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THE PROSODY OF LEFT-DISLOCATED TOPIC CONSTITUENTS IN ITALIAN READ SPEECH

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ABSTRACT

The prosody of the left periphery of the sentence is investigated by means of acoustic analysis of read speech data. In Italian, syntactic constituents can be left dislocated when they represent the topic or focus part in the sentence. In this paper, the characteristics of topic and focus constituents are then compared, in particular when different types of prosodic focalization affect them. Results of the analysis of the corpus data are presented. On the basis of this analysis, left dislocated constituents appear always to be prosodically separated from the following material. In case of multiple left dislocation, differences in the prosodic realization are found, and they relate to the marked or unmarked order of the left dislocated constituents.

1. INTRODUCTION

The notions of topic and focus have often been used to explain various phenomena concerning sentence structure. In the literature, it is possible to find many definitions of these two categories, and one of the most common ones identifies topic with ‘given’ and focus with ‘new’ information in the sentence and discourse structure. As far as topic is concerned, it has already been observed, that the topic of a sentence can also be a focus, in particular contexts, and does not necessarily have to be ‘old’. In this perspective, topic is what the sentence is about [1].

In this work, topic will be anything that has been explicitly mentioned in the context¹, and it can be considered as ‘given’. But contexts will be manipulated so that in some target sentences the topic will be prosodically focused, as it usually happens to elements whose function is to be semantic focus. Goal of this paper is to investigate some prosodic characteristics of left-dislocated syntactic constituents, especially when they represent given information. Particular attention will be paid to the effects of focalization on those constituents.

Such investigation can be interesting for multiple reasons. First of all, in many papers about syntax, topicalized constituents are claimed to be realized as independent intonational units, usually on the basis of auditory observations. Works on intonation, on the other side, often refer to patterns usually associated to ‘given’ information in the sentence. Deaccentuation seems to be the main strategy in English, but other languages may prefer differences in word

¹ This restricted definition it is sufficient to characterize the data. In the experiment described below, target sentences have been elicited as answers to questions, being possible with a question/answer test to determine which part of the sentence can be considered as topic or focus [8]. Then, the context will be a question, and an element will be topic if it has already been mentioned in it.

order to obtain the same result. As far as Italian is concerned, it is possible to apply both strategies. In the literature, then, it is possible to find description of intonation of given elements in sentences [6]², but, to my knowledge, there is no systematic investigation of what happens, intonationally, to given information if it is represented by a constituent moved to the left periphery of the sentence. Another reason to better assess these contexts’ intonation is connected to the automatic association of prosodic pattern to written text: dislocated topicalized constituents can be recognized by text analysis, and modeling their intonation can heavily improve the quality of synthetic voice prosody or the accuracy of recognition algorithm output.

2. THE LEFT PERIPHERY OF THE SENTENCE

2.1 The syntax of the left periphery

The left periphery of the sentence is particularly interesting because both topic and focus constituents can be dislocated in that position. Both topic and focus may, then, correspond to dislocated constituents, but, while the topic can be connected to the matrix by a clitic³, it is not possible to have a clitic referring to a syntactically focused part of the sentence. For instance, in

A Giovanni il libro glielo darò domani
‘To John the book I’ll give it to him tomorrow’

both ‘a Giovanni’ (to John) and ‘il libro’ (the book) have to be topicalized constituents because of the clitic in the matrix, ‘glielo’ (it to him), referring to them; none of them should be considered a syntactically focused item⁴ [1].

2.2 The prosody of the left periphery

These dislocated constituents have been studied quite in detail from a syntactic point of view. Most of the time, in works on syntax, claims about their intonation are not really substantiated; other times, the effort is directed to systematically relate the syntactic structure to the prosodic structure. This is the case for analysis realized in the Prosodic Phonology framework, in which researchers look at phonological rules to define prosodic constituents: topic and syntactic focus, then, have been defined as different prosodic

² Ladd shows, for instance, some data about deaccentuation of given information (though it is possible not to agree on all of his examples), and some instances of given elements being right dislocated.

³ Topic constituents must be connected to the matrix by a clitic only if it is the direct object to be topicalized [1]. The presence of the (optional) clitic for the indirect object guaranties that the constituent can not be a syntactic focus.

⁴ In Italian, it appears that those constituents can only have a ‘contrastive’ interpretation.

