



The Prosody of Post-focus Sequences in French

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Abstract

In French, the prosody associated with post-focus sequences is usually described as steadily flat, the suppression of any tonal variation being explained by the semantic and pragmatic content of these sequences. This paper aims to show that post-focus sequences may be realized in different ways. An experimental analysis of various post-focus sequences has shown that three distinct prosodic realizations may be distinguished, each realization being constraint along two dimensions :

- the length of the post-focus sequences, i.e. its metrical organization;
- the information conveyed by the sequence, and more specifically its relation to the discourse topic organization and the discourse status of the discourse referent the sequence contains.

1. Introduction

It is a well established fact that in many languages of the world the prosodic realization of an utterance is partly determined by the informational dimension, in particular by the ground/ focus articulation and the discourse thematic organization. It has been argued for instance that in French the ground/ focus articulation plays a role in the realization of post-focus sequences that are described as steadily flat in pitch (see, among others, [7], [17] and [18]). Sometimes the post-focus sequences have also been described as dephrased, but this idea has been contested in recent work (see [8] and [11]). In this paper, we will present three distinct realizations of post-focus sequences in French and we will try to see whether these realizations are in free variation or determined by linguistic factors (see also [1]).

In section 2, the material and descriptive framework in which this study has been carried out will be presented. In section 3, the realizations observed in post-focus sequences in assertion will be described. These descriptions will give both the prosodic features associated with each realization and their semantic and pragmatic characteristics. The parameters that are apparently important to choose one realization over another will be given in section 4.

2. Categories, Framework and material

2.1. Information

The notion of information subsumes a wide range of phenomena. The statement of empirical and descriptive generalizations is currently plagued by the lack of sharp

definitions of the categories most commonly used to analyze them: old/new information, focus, topic, contrast, emphasis, etc.

In this paper, we adopt a framework relying heavily on [2], [3], [9], [12] and [13]. Our approach can be characterized by the following features :

- It is a propositional approach of information (see [2]: “information is the establishment of a relation between terms in a proposition”);
- It is a dynamic approach : an utterance is analyzed relatively to the preceding and following context in the discourse;
- Methodologically, it is an analytic approach.

The approach used allows to distinguish in a unified framework several dimensions in the global concept of information. We distinguish three dimensions we consider independent:

- The ground/focus articulation in which informativity of an utterance (relatively to a context) is central. Concerning this articulation, it is important to note that we adopt an illocutionary definition of focus, in which Focus is the target of the illocutionary operator associated with the utterance (see [1] and [9]). This definition is well suited for French as prosodic marking of focus is determined by the illocutionary force of the utterance (see, among others, [1], [4], [7], [11] and [17]).
- The discourse topic organization in which the exhaustive/inexhaustive character of discourse content (relatively to a discourse topic) turns out to be a crucial factor (see [1], [2] and [3]). This dimension allows to distinguish two distinct discourse strategies : a simple one exemplified in (1) and a complex one presented in (2).
 - (1) a. Que fumaient les chanteurs de Rock dans les concerts des années 70 ?
b. *Les chanteurs de Rock fumaient de la marijuana dans les concerts de Rock des années 70.*
 - (2) a. Que fumaient les chanteurs de Rock dans les concerts des années 70 ?
b. *Les chanteurs de Rock anglais fumaient de la marijuana dans les concerts de Rock des années 70.*

In (1) the answer is exhaustive relatively to the current discourse topic (“*les chanteurs de Rock dans les concerts des années 70*”), while in (2), the answer is partial and calls for something else. This dimension plays a crucial role in the elaboration of the discourse topic and in the definition of the ground.

- The discursive status of the discourse referent, mainly their activation state in the current segment of discourse (active, inactive, accessible). This dimension has been

proposed by Lambrecht in order to avoid confusion between “new information” and “new discourse referent” (see [12] and [13]).

2.2. Prosody

Different approaches may be used to describe the intonational patterns of a language. In this paper, we will work in a framework inspired by the metrical and autosegmental framework that has been used in several studies of French (see [7], [10], [11], [14] and [16] among others). Our analysis and notation will use tones as minimal units and will make reference to two levels of prosodic structuration : the rhythmic group (RG) and the intonational phrase (IP)

- The rhythmic group is right-bounded by a primary stressed syllable. It is usually composed of a lexical word (N, V, A) and all the grammatical words on its non recursive side (see also [1] and [5]).
- The intonation phrase is characterized by the fact that a boundary tone is realized on its last syllable. Any rhythmic group may potentially be realized as an IP, in particular at slow speech rate. While the segmentation in RG is constrained by the syntactic structure and by rhythmic principles (see [5] and [11] among others), the segmentation in IPs is subject to a greater variability (speech rate, etc.) and constrained by various factors (rhythmic principles, informational dimension, syntactic structure).

