

Let's Phrase It! Focus, Word Order, and Prosodic Phrasing in German Double Object Constructions*

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Version from December 2, 1999, comments welcome

This paper presents a case study in the interaction of word order, prosody and focus. The construction under consideration is the double object construction in German. The analysis proposed is in line with the following more general hypotheses:

First, focus and word order do not interact directly. There are no grammatical rules that relate focus to specific phrase structural positions. Rather, focus interacts with prosodic phrasing, which in turn may interact with word order.

Second, the kind of word order variation under investigation here is governed by two potentially conflicting types of constraints. Morphosyntactic constraints that express ordering preferences relating to case, definiteness and possibly other categories, and prosodic constraints that define what a prosodic structure should look like. In case these constraint families call incompatible demands, languages may allow only the morphosyntactically perfect structure, or only the prosodically perfect structure, or, as is arguably the case in German, both.

Third, violable ranked constraints provide a well-suited framework to account for these kinds of phenomena. Both the morphosyntactic and the prosodic constraints, as well as those governing the relation between prosody and focus, are implemented as markedness

* This paper is built on an earlier economy-theoretic paper of mine (Büring 1996) and a series of optimality-based talks I gave at the SFB 282 Colloquium 'Die Intonationale' in Cologne 7-96, the 'Interfaces of Grammar' conference in Tübingen 10-96, and the Stuttgart 'Workshop on OT-Syntax' 10-97 (Büring 1997). I would like to thank the audiences at these conferences for their comments and discussion, especially Kai Alter, Katharina Hartmann, Gerhard Jäger, Inga Kohlhof, Gereon Müller, Roger Schwarzschild and Hubert Truckenbrodt. Judith Aissen, Armin Mester and Line Mikkelsen offered invaluable comments and suggestions that greatly helped to shape and improve the present version. All remaining errors and shortcomings have been retained deliberately in order to stimulate future work.

constraints. Their relative (non-)ranking accounts for the variation observed within a language and cross-linguistically.

1. Introduction

German, as many of its Germanic cousins, is a verb-second language. What sets it, along with Dutch, apart from the other Germanic verb second languages is what Bech 1955/7 called its *Klammerstruktur* (lit.: 'bracket structure'). All non-finite verb forms appear at the very end of the clause, so that finite verb in second position and the non-finite ones in final position together forms a sort of bracket around the main body of the clause.

- (1) initial finite verb *Mittelfeld* non-finite verb forms
position

As indicated, this main body of the clause, as delimited by the finite verb to its left and the non-finite ones to its right, is traditionally called the *Mittelfeld* ('middle field').

In embedded clauses, the initial position ususally remains empty and the finite verb is found at the end, too. In its place the subordinating complementizer constitutes the left bracket to the *Mittelfeld*.

- (2) complementizer *Mittelfeld* non-finite verb finite
forms verb

The *Mittelfeld* contains all non-clausal complements to the verb, some non-finite clausal ones, and most adverbials (almost any of these can alternatively occupy the initial position in declarative main clauses, a fact we can ignore here). The relative order among the elements in the *Mittelfeld* is basically free. In particular, German, unlike Dutch, allows reordering among the nominal arguments quite freely. Subject and object as well as the two objects in a ditransitive construction can be found in various orders. The following examples of embedded clauses from Müller 1998 (his (31) and (36)) illustrate this:

- (3) nominative--accusative-order
a. ...dass eine Frau den Fritz geküsst hat.
...that a woman the-ACC Fritz kissed has
b. ...dass den Fritz eine Frau geküsst hat.
...that the-ACC Fritz a woman kissed has
'...that a woman kissed Fritz.'

- (4) dative--accusative-order
- a. ...dass man das Buch dem Fritz geschickt hat.
 ...that one the book the-DAT Fritz sent has
 - b. ...dass man dem Fritz das Buch geschickt hat.
 ...that one the-DAT Fritz the book sent has
 '...that someone sent Fritz the book.'

All arguments are nominal. Overt case marking for nominative, dative and accusative is found on articles. As one might suspect, (4) allows for even more different orderings involving subject--object-reordering, which we did not list here.

It has long been observed that various factors determine the acceptability of a given word order in a particular case, among them case, definiteness, animacy, and focus (cf. Lenerz 1977, Uszkoreit 1987, Müller 1998 a.o.). In the present study we will concentrate on the particular role that focus plays in relation to case (which we take as representative of the other morphosyntactic constraints). We also limit our discussion to the relative ordering of accusative and dative objects in double object constructions.

2. Focus and Word Order: A Summary of the Proposal

In his seminal study on German word order, Lenerz 1977 found that there are two main semantic/pragmatic factors that co-determine object ordering in German double object constructions: definiteness and focus. Simplifying slightly the generalizations in (5) hold:

- (5) a. Definite NPs precede indefinite NPs.
 b. Non-focused NPs precede focused NPs.

An equally important finding of that study was that there is one purely morpho-syntactic factor involved, too:¹

- (6) Dative NPs precede accusative NPs.

¹ The issue whether the DatO>AccO order is preferred for all verbs or just a lexically specified sub-group is controversial, cf. among others Haider 1993, Fortmann & Frey 1997, Vogel & Steinbäch 1998, Müller 1998. Since this question is orthogonal to the issue at hand we will leave it unresolved, concentrating on verbs that are uncontroversially among the DatO>AccO ones.

As Lenerz observed, these three conditions interact in a complex and interesting fashion: Either one or both of (5) can be violated, as long as (6) is met; and (6) can be violated only if both conditions in (5) are met. Put differently, if the dative object precedes the accusative object (henceforth DatO>AccO order), any distribution of focus and (in)definiteness among the objects is possible; but the accusative object can precede the dative object (henceforth AccO>DatO order) only if DatO is in focus and AccO is definite. Lenerz 1977 concluded from this that DatO>AccO is the 'unmarked' word order, and that deviance from it is only justified in compliance with the conditions in (5) .

The focus--case interaction is demonstrated in (7) and (8) (Lenerz' (2) and (3), p.43). To control for focus, a context-question as in (7) and (8) is provided; the focus in the answer can then be identified as the constituent that corresponds to the *wh*-phrase in the question ([...]F brackets indicate focus, capitals represent pitch accents).

The DatO>AccO order in (a) is fine in both cases, whereas the AccO>DatO order in (b) is only acceptable if DatO is in focus (or, as we shall sometimes say, *F-marked*).

- (7) Wem hast du das Geld gegeben?
'Who did you give the money to?'
- a. [+def. DatO]F > [+def. AccO]
Ich habe [dem KasSIerer]F das Geld gegeben.
I have the teller the money given
- b. [+def. AccO] > [+def. DatO]F
Ich habe das Geld [dem KasSIerer]F gegeben.
I have the money the teller given
'I gave the money to the teller.'
- (8) Was hast du dem Kassierer gegeben?
'What did you give to the teller?'
- a. [+def. DatO] > [+def. AccO]F
Ich habe dem Kassierer [das GELD]F gegeben.
I have the teller the money given
- b. [+def. AccO]F > [+def. DatO]
?* Ich habe [das GELD]F dem Kassierer gegeben.
I have the money the teller given
'I gave the teller the money.'

The definiteness--case interaction is illustrated in (9) and (10) (Lenerz' (18) and (20) on p.52f). DatO>AccO order is possible with an indefinite preceding a definite, *contra* (5.a), as in (9).

- (9) Was hast Du einem Schüler geschenkt? ('What did you give to a student.')
- [-def. DatO] > [+def. AccO]_F
 Ich habe einem Schüler [das BUCH]_F geschenkt.
I have a-DAT student the book given
 'I gave a student the book.'

But AccO>DatO order is unacceptable if AccO is indefinite, cf. (10) (note that in both examples the focus follows the non-focus, in accordance with (5.b)):

- (10) Wem hast du ein Buch geschenkt? ('Who did you give a book?')
- [-def. AccO] > [+def. DatO]_F
 * Ich habe ein Buch [dem SCHÜLER]_F geschenkt.
I have a book the student given
 'I gave a book to the student.'

In an unpublished paper (Büring 1996) I proposed to re-interpret Lenerz' findings in the following terms: DatO>AccO is the base generated VP-internal order of objects in German; AccO>DatO is the result of a syntactic movement operation called *scrambling*, which adjoins AccO to the VP (this follows a common line of syntactic analysis for German, cf. Webelhuth 1989, Müller 1992, Vikner 1991). There are two constraints on scrambling, which can be phrased as in (11):

- (11) a. Don't scramble a focused NP!
 b. Don't scramble an indefinite NP!

To derive these I proposed to utilize two constraints along the lines of (12) and (13):

- (12) FINALFOCUS (FF)
 Focus should be sentence final.
- (13) IND(EFINITES)
 Indefinites must be properly contained in VP (if they are to receive an existential reading).

