

# THE INTERROGATIVE INTONATION OF DYIRBAL

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**ABSTRACT** - Dyrbal interrogative intonation phrases are analysed to determine the intonational cues a listener uses to differentiate between declarative and interrogative utterances. Results thus far obtained are presented.

## INTRODUCTION

The attention given to intonation in Australian Aboriginal languages has been quite minimal to date. The results of my quantified analysis of the declarative intonation of Dyrbal were presented in a previous paper (King, 1992) and in a revised and more detailed form in my MA thesis (King, 1994). This paper examines the interrogative intonation of Dyrbal and gives the phonetic implementation rules for deriving the surface  $F_0$  contours.

Dyrbal is a language of the Innisfail area of North Queensland, a grammar of which was published in 1972 by R.M.W. Dixon. The data used in this analysis was taken from two texts recorded by Dixon in the 1980s. The texts are two conversations involving four male speakers.

## PROCEDURE

Twenty-two semantically-defined questions were extracted from the texts. Each question was a complete intonation phrase. Spectrographic measurements were taken from these interrogative intonation phrases. The interrogative  $F_0$  contours were then compared with those of the declarative intonation phrases in order to determine the cues used by listeners to differentiate between statements and questions.

Pierrehumbert's (1987) concepts of the high pitch accent and the high final boundary tone (here annotated simply as \* and % respectively) are used to describe the intonation phrases. No evidence has been found for a low pitch accent in Dyrbal (King, 1994).

## RESULTS AND DISCUSSION

"Interrogatives fall basically into two major classes: yes/no interrogatives and question word interrogatives. Question word interrogatives ask for information in a more general way whereas yes/no interrogatives ask for an opinion about the truth of a proposition" (Cruttenden, 1986: 161). The Dyrbal data contains 10 question word interrogatives and 12 yes/no interrogatives.

The syntax and pragmatics of Dyrbal interrogatives

Dyrbal question word interrogatives contain one or more of the following interrogative forms (Dixon, 1972: 49, 53, 55, 58, 122):

### 1. interrogative verbs

wijamal ~ wijabal (transitive)

wijamaj ~ wijabaj (intransitive)

'do what? / do how?'

## 2. interrogative verb and noun markers

wuj̄nda- + inflection/affix 'where (from, at)?/ to where?/ in which direction?'

### 3. interrogative roots

mij̄na ~ waja	'what?'
mij̄naŋ	'how many?'
mij̄naj ~ mij̄ni	'when?'
waja ~ waju- ~ waj̄-	'who?'

An interrogative clitic *-ma* can be affixed to the end of the first word of a sentence. This clitic qualifies the complete sentence and "questions whether the event referred to by the sentence actually took (or will take) place (Dixon, 1972: 122).

Dyirbal has been regarded as a language in which the speaker has virtually free choice over the ordering of words within an utterance (Dixon, 1972: 148). In King (1994, ch.5) it was shown that although the word order may be *syntactically* free, there is prosodic evidence which suggests that certain *pragmatic* constraints may determine the word order in certain parts of an utterance. Eighty-three percent of the 197 declarative intonation phrases analysed had pitch accents on the first and final words of the utterances which suggests that Dyirbal speakers deliberately position the most salient information at the beginning and the end of an utterance (King, 1994). Seventy-two percent of the interrogative intonation phrases also have accents on the first and final words (every question word in the data is accented). In those cases where it is the second word which is accented, the first word is a particle which has a strong preference for phrase-initial position. Thus there is a strong tendency for the most salient information in interrogative intonation phrases to occur in the phrase-initial and final positions as in the declarative intonation phrases.

#### The *F<sub>0</sub>* courses of Dyirbal intonation phrases

Eighty-five percent of the declarative intonation phrases analysed have declination in the *F<sub>0</sub>* between the tones as in Figure 1 (King, 1994). The intonation phrase in this diagram has an *F<sub>0</sub>* onset of 116Hz which then rises to the 143Hz peak of the first pitch accent at csec 17. The *F<sub>0</sub>* then steadily declines by 50Hz to the onset of the second pitch accent at csec 80. From this point the *F<sub>0</sub>* rises to 143Hz at the peak of the second accent at csec 102 before again declining to 65Hz at csec 174 (there is a perturbation in the *F<sub>0</sub>* before the offset of the utterance at csec 193).

