

Cat_ToBI

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The aim of this talk is to present Cat-ToBI, a unified transcription system for Catalan intonation and its dialectal varieties. A written outline of the basics of the Cat-ToBI transcription system with examples of labeled utterances can be found at <http://seneca.uab.es/atlesentonacio>. Cat-ToBI has been developed on the basis of both existing research on Catalan intonation and the annotation of a corpus collected in 27 locations belonging to the three main geographical varieties of this language: Central Catalan, Northwestern Catalan, and Balearic Catalan. For each dialectal variety, the corpus includes transcribed recordings of subjects participating in the following: (a) An inductive intonation interview which elicits in a semi-spontaneous way a wide variety of statements, yes-no questions, wh-questions, commands, vocatives, and exhortative sentences; several contexts were presented to the speakers and they were asked to reply according to each situation; (b) Map-Tasks; and (c) Open interviews. An interactive map with the results and labeled examples from the survey can be found at <http://seneca.uab.es/atlesentonacio>.

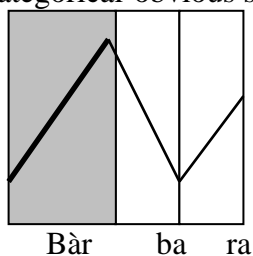
Catalan has six basic pitch accents: H* (!H*, ¡H*), L+H* (L+!H*, L+¡H*), L*, L*+H, H+L*, and, interestingly, ¡H+L* (only Majorcan Catalan). We will present near-minimal pairs which show relevant contrasts in different dialects. For example, in contrast with other Romance languages, Majorcan Catalan has a contrast between H+L* and ¡H+L* which distinguishes wh-questions from yes-no questions. We will briefly report on the results of identification and discrimination experiments that show that the height of the leading tone is the main cue to the distinction between these two types of utterances in Majorcan Catalan (Vanrell 2006).

In Cat-ToBI, we have found two levels of intonational phrasing, the intermediate phrase (marked with the phrase accents H-, !H-, and L-), and the intonational phrase (marked with combinations of those phrase accents with the boundary tones H%, !H% or L%). It is of interest to note Catalan has a wide variety of bitonal and tritonal phrase accents plus boundary tone combinations: LL%, HH%, LH%, HL%, and LHL%. Although the autosegmental-metrical framework suggests that only two level tones (High (H) and Low (L)) are necessary to represent intonational contrasts, there is enough evidence to argue that at a mid boundary tone is needed to label some phonological contrasts in Catalan. Besides having combinations of phrase accents and boundary tones with H and L, this language also has mid boundary tones which contrast with other contours containing H and L boundary tones and which encode a wide variety of meanings. Firstly, there is a sustained mid boundary tone in typical calling contours, which is being transcribed as !H-!H%, following Ladd (1996:143ff). By transcribing the sustained mid tones as a combination of a downstepped phrase accent !H- plus a downstepped boundary tone !H%, we reserve the H-L% boundary type for *those* complex boundaries which involve a real rise-fall gesture. This has also been the strategy adopted by Gr-ToBI (Arvaniti & Baltazani, 2005) and German-ToBI (Grice et al., 2005).

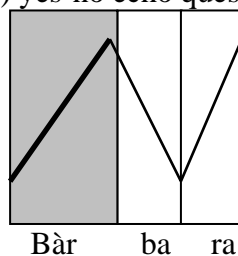
On the other hand, Catalan has several instances of mid boundary tone that are not sustained, that is, that are produced as a rising or falling movement from the nuclear accent to a final mid tone, or as a complex falling and rising movement to a final mid tone. With respect to the latter, (1) exemplifies the contrast between yes-no echo questions and categorical-obvious statements. As (1b) shows, yes-no echo questions (e.g. *(Has dit) la Bàrbara?* '(Did you say) Bàrbara?') are produced with a rising L+H* accent associated with the accented syllable (*Bàr*), followed by an L target associated

with the first posttonic syllable, *-ba-*, (the phrase accent), and an H boundary tone associated with the last unstressed syllable. By contrast, as (1a) shows, categorical-obvious statements (e.g. *(Home), la Bàrbara!*, ‘(Obviously), Bàrbara!’) are produced with the same rising L+H* accent (*bàr-*) followed by a complex falling and rising movement to a mid tone. Thus, the crucial difference between echo questions and categorical-obvious statements lies in the height of the sentence-final boundary tone: whereas echo questions are produced with a sentence-final high boundary tone, obvious statements are produced with a mid boundary tone.

