

ANTONIO MANGIA LA ZUPPA INGLESE  
PHONETIC AND PHONOLOGICAL ASPECTS OF ITALIAN  
SENTENCE INTONATION

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ABSTRACT

Within the framework of a phonosyntactic model of Italian sentence intonation, pitch movements of stressed syllables can be predicted from the syntactic structure (if congruence is assumed between syntax and prosody). New intriguing data seems to contradict some theoretical predictions. It is shown here that the observed facts can be better understood using the principle of eurhythmicity.

INTRODUCTION

The description of sentence intonation, as shown by the already existing mass of literature in the domain, has been the aim of many theoretical approaches. In the present paper we will be dealing with the phonosyntactic model of sentence intonation which operates on the specific relations of dependency existing between the syntactic and the prosodic structure of the sentence.

The model [1],[2] is based on the fact that stressed syllables are perceptually the most prominent. This reduces the continuum of Fo, intensity and duration to sequences of prosodic contours located only on stressed syllables. It is important to notice that the model deals with pitch changes and not differences in pitch levels.

Each prosodic contour can be described phonologically by means of specific phonological features, which have been postulated as follows [3]:

[± Extreme] : the contour attains an extremely low (in the case of statements) or an extremely high (in questions) frequency level as compared to the other contours.

[± Rising] : when the fundamental frequency rises or falls.

[± Ample] : when the melodic variation is large (or restrained) as compared to the variation of similarly rising or falling

contours.

The phonosyntactic model of sentence intonation has also been applied to Italian [4], and two rules are used to determine the prosodic structure of an utterance :

- Rule A indicates a contrast in slope. If the final contour (denoted C0) is falling, then the contour located to its left and at the same level in the prosodic structure (denoted C1) is rising.

e.g. Antonio mangia  
C1 C0

- Rule B indicates a difference in the amplitude of melodic variation. This second rule differentiates the melodic contours of two prosodic words, which are at different levels in the structure. In other words, if C0 is falling and C1 is rising, than C3 equally rising and located to the left of C1 is [- Ample].

e.g. La casa di Antonio non ci piace  
C3 C1 C0

[ + Rising ]	[ + Rising ]	[ - Rising ]
[ - Ample ]	[ + Ample ]	[ + Extreme ]
[ - Extreme ]	[ - Extreme ]	

In more recent work [5] possible variations concerning the prosodic contours of Italian sentence intonation were reported. However, this paper deals with new intriguing data which has not been observed previously, and seemed at first puzzling. By comparing two Italian sentences having the same subject noun phrase composed of only one word, but different object noun phrases, we have noticed that the initial prosodic contour located on the stressed syllable of the subject noun phrase was rising

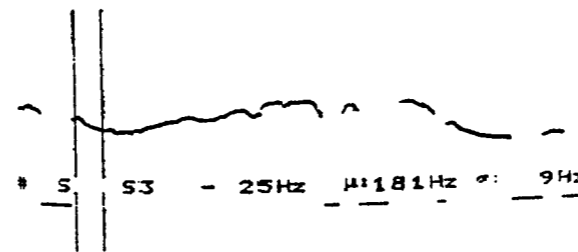
in the first case and falling in the second.

In other words in a sentence such as :

Antonio mangia la zuppa  
-----  
12 cs 10 cs contour duration  
31 Hz -14 Hz Fo variation  
313 Hz 175 Hz Fo level

the stressed syllable of "Antonio" bears a rising prosodic contour, whereas in the following sentence the initial prosodic contour is falling (we exclude here any focusing effect involving a falling contour on the stressed syllable of "Antonio") :

Antonio mangia la zuppa inglese  
-----  
10 cs 10 cs 10 cs  
-25 Hz +29 Hz -6 Hz  
181 Hz 194 Hz 138 Hz



Within the framework of the phonosyntactic model of intonation, pitch movements of stressed syllables can be predicted from the syntactic structure of the sentence, if congruence between the syntactic and the prosodic structure is assumed. However, it has been suggested recently [6] that speakers sometimes prefer a prosodic structure with a rhythmically balanced division of the prosodic words to another prosodic structure, congruent to the syntactic structure but rhythmically unbalanced. In other words, if we release the constraint of congruence, a reasonable criterion for choosing a specific prosodic structure from among all the possible patterns could be based on eurhythmicity.

