

# [WLG]

WIENER LINGUISTISCHE GAZETTE

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Sonderdruck aus: *Wiener Linguistische Gazette* (WLG) 82 (2017): 99–107

Themenheft 11-11-17. *Festschrift für Martin Prinzhorn*  
Hg. v. Clemens Mayr und Edwin Williams

Universität Wien · Institut für Sprachwissenschaft · 2017

**Eigentümer, Herausgeber und Verleger:**

Universität Wien, Institut für Sprachwissenschaft  
Sensengasse 3a  
1090 Wien  
Österreich

**Redaktion:** Christian Bendl, Mi-Cha Flubacher (Angewandte Sprachwissenschaft),  
Stefan Schumacher (Allgemeine und Historische Sprachwissenschaft)

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**Homepage:** <http://wlg.univie.ac.at>

**ISSN:** 2224-1876

**NBN:** [BL078,1063](https://nbn-resolving.org/urn:nbn:de:hbz:5:1-63864-p0078-1063)

Die *Wiener Linguistische Gazette* erscheint in loser Folge im Open-Access-Format.  
Alle Ausgaben ab Nr. 72 (2005) sind online verfügbar.

## PP-extrapolation and nominal pitch in German

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### 1. Non-sentential phrases in postverbal position

According to common theorizing about German word order, German is considered an SOV language (see e.g. Thiersch 1978). Nevertheless, German has access to a post-verbal position, traditionally referred to as the *Nachfeld* (NF). In her analysis of the corpus TüBa D/Z Proske (2010) shows that the NF is overtly filled in a third of all sentences, the main body of which (72%) are embedded sentential constituents. The remainder consists of PPs (44%), DPs (33%), adverbials (17%) and adjectives (6%).

The present squib investigates prosodic triggers for extraposition of PPs (PP-EX) that originate in an object DP. It presents a prosodic pilot study, which suggests that extraposition alters the overall prosodic shape of the utterance to the effect that the pitch accent on the PP-selecting noun is strengthened. This effect is argued to be a consequence of default pitch assignment. If the PP is in its base-position, the head of its NP-complement ( $N_2$  in (1)) is the last (and most deeply embedded) nominal head within the DP, which receives default prominence. After PP-extraposition, which I assume to be rightward movement and adjunction above  $vP/IP$ , stress shifts to the nominal head of the object-DP ( $N_1$  in (1)) again by rules of default prominence.

(1) ... $[NP \dots N_1 [PP \dots N_2]] V \rightarrow \dots [NP \dots N_1 t_i] V \dots [PP \dots \underline{N_2}]_i$

Based on this pilot study, it is argued that PP-EX is only indirectly motivated by information structure (IS, see also Chomsky 2005, Fanselow & Lenertová 2011). It will be shown that the NF does not represent a topological field linked to a specific IS-interpretation. Instead, PP-EX influences the overall intonational contour of a sentence in that it causes a boost of the pitch accent of the  $N_1$ , the nominal head of the preverbal DP-object. The strengthening of this accent may lead to a modulation of the IS-interpretation, and thus a weak foregrounding of the NP.

Sec. 2 discusses whether PP-EX is triggered by IS, i.e. whether the NF represents a preferred position for either topic or focus constituents. Sec. 3 presents the material and the pilot experiment. The prosody of PP-EX is investigated with the PP being either new, or given information. The subsequent discussion in Sec. 4 argues on the basis of the

result that the nuclear accent is not reconstructed (Bresnan 1971, Truckenbrodt & Darcy 2010). Instead, the overall intonational contour is re-organized as a consequence of PP-EX.

## 2. Information structure is not a potential trigger for PP-EX

Word order variation is often assumed to follow from IS-requirements. It is known that topicalization of non-subjects in German causes a contrastive interpretation of the fronted constituent (e.g. Lötscher 1985). In addition, scrambling is argued to be sensitive to discourse givenness in that definite, i.e. discourse-old, DPs move to a position above VP whereas indefinites, which are discourse-new, remain within the scope of VP (e.g. Lenerz 1977, Büring 1994 and many others). Such considerations could carry over to the postverbal domain, the *Nachfeld*, which should represent an ideal topological field for focused, i.e. discourse-new, constituents. This hypothesis, however, cannot be upheld, since there appears to be no correlation between the information-structural status of a constituent and its position in the post-verbal domain, at least for PPs in German.