In contrast to these declarative contours, the *F<sub>0</sub>* declination is suspended in 86% of the interrogative intonation phrases in the corpus, as in Figures 2 and 3. The intonation phrase in Figure 2 has two pitch accents (as in Figure 1) but there is no decline in the *F<sub>0</sub>* between the pitch accents. The *F<sub>0</sub>* has an onset of 117Hz and remains relatively level until the onset of the first pitch accent of 123Hz at csec 24. The *F<sub>0</sub>* then rises to 147Hz at csec 37 for the peak of the first pitch accent. The *F<sub>0</sub>* remains around that level (except for the perturbations due to the articulation of the segmentals) to midway into the vowel of the first syllable of the second accented word before declining to the 79Hz offset of phonation at csec 103. Fifty-five percent of the questions analysed have this type of *F<sub>0</sub>* contour. Figure 3 shows an intonation phrase in which there is no declination until a perturbation on the final consonant. The *F<sub>0</sub>* begins at 97Hz and rises continuously to 164Hz at csec 44. The *F<sub>0</sub>* remains at that level (apart from perturbations) for 18 csecs before an inaudible decline to the offset of phonation at csec 72 (144 Hz). This intonation phrase terminates in a high final boundary tone (%). The *F<sub>0</sub>* in twenty-seven percent of the interrogatives forms this type of contour. Both of the above *F<sub>0</sub>* contour types occur in both question word and yes/no interrogatives.

This suggests that the presence or absence of *F<sub>0</sub>* declination in an intonation phrase is a major cue to a listener's differentiation between declarative and interrogative utterances in Dyirbal.

## Final boundary tone

A terminal rise in  $F_0$  has been reported for interrogatives in many languages, particularly yes/no questions (Cruttenden, 1986: 162). Only 6 (3 question word and 3 yes/no questions) of the 22 interrogative intonation phrases (27%) have a rise in the  $F_0$  to a final boundary tone as in Figure 3. This proportion of intonation phrases is no greater than that of the declarative intonation phrases in the corpus which terminate in a final boundary tone. This result may be due to the small interrogative corpus but it does suggest that a terminal rise may not be such an important cue to questions as it is in some other languages.

## Phonetic implementation rules

The following derivations demonstrate how phonetic implementation rules can account for the varying surface intonation contours in the corpus. The Tonal Rule states how the tones, [L] and [H], are associated to the pitch accents and the boundary tones while [L] deletion accounts for the suspension of declination in the interrogative utterances.

### Tonal Rule:

- (a) associate an [LHL] sequence to a pitch accent



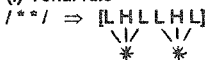
- (2) associate [H] with a boundary tone



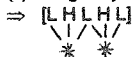
The derivation of the three surface contour types illustrated in Figures 1,2 and 3:

### 1. Derivation of the surface contour in Figure 1:

- (i) Tonal rule

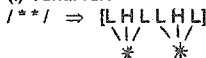


- (ii) Obligatory Contour Principle (Goldsmith, 1190:309-318):

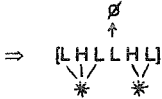


### 2. Derivation of the surface contour in Figure 2:

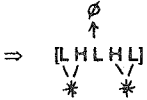
- (i) Tonal rule



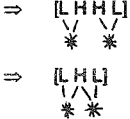
(ii) [L] deleted following an adjacent [L]:



(iii) [L] deletion between [H]s:

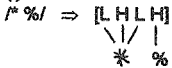


(iv) Obligatory Contour Principle:

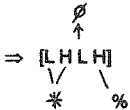


### 3. Derivation of the Fo contour in Figure 3:

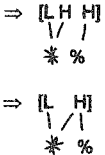
(i) Tonal rule



(ii) [L] deletion between [H]s:



(iii) Obligatory Contour Principle:



### CONCLUSION

The final Fo rise does not appear to be such a major cue for interrogative utterances as is the suspension of Fo declination. The latter provides a distinct cue for the listener to differentiate between a question and a statement. More analysis on these preliminary results may reveal further cues to interrogative utterances.

