

Tonal and Phrasal  
Structures  
in French Intonation

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# Tonal and Phrasal Structures in French Intonation

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# Chapter 1 Introduction

on ri:diŋ ðə frɛŋʃ trənskri:ʃn əv E. Paraige [...], wʌn kænɒt blʌt  
bi strʌk baɪ ðə rɛɡjʊləri:ti in ði insidəns əv ði æksənt. it si:mz  
tə fə:l wið insɪstənt mənɒtəni ɒn faɪnl siləblz [...] ənd wʌn iz  
tɛmtɪd tu ɑ:sk – dʌz sʌtʃ dræb seɪmnɪs ri:əli ɪgzɪst in ə lɪvɪŋ  
læŋɡwɪdʒ?

On reading the French transcription of E. Paraige [...], one cannot but be struck by the regularity in the incidence of the accent. It seems to fall with insistent monotony on final syllables [...] and one is tempted to ask – does such drab sameness really exist in a living language?

- Stephen Jones in *Maître Phonétique* 40 (1932), p.74

The “insistent monotony” referred to in the above quotation is probably the most striking characteristic of French prosody for a speaker of a Germanic language. In Germanic languages, the location of the accented syllables in an utterance varies much more than in French. In a neutral reading of the utterance *We investigate French intonation*, for instance, accents can be realised on the syllables *-ve-*, *French* and *-na*. If the word *intonation* is replaced with *prosody*, the antepenultimate instead of the penultimate syllable of the utterance will be accented. This is because the location of the stressed syllable varies between words in English, and speakers have to know for each word whether stress falls on the final, the penultimate or the antepenultimate syllable of the word.<sup>1</sup> This is not the case in French, because all words have final stress (‘fixed stress’, Garde 1968).<sup>2</sup> Thus, in *Nous recherchons l’intonation du français*, the syllables *-chons*, *-tion* and *-çais* will be accented in a neutral reading, and if *intonation* is replaced by *prosodie*, or any other word for that matter, the accent will still fall on the final syllable of the word. This is probably why Stephen Jones thought that French sounds “drab”.

Nevertheless, accentuation also varies in French. As in English, syllables with secondary stress can be accented. For instance, *recherchons* can have an additional accent on *re-*. Secondary stress usually falls on the first syllable of lexical words with more than two syllables (cf. Chapter 4 section 4.2). Whether or not a stressed

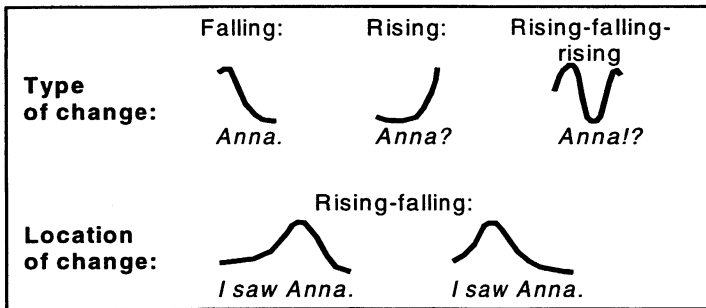
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<sup>1</sup> In this study, the term ‘stress’ refers to the prominence relations between the syllables of a word in terms of metrical strength. ‘Accent’ is used to indicate the intonational phenomenon whereby some of the stressed syllables show melodic variation (often accompanied by changes in duration and amplitude). In other words, stress determines which syllables can be accented.

<sup>2</sup> In words which end in a schwa, the penultimate syllable is stressed (e.g. *livre* ‘book’, *recherche* ‘investigate’). However, since word-final schwas are not normally pronounced, the accent can be said to coincide with the final syllable of the word.

syllable is actually accented depends on a number of factors. There is a general consensus that the most important factor in French is word grouping. That is, groups of words that are grammatically and/or semantically related are obligatorily marked by a final accent, and all other accents in the group are optional. However, since different definitions of the word-group are proposed in the literature, there is no agreement about the location of the obligatory accents in the utterance. Moreover, conflicting claims are made about the conditions on the realisation of optional accents. As a consequence, it is unclear which accentual patterns are acceptable in French, and which are not. It is important to know what the patterns are, because they play a crucial role in intonation, the topic of this study.