Pps in extraposed position may receive all possible information-structural interpretations. First, they may represent new information, see (2) from Austrian German (Prinzhorn 2013), where the extraposed PP has not been mentioned before.<sup>1</sup> In the following examples, the verb in final position appears in italics and the extraposed PP is underlined. It is not an afterthought and thus not separated from the main clause by a considerable prosodic break.

- (2) Heit in da nochd hosd du gred untan schlofm.  
 today in the night have you talked under sleeping  
 ‘Today at night you talked while sleeping.’

A PP in extraposed position can also be the answer constituent of a wh-question, thus the focus of a clause, especially if syntactically complex (Truckenbrodt 2012). The obligatory accent is represented in small caps.<sup>2</sup>

- (3) Q: Wo hat Simone nach ihrer Scheidung gelebt?  
 where has S. after her divorce lived  
 ‘Where did Simone live after her divorce?’

<sup>1</sup>This holds for standard German as well. I differentiate new information from focus. The former refers to information that has not been mentioned previously in the context. Simple new information is not necessarily accented and does not invoke a set of focus alternatives. The latter is a subset of the former. It also represents discourse new information, but in addition needs to occur in a special pragmatic context to occur in. It carries a nuclear pitch accent and creates sets of alternatives. In (2), the PP *untan schlofm* does not have to be stressed. The most natural contour in the given context results from stressing the main verb.

<sup>2</sup>The acceptability of non-sentential EX in German is in general subject to a lot of variation across speakers. In addition, the phenomenon appears to be present only in spoken language, to the extent that individual speakers often find written examples of PP-EX quite marked but produce them orally nevertheless. Thus, PP-EX clearly represents a performance phenomenon.

- A: Sie hat *gelebt* [<sub>PP</sub> in der Nachbarschaft von POTSDAM].  
 she has lived in the vicinity of P.  
 ‘She lived in the vicinity of Potsdam.’

Further evidence for the occurrence of focused PPs in extraposed position is that they can associate with a focus sensitive particle in the main clause, see (4A) from Balbach (2012: 4). The interpretation of the sentence is that the only thing Peter was afraid of was snakes, see also Barbiers (1995) for Dutch.

- (4) Q: Vor was hat sich Peter gefürchtet?  
 from what has REFL P. feared  
 ‘What was Peter afraid of?’
- A: Peter hat sich nur *gefürchtet* [<sub>PP</sub> vor SCHLANGEN].  
 P. has REFL only feared of snakes  
 ‘Peter was only afraid of snakes.’

The extraposed PP can also be given information as illustrated in (5). In the context preceding this utterance *Außenminister* (‘minister of foreign affairs’) and *Außenministerium* (‘ministry of foreign affairs’) are explicitly mentioned causing the given interpretation of the extraposed PP in (5), cf. the corpus TüBa D/Z for context information.

- (5) Daraufhin wollte Schlingensief, daß die Volksbühne Druck *macht*  
 thereupon wanted S. that the V. pressure makes  
 [<sub>PP</sub> auf das Außenministerium].  
 on the ministry.of.foreign.affairs  
 ‘After this Schlingensief wanted that the Volksbühne puts pressure on the ministry of foreign affairs.’  
 (TüBa D/Z, s14728)

Finally, an extraposed PP can also function as a continuative topic (Vinckel 2006, Averintseva-Klisch 2009), hence a topic of the following clause, see (6).

- (6) Jeder möge seiner Steuererklärung ein Protestschreiben  
 everybody should his tax.declaration a protest.letter  
*beifügen*, [<sub>PP</sub> mit folgendem Inhalt]: ...  
 add with following content ...  
 ‘Everybody should add a protest letter to his tax declaration with the following content.’  
 (TüBa D/Z, s5973)

To summarize, a PP in extraposed position is not linked to one specific IS-interpretation. This shows the NF is excluded from linearization restrictions as encoded in Behaghel’s second law (‘That which is less important (or already known to the listener) is placed before that which is important.’). It also proves that IS cannot be considered a direct trigger of PP-EX. Thus, a PP is not subject to EX due to some specific IS-state.