Both these constraints have been proposed in the literature and can be seen to be independently motivated. I will return to this issue below. They interact with a general syntactic faithfulness-constraint that penalizes movement, among them scrambling, call it STAY (cf. Grimshaw

1997). Optionality of movement results where the base order violates FF and the derived order violates STAY but respects INDEFINITES and FF. Movement is prohibited where the base order meets both STAY and FF; it is also prohibited if the derived order violates INDEFINITES.²

In order to discuss the workings of this system I will implement it in the form of an optimality grammar, as proposed in Choi 1996 and, independently, in Büring 1997 (it is the latter proposal I am going to discuss here, although Choi's analysis uses essentially the same constraint tie, her CN2 -- dative precedes accusative -- and NEW -- roughly: a non-focused argument precedes a focused one -- to derive focus-related word order variation; since I will propose a fundamental reanalysis later in this paper, I will not attempt a comparison of the two accounts here). To achieve the desired results, INDEFINITES must be undominated, while FINALFOCUS and STAY are tied. The proposed ranking is thus the one in (14):

(14) INDEFINITES >> STAY <<>> FINALFOCUS

The <<>> notation indicates the constraint tie. A tie can be resolved in two different ways, in this case as in (15.a) or as in (15.b) (cf. Prince & Smolensky's *ordered global ties*; see also Müller 1999 for more discussion).

(15) a. INDEFINITES >> STAY >> FINALFOCUS
b. INDEFINITES >> FINALFOCUS >> STAY

If a structure is optimal under one of these rankings, it is grammatical. In case the winner under (15.a) has a different word order from the one under (15.b), optionality results. If they are the same, word order is strict.

Note that the only one of these constraints that can ever *favor* scrambling is FF: Scrambling may bring an F-marked NP into a position closer to the end of the clause. In that sense, scrambling in this analysis is *focus driven*.



It should be fairly easy to see how the facts around indefinites follow in this system: Scrambling of an indefinite will always result in a violation of INDEFINITES (VP-adjoined sites are not properly contained in VP) and STAY (movement has occurred). Leaving it *in situ* may at worst violate FF. But INDEFINITES dominates FF on either resolution of the tie (i.e. on both rankings in (15)), so the optimal candidate will never violate

² I ignore cases of obligatory movement here, which I argued in Büring 1996 exist in German, too.

INDEFINITES in favor of FF.

If the AccO (the potential scramblee) is definite (notated as dAccO), however, a more interesting constraint interaction can be observed. Suppose DatO is focus (and AccO is not). Leaving AccO *in situ* satisfies STAY but violates FF, since AccO, and not DatO_F is final. This structure, (16.a), will be the optimal candidate under (15.a). Scrambling AccO across DatO satisfies FF (DatO_F ends up sentence final) but violates STAY; this candidate wins under (15.b). The situation is summarized in tableau (16).


(16)

| | | | | |
|--|--|-----|------|----|
| i: | $[_{VP} \text{DatO}_F [_{V'} \text{dAccO V}]]$ | IND | STAY | FF |
| a.  | $[_{VP} \text{DatO}_F [_{V'} \text{dAccO V}]]$ | | | * |
| b.  | $[_{VP} \text{dAccO} [_{VP} \text{DatO}_F [_{V'} t_{AccO} V]]]$ | | * | |
| c. | $[_{VP} \text{dAccO} [_{VP} \text{DatO}_F [_{VP} t_{DatO} [_{V'} t_{AccO} V]]]]$ | | **! | |

(I added (16.c) to illustrate that multiple scrambling, though generally permitted, will be harmonically bounded and therefore blocked.) Note that both winners in (16) have a non-focused verb following the focused argument. But there is no application of scrambling that would remedy this situation. I will return to the question of whether the sentence final V should be taken to violate FF at all in section 3. For the purpose of this exposition I will understand FF to be met if no non-focused argument follows the focused one.

If AccO is focus (and DatO is not), the situation changes again. Now the DatO>AccO_F candidate meets both STAY and FF (and INDEFINITES), while the scrambled candidate AccO_F>DatO violates them both. That is, under either resolution of the tie the *in situ* version is optimal. Movement is blocked:


(17)

| | | | | |
|--|---|-----|------|----|
| i: | $[_{VP} \text{DatO} [_{V'} \text{dAccO}_F V]]$ | IND | STAY | FF |
| a.  | $[_{VP} \text{DatO} [_{V'} \text{dAccO}_F V]]$ | | | |
| b. | $[_{VP} \text{dAccO}_F [_{VP} \text{DatO} [_{V'} t_{AccO} V]]]$ | | * | * |

As I already noted in that earlier work, this system also derives a case not considered in Lenerz 1977, but observed in Eckardt 1996: If both


objects are focused, scrambling is excluded, regardless of (in)definiteness. In terms of the system proposed: STAY must not be violated if no improvement in terms of FF results:

(18)

| | | | | |
|--|---|-----|------|----|
| i: | $[_{VP} \text{DatO}_F [_{V'} \text{dAccO}_F V]]$ | IND | STAY | FF |
| a.  | $[_{VP} \text{DatO}_F [_{V'} \text{dAccO}_F V]]$ | | | |
| b. | $[_{VP} \text{dAccO}_F [_{VP} \text{DatO}_F [_{V'} t_{AccO} V]]]$ | | * | |

It was finally observed that scrambling of indefinites *is* possible if these are not to receive an existential interpretation (cf. the exact wording of the constraint in (13))³. To illustrate this, let us compare two sentences with focus on DatO and an indefinite AccO. In the first version, the indefinite AccO is meant to be existential (indicated as $i\text{AccO}_\exists$):



(19)

| | | | | |
|--|---|-----|------|----|
| i: | $[_{VP} \text{DatO}_F [_{V'} i\text{AccO}_\exists V]]$ | IND | STAY | FF |
| a.  | $[_{VP} \text{DatO}_F [_{V'} i\text{AccO}_\exists V]]$ | | | * |
| b. | $[_{VP} i\text{AccO}_\exists [_{VP} \text{DatO}_F [_{V'} t_{AccO} V]]]$ | *! | * | |

The scrambled structure is blocked for its violation of INDEFINITES: since the indefinite is existential, it ought to stay within VP.

Turning now to the second version, we observe that scrambling the indefinite AccO becomes an option if the indefinite is supposed to be interpreted as a generic NP (indicated by subscript GEN):

(20)

| | | | | |
|--|--|-----|------|----|
| i: | $[_{VP} \text{DatO}_F [_{V'} i\text{AccO}_{\text{Gen}} V]]$ | IND | STAY | FF |
| a.  | $[_{VP} \text{DatO}_F [_{V'} i\text{AccO}_{\text{Gen}} V]]$ | | | * |
| b.  | $[_{VP} i\text{AccO}_{\text{Gen}} [_{VP} \text{DatO}_F [_{V'} t_{AccO} V]]]$ | | * | |

The INDEFINITES constraint does not apply here since AccO is generic. Accordingly, (20.a) is optimal if the tie is resolved to STAY>>FF, while

³ In fact the situation is more complicated since I argued that (13) is not accurate, a point I won't go into here.

(20.b) is optimal if it is resolved to FF>>STAY. Movement of the indefinite across the definite is thus (optionally) possible.⁴

This quick overview illustrates all the relevant aspects of the system as proposed in Büring 1996 in its application to German double object constructions. Empirically successful though it is, many questions remain open. Some of them regard the nature of the constraints. Why should they hold in the way they do? Others regard the technical set-up of the system. What advantages does it have to specify focus patterns (rather than, say, contexts, accent patterns, or nothing at all) in the input?

Regarding the first set of questions, the INDEFINITES constraint in (13) is a fairly direct adaption of the seminal proposals in de Hoop 1992 and Diesing 1992. If the position taken in these works is basically correct, positional preferences of indefinites can be explained in terms of the way syntax is mapped onto semantics. The effects of FINALFOCUS can and should, I believe, be derived from the way syntax is mapped onto prosody, utilizing ideas found in Truckenbrodt 1995, 1999 and Büring 1997. It is this latter aspect that the present paper is mainly concerned with.

The system I will present below shares many essential properties with the one sketched in this section and preserves its basic tenets: Object ordering in German is determined by morphosyntactic and focus-related constraints, F-marking is specified in the input, and optional re-ordering is derived by a constraint tie in the very way illustrated above.

I will not, however, continue to use the particular constraints STAY, FINALFOCUS and INDEFINITES. In section 3. I propose to replace FINALFOCUS by a group of constraints relating focus, prosody and syntax. Their net effect will be similar to that observed with FINALFOCUS above; in contradistinction to the latter, however, their empirical coverage is much broader, and they are compatible with and well motivated by current work in prosodic phonology. In section 4 I will then introduce a constraint DAT, which takes over the work of STAY. The effects of DAT will be the same as those of STAY; it is chosen merely to avoid commitment to a derivational syntactic framework. The issue of (in)definiteness and its influence on object order will be ignored in what follows, along with the constraint introduced to handle it; re-integration of it within the analysis developed below will have to await a later

⁴ To derive Diesing's 1992 original generalization, INDEFINITES in (13) would have to be strengthened to a biconditional, requiring that indefinites are existential if and only if they are VP-internal. In Büring 1996 I argued, however, that this generalization is too strong, i.e. that VP-internal indefinites can also be generic; cf. also Büring in prep.

occasion (Büring in prep.).

Regarding the second set of questions, the issue to be addressed here regards the specification of the input. The system sketched above and elaborated in what follows crucially specifies F-marking (and the different readings of indefinites) in the input, but not, e.g. accenting or prosodic phrasing. This choice could be made different. I don't think that the present paper presents conclusive evidence in favor of the set-up chosen here. Its purpose is to show that such a system can be devised, and explore what properties it will have, facilitating further discussion. I will touch upon some of the issues involved after the main exposition in section 5 below.

