

Modeling cross-linguistic pitch-range effects for tonal implementation

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This paper is concerned with the scaling of pitch accents and corresponding abstract register lines as a reference for the tonal makeup of intonation phrases. We will propose an OT account to capture cross-linguistic differences in pitch range. It is well-known that information structure affects the tonal structure of an intonation phrase. Focus tends to raise a high tone of a pitch accent in languages like English or German (Eady & Cooper 1986; Féry & Kügler, under revision), or to raise the tonal range in tone-languages like Mandarin Chinese (Xu 1999). In addition, in intonation languages post-focal deaccentuation occurs. In other languages focus appears to affect the pitch range of post-focal constituents by lowering it to such an extent that pitch accents still can be realized (Hellmuth 2006 for Egyptian Arabic; Patil et al., submitted, for Hindi).

Apart from information structural effects on the realization of tonal structures, languages also differ prosodically with respect to other factors such as downstep or pitch accent distribution. Downstep directly refers to the pitch register, and seems to be an unmarked default pattern in German and Hindi, while other languages may not employ tonal assimilation to such an extent. Comparing pitch accent distribution, under certain pragmatic conditions constituents may or may not receive a pitch accent. In languages like German and Hindi, for instance, in the unmarked case, i.e. in an all-new context, every prosodic domain receives a pitch accent. In case of pragmatically marked structures, German employs deaccentuation, while Hindi still realizes pitch accents, though in a compressed pitch range.

We propose a set of constraints (1) that may account for this kind of variation across languages (2). The OT model of pitch range is based on experimental data from German and Hindi elicited in production experiments that were designed to test the effect of focus on the tonal realization. In addition we will discuss further languages within this possible set of constraints to show the potential cross-linguistic perspective behind this proposal. For that we rely on data published elsewhere that deal with the effects of focus, deaccentuation, pitch accent realization and downstep.

(1) **Proposed constraints:**

REALIZEPITCHACCENT: Realize a pitch accent on every minimal prosodic domain of accent realization

DOWNSTEP: Realize a downstep pattern over the whole intonation phrase

COMPRESSGIVEN: Compress the pitch range on given constituents

(POSTFOC) – on post-focal given constituents

(PREFOC) – on pre-focal given constituents

RAISEFOCUS: Raise the register on focused constituents

(2) **Constraint hierarchies comparing Hindi and German:**

a. HINDI (based on data from Patil et al., submitted):

REALIZEPITCHACCENT >> DOWNSTEP >> COMPRESSGIVEN(POST&PREFOC) >> RAISEFOCUS

b. GERMAN (based on data from Féry & Kügler, u. rev.):

COMPRESSGIVEN(POSTFOC) >> REALIZEPITCHACCENT >> COMPRESSGIVEN(PREFOC) >>

RAISEFOCUS >> DOWNSTEP

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