### 3. The effect of PP-EX on accent realization

The main claim of this squib is that the structural variation resulting from PP-EX has a significant effect on the strength of the pitch and nuclear accents of the whole clause. Extraposition alters the relative order of the two nouns (the object's head noun  $N_1$  and the head noun of the PP's complement  $N_2$ ), and the final main verb. Whereas  $N_2$  is immediately preverbal prior to extraposition, it is the object's head noun ( $N_1$ ) which is in preverbal position after extraposition. Thus, the preverbal object is prosodically non-complex once the PP is extraposed. As a consequence, the pitch accent on the head noun is strengthened.<sup>3</sup>

$$(7) \quad N_1 [PP \dots N_2 \dots] V \rightarrow N_1 V [PP \dots N_2 \dots]$$

Principles of prosodic phrasing establish connections between syntactic and prosodic structure. According to Truckenbrodt (1995) et seq., prosodic phrasing is mainly based on the principle that requires that every syntactic phrase is assigned phrasal stress, i.e. stress at the level of the phonological phrase (see also the Stress Accent Assignment Rule, SAAR, of Gussenhoven 1983, 1992). Within the VP-domain the syntactic difference between complements and modifiers has prosodic effects. With complementation, stress on the nominal object licenses VP-level stress since the object is contained in the VP, see (8a) from Truckenbrodt (2006, 7). The phrasal accent of an adverbial, however, does not license Stress-XP at the VP. As a consequence, the VP and the adverbial PP both receive phrasal stress (see (8b)). The rightmost phrasal stress is strengthened at the level of the intonational phrase (= *Endakzentverstärkung*, Uhmann 1991).

- (8) a. (            x                            ) *ip accent*  
           (            x                            ) *phrase acc.*  
           (x)(x)(    x    ) (    x    ) *word acc.*  
           Er hat Linguistik unterrichtet.  
           he has linguistics taught  
           'He taught linguistics.'
- b. (            x                            x                            ) *ip accent*  
           (            x                            ) (            x                            ) *phrase acc.*  
           (x)(x)(    x    ) (    x    ) *word acc.*  
           Er hat in Ghana unterrichtet.  
           he has in G.    taught  
           'He taught in Ghana.'

Within the DP, a PP may be either selected by the object's head noun (a PP-complement, see (9a)) or adjoined to it (a PP-modifier, see (9b)).

<sup>3</sup>As a reviewer points out, the effect of stress-shift after PP-EX should also occur in sentences where the PP is either the adjunct of an intransitive clause or the only object, such as in the examples (3) and (4). This is a correct observation. Unfortunately, I did not run prosodic tests for these examples in this pilot study.



- (13) dass die Volksbühne Druck *macht* [<sub>PP</sub> auf das Außenministerium]  
 that the V. pressure makes on the ministry.of.foreign.affairs  
 ‘that the Volksbühne puts pressure on the ministry of foreign affairs.’  
 (TüBa D/Z, s14728)

#### 4.2 Effects of PP-EX on pitch realization

In the first example (11), the entire object was not mentioned in the preceding context, hence represents new information; see TüBa D/Z s13508 for context information. The table in (14) gives the  $f_0$ -frequencies at three measure points the head noun of the object DP ( $N_1$ ), the head noun of the PP ( $N_2$ ), and the verb. The left side of the table shows the figures for the PP in the in situ position (IN), the right side represents the extraposed condition (EX). S1, S2, and S3 refer to the three speakers. The highest pitch values are shaded.<sup>4</sup>

#### (14) *Kinderkrebsklinik*

	IN						EX					
	max			min			max			min		
	S1	S2	S3	S1	S2	S3	S1	S2	S3	S1	S2	S3
$N_1$ <i>Geld</i>	142	140	138	116	121	115	136	126	132	126	116	104
$N_2$ <i>KKK</i>	152	140	141	84	102	115	130	139	114	86	91	90
<i>sammeln</i>	87	136	121	78	97	90	115	124	116	109	115	112

(14) shows that the accents on  $N_1$  and  $N_2$  do not differ much in the in situ condition with regard to pitch frequency and pitch excursion. This is an effect of phrasing in an all new context. The nuclear accent on  $N_2$  is realized by an H\*L, it has a stronger lope than on  $N_1$  (64, 38, 26 Hz difference between maximal and minimal frequency on  $N_2$ , compared to 26, 19, 24 Hz on  $N_1$ ). Comparing the in situ and ex situ positions of the PPs, it can be observed that the accent on  $N_2$  is weaker in the EX condition, at least for speakers 1 and 3. This is an effect of downstep. The accent on  $N_1$  remains essentially unchanged with extraposition but is relatively stronger in comparison to  $N_2$ . The nuclear accent remains on the extraposed PP, as evidenced by the strong fall on this accent in the EX condition realized across all three speakers (54, 48, 24 Hz difference on  $N_2$  compared to 10, 10, 28 Hz difference on  $N_1$ ). With EX, the accent on the verb is leveled.