The term ‘intonation’ refers to melodic variation in speech. Melodic variation is not random; speakers decide how and when they produce a melodic change. For instance, *Anna* can be pronounced in various ways in English, as is shown in Figure 1. It matters whether the intonation contour is falling, rising, or rising-falling-rising, because it can change the interpretation of the utterance (e.g. the speaker is making a statement instead of a question, or he is rather surprised or irritated).



**Figure 1:** Different intonation contours on *Anna* and *I saw Anna*.

Figure 1 also shows that the location of the change can vary, while the type of change is the same. Both realisations of *I saw Anna* have a rising-falling contour, but the speaker has decided to accent *saw* instead of *Anna* in the second case. However, not all differences between intonation contours are important. For instance, if the first rising part of the rising-falling-rising contour on *Anna* in Figure 1 is omitted, the contour still is essentially the same. Whether a particular difference is categorical or not varies from language to language. Despite the rather large body of literature on French intonation, there is no agreement about which differences between intonation contours are categorical. More specifically, the descriptions disagree about how the direction and the location of the melodic changes can be varied to produce a distinct intonation contour.

This study aims to resolve this controversy by providing a comprehensive description of the tonal structure of French intonation contours and its association with the ‘text’ (the segmental structure). The stressed syllables and boundaries of the segmental structure determine at which locations melodic changes can occur, and the

tonal structure specifies how the melody can be varied at those points. Thus, the description makes clear predictions about the nature of the difference between any intonation contours (i.e. categorical, or gradient within some category), and can be experimentally verified. In addition, the distribution of pitch accents is described. That is, the description specifies how the interaction between factors such as word grouping and the location of the stressed syllables determines at which locations melodic changes occur (i.e. the accentual pattern).

The following section presents the starting points of the study, and some issues that are involved in the investigation of French intonation. The research questions are specified in Section 1.2. Section 1.3 provides a brief discussion of the methodology. The main findings of the study are summarised in Section 1.4. Section 1.5 presents some issues in French prosody and intonation that are not dealt with here. Section 1.6 concludes the chapter with an outline of the study.

## 1.1. Background

In this section, we will refine the definition of intonation given above by briefly discussing the production and perception of intonation, and the assumption of a difference between phonetic realisation and phonological categories. Then, the association between intonation contours and text is discussed to clarify the relevance of the issue of pitch accent distribution to the description of French intonation contours.

### 1.1.1. The production and perception of intonation

An important assumption that is made in this study is that intonation is primarily concerned with variations in pitch, although changes in pitch are often accompanied by changes in duration, loudness and voice quality (e.g. Bruce 1977; Beckman 1995; for French: Martin 1982).<sup>3</sup> Pitch is the perceived rate of vibration of the vocal folds within the larynx; its acoustic correlate is fundamental frequency. That is, if the vocal folds vibrate more quickly, fundamental frequency increases, and higher pitch will be perceived. Pitch is to a large extent independent of the segmental make-up of the utterance. Thus, two different segments, such as /a/ and /o/, can be produced at the same pitch, and two different utterances, such as *Anna* and *Anna came*, can be produced with the same pitch movement.

Nevertheless, fundamental frequency values may be affected by the segmental structure. For instance, voiceless consonants (e.g. /p/, /t/, /f/ and /s/) show up as gaps in the fundamental frequency trace, as the vocal cords do not vibrate during their

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<sup>3</sup> For instance, Martin (1982) claims that the appropriate acoustic features for the description of non-final intonation patterns in French must be found in the fundamental frequency curves alone, without taking intensity or duration into account, because the latter do not differ significantly when a different intonation pattern is used. Amplitude and time only play a role in final falling patterns, which have a significantly longer duration, lower amplitude, and lower fundamental frequency.