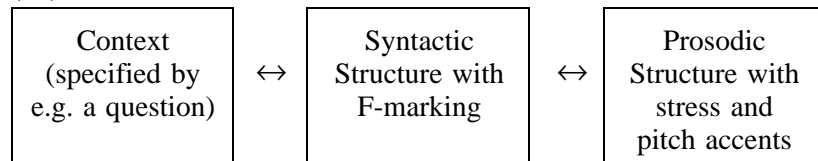
3. Deconstructing FINALFOCUS

This section explores the rationale behind a constraint like FINALFOCUS, and proposes to replace it by more precise and natural constraints on prosodic phrasing. Likewise we will no longer assume the constraints INDEFINITES nor STAY (which will be replaced by a less committal constraint called DAT(IVE) in section 4 below).

3.1. Phrasing, Stress, and Accent

Let me start by clarifying some of the assumptions about the relation between context, focus and accent I am making. I follow Selkirk 1984, 1995, Rochemont 1986, and many others in assuming an overall picture as in (21).

(21)



The context determines which constituents in the syntactic structure need to be F-marked. I will adopt the most straightforward characterization of this relation, as proposed in Schwarzschild 1999: Any constituent which is not contextually *Given* (or *c(ontext)-construable* in Rochemont's terms) needs to be F-marked. Usually this will be the constituent that corresponds to the *wh*-phrase in a context-question (see Selkirk 1995 and Schwarzschild 1999 for enlightening discussion), plus all or most of its

sub-constituents. In this paper I will have nothing more to say on the Context--F-marking relation; my subject will be the correspondence between the two boxes on the right in (21), *focus realization*.

In English, focus is signalled by *pitch accents*, i.e. movements of the fundamental frequency of the speaker's voice, centered around prominent syllables. But, as is well known, not every terminal element that bears F must receive a pitch accent. Selkirk 1984, as many following her, assumes two additional steps on the way from the context-determined F-marking to the actual prosodic structure: First, a set of conditions on the possible F-patterns within the syntactic tree, usually cast in terms of *focus projection rules*. Second a correspondence condition between F-marked terminals and pitch accents, e.g. the *basic focus rule* of Selkirk 1984:207.

In what follows I want to explore a different line: I will derive the relevant effects of the focus projection rules in terms of prosodic principles (in keeping with a larger project to eliminate focus projection rules altogether, cf. Büring 1997, Drubig 1994, Schwarzschild 1999), and I will follow Truckenbrodt 1995, 1999, in assuming that there is no rule that directly relates F-marking to pitch accents, but that focus--accent relation is mediated through *prosodic phrasing*.

My assumptions about prosodic phrasing are fairly standard: Lexical heads, sometimes together with lighter material accompanying them form *prosodic words*. Prosodic words are grouped into intermediate prosodic categories which I will call *accent domains*, ADs (a term used by Uhmann 1992, similar to Gussenhoven's 1984 *focus domains*, Pierrehumbert & Hirschberg's 1990 *intermediate phrases*, and Truckenbrodt's 1999 *phonological phrases*), which in turn are grouped into *intonational phrases*. Following Selkirk 1984 and many others, I assume that prosodic phrasing is *exhaustive*, *strictly layered*, and *non-recursive*.⁵

Each such prosodic category has a unique *head*. The head is the most *prominent* element of the category. For example, the syllables *sie*, *geld* and *ge* (marked by capitals) in (22) -- which is the end of sentence (8.a) above -- are the heads of their respective prosodic words; they receive a grid mark at the word-level, hence are more prominent than all the other syllables.

⁵ These conditions, as well as the one requiring headedness of prosodic phrases introduced in the next paragraph, should be properly understood as undominated markedness constraints in an optimality framework. It should be understood that this only holds for German, then, leaving open the possibility that they are ranked in a more interesting way in other languages.

- (22)
- | | | | | |
|-----|---|---|------|------|
| ... | | x | |)iP |
| | (| x |)AD | (|
| | | x | |)AD |
| | (| x |)PWd | (|
| | | x | |)PWd |
| | (| x | |)PWd |
- dem KasSIErer das GELD geGEben
the teller(DAT) the money give

The prosodic words (*dem Kassierer*) and (*das Geld*) are the heads of their respective accent domains. Accordingly they are more prominent than the prosodic word (*gegeben*), which means that their most prominent syllables receive AD-level stress. Finally, the AD (*das Geld gegeben*) is the head of the iP that wraps the entire sentence (the dots indicate that the iP extends further to the left) and thus receives a grid mark at the iP-level (note that this is different from the notation used in Halle & Vergnaud 1987, where heads are indicated by grid marks on the next higher level).

As noted, the grid marks represent *stress*, where higher columns represent a higher degree of stress. Finally, stressed syllables are associated with pitch accents (I will not be concerned with the choice of pitch accent here, see Pierrehumbert & Hirschberg 1990 for general discussion, and Büiring 1997a on German). For our purposes it is sufficient to state that each sentence contains at least one pitch accent, and that if a syllable gets a pitch accent associated with it, every other syllable with the same or higher degree of stress must get a pitch accent, too; the range of the pitch movement (the perceived 'intensity' of the accent) is positively correlated with the level of stress on the syllable the accent is associated with (cf. Pierrehumbert 1980). The result will be that the head of iP always bears a pitch accent. A common pattern in German is that all AD-heads have a pitch accent, too (cf. e.g. Uhmann 1991). We stipulate that syllables with only PWd-level stress never bear pitch accents.

The convention we will use where no prosodic trees are given is the following: AD-heads are marked by capitalization of the pertinent syllable, the iP-head by capitalization plus underlining of the word; PWd heads aren't marked at all. (22) can thus be abbreviated as in (23):

- (23) dem KasSIErer das GELD gegeben.

Given what we said above, *Geld* must bear a pitch accent here, while *KasSIErer* may (along with every other AD-head that may precede it); the *V gegeben* cannot. The pitch accent on *Geld* will be the most

prominent one (the *nuclear stress*).⁶

Let us start by elaborating on the notion of accent domain (I will ignore the issue of prosodic word formation, because nothing hinges on it in the present context). An AD has an 'ideal size', which is described by the constraints in (24). Since its two parts, PRED and XP don't conflict in the examples I discuss in this paper, I will treat them as one constraint, ADF, in the tableaux that follow:

- (24) ADF (ACCENTDOMAINFORMATION):
- a. PRED:
A predicate shares its AD with at least one of its arguments.
 - b. XP:
AD contains an XP. If XP and YP are within the same AD, one contains the other (where X and Y are lexical categories)


As stated quite explicitly in (24.b), the ideal aimed at is to map lexically headed XPs onto ADs. Two special cases arise: If one such XP contains another, the dominating one will be mapped onto AD. And if an argument XP is adjacent to its predicate, the predicate will be *integrated* into the XP's AD (borrowing Jacobs' 1992 apt term). For example, the NP and its selecting predicate will be mapped onto one AD in the German (25.a) (the same results obtain *mutatis mutandis* for English VO structures). This candidate doesn't violate XP, because even though it contains two lexically headed maximal projections, NP and VP, the latter contains the former.⁷ It doesn't violate PRED either because the predicate

⁶ Note that not all F-marked XPs will need to have a pitch accent on this view, though they all will have AD-level stress. Likewise, non-focused XPs *can* be pitch accented (if all focused ones are, too) since they usually receive AD-level stress as well. Crucially, however, non-focused AD-heads cannot have accents if the focused AD-heads don't. This is the empirical generalization reported e.g. in Uhmman 1991. Others, for example Féry 1993, claim that (in our terminology) all AD-heads must receive a pitch accent if they are part of a focused phrase, while non-focused ones may or may not. This latter viewpoint can be implemented by reformulating FP below, but it necessitates further complications. Given that the empirical situation seems unclear I will therefore stick with the easier generalizations offered in Uhmman 1991.

⁷ PRED and XP are close relatives of Truckenbrodt's (1999) WRAP and *Stress-XP* constraints, respectively. Just like these they will favor two ADs for adjunct-head, argument-argument and adjunct-argument structures (since neither phrase contains the other and no predication is involved), and with head-complement they unanimously favor one AD (since bare heads aren't XPs). Note, however, that Pred -- unlike Stress-XP -- favors $(NP\ V)_{AD}$ -integration, even if V ends up being the head of the AD (cf. (31) below). Also, PRED applies even if the predicate is an XP of its own. I'm thinking of subject--intransitive-verb, object--secondary-predicate, and NP--short relative clause, which all have been reported to allow, if not require single ADs. This can be achieved in


-- i.e. the verb -- gets to share the AD with its NP argument.

(25) das Geld geben
the money give ('give the money')

- a.  ()_{AD} ✓
 (das Geld)(geben)_{PWd}
- b. () ()_{AD} * (Pred: V is alone
 (das Geld)(geben)_{PWd} in its AD)
- c. (())_{AD} * (illegal recursion
 (das Geld)(geben)_{PWd} of AD)

As said above, every AD has one head, which is the most prominent element within it, indicated by a grid mark within the AD. If an AD consists of more than one prosodic word, as in (25.a), the head will be determined by (26):

(26) A/P (ARGUMENT-OVER-PREDICATE)
 Within AD, an argument is more prominent than a predicate.

- (27) a. (x)_{AD} violates A/P
 (das Geld)(geben)_{PWd}
- b.  (x)_{AD} satisfies A/P
 (das Geld)(geben)_{PWd}

The effect of (26) is demonstrated in (27) (note that here and henceforth I don't indicate prosodic words in a separate line; hence PWd-heads are no longer marked with a grid mark at all).

