0. Introduction

1. Non-tonal accents
   1.1. Duration as a cue to prominence
   1.2. Accent-related glottalization

2. Non-tonal boundaries
   2.1. Duration (final lengthening)
   2.2. Voice quality (breathy/creaky termination)

3. Non-local voice quality features

0. Introduction

As in the other two documents for the workshop, the purpose of this document is to propose cross-linguistic labels for phonologically contrastive phrase-level prosodic features. Whereas the other two documents deal with F0 events (pitch accents and boundary tones), here we address other features besides pitch that may contribute in a contrastive way to the intonational meaning of utterances.

In addition to or instead of pitch movements, accentual prominence and phrasal boundaries are often signaled by other means, including duration and voice quality. Non-F0 prosodic features such as duration or voice quality have been shown to work either together with or independently from pitch to convey a varied set of pragmatic functions across languages.

The prosody of a language may also involve metrical contrasts at the phrase level with variable acoustic realization, where a difference in F0 contour may be only one possible way to realize the contrast.

In some tone languages, the functions assigned to intonation may be (almost) entirely fulfilled by non-tonal means, such as lengthening and devoicing (Hyman & Monaka 2008).

We will discuss first the use of non-tonal features as markers of prominence (or accent) and secondly the use of these features either as boundary markers or to convey non-prominence-related prosodic meanings.

1. Non-tonal accents

1.1. Duration as a cue to prominence

A number of languages have been reported to use a localized increase in duration to indicate phrase-level prominence even in the absence of any pitch movement associated with the accented syllable.

Bolinger already remarked that in English accentual prominence may be conveyed solely by durational means “In an utterance like the following, I was so-o-o-o unhappy! (level pitch) there is no pitch prominence at all, and the cue to the accent on so is length alone” (Bolinger 1986:16). That is, in the analysis of English
intonation, together with an inventory of several pitch accents, it may be useful to recognize the existence of an accent that is expressed by increased duration, without any associated pitch event. (On the role of duration in conveying prominence in English see also Mo (2010), Cole et al. (2010). For German see Baumann et al. (2007)).

Duration alone or in combination with a pitch movement may signal focus or a specific type of focus. This also appears to be true of many other languages, although the distribution and function of durational accents may differ crosslinguistically. In Spanish, for instance, the last accented word in the phrase in a declarative sentence very frequently does not show any visible pitch event (i.e. the pitch contour is interpretable as interpolation between a preceding pitch accent and a final low boundary), but its accentedness is conveyed by duration. In Spanish also, verum focus is conveyed by extra-lengthening of the syllable with nuclear stress (Escandell-Vidal 2011). In addition, in rhetorical style, pitch-accents can be anchored to a syllable other than the lexically-stressed syllable (either the first syllable of the word or two syllables before the stressed syllable). The lexically stressed syllable, however, preserves its prominence by lengthening (Hualde & Nadeu 2014).

Questions:
- Should we introduce a label for accentual prominence provided exclusively by duration, without an associated pitch movement? Perhaps: *:
- In some languages obligatory lengthening may occur in conjunction with a specific pitch movement (so that presence vs absence of lengthening establishes a contrast in pragmatic meaning). Any examples? If this is the case, should this be indicated as a feature of the accent?, e.g. L:*+H?

1.2. Accent-related glottalization

Localized glottalization may serve as a contrastive accentual feature. In conservative varieties of Latvian there are three lexical accents, where one of the accents (“broken”) is a falling accent accompanied by glottalization (Kariņš 1997). Since the general shape of the broken accent is the same as that of the falling (“acute”) accent, HL, glottalization is clearly a phonological feature. Although in Latvian glottalization (realized as either a glottal stop or as creaky voice) is a lexical feature, in principle, in other languages it may function to signal prominence at the phrasal/intonational level. [Any examples?]

Questions:
- How should glottalization be indicated when it functions as a prosodic feature related to accent? (e.g. to distinguish the glottalized from the non-glottalized falling accent in Latvian).
- Are other types of non-modal voice quality, such as breathy voiced ever used as accentual features, e.g. to signal prominence?
2. Non-tonal boundaries

Intonational boundaries are often signaled by non-tonal means, including final lengthening, final devoicing and non-modal voicing. The use of these non-tonal features may have linguistic or sociolinguistic relevance.

2.1. Duration (final lengthening)

A number of languages have been reported to use final lengthening as the only cue to interrogativity or in combination with other cues. For example, Rialland (2007) reports 23 languages in a database of African languages that use final lengthening to signal questions, including two, Natemi (Gur) and Wobé (Kru), where final lengthening is the only question marker. Yes-no questions are also marked by final lengthening, in Lekeitio Basque, contrasting with unmarked declaratives, which have the same falling pitch movement, but lack final lengthening (Hualde et al. 1994:70) and Asturian (Ibero-Romance, Muñiz Cachón & AlvarellosPedrero 2008).

As for the use of duration in conjunction with a specific boundary tone, for Mongolian, Karlsson (2004) proposes the symbol H:L% to indicate a lengthened final boundary.1

Questions:
- Should the IPrA provide special symbols or diacritics to indicate non-tonal features used to convey phrase final boundaries? Perhaps, e.g. L% vs L:%?

2.2. Voice quality (breathy/creaky termination)

Rialland (2007) reports a “breathy termination”, together with final lengthening as a marker of interrogativity in Moba (Gur). In other Gur languages questions have final contour (L%) in addition to a lengthened and breathy final vowel.

Creaky voice is often found in association with a low-toned ending. Is this feature used for marking phrase boundaries in any language?

Questions:
- Is the IPA diacritic for breathy (/creaky) voice sufficient for this localized use of breathy (/creaky) voice for intonational purposes?

3. Non-local voice quality features

Voice quality, including glottalization and creaky and breathy phonation have been reported to convey the meaning of incredulity in a number of languages, including Korean (Jun & Oh 1996) and Catalan (Crespo-Sendra et al. 2013). Jun & Oh (1996) report that the Korean speakers in their study who used breathy voice in incredulity questions employed this mechanism through the whole utterance. This

1 A different issue is the prolongation of a tone. Maekawa et al. (2002) propose using ‘>’ as an “extender” to indicate the prolongation of a boundary tone, so that, for instance, H% > indicates that a final high boundary has scope over more than one syllable.
is different from the localized uses of non-F0 features discussed in the preceding two sections.

Questions
-Since the IPA already provides diacritics to indicate non-modal voice quality, perhaps no other symbols need to be developed for its presence with pragmatic function. Or, would it be useful to have symbols to mark the beginning and/or end of the part of the utterance realized with non-modal voice quality?

References
Mo, Yoonsook. 2010. Prosody production and perception with conversational speech. Doctoral diss., Univ. of Illinois at Urbana-Champaign.
