Syntactic and prosodic parenthesis

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Abstract

This paper examines the view that parentheticals obligatorily form an intonational phrase and break up the intonational phrase of the matrix sentence into two intonational phrases. The analysis of spontaneous speech data of Hamburg German shows that neither do all parentheticals form a distinct intonational phrase nor do all parentheticals break up the intonational phrase of the matrix sentence. The most frequent type of prosodic integration is prosodic parenthesis, which is the insertion of one intonational phrase into another and parallels parenthesis on the syntactic level. Additional analyses reveal that the size of the parenthetical and the syntactic integration of the parenthetical into the matrix sentence affect its prosodic integration. Finally, it is argued that the distinction between syntactic and prosodic parenthesis can solve common problems in defining parentheticals.

1. Introduction

According to Selkirk [1] and Nespor & Vogel [2], parentheticals obligatorily form an intonational phrase (IP) and break up the IP of the matrix sentence (i.e. the sentence into which the parenthetical is inserted) into two IPs. The example in (1) (after [1], p. 25) illustrates this analysis, with IP boundaries marked by {...}.

(1)   {Tuesday is} {Jane said} {a holiday}

Given that the IP is 'the domain over which an intonational contour is "spread"' ([1], p. 21; cf. [2, 3]), the analysis in (1) presupposes that the resulting syntactic expression contains three distinct intonational contours and three nuclear pitch accents. This type of prosodic integration will further be referred to as *prosodic parataxis*.

The view presented in [1, 2] is not new. A similar view was presented by Armstrong and Ward [4], who note: 'When a parenthesis is inserted into the middle of a sentence, it breaks up the intonation group into two groups, and can itself form another group'. But the same authors also observe that parentheticals do not necessarily form a separate intonation group (p. 28). The phrase *he said* in (2a), for example, is analyzed as being prosodically incorporated into the tone group of the preceding clause, as illustrated in (2b).

(2)   a.   I have called several times he said and never found you there.
       b.   {I have called several times he said} {and never found you there}

The second generalization by [1, 2], which claims that parentheticals break up the IP of the matrix sentence into two IPs, can be questioned in view of examples like (3), which is taken from German (capitals indicate nuclear syllables).

(3)   a.   Wer hat das Haus niedergebrannt? Peter?
             Wo burnt down the house? Peter?
       b.   PAUL, glaub ich, ist es gewesen.
             Paul   think I is it   been
             It was Paul, I think.

According to [1, 2], (3b) must be represented as in (4).

(4)   {PAUL} {GLAUB ich} {ist es geWEsen}

This analysis, however, changes the focus structure of (3b). In the original sentence, *Paul* is contrastively focused and bears the nuclear pitch accent of the clause, while the analysis in (4) requires an additional nuclear accent in the phrase *ist es gewesen*. An alternative analysis, which does not affect the focus structure of the matrix sentence, is given in (5).

(5)   {PAUL glaub ich ist es gewesen}

Here, the parenthetical is prosodically incorporated. But even if the parenthetical is pronounced with a distinct intonational contour, its insertion does not necessarily affect the focus structure, as shown in (6)

(6)   {PAUL {GLAUB ich} ist es gewesen}

The matrix sentence in (6) forms a single intonational contour, which is interrupted by the contour of the parenthetical, and the phrase *ist es gewesen* is deaccented, as in (5). This type of prosodic integration will be referred to as *prosodic parenthesis*.

Prosodic parenthesis parallels syntactic parenthesis. In syntactic parenthesis, a syntactic expression is inserted into another syntactic expression without breaking it up into two units. In (3b), the insertion of the clause *glaub ich* into the clause *Paul ist es gewesen* does not break up the latter into two clauses. Similarly, prosodic parenthesis in (6) does not break up the IP of the matrix sentence into two IPs.

The aim of the present paper is to examine which of the prosodic integration types mentioned are attested in spontaneous speech, using Hamburg German as our data source. In addition, we will try to identify factors which influence the prosodic integration of parentheticals. In particular, we will examine the relevance of the size of parentheticals and their syntactic integration into the matrix sentence.

2. Method

2.1. Speech materials

Data were obtained from a natural speech corpus of Hamburg German. One hour of conversational speech was selected from each of six male speakers, obtaining a total of six hours of running speech. All speakers were native of Hamburg German, with ages ranging between 60 and 69 years (for details see [5, 6]).