In the metrical and autosegmental framework, the intonational contour results from interpolation between two types of tones: boundary tones and pitch accents. In many languages, “boundary tones” and “pitch accents” are easy to set apart. However, in French, such distinction is not obvious as boundary tones are realized on stressed syllables, and generally on primary stressed syllables, which occur at the end of prosodic constituent. In our approach, all the tones associated with stressed syllables will thus be considered as boundary tones, except from a category of pitch accents realized as High tones and expressing contrast, emphasis, insistence or a change in discourse strategy.

Boundary tones are aligned with edges of intonational phrases (IPs). At the left edge of any IP a demarcative boundary tone may be realized on one of first three syllables (%H). At the right edge of any IP, a boundary tone is realized on the primary stressed syllable. These IPs final boundary tones are not only demarcative as they convey meaning : they express, for instance, the modality and the illocutionary force of the utterance (L% for assertion).

Apart from these boundary tones, we distinguish two distinct categories of pitch accents :

- Modality accents that are anchored on any prominent syllable and express speaker’s attitude. They are used in association with boundary tones to elaborate specific melodic tunes;
- Pragmatic accents that are realized on stressed syllable and fulfil different pragmatic functions (emphasis, intensification, etc.). In this paper, we will just make use of one of such accent : the C accent (henceforth H^{*P}). This accent plays a crucial role in marking complex discourse strategies and in modifying discourse topics (cf. [1], [2] and [3]).

2.3. Material and procedure

To investigate “the influence” of the various semantic and pragmatic dimensions presented in 2.1 on the realization of post-focus sequences, we have elaborated a corpus of 20 question/ answer pairs. In the answers, the metrical organization and the semantic content of the post-focus sequences did vary :

- The post-focus sequence was composed of one to four rhythmic groups;
- The post-focus sequence may contain an element whose discourse referent is not active (i.e. not mentioned in the preceding question);
- The post-focus sequence may modify the discourse topic and thus serves to elaborate a complex discourse strategy.

These sentences have then been presented in their context (Q/A pair) to three distinct speakers that were recorded while reading or pronouncing them. The utterances obtained have been digitized at 22kHz and acoustically analyzed with the PRAAT program. Two parameters were taken into account during the analysis at syllabic level : duration and F0.

3. Realizations observed

In the data, post-focus sequence have been realized in three distinct ways that are apparently determined by linguistic factors. These realizations will be presented in the following sections.

3.1. Realization as a low ‘plateau’

In some sentences, the post-focus sequence has been realized as a low ‘plateau’ (cf. fig. 1) : a fall is realized at the end of the focus constituent and the rest of the utterance is realized with a compression of both F0 register and intensity. This realization of post-focus sequences has been described in different work on focus in French (see, among others, [7], [11] and [17]). This type of intonational pattern has also been observed in other languages (Japanese, English, etc.). It is important to note that post-focus sequences were not dephrased in our data : rhythmic groups boundaries were marked by duration cues (cf. also [8] and [11]).

The analysis of the different utterances where this realization has been observed shows that :

- The post-focus sequences are usually composed of at most two rhythmic groups that are phrased in a single IP. These sequences are thus relatively short in length.
- The elements expressed in the sequence are active discourse referents.
- The sequence does not serve to modify the discourse topic and to elaborate a complex strategy.

Consider for instance example (3).

(3) Qu’est-ce que Jean-Bernard a lu pendant ses vacances ?

Jean Bernard a lu trois romans policiers pendant ses vacances.

(Jean-Bernard)_{RG} (a lu)_{RG} L%] (trois romans)_{RG} (policiers)_{RG} L%] (pendant ses vacances)_{RG} L%]

The post-focus sequence “*pendant ses vacances*” is composed of a single rhythmic group and does not bring up any new information or modification in the discourse topic.

3.2. Realization with a succession of downsteps and a copy of the boundary tone.

In some cases, the post-focus sequence is realized as a succession of Intonational Phrases (IPs) whose boundary tone is a copy of the Boundary tone realized at the end of the focus constituent, and thus determined by the illocutionary force of the utterance. In this case, the flat contour associated with each IP is always even more lowered (cf. fig 2). This realization has been described in [4] and [1].

Consider for instance the realization observed for the example given in (4).

- (4) Qu'est-ce que tu as donné aux étudiants de Licence pour le concours blanc ?
J'ai donné trois exercices de syntaxe aux étudiants de Licence pour le concours blanc.
(j'ai donné)_{RG}H% (trois exercices)_{RG} (de syntaxe)_{RG} L% (aux étudiants)_{RG} (de licence)_{RG} !L% (pour le concours blanc)_{RG} !L%

A L% boundary tone is realized at the end of the focus constituent '*trois exercices de syntaxe*'. This tone is chosen because the utterance is an assertion. The post-focus sequence '*aux étudiants de licence pour le concours blanc*' is realized with two intonational phrases (IPs): '*aux étudiants de licence*' and '*pour le concours blanc*'. A copy of the L% boundary tone is realized at the end of these IPs, but this tone is always downstepped and the pitch register is always more compressed.