3.2. Simple Foci

ADF and A/P in tandem govern phrasing and prominence, all other things being equal. How does focus enter the picture? I submit that one simple constraint, (28), is all that is needed:

the present system by ranking Pred above XP.

- (28) FP (FOCUSPROMINENCE)
Focus is most prominent.⁸

Importantly, (28) inspects the prosodic structure of the sentence; for example, if an AD contains two prosodic words, only one of which contains an F-marked node, FP will demand that that PWd become the head of AD; likewise for higher prosodic categories (to which I will turn below).

In German, FP is crucially ranked above A/P; for reasons that will become clear later, ADF must be ranked in between them. To understand the workings of FP, let us consider AD-formation in cases where exactly one immediate constituent of the clause bears an F-feature (that constituent may in turn contain more F-features, which I will ignore here); I will refer to these as *simple* or *narrow focus* cases. What we observe here is that among the elements within VP, only the constituent in focus has AD level stress (and, for reasons to be discussed in a moment, the main pitch accent). (Since narrow V-foci are hard to elicit by a *wh*-question, I will use contrasting contexts, which, in accordance with Schwarzschild 1999, I assume work the same in all relevant respects.)

- (29) a. (Was hast du dem Kassierer gegeben? Ich habe dem Kassierer) das GELD_F gegeben.
'What did you give the teller? I gave the teller [the money]_F.'
- b. (Ich habe nicht gesagt, du sollst dem Kassierer das Geld beschreiben, sondern du sollst dem Kassierer) das Geld GEben_F.
'I didn't say you should describe the money to the teller, but you should [give]_F the money to the teller.'


The pitch accents on *Geld* and *gegeben*, respectively, tell us that these must be AD-heads, while their respective sisters are not (otherwise they *could* at least bear a secondary accent, which I would have indicated by capitals). Let us see how this follows from our assumptions: If the AccO

⁸ A more precise rendering is (i):

- (i) FP (focus prominence)
a. If α is the smallest prosodic constituent that contains an F-marked syntactic node β , α is called a *prosodic focus*.
b. If α is a prosodic focus at level n it is the head at level $n+1$.


alone is F-marked (case (29.a)), FP will require that the prosodic word containing it become the head of the AD. This is the case in (30.a) and (30.c), but not in (30.b), which is therefore blocked ((30.b) violates A/P on top, which is irrelevant here). Among (30.a) and (30.c), ADF prefers the former, due to the reason already seen in (25.b): The V alone is not a good AD, violating ADF/PRED.

(30)

| i: [_{VP} [_{NP} das Geld] _F geben] | FP | ADF | A/P |
|--|----|-----|-----|
|  (x) _{AD} a. (das Geld _F)(geben) _{PWd} | | | |
| (x) _{AD} b. (das Geld _F)(geben) _{PWd} | *! | | * |
| (x)(x) _{AD} c. (das Geld _F)(geben) _{PWd} | | *! | |

If V alone is F-marked (case (29.b)), *it* has to be head of AD, which blocks (31.a). Both (31.b) and (31.c) achieve that goal, though by different means. The former shifts the accent within an otherwise perfect AD, violating A/P; the latter makes V an AD of its own, which then trivially meets FP.

(31)

| i: [_{VP} [_{NP} das Geld] geben] _F | FP | ADF | A/P |
|--|----|-----|-----|
| (x) _{AD} a. (das Geld)(geben _F) _{PWd} | *! | | |
|  (x) _{AD} b. (das Geld)(geben _F) _{PWd} | | | * |
| (x)(x) _{AD} c. (das Geld)(geben _F) _{PWd} | | *! | |

Note that A/P is not violated in (31.c), since there *is* no AD containing a predicate and its argument. Yet (31.c) is blocked by (31.b) since ADF dominates A/P.

Let us now include the intonational phrase, iP, into the picture. Since we are only concerned with VP-internal focus here, it suffices to assume that every sentence (or inflection phrase) is mapped onto one iP.

Intonational phrases are strictly right-headed in German: The

head will be that AD which is aligned with iP's right edge. We implement that by assuming (32) as an undominated constraint (cf. McCarthy & Prince 1993).

- (32) iP-HEAD-RIGHT:
ALIGN(iP,right,head(iP),right)

Main prominence within iP will therefore be on the most prominent element of its final AD (this is essentially equivalent to Selkirk's 1984 *final strengthening*). Since at least the most prominent syllable of a sentence must be associated with an accent (see above), the iP-head will be perceived as the main accent or 'nuclear stress' of the sentence; on casual inspection it might even be perceived as the *only* prominence, even though that constitutes an over-simplification in most cases.

Since (32) is not violated in any of the examples I discuss in this paper I won't include it in the tableaux and indicate violations of it separately, where necessary.

The full representations of (30.a) and (31.b) are then (33.a) and (33.b), respectively (the dots again indicate that iP extends to the left):

- (33) a. ... x) _{iP}
 (x) _{AD}
 (das Geld_F)(geben)_{PwD}
- b. ... x) _{iP}
 (x) _{AD}
 (das Geld)(geben_F)_{PwD}

Notice that, also at the iP-level, the structures in (33.a) respect FP: The AD containing the focus ends up being the head of iP. Note in particular that although there is plenty of material following the most prominent syllable *Geld* within the iP in (33.a), there is no AD following the AD containing *Geld*. Therefore iP-HEAD-RIGHT in (32) is respected here: The rightmost daughter AD is the head of iP.⁹

⁹ It is perhaps worth noting that the second best candidate in (31), (31.c), will receive a very similar overall realization as the winner (31.b). In particular both (31.b) and (31.c) have main prominence (= the head of iP) on V. The difference is merely the presence of AD-level prominence on the AccO in (31.c), which means that it can, but doesn't have to, bear a secondary pitch accent. As far as I can tell, the data are inconclusive with regard to this issue (a lot depends upon the relation between prominence and pitch accents, cf. note 6 above). (31.b) owes its optimality to the fact that A/P is ranked below ADF. If both were tied, both (31.b) and (31.c) would be grammatical. Within the set of data that I discuss in this paper, this seems to be the only case where ranking ADF above A/H is crucial. If required on empirical or theoretical

To conclude the simple focus cases, what if the VP-initial dative argument is the sole focus? As already discussed in section 2 above, the nuclear accent then falls on the DatO; moreover, no secondary accents on either AccO or V are allowed.

- (34) (Wem hast du das Geld gegeben? Ich habe) dem KaSSIErer_F das Geld gegeben.
 'Who did you give the money? I gave [the teller]_F the money.'

This is predicted: The dominant constraint FP will force the head of AD and iP to be on the focused DatO. As Truckenbrodt 1995:ch.5 was the first to point out, this, together with iP-HEAD-RIGHT, excludes the presence of any AD following the one containing the focus. Consider (35.a) and (35.b); in both the final AD (*das Geld geben*) becomes the head of the iP, consonant with the right-headedness of iP, (32). But this violates FP at the iP level, since the AD (*dem Kassierer_F*) is not most prominent in iP. Since FP dominates ADF, (35.a) and (35.b) are blocked by (35.d).

Alternatively consider (35.c). Here the AD containing the focus, (*dem Kassierer_F*) becomes the head of iP, satisfying FP, but violating iP-HEAD-RIGHT, which again dominates ADF.

(35)

| i: [_{VP} [dem Kassierer] _F] _[NP] das Geld] geben] | FP | ADF | A/P |
|--|------------------------|-----|-----|
| (x) _{iP} (x) (x) _{AD} a. (dem Kassierer _F)(das Geld)(geben) _{PwD} | *! | | |
| (x) _{iP} (x) (x) _{AD} b. (dem Kassierer _F)(das Geld)(geben) _{PwD} | *! | | * |
| (x) _{iP} (x) (x) _{AD} c. (dem Kassierer _F)(das Geld)(geben) _{PwD} | IP is not right headed | | |
| (x) _{iP} (x) _{AD} d. (dem Kassierer _F)(das Geld)(geben) _{PwD} | | * | |

grounds, that ranking could be given up, ruling in (31.c) as an optimal output.

The only way to have a non-final argument be most prominent is thus to make it the head of the *final* AD. In other words, all subsequent AD boundaries are 'deleted', or put more accurately: No more ADs are formed. This blatantly violates ADF, in particular its XP sub-constraint (cf. (24.b)): DatO and AccO are both lexically headed XPs, and neither one contains the other. But since ADF is dominated by both FOCUSPROMIENANCE and iP-HEAD-RIGHT, these violations are unavoidable. Consequently the post-focal stretch of the sentence gets totally de-structured. There can be no AD-level stresses and, accordingly, no pitch accents. This effect has been observed in various languages, cf. again the discussion in Truckenbrodt 1995:ch.5.

3.3. Complex Foci

We now turn to cases where more than one immediate constituent of the sentence is in focus. (36) is an example of that sort (quite possibly there is another F-mark on the VP here and in (38) below; I'll address this issue in the next sub-section).

- (36) (Wie soll die NSF dabei helfen? - Sie soll) das GELD_F geben_F.
'How can the NSF help? They should give_F the money_F.'