2.2. Classification of parentheticals

The analysis is restricted to syntactic parentheticals. By 'syntactic parenthetical' we refer to any syntactic expression which occurs in the linear order of another syntactic expression (sentence, clause, etc.) but has no syntactic function in that expression (like subject, predicate, object, attribute, adverbial, etc.).

2.2.1. Prosodic integration

Parentheticals were classified according to the prosodic integration types introduced in section 1. To account for a wider variation observed by preliminary inspection of our data, we added a fourth type of prosodic integration, which combines prosodic parataxis with prosodic parenthesis. In this case, the IP of the matrix sentence is interrupted by the IP of the parenthetical, as in prosodic parenthesis, but not continued after the parenthetical. The matrix sentence starts with a new IP instead, as illustrated by (7).

(7)   {Paul {it is true} {he is dead}

(8) summarizes the four integration types.

(8)   Prosodic parataxis   {...} {...} {...}
       Prosodic incorporation   {... ... ...}
       Prosodic parenthesis   {... {...} ...}
       Mixed type   {... {...} {...}

To identify prosodic integration types, we did not make use of prosodic cues like pauses or discontinuities in pitch scaling and speech rate, as these cues may be optional (see [7, 8] for discussion). Defining the (non-clitic) IP as the domain of a single intonational contour, as in [1, 3], parentheticals were classified according to the number of complete intonational contours found in the parenthetical and relevant parts of the matrix sentence. Prosodic incorporation differs from prosodic parataxis, prosodic parenthesis, and the mixed type by the lack of a distinct intonational contour of the parenthetical. Both, prosodic incorporation and prosodic parenthesis differ from prosodic parataxis by the prosodic structure of the matrix sentence, which contains one intonational contour rather than two. In the mixed type, the parenthetical is surrounded by an incomplete and a complete IP.

To determine how many contours can be assigned to a sentence we used the inventory of nuclear contours established for Hamburg German in [5], which relies on the same data basis. According to this analysis, Hamburg German uses eight nuclear contours, H*LL%, H*LH%, H*L0%, H* H%, H* 0%, L*HH%, L*H0%, and L* H%, as illustrated in figure 1. Arrows indicate rightward spreading of the preceding tone. 0% indicates the absence of a final boundary tone (cf. [9]).

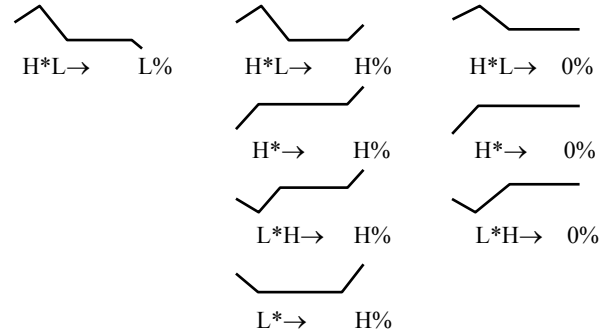For more details on the system of tonal representation used see [5, 10].

Figure 1: *Nuclear contours of Hamburg German.*

In addition to the contours of figure 1, Hamburg German has calling contours and uses accentual modifications such as downstep and peak delay.

Prosodic integration types were identified in two steps. First, parentheticals were rated as to whether they contain a distinct intonational contour or not, based on the contours displayed in figure 1. Second, matrix sentences were rated as to whether they contained one contour, two contours, a sequence of one incomplete and one complete contour, or any other prosodic structure. This task was performed using matrix sentences from which parentheticals including pauses and hesitation markers such as *äh* 'eh' were deleted (cf. [11]). Utterances were judged both by listening to the stimuli and by visual inspection of pitch tracks. Manipulations of the stimuli and calculations of pitch tracks were done with the acoustical analysis program PRAAT (©Boersma & Weenink 1992-2005).

Judgments were done independently by the author and a PhD student at the Max Planck Institute of Nijmegen, who is native of German and trained in prosodic annotation at a medium level.

2.2.2. Size and syntactic integration of parentheticals

The size of parentheticals was counted in syllables, ignoring hesitation markers and syllables resulting from stuttering.