The PP of the second example (12) (*für die Zeit nach dem Krieg*, ‘for the time after the war’) can be considered to be given by implication through the context, cf. TüBa D/Z, s13023. The following table shows the highest and lowest pitches on  $N_1$ ,  $N_2$ , and the verb. The accent on *Zeit*, the head noun of the upper PP, is disregarded.

<sup>4</sup>There is a difference across speakers with respect to the realization of H\*L leading to the the boundary tone L-. S1 realizes the H\*L fully on  $N_2$  (see the difference of 68 Hz on  $N_2$  and of only 9 Hz on the final verb, the L- tone). S2 and S3 realize part of the H\*L on the verb which shows an excursion of 39 (S2) and 31 (S3) Hz.



(15) *Krieg*

	IN						EX					
	max			min			max			min		
	S1	S2	S3	S1	S2	S3	S1	S2	S3	S1	S2	S3
<i>N<sub>1</sub>Beweise</i>	186	116	152	108	100	112	213	142	180	78	117	121
<i>N<sub>2</sub> Krieg</i>	123	137	154	114	110	125	143	132	140	88	114	100
<i>sammeln</i>	95	114	129	77	89	94	141	132	160	129	117	146

In this example, the effect of extraposing the given PP on  $N_1$  is evident. The frequency increases considerably across all speakers (27 Hz on average). It is not only stronger than in the in situ condition but also stronger than the accent on  $N_2$  in both in situ and extraposed conditions. The speaker variation concerning the pitch realization of  $N_1$  and  $N_2$  could be an effect of the uncertainty of the implicational relation triggered by the context. The effect of EX on the verbal accent is also present in (12). In the in situ condition, the overall frequency is much lower than with EX, showing the L- boundary tone. The tonal range on the verb is smaller with EX since the final fall is postposed to the  $N_2$  in the extraposed PP.

In the third example, the nominal complement of the PP is given by prior mention in the context. It is therefore expected that  $N_1$  is stronger in both conditions.

(16) *Außenministerium*

	IN						EX					
	max			min			max			min		
	S1	S2	S3	S1	S2	S3	S1	S2	S3	S1	S2	S3
<i>N<sub>1</sub> Druck</i>	183	138	164	117	123	123	169	160	136	116	122	109
<i>N<sub>2</sub> AM</i>	134?	116	124	79	97	113	142	137	104	116	102	94

The effect of deaccenting is visible in both contexts.  $N_2$ , the accent within the PP, is deaccented with respect to  $N_1$  in the in situ and the ex situ condition. The nuclear accent on the object is not influenced by extraposition.

### 4.3 Discussion

The predictions of Stress-XP and the SAAR are confirmed with respect to PP-EX. A nominal object is re-accented or “de-deaccented” if a PP originating between the object and the verb is extraposed. This process applies independently of the syntactic base position of the PP as a nominal attribute, a nominal modifier, or even a verbal modifier below a scrambled object. If the extraposed PP is given, the DP immediately preceding the verb receives the nuclear accent. The data suggest that the accent of the extraposed PPs does not reconstruct, see also the results of Truckenbrodt & Darcy (2010) with respect to extraposition from object clauses.

Concerning the interplay between syntax and IS, the pilot study shows that the extraposition of PPs is not directly triggered by IS. IS-features do not appear to play a role for PP-EX. Similar results concerning movement to the left periphery can be found in Fanselow & Lenertová (2011). Extraposition leads to a syntactic representation with

consequences for accent rules and interpretation. Thus the accent pattern of a sentence determines the contexts in which a sentence can be used.

To conclude, the present pilot study contributes to a research program which denies the direct influence of IS in the syntax of German. Instead, it argues for a syntactic model that forgoes IS-sensitive features like topic and focus. It is assumed that syntactic movement, which I assume extraposition to be, interacts directly with pitch accent assignment rules and resulting pragmatic interpretations.

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