

Regional Variations of Sentence Intonation in French

The Continuation Contour in Parisian French

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Abstract

Numerous studies on regional variations of French sentence intonation have been conducted for some time, even before any phonological description of intonation was available. These studies are therefore characterized by a strong phonetic bias, leading researchers to gather large sets of experimental data, which once statistically organized, would give an empirical account of intonational differences existing between varieties of French.

In contrast with these studies, we proposed a phonetic description of some intonational regional differences based on a phonological description, in which as in any classical phonetic study of, say, vowel quality, the phonological analysis precedes phonetic description of the data. In the theoretical approach chosen, stressed syllables are encoded with features such as duration and melodic variations, which in turn indicate a (prosodic) organization of the sentence.

1. Introduction

Historically, the phonetic study of sentence intonation precedes its phonological description (at least in the second half on the 20th century), although important phonological work on intonation was carried at the Cercle Linguistique de Prague, by Karcevskij [5] among others. The apparent elusive nature of the data and the emergence of acoustic analysis tools more familiar to phoneticians than to phonologists lead to the mushrooming of a large number of studies on the various aspects of sentence intonation. Regional variation was and remains a popular topic, as shown by large studies carried out today for English [10], or for other European languages [11].

For French, important experimental work was accomplished by leading French phoneticians, such as Carton, Léon, Rossi, Autesserre [1], [2], [3], [4], [6], and others. Contrary to more recent studies using the ToBI system to transcribe the data and therefore clearly influenced by the Pierrehumbert-Beckman model for English intonation, these earlier studies were essentially phonetic in nature, as they use a set of descriptive parameters chosen out of various and not necessarily coherent considerations. The experimental gathered on corpus recorded in specific conditions (spontaneous interviews, story telling, etc.), would then reveal tendencies for prosodic differences in rhythm, melody and syllabic intensity that would characterize the sets of regional sentence intonation considered.

In this preliminary study, we will depart from this approach as in endeavors [10] and [11], but using another theoretical model applied to French [8].

2. Phonetics through phonology

2.1. The phonological model

A general consensus exists to confer to sentence intonation the phonological role of indicating cohesion and hierarchy of groups of words as well as emphasis on specific units. More specifically, in the framework of current theories for French (Martin [8]), pertinent phonological events take place essentially on stressed syllables (word stress and emphatic or contrastive stress). Therefore, stressed syllables are either indicating a) the hierarchical organization of the sentence, b) a division of the sentence into theme and propos, or c) emphasis. The phonological sentence intonation events located on the stressed syllables are, as any other phonological unit, part of a contrastive system that presides to their phonological description and their actual phonetic realizations. This means that the actual realization of prosodic contour features such as duration melodic rise or fall, etc., will depend on the configuration of the prosodic structure considered.

If we consider only function a), stress assignment rules based on dependency relations between words (Martin [6]), interact with the last syllable rule, the stress clash rule and the rhythmic rule to predict the correct accentuation of syllables in the sentence. Briefly stated, stress dependency rule assign stress to words, which are either in independent or selection dependency relation with another unit (units in relation of solidarity form a stress group and can only have one stress). Stress clash rule prohibits the sequence of two consecutive stressed syllables (unless there is enough phonetic time space between two consecutive stressed syllables). Rhythmic rule allows for un-stressing of stressed syllables according to a) their position in the corresponding prosodic structure and b) their distance in number of syllables from the preceding and the following stressed syllable in order to maintain the size of prosodic words (i.e. stress groups) in the range of 6 to 8 syllables. Other functions pertaining to stress have a semantic role, such as emphasis, pragmatic content, and the like.

Stress is encoded in various ways depending on the variety of French and the style of the speaker (Léon, [6]), but many if not all cases involve a change in melody on the voiced part of the syllable. The change takes the shape of a melodic contour, described phonetically in terms of duration, intensity, and variation of fundamental frequency.

From a methodological point of view the process is very much analogous to the phonetic observations that could be made on the various realizations of the vowel phoneme [a] in different

varieties of French for instance, where the phonetic observation clearly presupposes a phonological description of the French vowel system. By the same token, the phonetic description of sentence intonation should presuppose the existence of a phonological description, in order to compare phonetic features of equivalent phonological intonation contours in a proper fashion. Comparing global features of sentence intonation outside phonology would be as comparing, say, vowel quality of a set of mixed vowels, or of all vowels, in French.

2.2. Phonetic variations of prosodic contours

The underlying idea of this study is thus very simple: describe the detailed shape of melodic variations on stressed syllables, in the light of the theoretical model chosen. To avoid the influence of modality variations (such as declarative, interrogative, imperative, surprise, evidence and doubt), we did limit the investigation to first level (i.e. "continuation") contours C1, preceded by a falling contour C2 on the preceding stressed syllable.

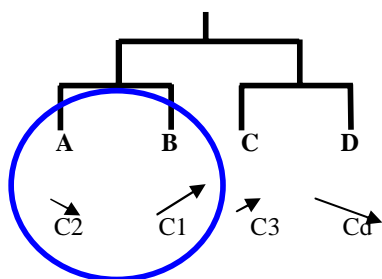


Figure 1: Theoretical sequence of prosodic contours encoding a prosodic structure [[A B] [C D]].

Recording from 6 interviews made on the national radio constitute the majority of the corpus examples and were analyzed with the program WinPitch XP [12]. From the content, these speakers appear to live in Paris, and their age could be estimated as indicated in Table 1.

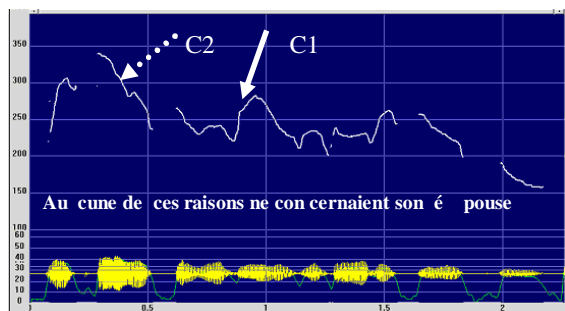


Figure 2: Female Parisian speaker ...*aucune de ces raisons ne regardaient son épouse*...Contours C2 and C1 located on stressed syllables contrast in slope and C1 the continuation contour is realized as a straight rise.

In order to be retained in the final results, rising continuation contours had to be preceded by a falling contour C2 belonging

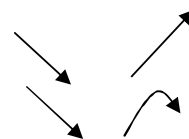
to the same prosodic group. Observations were categorized in either straight rise (Type 1), or rise-fall (Type 2), as shown in Table 1, where the estimated age or the speaker appears in column 2.

Table 1: Experimental results for continuation contour C1 for 6 Parisian speakers. Columns 3 and 4 show the number of cases of straight rise phonetic realization of continuation contour C1 (Type1), vs. the rise-fall pattern (Type1).

SPEAKER	SEX - AGE	TYPE 1	TYPE 2
NE	F 75	20	1
NM	H 40	3	21
PS	F 30	6	27
PR	H 60	37	13
SU	F 60	41	5
LJ	H 60	0	45

Type 1: sequence

Type 2: sequence



Examples of Type 2 pattern are given in Fig. 3 and 4.

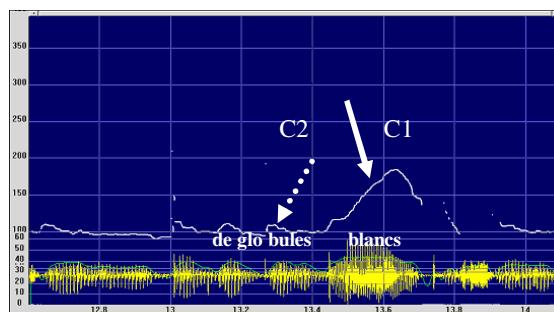


Fig. 3 Male Parisian speaker ...*de globules blancs*...Another instance of the rise-fall configuration as in fig 3. Here the contour C2 is neutralized and appears as a plateau.

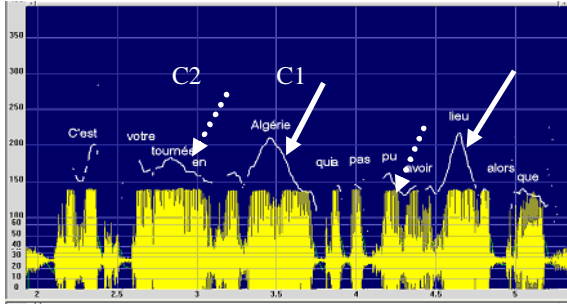


Fig. 4 Female Parisian speaker ...c'est votre tournée en Algérie qui a pas pu avoir lieu alors que...Rising (continuation) contours are actually executed with a rise-fall pattern, typical of contemporary Parisian stress syllable intonation.

The data presented in Table 1 seem to suggest that younger Parisian speakers in spontaneous mode tend to use a rise-fall pattern to encode the continuation contour C1, but speaker LJ appears as a clear counter example (Fig. 5).

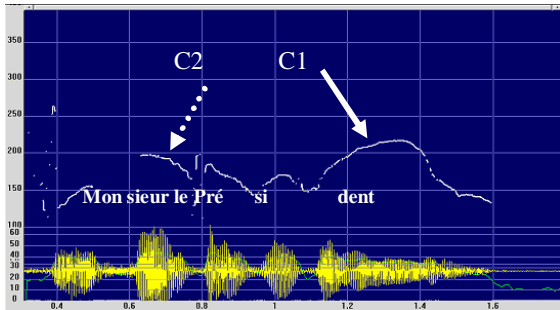


Fig. 5 Speaker Lionel Jospin ...Monsieur le Président...Another typical rise-fall pattern in a spontaneous discourse (French Parliament).

A more detailed report of the actual patterns used by the various speakers is presented in Table 2.

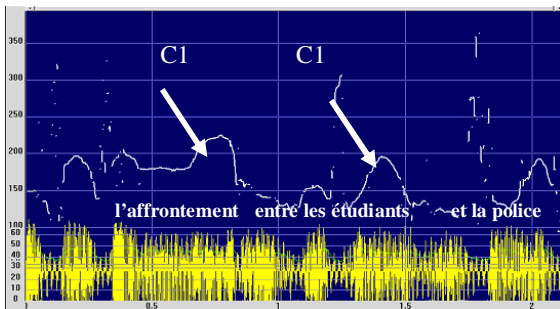


Fig. 6 Male Parisian speaker ... le point culminant de l'affrontement entre les étudiants et (la police) Recorded in 1998, showing the same rise-fall configuration as in fig 3.

Table 2: Dominant realizations of continuation contours C1 for each of the 6 speakers.

SPEAKER	TYPICAL SHAPE
NE	
NM	
PS	
PR	
SU	
LJ	

Although possibly linked to the age of the speaker, this rise-fall pattern is not new, as shown in Fig. 5, recorded in 1968.

The melodic curves observed on examples recorded in other regions such as Savoy, Brussels or Lausanne do not show this pattern, and consistently exhibit a rather straight rise pattern. These data will be presented in another paper.

3. Remarks and conclusions

We presented some phonetic feature pertaining to sentence intonation realized by Parisian speakers (not necessarily of Parisian origin, but working and speaking in Paris). More specifically, and as part of a more ambitious project, detailed configuration of continuation melodic contours, or first level C1 contour of the prosodic structure. Extension of this limited exploration would involve the other contours of the prosodic structure, as the final modality contour and the second level C2 and C3 contours (respectively phonologically falling and rising).

Although similar in shape to the implicative (evidence) contour located on final (or rheme final in a theme-rheme configuration of the prosodic structure), the rise-fall pattern emerging in Paris does not convey the implicative signifier. A possible interpretation of this fact would involve the institutionalization of a systematic contour of evidence placed by Parisian speakers on their continuation contours.

Although limited experimental data show that continuation contours C1 are realized by straight rising pitch movements, whereas spontaneous examples exhibit a rise-fall pattern on the same contours. The melodic curves observed on examples recorded in other regions such as Savoy, Brussels or Lausanne do not show this pattern, and consistently exhibit a rather straight rise pattern.

It would be interesting to investigate into factors responsible for these melodic variations: could it be a new motif developed in Paris, a characteristic linked to the speaker age (although from our subjects age does not seem to correlate very well with the observed motif), a prosodic style or a new discursive modality. We will tentatively conclude that all these hypotheses are plausible, but that the end result may very well be adopted by all speaker of the Parisian region.

4. References

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