Syntactic parentheticals can be inserted within or between clauses of a sentence, as illustrated in (9a) and (9b), respectively.

(9)   a.   Paul, it is true, wants to be dead.
      b.   Paul believes, it is true, that Peter is dead.

A third type of syntactic integration is the beginning of a new clause after the parenthetical by anaphoric resumption, as in (7), or repeating some or all elements preceding the parenthetical, as in (10).

(10) Paul, it is true, Paul is dead.

For the purpose of the present analysis, both anaphoric and repetitive resumption were subsumed under the single category of syntactic resumption. Accordingly, three types of syntactic integration of parentheticals were distinguished, insertion between clauses, insertion within clauses, and syntactic resumption.

3. Results

3.1. Prosodic phrasing

Our corpus contained 96 syntactic parentheticals. As shown in figure 1, all four prosodic integration types were attested.
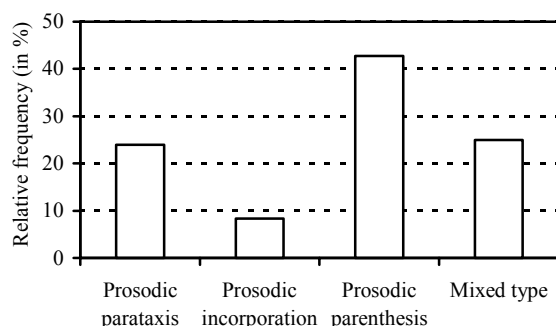

Figure 1. *Relative frequencies of prosodic integration types (N = 96).*

Prosodic parenthesis was found to be used most frequently. Prosodic incorporation was attested in less than 10% of the data. The fact that prosodic incorporation was attested at all, however, shows that in Hamburg German syntactic parentheticals do not obligatorily form an IP.

Interrater agreement was 97,9% for judging the prosodic phrase structure of parentheticals and 90,6% for judging the prosodic phrase structure of matrix sentences.

3.2. Size of parentheticals

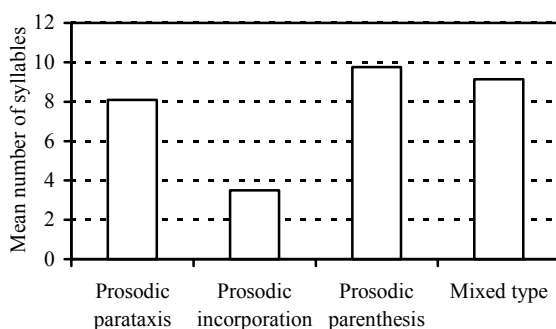Figure 2 shows mean syllable numbers of parentheticals for each prosodic integration type.

Figure 2. *Mean syllable number of parentheticals for different prosodic integration types (N = 96).*

Size of parentheticals was found to differ across prosodic integration types (Kruskal-Wallis test, $H(3) = 16.22$, $p < .01$). Inspection of figure 2 suggests that this result can mainly be attributed to the low mean value for prosodic incorporation. Mann-Whitney tests were used to examine whether incorporated parentheticals were shorter than the parentheticals of the other integration types. Applying a Bonferroni correction we report all effects at a .0167 level of significance. Prosodically incorporated parentheticals were found to be significantly shorter than parentheticals of the prosodic parataxis type ($U = 22.0$, $r = -.57$), the prosodic parenthesis type ($U = 28.0$, $r = -.53$), and the mixed type ($U = 18.0$, $r = -.60$). We conclude that there is a relationship between the size of the parenthetical and the prosodic integration type. Prosodically incorporated parentheticals tend to be shorter than other parentheticals.

3.3. Syntactic phrasing

Figure 3 shows for each prosodic integration type the relative frequencies of syntactic integration types as defined in section 2.2.2.
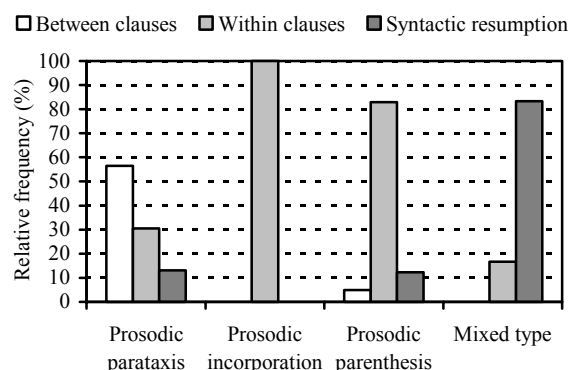

Figure 3. *Relative frequencies of combinations of prosodic and syntactic integration types (N = 96).*

The frequency distribution shown in figure 3 suggests that prosodic parataxis is preferred in parentheticals that are inserted between clauses, whereas prosodic incorporation and prosodic parenthesis are preferred in parentheticals that are inserted within clauses and the mixed type in syntactic resumption.