The final V, though F-marked itself, does not have AD-level stress and cannot bear a pitch accent. That means that object and verb continue to form an AD; (37) shows how this is accounted for:

(37)

| i: [_{VP} [_{NP} das Geld] _F geben _F] | FP | ADF | A/P |
|--|-------------------------|-----|-----|
| $\begin{array}{c} (\quad \quad \quad x \quad)_{iP} \\ (\quad \quad x \quad)(\quad x \quad)_{AD} \\ \text{a. (das Geld}_F)(\text{geben}_F)_{PWd} \end{array}$ | * | *! | |
| $\begin{array}{c} (\quad \quad \quad x \quad)_{iP} \\ \text{b. (das Geld}_F)(\text{geben}_F)_{PWd} \\ (\quad \quad \quad x \quad)_{AD} \end{array}$ | * | | |
| $\begin{array}{c} (\quad \quad \quad x \quad)_{iP} \\ (\quad \quad \quad x \quad)_{AD} \\ \text{c. (das Geld}_F)(\text{geben}_F)_{PWd} \end{array}$ | * | | *! |
| $\begin{array}{c} (\quad \quad \quad x \quad)_{iP} \\ (\quad \quad x \quad)(\quad x \quad)_{AD} \\ \text{d. (das Geld}_F)(\text{geben}_F)_{PWd} \end{array}$ | iPs is not right-headed | | |

The winner in this case has exactly the same prosodic structure as in the object-only-F case in (30). The tableaux look considerably different though. In particular, notice that even the winner in (37) has one violation of FP. This is unavoidable if a sentence has two F-marked constituents, given that every phrase has only one head: At some level, one of the F-constituents must become the non-head.

The most instructive candidates to compare are (37.a) and (37.b). In (37.a), V is the head of its own AD, and the AD with the AccO is subordinated at the level of iP, inducing a FP violation. In (37.b), V is subordinated, but already at the AD level. It incurs a violation of FP, too, this time because the PWD containing *geben_F* is not the head of the AD containing it. Note that since there is only one AD (which then is the head of iP), no further violations of FP occur. The choice *pro* (37.b) is made by the lower constraint ADF, which prefers the 'integrated' structure (37.b) over the 'split' one in (37.a): A perfect AD cannot consist of just a predicate as in (37.a) (the fact that the prominence within the AD is on the object rather than on the verb, as in (37.c), is then regulated by A/P).

What happens if the verb and *two* arguments are F-marked? In this case we get the nuclear accent on the rightmost argument and a secondary accent, or at least AD-level stress, on the VP-initial one.

- (38) (Was hast du gemacht? -- Ich habe) dem Kassierer_F das GELD_F
 gegeben_F.
 'What did you do? -- I gave_F the teller_F the money_F.'

Turning to the tableau, there will inevitably be two violations of FP (since there are three prosodic words -- two arguments and the predicate -- only one of which will be prominent at all levels). But this time, since the ideal AD contains at most one of the arguments (cf. (24.b) above), each argument will get its own AD, and they will only be 'merged' at the level of the iP. The predicate will integrate with the closest argument for reasons of ADF, as seen before.

(39)

| i: $[_{VP}[\text{dem Kassierer}]_F[_{NP}\text{das Geld}]_F \text{geben}]_F$ | FP | ADF | A/P |
|--|----|-----|-----|
| $\begin{matrix} (& & X &)_{iP} \\ (& X & &)_{AD} \\ \text{a. } (\text{dem Kassierer}_F)(\text{das Geld}_F)(\text{geben}_F)_{PWd} \end{matrix}$ | ** | *! | |
| $\begin{matrix} (& & X &)_{iP} \\ (& X & &)_{AD} \\ \text{b. } (\text{dem Kassierer}_F)(\text{das Geld}_F)(\text{geben}_F)_{PWd} \end{matrix}$ | ** | *! | |
| $\begin{matrix} (& & X &)_{iP} \\ \text{c. } (\text{dem Kassierer}_F)(\text{das Geld}_F)(\text{geben}_F)_{PWd} \\ (& X & &)_{AD} \end{matrix}$ | ** | | |
| $\begin{matrix} (& & X &)_{iP} \\ (& X & &)_{AD} \\ \text{d. } (\text{dem Kassierer}_F)(\text{das Geld}_F)(\text{geben}_F)_{PWd} \end{matrix}$ | ** | | *! |
| $\begin{matrix} (& & X &)_{iP} \\ (& X & &)_{AD} \\ \text{e. } (\text{dem Kassierer}_F)(\text{das Geld}_F)(\text{geben}_F)_{PWd} \end{matrix}$ | ** | **! | |
| $\begin{matrix} (& & X &)_{iP} \\ (& X & &)_{AD} \\ \text{f. } (\text{dem Kassierer}_F)(\text{das Geld}_F)(\text{geben}_F)_{PWd} \\ (& X &)_{AD} \end{matrix}$ | ** | *! | |

It should be noted once more that the crucial difference is between predicates and non-predicates in complex-F-constructions. While predicates have an incentive to join the AD of one of their arguments and therefore integrate at that lower level, arguments do not. In fact, ADF prefers for them *not* to share an AD with any other argument, which is why they end up forming their own AD. Incidentally, the latter reasoning applies to adjuncts, too, except that these never join ADs with a predicate, given that they are never selected by a predicate (cf. again the definition in (24)); it is beyond the scope of this paper to go into this, though.

3.4. F on a Verbal Projection

In the above cases we have concentrated on F's sitting on immediate constituents of the clause such as DatO, AccO and V. I remarked above example (36) already that sometimes, there may be F-marking on clausal projections such as V', VP, IP etc. as well. It would lead us to far afield to discuss the pragmatic differences leading to, say, a $[_{VP} NP_F V_F]$ pattern

as opposed to a $[_{VP} NP_F V_F]_F$ pattern, especially since the issue seems controversial. Fortunately, no commitment is needed, because, as we will see, nothing changes with or without additional F-marking on clausal projections. Consider (40), which is mostly a repetition of (37) with an F on VP added:¹⁰

(40)

| i: $[_{VP}[\text{das Geld}]_F \text{ geben}_F]_F$ | FP | ADF | A/P |
|--|----|-----|-----|
| $\begin{array}{c} \dots \quad x \quad)_{iP} \\ (\quad x \quad)_{AD} \\ \text{a. } (\text{das Geld}_F)(\text{geben}_F)_{PWd} \end{array}$ | * | | |
| $\begin{array}{c} \dots \quad x \quad)_{iP} \\ (\quad x \quad)_{AD} \\ \text{b. } (\text{das Geld}_F)(\text{geben}_F)_{PWd} \end{array}$ | * | | *! |
| $\begin{array}{c} \dots \quad x \quad)_{iP} \\ (\quad x \quad)(\quad x \quad)_{AD} \\ \text{c. } (\text{das Geld}_F)(\text{geben}_F)_{PWd} \end{array}$ | * | *! | |

In (40.a) and (40.b), the smallest prosodic constituent containing VP_F is the AD. Since that AD is the head of iP , FOCUSPROMINENCE is met.¹¹

If we look at a double object example along the lines of (35), the a similar reasoning applies; (41) repeats the winning candidate for that structure with an F on VP added:

(41)
$$\begin{array}{c} (\quad \quad \quad x \quad)_{iP} \\ (\quad \quad x \quad)_{AD} (\quad x \quad)_{AD} \\ [_{VP} \text{ dem Kassierer}_F \text{ das Geld}_F \text{ geben}_F]_F \end{array}$$

No smaller prosodic unit than iP contains the VP, and since iP is the highest category, nothing is more prominent than iP . Therefore, no

¹⁰ The F-marking on VP is not represented in the outputs. This is because I only indicate the prosodic structure in the output, with some F-marks added for convenience, so there is no natural place for them. Strictly speaking the outputs should be pairs of syntactic phrase markers with F marking and prosodic structures without (or, perhaps, only the latter).

¹¹ Pedantically speaking (40.c) violates FP as formulated in note 8 above, since the smallest prosodic constituent containing VP_F , iP , is *not* the head of the next higher prosodic category, because there *is* no such higher category. But since this affects all structures in the competition equally, no change will arise from this. In the main text I will ignore these extra violations for the sake of perspicuousness. Put differently, I will interpret FP to say "...is the head at level $n+1$, if *there is such a level*".

additional violation of FP occurs, hence no other candidate will improve relative to (41)/(39.c).

3.5. Deaccenting

So far we have looked at simple foci (DatO_F, AccO_F, and V_F) or complex foci in which all VP internal arguments were F-marked. Now I will turn to examples that contain *deaccenting*. As a starting point, recall that a ditransitive VP/IP focus without deaccenting results in a structure with the last AD consisting of a prominent AccO and a non-prominent V. (42)/(43) illustrates this with a new example (foci on, external to, and above VP are not indicated):

- (42) 'Why was Veronika arrested?' → DatO_F AccO_F V_F
 Weil sie ihrem Macker den Kaminhaken überzog.
bec. she her-DAT man the-ACC poker landed
 'Because she beat her man with the poker.'