When the post-focus sequence is realized as a succession of downsteps, the realization of the various IPs is apparently determined by the discourse characteristics of the various post-focus constituents. From the low target on which the L% Boundary tone is realized at the end of the focus constituent or at the end of any Intonational Phrase, the next L% boundary tone is usually realized at a lower level if :

- the discourse referent associated with the element expressed by the IP is active, or
- the meaning expressed by the IP does not modify the discourse topic.

This realization is obtained in example (4) as shown in fig. 2.

On contrary, when the IP is composed with an element that is not an active discourse referent or that does modify the discourse topic, tonal agreement may not occur. The IP may be right-bounded by a H% [cont] and the pitch register is not compressed further more (cf. example (5) and fig. 3)

- (5) Qu'est ce que tu as donné pour le concours blanc ?
J'ai donné trois exercices de syntaxe aux étudiants de Licence pour le concours blanc.
(J'ai donné)_{RG} H%] (trois exercices)_{RG}(de syntaxe)_{RG} L% (aux étudiants)_{RG} (de Licence)_{RG} H% [cont]] (pour le concours blanc)_{RG} L% !]

The IP '*aux étudiants de Licence*' is realized as a plateau at the low level reached at the end of the focus constituent. No compression of the pitch register occur and a H% [cont] boundary tone is realized at the end of the IP. From the semantic point of view, the constituent '*aux étudiants de Licence*' brings up some new information and modifies the discourse topic. On contrary, the constituent '*pour le concours blanc*', which is given in the question, is realized with a downstepped L% boundary tone. The intensity curve follows the same pattern.

3.3. Realization with a continuous fall

In some cases, the post-focus sequence is not realized as a low 'plateau'. Even if a L% boundary tone is realized at the end of the focus constituent (as in any assertive sentence), the L tone does not reach its target (i.e. : the base-line of the speaker). It is only at the end of the utterance that the Low target is reached, F0 falling gradually in the post-focus sequence (cf. fig. 4). In this case, the compression of the pitch range and of the intensity after the focus constituent is not as clear as in the previous examples. An example of this type of realization is given in (6).

- (6) Qu'est-ce qu'il fume ?
Il fume des cigarettes le dimanche.
(il fume)_{RG} (des cigarettes)_{RG} L%] H*^p(le DImanche)_{RG} L%]

In this sentence, a L% boundary tone is realized at the end of the focus constituent '*des cigarettes*' since the utterance is an assertion. But the L target is not reached at the end of the focus constituent, but only at the end of the post-focus sequence. Since the element '*le dimanche*' modifies the discourse topic (the answer calls for further developments of the Discourse Topic: *il fume la pipe les autres jours*, etc.), a C accent is realized on the syllable 'DI'. The presence of the H*^p may explain why :

- the post-focus sequence is realized as a continuous fall and,
- the post-focus sequence is not realized with a compression of the pitch register.

In our data, this realization has generally been used in the following cases :

- The post-focus sequence is composed of at most two RG that are phrased in a single intonational phrase.
- The element expressed in the post-focus sequence are not active discourse referent.
- The post-focus sequence contains elements that modify the discourse topic and serve to elaborate a complex strategy.

Further research is now necessary in order to see if this realization is obligatory in these cases or if it is a variant of the realization presented in section 3.1.

4. Conclusion

We have presented in this paper the three realizations we obtained for post-focus sequences in our data. These realizations are apparently not in free variation, but are determined by the following factors :

- The metrical organization of the sequence : if the sequence is relatively short in length and can be phrased in a single IP, it is realized as a continuous fall or as a low plateau. By contrast, long sequences are realized as a succession of IPs whose boundary tones are downstepped
- The informational status of the element contained in the sequence : if the elements are active discourse referents, the post-focus sequences are deaccented, the pitch register being more compressed than in the preceding IP. On the contrary, if the sequence contains elements that modify the discourse topic and that must be realized with a C accent, the L% boundary tone of the preceding IP does not reach its target and compression of the pitch register does not occur. This might result from the presence of the H*^p tone.

Future experiments are necessary to confirm these results. Thus we intend to analyze the realization of post-focus sequences in various types of data (conversation, map-task dialogues, text reading, etc.).