B	Svelava il nascondiglio a Giovanni oggi pomeriggio 'He showed the hiding place to John this afternoon'		_____
T	[A Giovanni] _T (glie)lo domanda oggi pomeriggio 'To John he asks it (to him) this afternoon'	T2	[A Giovanni di Belluno] _T .. 'To John from Belluno' ..
TT	[Il nascondiglio] _T [a Giovanni] _T (glie)lo svelava ieri pomeriggio 'The hiding place to John he showed it (to him) yesterday afternoon'	TT2 TT4	[Il nascondiglio di famiglia] _T [a Giovanni] _T .. [Il nascondiglio di famiglia][a Giovanni di Belluno] 'The family hiding place to John from Belluno' ..
TTM	[A Giovanni] _T [il lavandino] _T glie(lo) mandavano ieri pomeriggio 'To John the sink they sent it (to him) yesterday afternoon'	TTM2 TTM4	[A Giovanni di Belluno] _T [il lavandino] _T .. [A Giovanni di Belluno][il lavandino di marmo] .. 'To John from Belluno the marble sink' ..

Table 1. Types of sentences in the corpus.

constituents because they are domains of application of different phonological rules. For Italian see [3].

According to Prosodic Phonology theories, in Italian, left-dislocated topic constituents are usually independent intonational phrases, but if they are not phonologically branching, it is possible for them, in fast speech, to restructure with the adjacent intonational phrase. Left-dislocated focus constituents, on the contrary, are always claimed to be part of the same intonational phrase as the matrix sentence [3]. According to these definitions, in fast speech, topic and focus domains should be characterized by the presence of the same phonological rules, being part of the same prosodic constituents. Moreover, in Italian it is possible to have multiple left dislocated topic constituents, while only one syntactic focus can be present. According to prosodic phonology, in fast speech, it is possible for two topic constituents to merge into one intonational phrase, if they are not branching⁵, but it is never possible for them to restructure with the matrix sentence. In addition, it is never possible for a topicalized constituent to restructure with a syntactically focused constituent on its right side.

In this work, these contexts will be considered in the framework of Intonational Phonology, where prosodic domains are defined in relation to tonal phenomena, such as pitch accents association and boundary tones [5, 4]. Then, it can be interesting to see if constituents claimed to be homogeneous for the application of phonological rules, are homogeneous with respect to their intonation also⁶. The main questions to be answered are the following:

1. Are topicalized constituents independent intonational units?
2. Does intonation reflect the restructuring processes that are claimed to apply in relation to speech rate and sentence structure?
3. What happens when a topicalized constituents is prosodically focused?
4. In sentences with multiple left dislocation, has the constituents' order any effect on prosody?

3. CORPUS

The corpus consisted of 45 target sentences.

Set B: 3 broad focus sentences with constituents in unmarked order, and the same segmental environment of sentences in the other sets (see table 1);

⁵ To my knowledge, both from a syntactic and a prosodic point of view, no differences have been claimed to emerge in relation to the order of the left dislocated constituents.

⁶ It has already been observed that domains defined according to the two frameworks mentioned above, Prosodic Phonology and Intonational Phonology, are not always isomorphic [7].

Set T: 10 sentences with one left-dislocated constituent;

Sets TT and TTM: 16 sentences each, with two left dislocated constituents, in set TT in unmarked order (OI : direct object - indirect object); in set TTM in marked order (IO). In sets T, TT and TTM some sentences had a longer dislocated constituent due to a specifier added to it (see T2, TT2 and TTM2 in table 1), and some sentences had a specifier added also to the second one (see TT4 and TTM4 in table 1). According to Prosodic Phonology theories, in these cases the topic constituents are phonologically branching.

Each target sentence was preceded by a question in order to obtain different interpretations during the recording session. Therefore, the focus/topic nature of the left dislocated constituents was guaranteed both by the syntactic structure of the sentences (see fn. 3) and by the questions preceding them.

The possible interpretations of the target sentences are listed below.

Set B: all the target sentence was 'new' information⁷

Sets T, TT and TTM: A) Syntactically focused constituents: 1) the constituent was 'new'; 2) it was 'new' but interpreted as a contrastive focus; B) Syntactically topicalized constituents: 1) the constituent was 'given'; 2) it was 'given' but interpreted as emphatic⁸; 3) it was 'given' but interpreted as contrastive.

In both set TT and TTM, either one or both the topic constituents undergo the emphatic interpretation, while only one constituent at the time undergoes the contrastive one.

4. METHOD

In order to perform the investigation, some data has been collected for the Pisa variety of Italian.

Three speakers of the Pisa variety of Italian read the corpus in a sound treated room. Each speaker read the target sentences at least three times: the first time, reading both the question and the answer, the following times, reading only the target sentence answering the question posed by the experimenter. In some cases, the speaker was asked to read slower or faster than he did for the previous repetitions of the same sentence. The total amount of target sentences is 405.

⁷ New is something that did not appear in the question.

