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 (N₂ 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 (N₁ in (1)) again by rules of default prominence.

(1) …[NP … N₁ [PP … N₂]] V → …[NP … N₁ t₁ ] V…[PP … N₂]

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 N₁, 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. 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 undersleeping
   ‘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.

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

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1 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.

2 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 [PP in der Nachbarschaft von Potsdam].
   '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 [PP vor Schlängen].
   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 [PP auf das Außenministerium].
   thereupon wanted S. that the V. pressure makes 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 beifügen, [PP mit folgendem Inhalt]: ...
   everybody should his tax.declaration a protest.letter 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. Extrapolation alters the relative order of the two nouns (the object’s head noun N₁ and the head noun of the PP’s complement N₂), and the final main verb. Whereas N₂ is immediately preverbal prior to extrapolation, it is the object’s head noun (N₁) which is in preverbal position after extrapolation. Thus, the preverbal object is prosodically non-complex once the PP is extrapoleted. As a consequence, the pitch accent on the head noun is strengthened.⁴

(7) \[ N₁ [PP ...N₂...] V \rightarrow N₁ V [PP ...N₂...] \]

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 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. \[(x x)\] ip accent
\[(x)\] phrase acc.
\[(x) (x) (x)\] word acc.
Er hat Linguistik unterrichtet.
he has linguistics taught
‘He taught linguistics.’

b. \[(x x)\] ip accent
\[(x)\] phrase acc.
\[(x) (x) (x)\] 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)).

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⁴As 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.
In contrast with prosodic phrasing at the VP-level, the syntactic difference represented in (9) is not mirrored prosodically. DP-internal PP-complements cannot be differentiated from PP-modifiers due to the head-initial nature of the NP. In both cases, the PP is phrased independently thereby neutralizing the syntactic distinction. Page limitations prevent me from discussing the sources of the observed neutralization as well as the theoretical consequences of the variation between syntactic domains.

4. Experiment

4.1 Material

The following three sentences from the corpus TüBa D/Z have a PP in extraposed position. These and three sentences with the PP in their assumed base-positions in the middlefield were presented to three male speakers of German in written form. The sentences appeared in contexts that influenced the informational status of the PPs. The test persons were asked to read the sentences. The sentences were recorded and analyzed in PRAAT. The highest and lowest frequencies were measured on the pitch accents.

(11) Geld sammeln [PP für eine Kinderkrebsklinik]  
money collect for a children.cancer.hospital  
‘collect money for an oncological hospital for children’ (TüBa D/Z, s13508)

(12) weil ich Beweise sammeln will [PP für die Zeit nach dem Krieg]  
because Isg proofs collect want for the time after the war  
‘because I want to collect proofs for the time after the war’ (TüBa D/Z, s13023)
(13) dass die Volksbühne Druck *macht* [pp 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.\(^4\)

\[\begin{array}{cccc|cccc}
& \text{IN} & & \text{EX} & & \\
& \text{max} & \text{min} & \text{max} & \text{min} & \\
S1 & S2 & S3 & S1 & S2 & S3 & S1 & S2 & S3 \\
\hline
\text{N}_1 \text{ Geld} & 142 & 140 & 138 & 116 & 121 & 115 & 136 & 126 & 132 & 126 & 116 & 104 \\
\text{N}_2 \text{ KKK} & 152 & 140 & 141 & 84 & 102 & 115 & 130 & 139 & 114 & 86 & 91 & 90 \\
\text{sammeln} & 87 & 136 & 121 & 78 & 97 & 90 & 115 & 124 & 116 & 109 & 115 & 112 \\
\end{array}\]

(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 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.

\(^4\)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.
In this example, the effect of extraposing the given PP on N₁ 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 N₂ in both in situ and extraposed conditions. The speaker variation concerning the pitch realization of N₁ and N₂ 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 N₂ 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 N₁ is stronger in both conditions.

The effect of deaccenting is visible in both contexts. N₂, the accent within the PP, is deaccented with respect to N₁ 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.

**References**


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