"Tonal density index in Mande and beyond"

Tonal languages differ by tonal density (concept proposed by Gussenhoven (2004); later on, in favour of the tonal density pronounced Hyman (2009, 2011a). This concept makes it possible to operate over more subtle differences than the dichotomy of the tonal / non-tonal. Languages which traditionally were described as having 'musical accent' or 'pitch accent', from this point of view are defined as languages with low tonal density. Languages with high tonal density employ all or almost all tone-bearing units for tonal oppositions: there are languages with the tonal density close to 100%. It is suggested to introduce a new parameter, namely the Tonal Density Index (TDI), which is the ratio between the number of tones (or tonemes, i.e. meaningful tones, or melodies) and the number of segmental units. The numeric value of the TDI will show more precisely the importance of tones for coding values in a particular language. The key notions for the TDI counting are the following:

Toneme. A toneme is a meaningful tonal contour, i.e. a contour which is relevant for the contrast of lexical or grammatical meanings. Contextually and positionally conditioned (and, therefore, predictable) tonal contours are not considered as tonemes.

Tonal domain. Tonal domain is a segmental chain on which a toneme is realized.

Marked tone. There are numerous languages with two contrastive tone levels where one tone (most often, high) can be regarded as marked. In such languages, only marked tones should be counted. In the languages where only marked tones are counted, the notion of tonal domain seems irrelevant. There are however many languages with two level tones where analysis in the terms of "marked vs. default tones" seems unfitting.

Basic segmental unit (BSU) for the TDI can be a mora or a syllable. For syllable-counting languages (where a syllable equals a mora) the numeric values are the same in both cases, but they diverge for mora-counting languages. In fact, both mora and syllable are relevant as a BSU, the question is in their operability: in some languages, segmentation of a text into syllables may be problematic (see, for example, Hyman (2011b), and in some others, it may be difficult to define the number of morae. However, the syllable as a basic segmental unit for our TDI counting seems to be more universal unit.

The TDI shows the number of tonemes (or marked tones) per 100 syllables. In a preliminary way, three tonal types of languages are defined, in correlation with the numerical value of TDI. Analysis of tonal systems of some Mande languages and calculation of TDI is suggested.

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