5. References

- [1] Beyssade et. al., To appear. Prosody an Information in French. *Handbook of French semantics*, F. Corblin & H. de Swart (eds). CSLI.
- [2] Büring, D., 1997. *The Meaning of Topic and Focus : The 59th Street Bridge Accent*. London: Routledge.
- [3] Büring, D., 1999. *Topic, Focus: Linguistic, Cognitive, and Computational Perspectives*. Bosch, Peter & Rob van der Sandt (eds). CUP. 142-165.
- [4] Clech-Darbon, A et. al., 1999. Are there Cleft Sentences in French ? *The Grammar of Focus*. L. Tuller & G. Rebuschi (eds). Amsterdam: Benjamins. 83-118.
- [5] Delais-Roussarie, E., 1995. *Pour une approche parallèle de la structure prosodique : Etude de l'organisation prosodique et rythmique de la phrase française*. Phd Dissertation, Université de Toulouse-le Mirail, France.
- [6] Di Cristo, A & Hirst, D., 1996. Vers une typologie des unités intonatives du français. *Actes des XXIème JEP*. Avignon. 223-226.
- [7] Di Cristo, A., 1998 Intonation in French in Hirst & Di cristo (eds), 195-218.
- [8] Di Cristo, A & L. Jankowski., 1999. Prosodic organization and phrasing after focus in French, *Proceedings of XIVth International Congress of Phonetic Sciences*, San Francisco, USA. 1565-1568.
- [9] Jacobs, J., 1984. Funktionale Satzperspektive und illokutionssemantik. *Linguistische Berichte* 91. 25-58.
- [10] Hirst & Di Cristo (eds.), 1998. *Intonation Systems: a survey of twenty languages*. Cambridge University Press.
- [11] Jun, S-A. & C. Fougeron, 2000. Phonological Model of French Intonation. *Intonation : Analysis, Modelling and Technology*. A. Botinis (ed). pp. 209-242. Dordrecht: Kluwer Academic Publishers.
- [12] Lambrecht, K., 1994. *Information structure and sentence form : Topic, focus and the mental representations of discourse referents*. Cambridge studies in Linguistics 71, Cambridge University Press.
- [13] Lambrecht, K. & L. A. Michaelis., 1998. Sentence Accent in Information Questions: Default and Projection. *Linguistics and Philosophy* 21: 477-544.
- [14] Mertens, P., 1987. *L'intonation du français : de la description linguistique à la reconnaissance automatique*. Phd Dissertation. Leuven University.
- [15] Mertens, P., 1997. De la chaîne linéaire à la séquence de tons. *Traitement automatique des langues* 38. 27-51.
- [16] Post, B., 2000. *Tonal and Phrasal structures in French Intonation*. Phd Dissertation. Nijmegen. Den Haag : Thesus Publisher.
- [17] Rossi, M., 1999 *L'Intonation, le système du français : description et modélisation*. Paris : Ophrys.
- [18] Touati, P., 1987. Structures prosodiques du suédois et du français : profils temporels et configurations tonales. *Travaux de l'institut de linguistique de Lund 21*, Lund University Press.

6. Figures

Figure 1 : Post-focus sequence realized as a low plateau. Example (3)

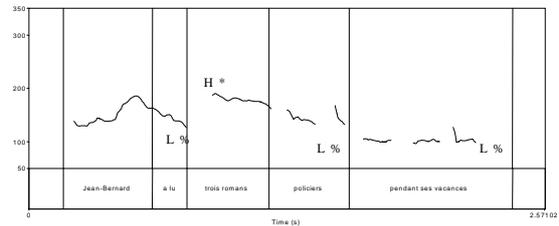


Figure 2 : Realization of the post-focus sequence as a succession of downtsep. Example (4)

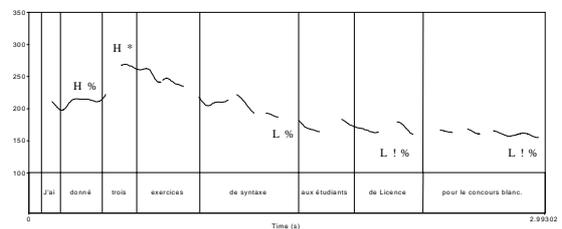


Figure 3 : Realization of the post-focus sequence as a succession of downstep. Example (5)

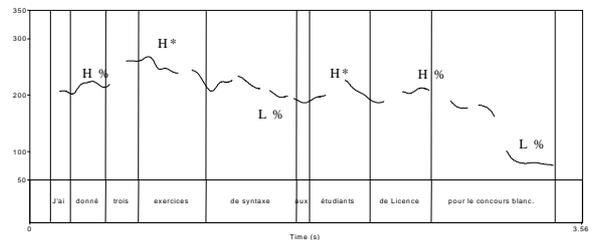


Figure 4 : Post-focus sequence realized as a fall. Example (6)