(43)

| i: [_{VP} DatO _F AccO _F V _F] | FP | ADF | A/P |
|---|---------------------|-----|-----|
| $\left(\begin{array}{c} \\ \\ \text{x} \end{array} \right) \left(\begin{array}{c} \\ \\ \text{x} \end{array} \right) \left(\begin{array}{c} \text{x} \\ \\ \end{array} \right)_{iP}$ $\left(\begin{array}{c} \text{x} \\ \\ \end{array} \right) \left(\begin{array}{c} \text{x} \\ \\ \end{array} \right) \left(\begin{array}{c} \text{x} \\ \\ \end{array} \right)_{AD}$ a. (ihrem Macker _F)(den Kaminhaken _F)(überzog _F) _{PWD} | ** | *! | |
| $\left(\begin{array}{c} \text{x} \\ \\ \end{array} \right) \left(\begin{array}{c} \\ \\ \end{array} \right) \left(\begin{array}{c} \\ \\ \text{x} \end{array} \right)_{iP}$ $\left(\begin{array}{c} \text{x} \\ \\ \end{array} \right) \left(\begin{array}{c} \text{x} \\ \\ \end{array} \right) \left(\begin{array}{c} \text{x} \\ \\ \end{array} \right)_{AD}$ b. (ihrem Macker _F)(den Kaminhaken _F)(überzog _F) _{PWD} | iP not right-headed | | |
| $\left(\begin{array}{c} \\ \\ \\ \end{array} \right) \left(\begin{array}{c} \\ \\ \text{x} \end{array} \right) \left(\begin{array}{c} \text{x} \\ \\ \end{array} \right)_{iP}$ $\left(\begin{array}{c} \text{x} \\ \\ \end{array} \right) \left(\begin{array}{c} \\ \\ \text{x} \end{array} \right) \left(\begin{array}{c} \text{x} \\ \\ \end{array} \right)_{AD}$ c. (ihrem Macker _F)(den Kaminhaken _F)(überzog _F) _{PWD} | ** | | *! |
| $\left(\begin{array}{c} \\ \\ \\ \end{array} \right) \left(\begin{array}{c} \\ \\ \text{x} \end{array} \right) \left(\begin{array}{c} \text{x} \\ \\ \end{array} \right)_{iP}$ $\left(\begin{array}{c} \text{x} \\ \\ \end{array} \right) \left(\begin{array}{c} \text{x} \\ \\ \end{array} \right) \left(\begin{array}{c} \text{x} \\ \\ \end{array} \right)_{AD}$ d. (ihrem Macker _F)(den Kaminhaken _F)(überzog _F) _{PWD} | ** | | |
| $\left(\begin{array}{c} \text{x} \\ \\ \\ \end{array} \right) \left(\begin{array}{c} \\ \\ \end{array} \right) \left(\begin{array}{c} \text{x} \\ \\ \end{array} \right)_{iP}$ $\left(\begin{array}{c} \text{x} \\ \\ \end{array} \right) \left(\begin{array}{c} \text{x} \\ \\ \end{array} \right) \left(\begin{array}{c} \text{x} \\ \\ \end{array} \right)_{AD}$ e. (ihrem Macker _F)(den Kaminhaken _F)(überzog _F) _{PWD} | ** | *! | |

If we now introduce AccO as part of the context-question, it no longer needs to be F-marked (since it is Given). But its surrounding elements, DatO and V still are (and so are, presumably, its dominating VP and IP).

Such a structure is realized with the nuclear accent on V, no stress or secondary accent on AccO, and AD-level stress (and usually a secondary pitch accent) on DatO. So the contextually given AccO must remain unstressed and unaccented between its two stressed neighbors, which is presumably why cases like this have been labelled 'deaccented'.

- (44) 'Why was Veronika arrested? Only because she had a poker in her trunk?' → DatO_F AccO V_F
 Nein,...
- a. ...weil sie ihrem Macker den Kaminhaken Überzog.
 b. # ...weil sie ihrem MAcker den Kaminhaken überzog.
 ...bec. she her-DAT man the-ACC poker landed

It should also be noted that, unlike all the other cases of XP+V focus we have considered thus far, this type of context strictly excludes an unstressed V, as (44.b) shows. This result is predicted, as tableau (45) demonstrates.

(45)

| i: [_{VP} DatO _F AccO V _F] | FP | ADF | A/P |
|--|-----|-----|-----|
| $\left(\begin{matrix} & & & x & \\ & & & & \end{matrix} \right)_{iP}$ $\left(\begin{matrix} x & & & & \\ & & & & \end{matrix} \right)_{AD}$ a. (ihrem Macker _F)(den Kaminhaken)(überzog _F) _{PWd} | * | | * |
| $\left(\begin{matrix} & & & x & \\ & & & & \end{matrix} \right)_{iP}$ $\left(\begin{matrix} & & x & & \\ x & & & & \\ & & & & \end{matrix} \right)_{AD}$ b. (ihrem Macker _F)(den Kaminhaken)(überzog _F) _{PWd} | * | *! | |
| $\left(\begin{matrix} & & & x & \\ & & & & \end{matrix} \right)_{iP}$ $\left(\begin{matrix} & & x & & \\ & x & & & \\ & & & & \end{matrix} \right)_{AD}$ c. (ihrem Macker _F)(den Kaminhaken)(überzog _F) _{PWd} | **! | | |
| $\left(\begin{matrix} & & & x & \\ & & & & \end{matrix} \right)_{iP}$ $\left(\begin{matrix} & x & & & \\ & & & & \end{matrix} \right)_{AD}$ d. (ihrem Macker _F)(den Kaminhaken)(überzog _F) _{PWd} | * | *! | |

In contradistinction to the case of a narrowly focused DatO -- (35), whose winner is structurally parallel to (45.d) -- , the verb together with the AccO will form an AD in this case. The reason is that this last AD does not threaten to violate FP: It contains a focus, and to make that focus prominent, it merely needs to violate A/P.

Before I go on I would like to emphasize some points in which the present account differs from others in the literature: First, the integration

effect (F-marked V remains unstressed if its argument is stressed) is arrived at without any syntactic conditions on F-patterns (such as the second *phrasal focus rule* in Selkirk 1984:207, or the third *focus assignment rules* of Rochemont 1986:85), a results which brings us closer to a theory that dispenses with focus projection rules altogether. Second, it maintains that stress assignment and accenting are related to focus through prosodic phrasing (unlike the proposal in Schwarzschild 1999:sec.6, which otherwise shares many properties with the present one). Third, it generalizes to complex F-patterns and deaccenting, cases not discussed in e.g. Truckenbrodt 1995, 1999. And fourth, it allows integration with a theory of word order variation, as I will demonstrate now.

4. Word Order Variation

4.1. A First Look

In (35) above we derived the fact that single focus on the DatO yields a structure as in (46). FP requires that DatO be the head of AD and iP; since iP is right-headed, this blocks insertion of further AD boundaries to the right of AD. Due to this, a 'super-big' AD is formed, violating ADF.

(46) ... x)_{iP}
 (x)_{AD}
 DatO_F AccO V

Let us now see what happens if word order permutations enter the picture. In this case, the same F-pattern could be realized without violating any constraint by utilizing AccO>DatO order. And in fact, this option exists alongside the one in (46) in German, as noted in (7) above. I repeat both variants for convenience here (note that I have added the indication of AD-level prominence on AccO in (47.b), which may or may not be associated with a pre-nuclear pitch accent):

- (47) Who did you give the money to?
 a. Ich habe dem KassIERer das Geld gegeben. (DatO>AccO = (46))
 b. Ich habe das GELD dem KassIERer gegeben. (AccO>DatO = (48))
 'I gave the teller the money/the money to the teller.'

Let us examine (47.b) more closely, since we haven't done so before. Its prosodic structure is (48). It is perhaps worth pointing out that the prosodic structure of (47.b)/(48) is identical to that of the parallel the DatO-AccO-V example in (38)/(39) above; in particular, V and the adjacent DatO integrate into one AD in just the same way that V and AccO do.

(48) ... x)_{iP}
 (x) (x)_{AD}
 AccO DatO_F V

(49.a) is the constraint profile for this AccO>DatO order. No violations occur. (I will henceforth leave out the iP-level for reasons of space; the head of iP -- which is predictably the rightmost AD -- will be indicated by a capital underlined grid mark: X.)

(49)

| i: [_{VP} AccO DatO _F V] | FP | ADF | A/P |
|--|----|-----|-----|
| a. (das Geld)(dem <u>K</u> assierer _F)(geben) _{AD} <small>PWD</small> | | | |
| b. (das Geld)(dem <u>K</u> assierer _F)(geben) _{AD} <small>PWD</small> | | *! | |
| c. (das Geld)(dem Kassierer _F)(<u>G</u> eben) _{AD} <small>PWD</small> | *! | * | * |

Likewise, the deaccentuation case in (44)/(45) above can be realized in an optimal prosodic structure with AccO>DatO order. As (50) illustrates, this structure maps the V and its argument into one AD, avoiding a violation of ADF.

(50) 'Why was Veronika arrested? Only because she had a poker in her trunk?' → AccO DatO_F V_F

Nein, weil sie den KamInhaken ihrem MAcker überzog.
no bec. she the-ACC poker her-DAT man landed

(51)

| i: [_{VP} AccO DatO _F V _F] | FP | ADF | A/P |
|---|-----|-----|-----|
| (_x)(_X) _{AD} a. (den Kaminhaken)(ihrem Macker _F)(überzog _F) _{PWd} | * | | *! |
| (_x)(_x)(_X) _{AD} b. (den Kaminhaken)(ihrem Macker _F)(überzog _F) _{PWd} | * | *! | |
| (_x)(_X) _{AD} c. (den Kaminhaken)(ihrem Macker _F)(überzog _F) _{PWd} | * | | |
| (_X) _{AD} d. (den Kaminhaken)(ihrem Macker _F)(überzog _F) _{PWd} | **! | * | |

If the F-marked argument is capable of forming a 'perfect AD' with the verb, which it is when it is adjacent to V, this option is preferred -- (51.c). Phrasing and accenting the verb separately -- (51.b) -- is just as impossible as with AccO_F V_F in (37).