⁸ Zubizarreta [8] defines emphasis as what "may negate the assertion introduced by its context statement [...], or it may reassert the assertion introduced by its context statement". In the corpus, it is possible to have two topics in the question. In these cases, the answer contains a predicate that is true for one topic and false for the other (there is syntagmatic opposition among the two topics). This definition seems to be the closest way to characterize the focusing process in those cases.

The target utterances have been digitized and then analyzed using ESPS Waves(tm) at the Institute of Phonetics of the University of Saarland. An informal perception test has also been carried out in order to check the perceptual relevance of the identified patterns. Five Italian subjects took part in the experiment. Stimuli were 46 resynthesized utterances⁹. Subjects were asked to judge if the utterances were the appropriate answer to the question asked by the experimenter.

The results obtained by means of the analysis of the read speech data, and informally checked with the perception test, are discussed in the following sections. Each section concerns one of the sets of sentences in the corpus.

5. RESULTS

5.1 Broad focus sentences with constituents in unmarked order

Broad focus sentences in the corpus were realized with either H* or H+L* pitch accents on the verb and its complements¹⁰ (in the matrix sentence). The following adverbial phrase was usually realized with a compressed pitch range and with a H+L* pitch accent on the final word (fig.1).



Fig. 1. Broad focus sentence from set B (see table 1 for translation).

5.2 Sentences with one left-dislocated constituent

Syntactically, the left dislocated element could be a topicalized or a focus constituent.

The topicalized constituent (B.1 in section 3) was consistently realized with a H* pitch accent followed by a low target point which may be interpreted as a boundary tone of some kind. The H* peak was usually at a relatively high f0 level, and the low target point was usually reached between the end of the left dislocated constituent and the end of the clitic at the beginning of the matrix sentence. A lowered and compressed pitch range and a fairly steep f0 fall separate two instances of given information: the topicalized information on the one hand and the beginning of the matrix sentence which is also given. In fact, the matrix was usually realized with a compressed pitch range and a H+L* pitch accent on the word 'pomeriggio', i.e. the new information in the sentence¹¹. No

⁹ Utterances were resynthesized using XASSP, IPDS Kiel.

¹⁰ During the perception test, subjects could not tell the difference between the resynthesized version of one of the sentences in set B (with H* pitch accents), and the same sentence resynthesized with no dip between two of the pitch accents (on the verb's complements). This gives an indication that the pitch accent may have no low target point preceding it, and that the dip should only be due to interpolation.

¹¹ It may be that such a difference in pitch range it is only due to the presence of given information at the beginning of the matrix sentence.

major difference has been observed if the topic was longer (see 3) or interpreted as emphatic focus (B.2 in section 3). See fig. 2 (a).

When the topic was interpreted contrastively (B.3), it was realized with a H*+L pitch accent¹². The low target which represents a sort of boundary tone was then reached more easily by the end of the dislocated constituent, and the matrix sentence was usually deaccented. The same pattern is characteristic of syntactic focus interpreted contrastively (A.2). See fig. 2 (b). When the syntactic focus represented new information (A.1), the only difference was that the pitch accent could also be H*.

No major difference was observed in the case of longer dislocated constituents or faster speech rate.

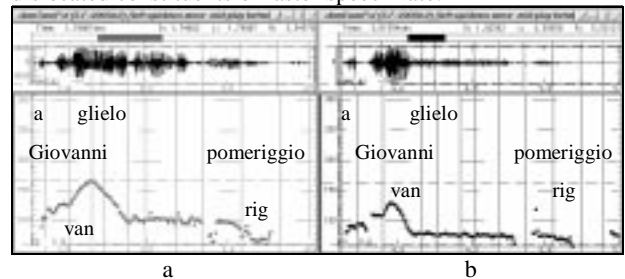


Fig. 2. Two sentences from set T: in a. the topic was not focused; in b. contrastive interpretation of it was induced.

5.3 Sentences with two left dislocated constituents

In sets TT and TTM, two left dislocated constituents preceded the matrix, and they were, respectively, in unmarked and marked order. The results of the analysis of the two sets will be dealt with together as long as no regular differences are found.

In both TT and TTM sets, one sentence was characterized by having a topic followed by a focus, as left dislocated constituents (B.1 + A.1). In these cases, the topic constituent was either realized with a H* or a H+L*. A low target point, corresponding to a boundary tone, was always reached after the topicalized constituent, and a H*+L pitch accent was usually realized on the focused element (the same pitch accent in fig. 2.b). When two topics were left dislocated and a contrastive interpretation of the last one was induced (B.1 + B.3), the utterances showed a similar pattern, while, when the second topic was emphasized (B.1 + B.2), the pitch accent was always H* (and the perception test showed that a H+L* is not acceptable in that position).

5.3.1 Constituents in unmarked order

When two topics were left dislocated (section 3: B.1 + B.1) and were not particularly focused, speakers varied in their choice of strategy. The two main options were to choose a H* or a H+L* pitch accent for the topicalized constituents.

¹² It is possible that the H*+L pitch accent it is the contrastive variant of the H+L* pitch accent. This could mean that the two pitch accent should be collapsed in the same one. In case of contrastive focus the accent could be 'squeezed', reaching the H target at the beginning of the accented syllable; otherwise the target could be reached in the previous syllable. In fact in the perception test, subjects could not tell the difference between two H*+L pitch accents differing in the position of the H target. This problem requires a deeper investigation, and for the moment the two pitch accents are differentiated.

a) In the first case, a.1) the two elements could be realized as a unit either deaccenting everything but the last content word, or having a sequence of H*. In both cases, the f0 level of the last H* was always the highest, and it was followed by a fall that (almost) reached the bottom of the speaker's range, usually by the end of the clitic (if not earlier) at the beginning of the matrix. A compressed pitch range section followed, and a H+L* pitch accent usually characterized the last content word (the new information in the sentence)¹³. a.2) A different strategy consisted in having two H* pitch accents separated by a low target, as a boundary marker. The second H* was always downstepped, and the low preceding it almost reached the bottom of the speaker range (in faster speech the f0 level is not as low, but is still very low). The choice of the strategy does not seem to be directly related to speech rate or constituent length, but more to speakers' preferences.

The same patterns were observed in case of two topics interpreted as emphatic (see 3: B.2 + B.2). The presence of emphatic interpretation seems to slightly favor the realization of the two elements as a unit (fig. 3).

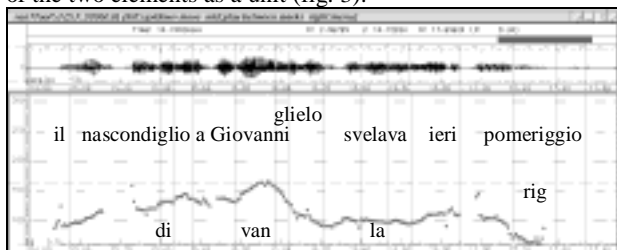


Fig. 3. Sentence from the set TT: the two topics are realized as a prosodic unit.

b) A different strategy consisted in choosing a H+L* pitch accent as the nuclear one in each topic constituent. In these cases the low target point is reached by the end of the syntactic topic constituent. This strategy was mainly applied when topics were longer.

5.3.2 Constituents in marked order

When the topic constituents are in marked order speakers never appear to collapse the two topics. The usual pattern is characterized by H* pitch accents separated by a very low target point. The last pitch accent is always downstepped (the pattern is the same as the one described in 5.3.1: a.2).



Fig. 4. Sentence from set TTM: the two topics are realized as different prosodic units.

In all cases of left dislocation, the low target at the end of the second topicalized (or focalized) constituent was always reached, and usually by the end of the clitic (if not before).

6. DISCUSSION

Let us try to interpret the results in order to answer the questions in 2.2.

¹³ This pattern could probably be considered as the realization of the restructuring of prosodic domains.

1. Left dislocated constituents seem always to be prosodically separated from the following material. Though some differences emerge in comparing focus and topic elements, these differences do not seem to be related to phrasing. Regardless of pitch accent type there is always a low tone target functioning as separator, as kind of boundary tone. No differences directly related to speech rate or length (phonological branching) seem to emerge.

2. In the case of one topic or one focus left dislocated, there is prosodic separation as described above. In multiple left dislocation cases, topics can belong to the same prosodic unit only if they are in the unmarked order, and these option does not seem to be necessarily related to the speech rate or to the length of the constituents. When a focus follows a topic, they always constitute two prosodic units, and the strength of the boundary between the syntactic focus and the matrix does not differ from the strength of the boundary between a topic and the matrix.

3. Different pitch accents are generally used for contrastive and emphatic focalization. However, both types of focalization force the focused element to be prosodically separate from the topic preceding it, when there is one. Although the focused element can be perceived as more connected to the following material, the boundary realization is relatively indistinguishable.

4. Constituent order seems to affect intonation. It seems that two topic constituents can be realized as one unit only if they are in the unmarked order.

7. CONCLUSIONS

A corpus of sentences with left dislocated constituents has been read by Italian speakers. Results of the analysis with preliminary results from an informal perception test as been presented in the paper.

On the basis of these data, the left periphery of the sentence appears to be prosodically separated from the following material. Differences in phrasing related to the order of the left dislocated constituents and differences in the pitch patterns realized have also been found. Further analysis of the pitch accents, boundary tones and perceptual data is required to better assess the status of these contexts.

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