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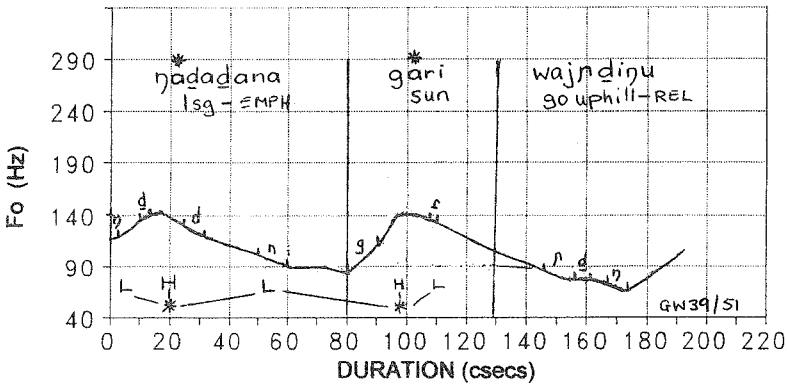


Figure 1. F<sub>0</sub> course of a declarative intonation phrase containing two pitch accents.  
 'I only went up there while the sun rose a bit'.

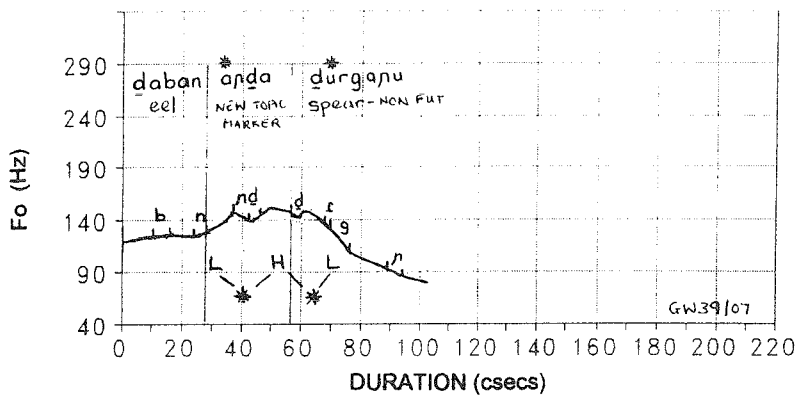


Figure 2. Fo course of an interrogative intonation phrase containing two pitch accents. 'You speared eels?'

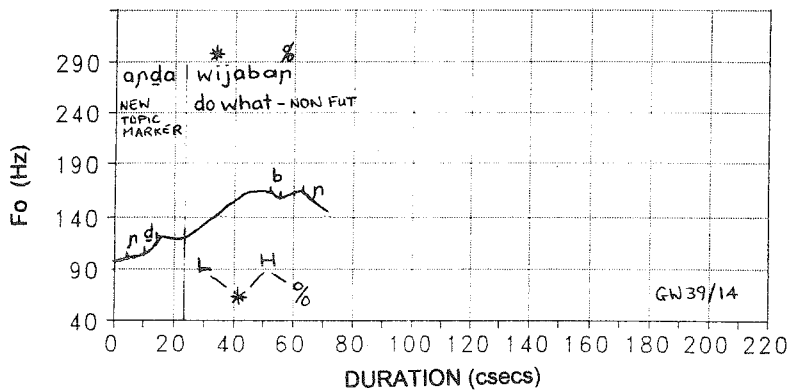


Figure 3. Fo course of an interrogative intonation phrase containing one pitch accent and a final boundary tone. 'And what did you do to it?'