(1) (a) categorical-obvious statement

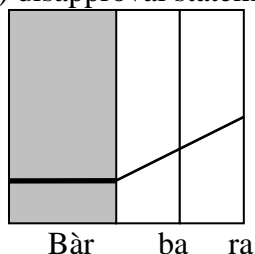


(b) yes-no echo question

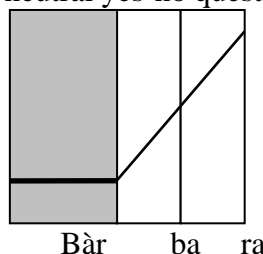


Catalan has another contrast involving mid boundary tone configurations: a rising movement to a final mid tone and a rising movement to a final high tone, as illustrated in (2). While neutral yes-no questions (e.g. *(És la) Bàrbara?* ‘(Is it) Bàrbara?’) are produced with a nuclear L* accent followed by an H-H% boundary tone associated with the posttonic syllables (2b), disapproval statements (e.g. *(No estic d’acord amb la) Bàrbara* ‘(I disapprove of) Bàrbara’) are realized with a nuclear L* nuclear accent followed by a final rise to a mid tone (2a).

(2) (a) disapproval statement

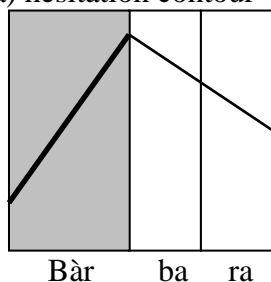


(b) neutral yes-no question

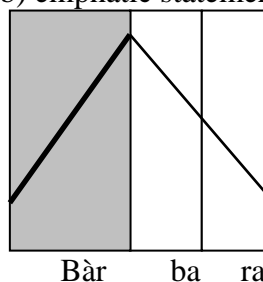


Finally, (3) exemplifies a third contrast involving mid boundary tone configurations. While emphatic statements (e.g. *Bàrbara!* ‘(My God), Bàrbara!’) are produced with a rising L+H* nuclear accent followed by an L-L% boundary tone (see 3b), hesitation contours (e.g. *(Potser la) Bàrbara!* ‘(Perhaps) Bàrbara!’) are produced with a rising L+H* nuclear accent followed by a falling movement to a final mid tone (see 3a).

(3) (a) hesitation contour

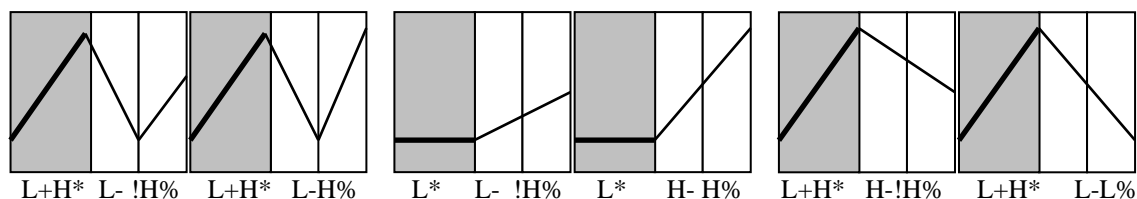


(b) emphatic statement



We propose to encode the difference between “sustained” mid tones (typical of calling contours and ‘chanted tunes’) and “dynamic” mid tones as a tonal difference in the phrase accent. To indicate that the boundary tones are sustained, phrase accents will be signaled as being downstepped (as in the vocative example, !H-!H%); by contrast, a “dynamic” movement is indicated through the use of L-!H% and H-!H%, meaning an interpolation. The transcription proposed for the abovementioned contrasts is as follows, where phonetic implementation rules will guarantee that the phonetic realization of the combination L-!H% is different depending on the preceding target pitch accent:

(4)



In order to prove that the change from a high (or a low) boundary tone to a mid boundary tone is perceived categorically, we are currently undertaking several identification experiments with the three minimal contrasts discussed in this abstract. Though our proposal solves the transcription problem originated by the presence of a mid tone level in the system, the use of the downstep feature leads to an overuse of a mechanism that was originally invoked in tone languages to express the effect of automatic lowering of high tones in an H-L-H sequence, and that was then adopted by the AM model to refer to the lowering of successive high tone targets within a prosodic phrase in downstepping contours. While in the stepping contour the progressive lowering of f0-levels on the strong syllables of successive accented words is modelled by a downstep rule, the alleged presence of downstepped accents implies a phonological use of this same feature. As has been recently pointed out by Ratchke & Harrington (2006a, 2006b), “if we allow the system to contrast H+L* and H+!H* pitch-accents, then this means that the frequency scaling of the (starred) tones that are associated with the accented syllable is no longer phonetic as argued in e.g., Pierrehumbert (1980), but is implicitly phonological because there is now a paradigmatic contrast between three tonal levels: high-star in (L+)H*, low-star in H+L* and effectively a mid-star in H+!H*.”

In sum, the present Catalan data challenge the assumption of the AM system that frequency scaling of the H and L tones is predictable from phonetic factors and controlled by a system of rules. In our view, in order to make the system more transparent and precisely descriptive we should acknowledge that intonation languages might need more than two level tones, as has been recently argued in work by Lee (2003) on Korean boundary tones. While the presence of mid tones (M) could be used for phonological contrasts in scaling, the downstep feature !H could be reserved for its original stepping mechanism and to encode predictable scaling relations among H tone targets.

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