4.2. Competing with Movement

Suppose now that AccO>DatO structures as in (49) and (51) were to enter into competition with their DatO>AccO siblings such as (35) and (45). That is, suppose that the input was not specified w.r.t. object ordering, allowing outputs with either order to compete with one another (I'll use set notation in the input specification to indicate that).¹² Then the AccO>DatO structure would be the sole winner. It clearly beats even the best DatO>AccO candidate. (52) demonstrates this for the simple DatO_F case. It compares the optimal structure from (51) with that from (35), rendering the latter sub-optimal.

¹² Another implementation would specify object order in the input, but allow GEN to change it. Nothing hinges on this in the present context.

(52)

| <i>Who did you give the money?</i> i: {AccO, DatO _F , V} | FP | ADF | A/P |
|---|----|-----|-----|
| a. (<u>x</u>)(<u>X</u>) _{AD} a. (das Geld)(dem Kassierer _F)(geben) _{PWd} | | | |
| b. (<u>X</u>) _{AD} b. (dem Kassierer _F)(das Geld)(geben) _{PWd} | | *! | |

If German had a ranking like that in (52), the only object order we would ever find for simple focus cases would be one where the F-marked object follows the F-less one, so the former can be maximally prominent (satisfying FP) *and* the latter can form an AD (satisfying ADF). Put in derivational terms, we would find obligatory scrambling of non-focused objects around focused ones. While this is obviously not the case in German, a situation much like this can arguably be found in many Romance languages, e.g. Spanish, Italian and, to a lesser degree, French (Ladd 1996, Zubizarreta 1998). In Spanish for example, an NP which is the single focus in a sentence must occur postverbally, in VP-final position. The interpretation of this that I have in mind runs along the following lines: Any structure in which the focus isn't sentence final would require an AD which contains the focus and everything following it, similar to (52.b) (otherwise the AD wouldn't be iP-final, hence not the head of iP, yielding a violation of FP). But such a structure will always be sub-optimal compared to one in which the focus occurs in sentence final position, so that every element preceding it can form its own AD, similar to the structure in (52.a). Derivationally put, we find obligatory movement of the focus to a peripheral position (see Gutierrez-Bravo 1999 for an optimality analysis along these lines).

So how is German differentiated from a Spanish-type language. Why is there optionality of object re-ordering at least in some cases, as discussed in section 2? Assume a constraint that disfavors the AccO>DatO word order in (52) (such as STAY from section 2 above). Such a constraint, if ranked high enough, in particular higher than ADF, would be able to tip the scales in favor of (52.b) again. To derive the German case, then, the pertinent constraints must be arranged so as to allow for two optimal candidates sometimes. This we achieve by...

4.3. Tying the Focus Constraints with DAT

As in section 2 above, we will use a constraint-tie to derive the optionality. Essentially, we want to tie the constraint that enforces a good prosodic structure with the one that enforces DatO>AccO word order. Above we used the constraint STAY for the latter purpose. We do not need to commit ourselves to the syntactic assumptions connected to this constraint, though (i.e. a particular base order, movement, VP-adjunction). We can simply follow the guide of Müller 1998:22 and use the constraint in (53):¹³

- (53) DAT(IVE)
Dative NPs precede accusative NPs.

Implementing this, however, requires an additional complication. Since we have two relevant constraints regarding prosodic structure -- ADF and A/P -- the question arises which of them we should tie with the word order constraint DAT.

Upon closer inspection it turns out that the alternation -- where it exists -- is always between the DatO>AccO order under some mediocre prosodic phrasing and the AccO>DatO order under an *optimal* phrasing (i.e. one which satisfies both ADF and A/P in an optimal way). What this means is that we want the tie to be resolved into (54.a) or (54.b):

- (54) a. DAT >> ADF >> A/P
b. ADF >> A/P >> DAT

It will turn out that we crucially never want the tie to resolve into any of (55):

- (55) a. A/P >> DAT >> ADF
b. A/P >> ADF >> DAT
c. DAT >> A/P >> ADF
d. ADF >> DAT >> A/P

Put differently, the two prosodic constraints ADF and A/P never change their ranking *relative to each other*, but only as a block relative to DAT.

¹³ As stressed in Müller 1998, this also allows us to add more morphosyntactic word-order constraints upon demand, yielding different morphosyntactically unmarked word orders without committing us to the assumption of different base-generated argument orders.

This special property of the system will become relevant only in the deaccenting cases, but for reasons of comparability and uniformity I will use it right from the beginning. The notation I invent for this purpose is that in (56):

(56)

| | | | | |
|--|----|-----|----------------------|-----|
| | FP | DAT | prosodic constraints | |
| | | | ADF | A/P |

The narrow-focus cases fall out straightforwardly again as in section 2 above: With AccO_F all constraints pull in the same direction, making the $\text{DatO} > \text{AccO}$ order the only one possible (I use set notation to designate the input again):

(57)

| | | | | |
|---|----|-----|-------------|-----|
| <i>What did you give to the teller?</i> | FP | DAT | pros. cons. | |
| i: {DatO, AccO_F , V} | | | ADF | A/P |
| ((dem Kassierer) (<u>das Geld</u>) (geben) _{AD} a. (dem Kassierer) (<u>das Geld</u>) (geben) _{Pwd} | | | | |
| (<u>das Geld</u>) (dem Kassierer) (geben) _{AD} b. (<u>das Geld</u>) (dem Kassierer) (geben) _{Pwd} | | *! | *! | |

Since candidate (57.a) violates neither DAT nor any of the prosodic constraints, it will be the winner regardless of how the tie is resolved.

With DatO_F , the focus constraints -- in particular ADF -- favor $\text{AccO} > \text{DatO}$, while DAT favors the opposite order. Since both constraints are tied, both structures emerge as optimal.

(58)

| <i>Who did you give the money?</i> | FP | DAT | pros. cons. | |
|---|----|-----|-------------|-----|
| | | | ADF | A/P |
| i: { DatO _F , AccO, V } | | | ADF | A/P |
| a. (dem Kassierer _F)(<u>das Geld</u>)(geben) _{AD} _{PWd} | | | * | |
| b. (das Geld)(dem Kassierer _F)(geben) _{AD} _{PWd} | | * | | |
| c. (das Geld)(dem Kassierer _F)(geben) _{AD} _{PWd} | | *! | *! | |

Focus on both arguments (with or without the verb) again allows only for the order preferred by DAT. While scrambling doesn't make the phrasing worse, it doesn't improve it either and is therefore excluded:

(59)

| <i>What will you do?</i> | FP | DAT | pros.cons. | |
|---|----|-----|------------|-----|
| | | | ADF | A/P |
| i: { DatO _F , AccO _F , V _F } | | | ADF | A/P |
| a. (dem Kassierer _F)(<u>das Geld_F</u>)(geben) _{AD} _{PWd} | ** | | | |
| b. (dem Kassierer _F)(das Geld _F)(geben) _{AD} _{PWd} | ** | | | *! |
| c. (dem Kassierer _F)(das Geld _F)(geben) _{AD} _{PWd} | ** | | *! | |
| d. (das Geld _F)(dem Kassierer _F)(geben) _{AD} _{PWd} | ** | *! | | |
| e. (das Geld _F)(dem Kassierer _F)(geben) _{AD} _{PWd} | ** | *! | *! | |
| f. (das Geld _F)(dem Kassierer _F)(geben) _{AD} _{PWd} | ** | *! | *! | |

Let us then turn to the deaccenting cases. If DatO and V are F-marked and AccO is not, two structures emerge as grammatical: the one that meets DAT (and violates the prosodic constraint A/P), and the one that

meets the prosodic constraints (but violates DAT).¹⁴

(60)

| Why was Veronika arrested? Because she had a poker in her trunk? No, because she... i: {AccO, DatO _F , V _F } | FP | DAT | pros. cons. | |
|---|----|-----|-------------|-----|
| | | | ADF | A/P |
| a. (ihrem Macker _F)(den Kaminhaken)(überzog _F) _{PWd} ^{AD} | * | | | * |
| b. (ihrem Macker _F)(den Kaminhaken)(überzog _F) _{PWd} ^{AD} | * | | *! | |
| c. (ihrem Macker _F)(den Kaminhaken)(überzog _F) _{PWd} ^{AD} | * | | *! | |
| d. (den Kaminhaken)(ihrem Macker _F)(überzog _F) _{PWd} ^{AD} | * | * | | *! |
| e. (den Kaminhaken)(ihrem Macker _F)(überzog _F) _{PWd} ^{AD} | * | * | *! | |
| f. (den Kaminhaken)(ihrem Macker _F)(überzog _F) _{PWd} ^{AD} | * | * | | |

If DatO is non-F, on the other hand, AccO>DatO order is excluded because the DatO>AccO order already allows for a perfect prosodic structure.

¹⁴ Note that if only DAT and ADF were tied, (60.f) could never emerge as an optimal candidate; it would always lose to (60.a). If instead all of DAT, ADF and A/P were tied (60.a) and (60.f) would be permitted (as desired), both having one violation. But so would (60.c), which has only one violation, too. But (60.c) is not acceptable in this case.