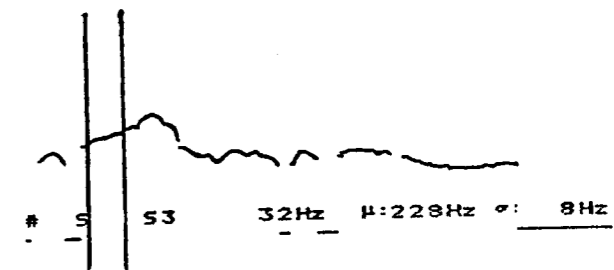
The hypothesis of eurhythmicity favours prosodic structures that balance the number of syllables of the prosodic words within a sentence. The sentence mentioned above can thus be pronounced by using two different prosodic structures

(we indicate the number of syllables below each prosodic group) :

a. Congruence between syntax and the prosodic structure is maintained.

Antonio mangia la zuppa inglese  
-----  
12 cs 12 cs 14 cs duration  
+32 Hz -37 Hz -12 Hz Fo variation  
228 Hz 184 Hz 144 Hz Fo level

-----  
3 11 8  
-----  
2 6  
-----  
3 3



If congruence between the two structures is maintained, the result is a rhythmically unbalanced division of the prosodic words at the first level in the structure (8-3=5 syllables difference).

b. A eurhythmic prosodic structure is preferred.

Antonio mangia la zuppa inglese  
-----  
-----  
5 6  
-----  
3 2 3 3

If the constraint of congruence is released and the principle of eurhythmicity is applied, the number of syllables of the prosodic words at the first level in the structure can be balanced by choosing a different prosodic structure (6-5=1 syllable difference). In order to test the principle of eurhythmicity, we have examined another sentence with a longer verb phrase (square brackets are used to indicate the prosodic structure):

[Antonio] [ha pregato Carlo di scrivergli]

We have observed that in the case of this sentence congruence between the syntactic structure and the prosodic structure is not easily maintained. This might be due to the striking unbalanced

rhythmical effect (10-3=7 syllables difference):

Antonio	ha pregato	Carlo	di scrivergli
-----		-----	
8 cs		14 cs	17 cs
+41 Hz		-19 Hz	-20 Hz
319 Hz		220 Hz	174 Hz
-----		-----	
3		10	

The most eurhythmic prosodic structure of the above sentence would be the following (7-6=1 syllable difference) :

* [Antonio	ha pregato]	[Carlo	di scrivergli]
-----		-----	
7		6	
-----		-----	
3		4	

However, as the asterisk shows, this is not possible in Italian.

As it also occurs in French [6] some prosodic structures are unacceptable, because they contradict the syntactic structure of the sentence at the lowest level of the syntactic division. In such case a lowest level syntactic clash (LLSC) appears. When a LLSC occurs a eurhythmic prosodic structure cannot be chosen, because it contradicts the syntactic structure to such a degree that the intonation pattern becomes unacceptable.

We have noticed that speakers tend to choose the following eurhythmic prosodic structure (9-4=5 syllables difference) :

[Antonio	ha pregato	Carlo]	[di scrivergli]
-----		-----	
10 cs		14 cs	9 cs
-23 Hz		+26 Hz	-4 Hz
112 Hz		99 Hz	85 Hz
-----		-----	
3		4	
-----		-----	
9		4	
-----		-----	
4		2	

This rhythmic division is more balanced than the one used when congruence between the syntactic structure and the prosodic structure is maintained.

Our observations show that the prosodic structures of Italian sentences can be independent from syntax, provided that their choice is based on a principle of eurhythmicity that divides the sentence in a rhythmically balanced number of syllables. However, eurhythmic prosodic structures generate acceptable prosodic contours only when the LLSC condition is not violated.

#### REFERENCES

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