Prosodic regularities in the surface structure of French questions

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ABSTRACT

This paper is concerned with the description of the tonal patterning of questions in French. The results are based both on the analysis of interviews recorded from broadcast programes and on an experimental study of simulated dialogues which constitute an iintermediate level between read-aloud decontextualised utterances and truly spontaneous speech. Special attention is paid to the recurrent downstepping pitch pattern which appears to constitute an important feature common to most of the basic types of questions analysed here.

INTRODUCTION

This study deals with the tonal organisation of questions in French. It is part of a larger project aiming at describing the prosodic pattern of General French within the framework of the parametric approach used in Aix. This approach has lead in the recent past to the development of two related models: a phonological model and a model of production.

The core system of the phonological model is formed by two hierarchical constituents: Intonation Units and Tonal Units to which language dependent tonal templates are assigned (Hirst, 1988, ; Hirst & Di Cristo, 1984).

The model of production is designed to model an Fo curve by selecting two parameters: local Fo targets (roughly but not entirely equivalent to the "turning points" of the Lund Model) and an appropriate interpolation function for connecting these targets (Hirst, 1981).

Thanks to the implementation of the model on a mini-computer (Hirst & Espesser, in press), it is now possible, among others, to factor out automatically an Fo curve into two components: a macroprosodic component and a microprosodic component (Di Cristo & Hirst, 1986), the former consisting of a smooth underlying curve. This curve is viewed in this approach as a phonetic level of interpretation of pitch variations which constitutes an interface between acoustic raw data and the higher levels of the phonological representation (Hirst & Di Cristo, 1992; Hirst & al., this volume).

MATERIAL AND METHODOLOGICAL PROCEDURE

The results which are presented in the next section of this paper are based on general observations arising from a preliminary study of interviews recorded from broadcast programs completed and illustrated by analysis of simulated short dialogues which were recorded by four subjects (two male and two female).

Turn-units in the dialogue consisted of short questions and answers, the former being of four types: a) yes-no Qs (*La voisine de la cousine de l'amie de Sylvie?*), b) elliptical Qs (*Et la copine de l'ami du mari de Corine?*), c) alternative Qs (*La voisine de la cousine de l'amie de Sylvie ou la copine de l'ami du mari de Corine?*), and d) left-dislocated Qs (*La voisine de la cousine de l'amie de Sylvie , elle vit aussi en Suisse?*). These turn-units have been chosen to be formed either by a single IU or by two IUs, each corresponding to an information-unit. As can be seen from the preceding examples and from the following dialogue, these IUs are nominal utterances including three to five syllable stress-groups.

- Tu penses qu'elle viendra demain?
- Qui ça?
- La voisine de la cousine de l'amie de Sylvie.
- La voisine de la cousine de l'amie de Sylvie ou la copine de l'ami du mari de
    Corine?
- Non, la voisine de la cousine de l'amie de Sylvie.
- La voisine de la cousine de l'amie de Sylvie, elle habite en Italie?
- Non, elle vit en Suisse.
- Et la copine de l'ami du mari de Corine, elle vit ausi en Suisse?
- La copine de l'ami du mari de Corine? Non, elle réside à Paris, la copine de l'ami
    du mari de Corine.

To describe the tonal patterns of questions embedded in the dialogue, a clear distinction is made between global and local characteristics affecting, respectively, the whole IU or simply a part of it as, for example, the pitch contour associated with the nucleus. Recurrent characteristics, i.e. iterative tonal patterns which are associated with smaller sequences such as stress-groups, are also taken into account since they also make up utterance intonation.

RESULTS AND DISCUSSION
We begin with some preliminary remarks about stress in French. Besides nuclear stress and emphatic stresses which are beyond the scope of this study, French possesses both primary and secondary stresses (Pasdeloup, 1990; Di Cristo, forthcoming).

Secondary stress, when present, generally affects the initial syllable of lexical units in, whereas primary stress occurs regularly on the last full syllable of a group of words, giving rise to a right-headed structure (Di Cristo & Hirst, in press). Since the main cue for rhythmic stresses is pitch prominence (Rossi & Di Cristo, 1980), we used the term Tonal Unit, (TU) to refer to what we have called the stress-group here (Hirst & Di Cristo, 1984) . Only TUs ending with a primary stress will be considered in this paper.

Let us consider first as a reference for a comparison the basic IU of a simple declarative utterance corresponding to a single information-unit. The tonal configuration of such an IU (Figure 1a) can be described as globally rising-falling. The initial rise which constitutes the onset pitch accent of the utterance is aligned with the first accented syllable and the pattern finishes on an extreme low pitch associated with the nucleus. A downtrend can also be observed joining the maxima of the utterance

As regards the recurrent pitch pattern, it can be accounted for by a general rule which specifies a rising pitch movement (from low to high) at the end of each TU, except the last one, so that the template of this iterative TU can be defined as [L H].

IUs in question structures can be classified into two types depending on the direction-rising or falling- of the final pitch contour. For yes-no Qs, which belong to the "final-rising" type and which are characterised by a globally rising-falling-rising pattern, it is possible to formulate the following rules.

