

Evidence from Egyptian Arabic for the role of the foot in intonational phonology

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This paper explores two notions of the foot, currently in use in the intonational phonology literature, in the light of evidence from the intonational phonology of Egyptian Arabic (EA). Although it is rarely appealed to, this paper argues that there is a role for a ‘metrical foot’ (Hayes 1995) in intonational phonology, as the target of phonological association of pitch accents, in at least some languages. In contrast, the role of the ‘accentual foot’ (Abercrombie 1967) is called into question. The implications for systems of intonational transcription are discussed, in particular how to decide the correct domain within which local variation in the f_0 should be taken into account, and thus transcribed, in the early stages of an intonational analysis.

In Autosegmental-Metrical (AM) theory the intonation contour is analysed as a sequence of tonal events (pitch accents and boundary tones), associated to strong or edge positions in metrical/prosodic structure (Beckman & Pierrehumbert 1986 [BP86], Pierrehumbert & Beckman 1988 [PB88], Ladd 1996). Prosodic domains needed for analysis of English intonation are Intonational Phrase (IP), Intermediate Phrase (iP) and Prosodic Word (PWd) [BP86], with the foot only referred to in discussion of the association target of starred tones in pitch accents; in English this target is the foot, with association passed on to the head syllable [PB88]. The role of the foot in the ