

PROSODIC ORGANISATION AND PHRASING AFTER FOCUS IN FRENCH

Albert Di Cristo and Ludovic Jankowski
Institut de Phonétique, CNRS ESA 6057 "Parole et Langage"
Université de Provence, 29, Avenue Robert Schuman
13621 Aix-en-Provence, FRANCE
Tel: + 33 (0)4 42 95 36 27 Fax: + 33 (0)4 42 59 50 96
E-mail: albert.dicristo@lpl.univ-aix.fr

ABSTRACT

It is often claimed that Post-Focus sequences in French statements are subject to a pragmatic constraint causing the suppression of any tonal variation in the sequence. In this case, Post-Focus sequences, which are said to be deaccented, are generally described as steadily flat or slightly declining pitch. On the other hand, it is well known that tonal features play a major role in French to signal, namely, both the initial rhythmic accent and syntactic boundaries. They also contribute to disambiguate syntactically ambiguous utterances. This paper aims to put some light on the prosodic organisation and phrasing after focus in French. An experimental analysis of elicited dialogues, in which Broad Focus is contrasted with Post-Focus sequences, reveals that the later are neither fully deaccented nor dephrased. Post-Focus conditions give rise to a specific tonal template (a downstepped pattern) and attribute a primary role to temporal structuring.

1. INTRODUCTION

It is a well established fact that most of the languages which have been extensively described until now make use of linguistic expressions (lexical, syntactic and prosodic) to signal parts of utterances which language users intend to highlight in specific contexts.

These « centres of attention » are generally called « foci », the basic idea behind this notion being that messages are structurally organised so that a semantic entity mentally represented as a « figure » stands out against the flat part of the message which cognitively constitutes the « ground ». Focus has been subject to various interpretations ranging from the more syntactic to the more pragmatically motivated. In our approach, following Dik [7] we regard focal information as that information which is relatively « the most important or salient in the given communicative setting » or, in a more dynamic way, that information concerning « the changes that the speaker wishes to bring about in the pragmatic information of the hearer » (p. 277).

A focal information may, depending on the choice of the speaker, be broad or narrow [14], the latter inducing more often a contrast. It also may be either strictly informative or emphatic.

Despite the interest of these categories [10] we are mainly concerned in this paper by the prosodic organisation of utterances after focus. In French [6] an informative focus can be indicated in a declarative utterance by a set of prosodic features, namely by the conjugate assignment of a Nuclear Accent (indicating the highest level of metrical prominence) and of a terminal boundary

both of which help to signal the right border of the focal constituent. To mark the beginning or the left border of this constituent, French can also use a Floating Accent, as illustrated in the following example where the constituent focal is delimited by brackets, accents being noted here in bold characters and the Nuclear Accent in italics.

A.- OÙ sont-ils allés, hier soir, après le spectacle ? (*Where did they go, last night, after the show ?*)

B.- Ils sont allés [**au** restau**RANT**], hier soir, après le spectacle. (*They went to the restaurant, last night, after the show.*)

In B's answer, the string « hier soir, après le spectacle » constitutes the post-focal part of the utterance.

Empirical data show that whatever the speaking style used (casual or more formal), post focal sequences can be relatively expanded in French and can thus exhibit a more or less syntactically complex structure. In spite of these observations, post-focal sequences in declarative utterances are often described as steadily flat or slightly declining in pitch and are then traditionally labelled as: « low parenthesis» [4, 15].

Although this interpretation appears questionable, it is consistent with the general, cross-linguistically supported claim that Post-Focus sequences are subject to a pragmatic constraint, the effect of which being to delete or to reduce the pitch prominences embedded in these sequences. Thus, most languages are described as exhibiting an accentless pattern after focus [10]. Deaccenting however does not mean that Post-Focus sequences are also systematically dephrased. As suggested by Di Cristo [6], it may be the case that in the post-focal part of a French utterance where pitch prominences have been cancelled, phrase boundaries could be signalled by temporal organisation. This would mean that phrasing could be fairly independent from tonal organisation.

In French, tonal features are used to signal both specific accents - namely the initial rhythmic accent (traditionally labelled as a "pitch accent") - and syntactic boundaries. Signalling these boundaries by the assignment of specific tonal configurations can also contribute to disambiguating syntactically ambiguous utterances [5].

In this paper, we aim to answer to the following questions:

- Are Post-Focus sequences in French partially or fully deaccented ?
- If Post-Focus sequences are deaccented, what happens then to the initial rhythmic accents embedded in these sequences ?
- If Post-Focus sequences are fully deaccented, are they also dephrased ? If this is not the case, what kind of prosodic devices

are at work to indicate the phrasing of these sequences ?

- Can ambiguous Post-Focus sequences be disambiguated by prosodic means despite the constraints which affect them ?

2. MATERIAL AND PROCEDURE

To investigate the « prosodic behaviour » of Post-Focus sequences in French, we decided to use elicited speech. To this end we constructed three short dialogues containing similar clauses appearing either as a broad focus or as a Post-Focus sequence.

The clause to be investigated in the first dialogue is « Un fabriquant de matériaux de construction » ("A maker of building materials"). According to our analysis, this clause represents a single Intonation Unit (IU) which contains three Prosodic Words (PW): {Un fabriquant} {de matériaux} {de construction}, each of them being right-bounded by a final phrase accent. For these PWs, the first syllable of each content word can be viewed as a potential locus for the assignment of an initial rhythmic accent.

The second dialogue has been devised to investigate prosodic phrasing after focus. The sequence analysed in this part of our study, which is underlined in the following example « Elle joue du violon, ma voisine, tous les soirs, quand elle rentre du bureau » (*She plays the violin, my neighbour, every night, when she comes back from her office*), quite obviously exhibits a complex syntactic structure. As previously specified this sequence can appear either as a broad focus or as a Post-Focus sequence in the dialogue.

The third dialogue aims to study the prosodic devices which could possibly be used by speakers to disambiguate syntactic ambiguous expressions in post-focal sequences. To this end, we constructed a short dialogue in which the sequences « Un lit bien douillet » (« A cosy bed ») and « Un libyen douillet » ("A Libyan sensitive to pain") were contrasted both in focal and in post-focal positions.

The three dialogues were recorded in a quiet room by five pairs of native French speakers. Texts were communicated to the subjects well before the recording session and there were invited not to read the lines but to pronounce them as naturally as possible.

The excerpts (Broad Focus and Post-Focus sequences) selected for the acoustic analysis were digitised at 16 kHz on a Sun Sparc Station and syllabic labels were aligned by hand with the speech signal. The fundamental frequency of these extracts was detected using a *comb function* and was modelled with a *quadratic spline function* using an automatic modelling algorithm Momel with manual corrections [9]. Following this method, modelled F0 curves are represented by sequences of target-points which are interpolated by a curvilinear monotonic function (*quadratic spline*). The modelled curves were validated informally by PSOLA re-synthesis to ensure that there was no audible loss of prosodic information. Target points were labelled by means of the INTSINT alphabet described in [10].

For F0, we calculated, using the ERB scale [8], and for the two conditions (Broad Focus and Post-Focus sequence) the mean difference between the target point of the target syllable (bearing the initial rhythmic accent: dialogue 1 or aligned with the syntactic boundary: dialogues 2 and 3) and the target point of the preceding one. This calculation gives us an evaluation of the magnitude of the tonal variation which accompanies the production of the accent or that of the boundary. Similarly, for

duration, we calculated the ratio between the target syllable and the preceding one to obtain an evaluation of the syllable lengthening which is associated with an accent or a syntactic boundary.

3. RESULTS

3.1. General remarks

If we consider globally the results of our experimental analysis, we cannot conclude that Post-Focus sequences which are investigated in this paper are fully deaccented. Speakers tend in fact to make use of a strategy which leads to reduce drastically the magnitude of the pitch variations without, however cancelling all kind of tonal contrast. This tendency is illustrated (figure 1) by the fact that a L(ow)-H(igh) tonal configuration associated with a phrase boundary in a broad focus is very frequently supplanted by a D(ownstepped) tone in the corresponding post-focal sequence.

In figure 1a, corresponding to the Broad Focus sequence "*un fabriquant de matériaux de construction*", we can observe an iterative LH pattern, the H tones being aligned with the syllables bearing the initial rhythmic accents: "*fa-*", "*ma-*" and "*cons-*" and with the syllables bearing the final phrase accent: "*-quant*", "*-riaux*". The right boundary of the terminal IU is signalled here by a D(own), B(ottom) tonal configuration.

In figure 1b, which represents the modelled F0 curve of the same sequence (signalled by horizontal arrows) in a Post-focus condition, we note that that tonal prominences associated with these accents have been cancelled, except the last initial rhythmic accent on "*cons-*" which retains a reduced L-H tonal configuration. It is particularly interesting to observe in this example that the Prosodic Words: "*un fabriquant*" and "*de matériaux*", which are delimited by vertical arrows on the figure, are similarly realised with a downstepped pattern : D(own)-S(ame), spreading over these entire phrases. A same iterative downstepped pattern can be observed with the Post-Focus sequence: "*ma voisine, tous les soirs, quand elle rentre du bureau*" included in the dialogue 2.

3.2. The initial rhythmic accent

In the Broad-Focus sequence "*Un fabriquant de matériaux de construction*", the speakers tend to realise systematically a pitch accent on the first syllable of each content word. The magnitude of the F0 variation corresponding to this pitch accent is on average 1.12 ERB. For the Post-Focus condition this mean drops to 0.2 ERB. This means that, for this condition, the pitch accent, which is always associated with an initial prominence in the literature devoted to French prosody, is either cancelled or drastically reduced.

For duration, we note that the syllable bearing the initial rhythmic accent is lengthened on average by 40% in the two conditions between which differences appear to be non-significant. We observed in other experimental studies [2, 1, 11] that for an initial accent, the syllable lengthening is mainly supported by the onset in French, while it is supported by the rime for a final accent. This suggests that in the absence of a tonal cue, as it may be the case for Post-Focus condition, this differential lengthening of the syllabic constituents could efficiently contribute to the identification of the initial accent in French (for a general discussion of this hypothesis, see [12]).

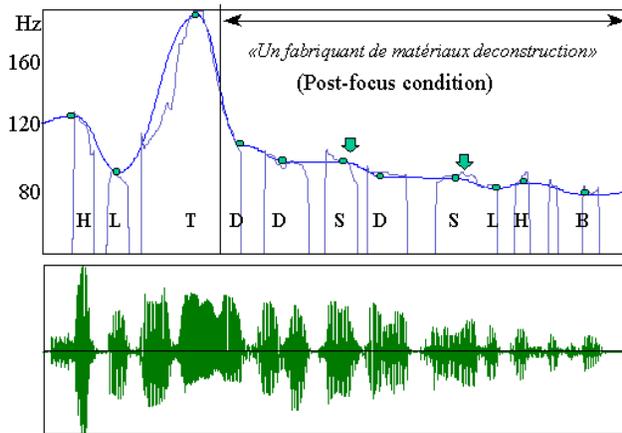


Figure 1.a. Modelled F0 curve of the sequence “ un fabricant de matériaux de construction ” (Broad Focus condition).

3.3. Prosodic phrasing

In the Broad Focus condition, it appears that the magnitude of F0 variations associated with the signalling of a non-terminal Intonation Unit boundary is on average 1.35 ERB for all the subjects. This value drops again to 0.2 ERB for Post-Focus condition. This result clearly indicates that tonal variations at syntactic boundaries tend also to be suppressed or strongly reduced in Post-Focus sequences. We have already pointed out in section 3.1. that, for this particular condition, speakers tend to adopt a recurrent strategy to maintain tonal phrasing by producing, as illustrated in figure 1b, iterative downstepped sequences.

For duration, we observed that the final lengthening associated with non-terminal Intonation Unit boundaries is near 70% for the two conditions, without significant differences between them. This suggests that final lengthening can also play an important role for syntactic phrasing in post-focal sequences.

3.4. Disambiguation

We make the assumption that to distinguish between « *lit bien douillet* » (« a cosy bed ») and « *Libyen douillet* » (« a Libyan sensitive to pain ») subjects have to mark a strong boundary between the content word « *lit* » and the adverb « *bien* ». This hypothesis is confirmed by the fact that in the Broad Focus condition, the average magnitude of the F0 rise aligned with the content word « *lit* » reaches 2 ERB. However, it is quite surprising to note that this value is near 1 ERB for the Post-Focus condition. We can conclude from this observation that the tendency to cancel or to reduce drastically pitch movements in Post-Focus sequences can be counterbalanced to avoid ambiguity (cf. figure 2). Nevertheless this may be not sufficient to achieve this purpose and this limitation can explain the fact that the lengthening of the monosyllable « *lit* » in the Post-Focus condition is twice that in the Broad-Focus condition (this difference being significant at $p < .0001$).

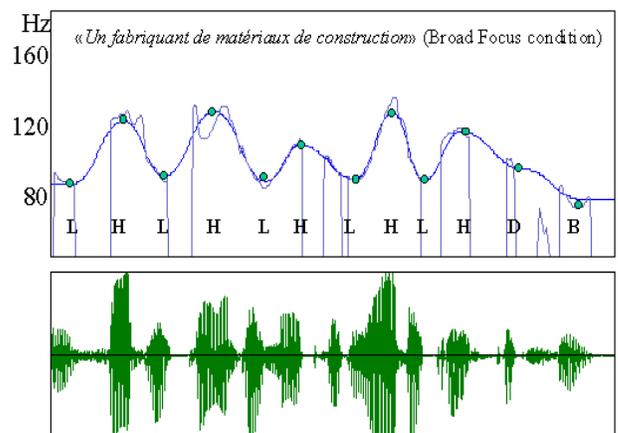


Figure 1.b. Modelled curve of the sequence “ C’est plutôt rare, un fabricant de matériaux de construction ” (“ it is rather unusual to meet a maker of building materials ”).

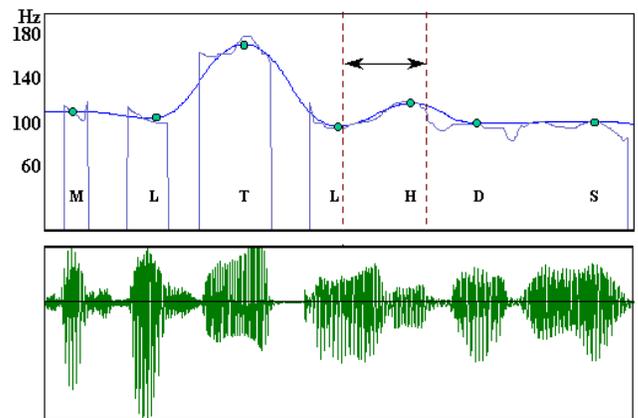


Figure 2. Modelled curve of the sequence « Ce serait chouette, un lit bien douillet » (« It would be great to have a cosy bed »). The syllable “lit” is indicated by arrows.

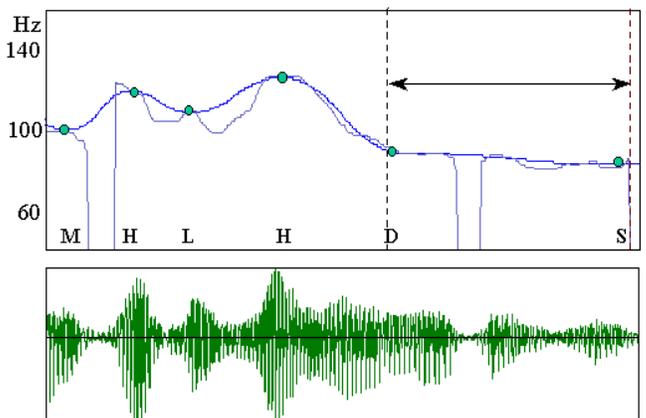


Figure 3. Modelled curve of the sequence « Elle joue du violon, ma voisine » (« She plays the violin, my neighbour »). The Post-Focus sequence “ma voisine” is indicated by arrows.

4. CONCLUSION

We presented in this paper the results of an experimental study investigating some issues concerning the prosodic organisation and phrasing of Post-Focus sequences in French. The results of this preliminary study, based on the analysis of elicited dialogues, lead us to conclude that, contrary to the traditional view, tonal variations in Post-Focus sequences are neither completely deaccented nor dephrased. Of course, it may be the case, with short Post-Focus sequences consisting of a single word or a single phrase, that the pitch configuration takes the shape of a steadily declining line (figure 3) which corresponds, following the terminology proposed by [3], to a "true declination". But as far as complex sequences are concerned, we can observe a recurrent tendency to realise Post-Focus sequences as an iterative downstepped pattern. When this pattern is not at work, we observed a strong tendency to reduce drastically the magnitude of the rising pitch movement associated with the marking of an IU's non-terminal boundary, a tendency that can also be interpreted as a first step towards the downstepped pattern. We noted however that both these tendencies can be counterbalanced for the purpose of disambiguating syntactically ambiguous utterances.

The pitch movement associated with the rhythmic initial accent (traditionally labelled as a "pitch accent"), is generally cancelled. Nevertheless, the lengthening of the syllable (mainly supported by the onset of the syllable) bearing this accent is maintained in Post-Focus position. The question arises to know whether this parametric variation is sufficient to insure the perception of the rhythmic initial accent in this context.

Duration features, namely the lengthening of syllables at syntactic boundaries, are preserved in Post-Focus sequences, showing consequently that these sequences are not dephrased, an observation which is consistent with the results of the Jun & Fougeron's study [13] based on a corpus of read utterances.

Future experiments are necessary to verify the perceptibility of the drastically reduced tonal variations observed in Post-Focus sequences. This will constitute the next step of our study.

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