If the IU contains one or two TUs, its pitch pattern, with the exception of the final rise, is similar to that of the declarative utterance. On the other hand, if the IU is formed by more than two TUs (Figure 1b), the recurrent pitch pattern of TUs between the first (which also exhibits an onset pitch accent similar to declaratives) and the last (which contains the final rise) is different from that of a corresponding declarative, consisting of a sequence of lowered pitches or downstepped tones , so that the template of such an UT can be defined as [D].

It is noteworthy that this description also applies to IUs of the "final-rising" type which are embedded in more complex question structures and which correspond, for example, to the first term of an alternative Q (such as: "*La voisine de la cousine de l'amie de Sylvie* ou la copine de l'ami du mari de Corine?") or to the rhematic part of a Left-dislocated Q (such as: "La voisine de la cousine de l'amie de Sylvie, *elle habite en Italie?*")
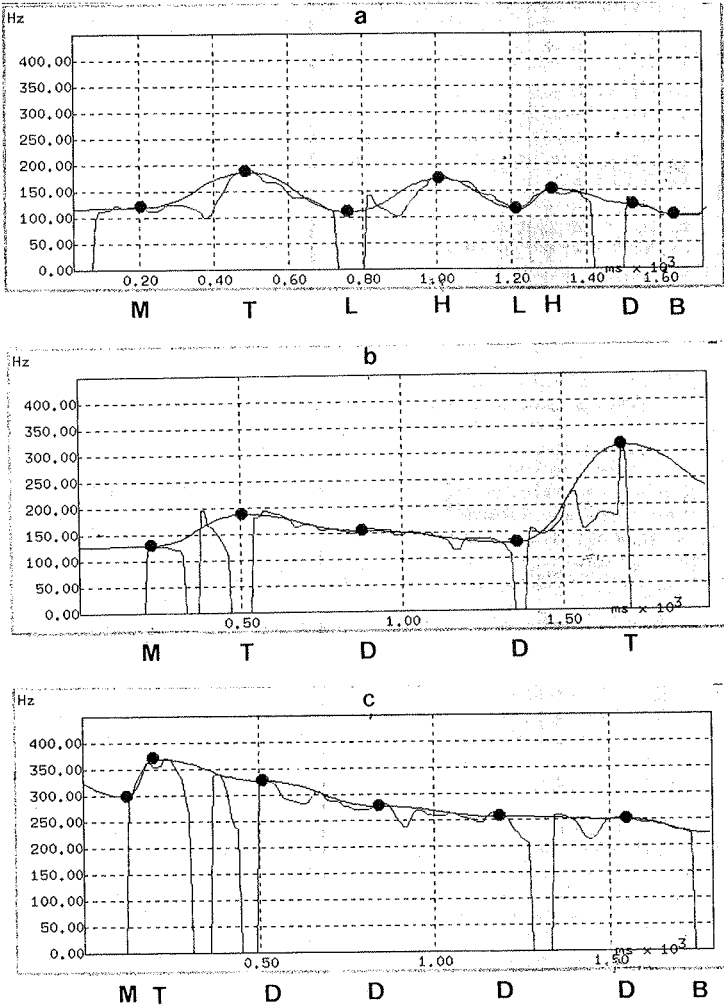
Figure 1. *Observed and modelled Fo curves with the INTSINT coding (Hirst & Di Cristo, fothcoming) of the target points: M id, T op, B ottom, Lower, H iger, Downstepped and Same. a) declarative utterance: "La voisine de la cousine de l'amie de Sylvie" (Sylvie's friend's cousin's neighbour), b) yes-no Q.: "La copine de l'ami du mari de Corine?" (Corine's husband's friend's girlfriend ?) and c) elliptical Q.: " Et la copine de l'ami du mari de Corine?" (What about Corine's husband's friend's girlfriend ?).*

This downstepping pattern in questions with a final rising contour has already been described in a previous study (Hirst & Di Cristo, 1984). Something similar seems to be implied by the decription proposed by Martin (1981) which accounts for a difference in the prenuclear pitch pattern of French utterances as conditioned by the form of the final falling or rising contour, appealing to a general principle of "contour opposition"

If this were the case, we should expect questions with a final falling contour to show recurrent rising prenuclear pitch movements, just like declaratives. This is not what we obseve however for IUs in question structures which belong to the "final-falling" type", such as elliptical Qs (e.g.: "Et la copine de l'ami du mari de Corine?"), the second term of alternative Qs (e.g.: "La voisine de la cousine de l'amie de Sylvie *ou la copine de l'ami du mari de corine*?") or the thematic part of left-dislocated Qs (e.g.: " *La voisine de la cousine de l'amie de Sylvie*, elle habite en Italie?") and which exhibit a global pitch pattern which is either rising-falling, or simply falling, depending on the place of the onset pitch accent. In fact, it is particularly interesting to observe (figure 1c) that these IUs, which all end either with a conclusive fall (mainly when they conclude a turn-unit) or with no final contour at all (when they are embedded in an utterance) are also characterised by a recurrent downstepped pitch pattern. The regularities which have been shown in the present paper seem consequently suggest that the downstepping pattern in fact constitutes a tonal feature of questions in French and not simply an anticipatory feature of a following rising contour.

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