This is where the more complicated construction that I introduced at the beginning of this section pays off: Among the structures that violate DAT, only (60.f) is grammatical, because it violates none of the prosodic constraints. This candidate is optimal under the ranking DAT>>ADF>>A/P. Among the structures that satisfy DAT, only (60.a) is optimal, because it violates the lower prosodic constraint A/P, rather than the higher one ADF, as (60.c) does. This corresponds to the outcome under the ranking ADF>>A/P>>DAT. Crucially, for (60.c) to win the constraints would have to be ordered with A/P dominating ADF (either one of those in (55) above), but this is not permitted by the kind of tie that is assumed here.

(61)

| Why was Veronika arrested? Because her man disappeared? No, because she... i: {DatO, AccO _F , V _F } | FP | DAT | pros. cons. | |
|---|----|-----|-------------|-----|
| | | | ADF | A/P |
| (<u>x</u>)(den Kaminhaken _F)(<u>X</u>) _{AD} a. (ihrem Macker)(den Kaminhaken _F)(überzog _F) _{PWd} | * | | | *! |
| (<u>x</u>)(den Kaminhaken _F)(<u>X</u>) _{AD} b. (ihrem Macker)(den Kaminhaken _F)(überzog _F) _{PWd} | * | | *! | |
| (<u>x</u>)(den Kaminhaken _F)(<u>X</u>) _{AD} c. (ihrem Macker)(den Kaminhaken _F)(überzog _F) _{PWd} | * | | | |
| (<u>X</u>) _{AD} d. (ihrem Macker)(den Kaminhaken _F)(überzog _F) _{PWd} | * | | *! | |
| (<u>x</u>)(den Kaminhaken _F)(<u>X</u>) _{AD} e. (den Kaminhaken _F)(ihrem Macker)(überzog _F) _{PWd} | * | *! | | *! |
| (<u>x</u>)(den Kaminhaken _F)(<u>X</u>) _{AD} f. (den Kaminhaken _F)(ihrem Macker)(überzog _F) _{PWd} | * | *! | *! | |
| (<u>X</u>) _{AD} g. (den Kaminhaken _F)(ihrem Macker)(überzog _F) _{PWd} | * | *! | *! | |

To sum up then, the proposed system correctly predicts when we get two different object orders with the same focus pattern, and when we don't. It generalizes across the various cases because it doesn't invoke the notion of an optimal focus placement (as the system in section 2 did), but only the notion of an optimal prosodic structure. For each of the grammatical structure, it delivers a unique prosodic phrasing, which in turn can be used to derive the set of its possible accent patterns.

5. Concluding Remarks and Some Thoughts On Markedness

One way of looking at the constraint tie is that there are actually two grammars at work: One that finds the prosodically optimal candidate, and one that finds the morphosyntactically optimal one (which we have equated with the one that displays DatO>AccO order here). All candidates which are prosodically *and* morphosyntactically sub-optimal are predicted to be simply ungrammatical.

A reasonable objection to the present proposal is that a sentence

like, say, (8.b), repeated here as (62.a), is awkward, but still much better than, say, (62.b), and that (62.a) should therefore be question-marked, but not starred, as is done here.

- (62) a. ?? Ich habe das GELD dem Kassierer gegeben.
 I have the money the teller given
 b. * Ich habe das GELD gegeben dem Kassierer.
 I have the money given the teller
 'I gave the money to the teller.'

Intuitively, (62.b) violates a hard and fast constraint about verb-argument ordering in German, namely that nominal arguments cannot be post-verbal. Constraints like DAT, ADF, A/P and their kin seem 'softer' than that.

Ignoring the numerous interesting issues about the relation between grammaticality and acceptability that come up here, let us grab the bull by the horns and directly implement the intuition described above. We simply need to say that a candidate C* which is sub-optimal to the prosodically or morphosyntactically optimal candidate C only by virtue of violating any of the constraints in {DAT, ADF, A/P} -- the word order constraints -- is marked, but not ungrammatical.¹⁵

In practice this means that all sub-optimal candidates discussed in this paper that lose on constraints lower than FP are no longer ungrammatical but merely marked. The result of this amendment is a system which is similar to, though much less refined than, the one proposed in Müller 1998. I mention this possibility merely to illustrate that everything proposed in this paper can relatively easily be made to conform with such a system. There is no inherent incompatibility between the type of constraints used here and the kind of system Müller proposes in order to derive both grammaticality and markedness, and the types of judgement reported above make it seem advantageous to actually combine them.

Note though that the notion of markedness as introduced in the last paragraph is only defined among members of the same competitor set.

¹⁵ Note that FP is not included here, owing to the empirical fact that a sentence with, say, main prominence on the AccO can absolutely not be used in a context that requires focus on the DatO. In other words, a structure like (i) is strictly impossible, not just marked.

(i) $\left(\begin{array}{c} \text{X} \\ \text{(DatO}_f\text{)} \end{array} \right) \left(\begin{array}{c} \text{X} \\ \text{(AccO)(V)} \end{array} \right)_{\text{AD}} \Bigg)_{\text{IP}}$

And given our decision to include F-marking in the input, this means that otherwise identical sentences with different F-markings are not in competition with each other. It follows that there will not be F-patterns that are *sui generis* more marked than others.

To give an example, the structures in (63.a) and (63.b) are both optimal. Since they involve different F-patterns they do not even compete. Hence neither is marked w.r.t. the other.

- (63)
- a. $\left(\begin{array}{c} \text{X} \\ \text{X} \end{array} \right)_{\text{IP}}$
 $\left(\begin{array}{c} \text{X} \\ \text{X} \end{array} \right)_{\text{AD}}$
 dem Kassierer_F das Geld geben
- b. $\left(\begin{array}{c} \text{X} \\ \text{X} \end{array} \right)_{\text{IP}}$
 $\left(\begin{array}{c} \text{X} \\ \text{X} \end{array} \right)_{\text{AD}}$
 dem Kassierer_F das Geld_F geben_F
- c. ?* $\left(\begin{array}{c} \text{X} \\ \text{X} \end{array} \right)_{\text{IP}}$
 $\left(\begin{array}{c} \text{X} \\ \text{X} \end{array} \right)_{\text{AD}}$
 das Geld_F dem Kassierer_F geben_F

(63.c) on the other hand is a competitor to (63.b), and sub-optimal w.r.t. it (it violates DAT and ADF). Hence it is marked (or ungrammatical, on the previous interpretation).

This state of affairs reflects the intuition that in the appropriate contexts (e.g. 'Who did you give the money to?' and 'What did you do?', respectively) (63.a) and (63.b) are judged perfect, while (63.c), even in context that suits its F-pattern (again 'What did you do?') sounds at best marginal.

It is of course possible to define different notions of markedness in addition. For example, (63.a) requires a much more specific context than (63.b) (roughly one in which 'give X the money' is already under discussion). It has been observed that speakers, when presented with sentence-tokens out of the blue, judge (63.b) as more 'normal' than (63.a), presumably because (63.a) forced them to accommodate a more specific context than (63.b) doesn't (cf. Höhle's 1982 explication of the notion 'normal intonation').

I believe, however, that this sort of markedness, call it pragmatic markedness, is essentially different from the one manifested in e.g. (63.c), which we might call structural markedness. Empirically, the first only occurs in the absence of a context and disappears once the appropriate context is provided, while the second invariably remains. As a consequence, pragmatic markedness should be explained in pragmatic terms: It quite likely correlates with the amount of accommodation

speakers are required to do. Structural markedness is a matter of grammar proper: It is no more reducible to non-structural facts than, say, the requirement that noun phrases need case.

In the present proposal this has been done by specifying F-marking in the input. Accordingly, for every input I with a specified F-pattern there are one or more optimal structures, which are predicted to be fully acceptable in a context that complies with the F-pattern of I. Suboptimal output structures for I are structurally marked (or ungrammatical) by virtue of the system developed, and thus predicted to be considerably less acceptable in that context. No structural markedness ranking among different inputs with different F-patterns is defined (though, as I indicated above, it could be on a different scale). In this respect the present system essentially differs from that proposed in Müller 1998.

In conclusion, this paper has offered a particular way of looking at word order variation, exemplified for double object constructions in German. It was proposed that two families of constraints co-determine word order: morphosyntactic constraints and prosodic constraints. The apparent influence of information structure (here: focus marking) on word order is really only indirect, since information structure interacts with prosodic phrasing (this line of argumentation has, I believe, first been explicitly pursued in the works of Zubizarreta and Reinhart, as documented in Zubizarreta 1998 and Neeleman & Reinhart 1998, though in these works, unlike in the present one, information structure interacts with accenting directly).

Depending on the relative ranking of these constraint families, languages may display strict word order (morphosyntactic constraints outrank prosodic ones), free word order (prosodic constraints outrank morphosyntactic ones), or some mixture thereof (the two constraint types are intertwined or tied). The German *Mittelfeld* presents an instance of the third type.

In the present paper we have only included one exemplary morphosyntactic constraint. We mainly tried to explore the prosodic constraints, attempting to connect up approaches like the ones mentioned above with current work in prosodic phonology. We have shown that such a 'deconstruction' of accent assignment rules is not only compatible with the general approach to word order variation, but even serves to derive a wide and comprehensive range of data in a satisfactory fashion.

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