The values for prosodic incorporation and prosodic parenthesis were pooled to increase cell numbers. There was a significant association between prosodic and syntactic integration type, $\chi^2(4) = 72.17$, $p < .001$. Frequency distributions were found to vary within the prosodic integration types 'prosodic parataxis', $\chi^2(2) = 6.61$, $p < .05$, 'prosodic incorporation/parenthesis', $\chi^2(2) = 60.78$, $p < .001$, and 'mixed type', $\chi^2(2) = 10.67$, $p < .01$. We conclude that there is a link between syntactic clause structure and prosodic integration. If a parenthetical is inserted between two clauses, the matrix utterance consists preferably of two IPs, which surround the parenthetical (prosodic parataxis). If a parenthetical is inserted within a clause, the parenthetical either forms a distinct IP, which interrupts the IP of the clause (prosodic parenthesis), or it becomes part of the IP of this clause (prosodic incorporation). In the mixed type, the parenthetical is mostly followed by an IP that coincides with a full clause resulting from syntactic resumption.

4. Discussion

Syntactic parentheticals of Hamburg German were found to be prosodically integrated by prosodic parataxis, prosodic incorporation, prosodic parenthesis, and a combination of prosodic parataxis and prosodic parenthesis (mixed type). Our data thus do not support the main generalizations on parentheticals in [1, 2]. First, parentheticals do not obligatorily form a distinct IP, as the use of prosodically incorporated IPs demonstrates. Second, parentheticals are not always surrounded by two distinct IPs. In prosodic parenthesis, the parenthetical forms an IP that is inserted into another IP without breaking it up into two IPs. In prosodic incorporation, the parenthetical does not form a distinct IP that could be surrounded by two IPs.

Further analysis showed that there is a link between prosodic integration and the size of the parenthetical. The available data suggest that shorter parentheticals are more likely to be prosodically incorporated than longer ones. In addition, the prosodic integration of parentheticals was found to be related to their syntactic integration. Prosodic parataxis is most frequently attested in parentheticals that are inserted between clauses. Prosodic parenthesis and prosodic incorporation are preferred in parentheticals that are inserted within a clause. The mixed type is preferred in parentheticals that are followed by syntactic resumption. These findings suggest that Hamburg speakers tend to adjust IP structure to clause structure, as illustrated in (11), which represents the most frequently attested combinations of prosodic and syntactic integration types, disregarding prosodic incorporation (clauses are marked by "[...]").

(11) a. Prosodic parataxis / between clauses
         {[Paul doubts]} {[it is true]} {[that Peter is dead]}

     b. Prosodic parenthesis / within clauses
         {[Paul {[it is true]} wants to be dead]}

     c. Mixed type / syntactic resumption
         {[Paul {[it is true]} {[he is dead]}

The distinction between prosodic parataxis and prosodic parenthesis does not only account for variation found in spontaneous speech data. It also may solve common problems in the definition of parentheticals. Defining parentheticals in purely syntactic terms raises the problem how to deal with syntactic expressions that prosodically resemble syntactic parentheticals but yet are ordinary syntactic constituents of the sentence into which they are inserted, such as the adverb *engagingly* in (12) (after [7], p. 95).

(12) He described himself, engagingly, as an economist on leave.

To account for such phenomena, parentheticals are sometimes defined by a combination of syntactic and prosodic criteria, diluting the distinction between parentheticals and other grammatical phenomena. In our view, the distinction between syntactic and prosodic parenthesis offers a better solution as it allows characterizing (12) as involving prosodic parenthesis without syntactic parenthesis. If we distinguish between syntactic and prosodic parenthesis, thus, phenomena such as in (12) do not oblige us to sacrifice a purely syntactic notion of parenthesis.

5. References

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