The Realization of Semantic Focus and Language Modeling

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ABSTRACT

Italian is a language in which discourse level informational strategies are easily detectable at sentence level. When arguments of a certain predicate do not constitute new information they are adjoined as clitic to the front of the verb; subject arguments constituting the theme of a discourse or text are left unexpressed. All relevant information on the contrary is highlighted means of a variety of structural means: these are usually accompanied by phonetic signals mostly at the level of intonational contours. Semantic focus can be characterized by phonological structure, syntactic structure and pragmatic or full semantic representation. Only emphatic and contrastive focussing requires pragmatic or full semantic representation: this is not generated by available grammatical components of rule systems for speech synthesis, currently presented in the literature. The two remaining levels of representation, the phonological and the syntactic ones, enable a system of synthesis by rule to realize focus structure in most cases. Relevant semantic information is passed on to the syntactic component from the lexicon, which must be highly articulated. The remaining components activated in a system for synthesis by rule are the morphological and the phonological ones.

Phonetically speaking, the focussed constituent can be characterized by a peak with Low or High tone, aligned with word-stress, accompanied by a preceding H/L tone and sometimes followed by a L tone in coincidence with an Intonational Group boundary. Intonational Groups (IGs) constitute the higher phonological structure and are defined on a syntactic-semantic level, as the root sentence including the higher S node and its complements and modifiers. Moreover, we found out that to obtain a satisfactory definition of focus the highest-lowest peak in F0 value is not sufficient as an acoustic correlate. Focus is defined as a relation over two adjacent tonal assignments, in terms of the rate/s of change of the F0 curve.

INTRODUCTION

In a previous paper[1] we distinguished between Phonological Focus (FF) which gives rise to unmarked Focus Assignment Rules (FAR), and Logical Focus (LF) which gives rise to marked FAR. The former constitutes a case of default sentence level rule which associates a certain basic pitch contour with each Intonational Group(IG). Basic intonational contours of a certain language are usually defined generalizing over a set of illocutionary types (or tunes as defined in[2]) which are language-specific. In Italian there are at least the following: declaratives, questions, exclamatives and parentheticals. IGs constitute a syntactic-semantic level, as the root sentence including the higher S node and its complements and modifiers.

Logical Focus (LF) is conceived as the pitch induced by syntactically governed discontinuities of constituents which can and usually are - affected by discourse level rules, as to their interpretation. These structures are however detectable at sentence level and give rise to a syntactic representation in which grammatical functions are assigned to constituents which do not occupy their canonical position in superficial or constituent structure. FF and LF generate focus structures which define the boundary of a sense unit at a discourse grammar level: with FF focus structure includes the arguments of the predicate as they are normally associated by lexical frames, where syntactic or functional subcategorization, selectional restrictions and other feature information is listed for each lexical entry. In the case of LF this is also taken into account, plus the marked structures of Italian in terms of syntactic discontinuities. No pragmatic or extragrammatical knowledge is required, however, since no emphatic or contrastive structures are generated by the rules. We take for granted that the system will generate an adequate structural description of marked structures(but see[3]). In order to investigate its relations with an acoustic-phonetic model of focus structure we built a test set made up of sentences including the following structural types:

1. Neutral declarative followed by a subordinate hypothetical clause;
2. Topicalized version of 1.
ANALYZING THE DATA

From a linguistic point of view we can divide sentences into two parts the following and the other preceding the focused constituent. First of all we look at the sentence section following the focused constituent, which on a first encounter we take it to tie with the rightmost T'T/TT' tonal marking. The portion to be concerned with is a single constituent. When we have moved to the next sentence to another: it is constituted by a single constituent, the subordinate clause plus what remains of the major clause, an intrusive topicalization. We next assume that the subordinate clause has been fronted, in sentence 2 the subordinate clause plus the constituent has been extraposed or topicalized, in sentence 3, the presupposed relative clause attached to the extraposed NP subject in sentence 2, the extraposed NP subject in sentence 3, and the right dislocated NP object in sentence 4.

All this sentence material can be treated as follows: As a first approximation we adopt the hypothesis that focus is defined as a relation over a phrase and is marked by a foot, H, a maximum, or a fall to a very low level in the pitch range of the main clause. This is achieved by a preceding or trailing H. The local variation that gives the F contour in a phonological phrase is a function of the second foot of a clause, i.e., the foot that is associated with the rightmost T'T/TT' tonal marking. The portion to be concerned with is a single constituent, the subordinate clause plus what remains of the major clause, an intrusive topicalization. We next assume that the subordinate clause has been fronted, in sentence 2 the subordinate clause plus the constituent has been extraposed or topicalized, in sentence 3, the presupposed relative clause attached to the extraposed NP subject in sentence 2, the extraposed NP subject in sentence 3, and the right dislocated NP object in sentence 4.

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is extraposed beyond three sentence boundaries, as shown below:

We define a Phonological word as a structural component of IGs made up of one stressed lexical element, the head of the PW, preceded by as many unstressed lexical elements as there are within a Phonological Phrase. Phonological Phrases in turn correspond to major syntactic constituents (see Selkirk, 1984).

BIBLIOGRAPHY

[1] Delmoote R., A Phonological Processor for Italian. in Proc. 1st Meeting European Chapter of the ACL, Paris, 26-34.

This characterization of F+ variations in terms of half tones has been suggested to me by G.A. Mian and G. Tisato each half-tone corresponds to ΔF/F=6%.

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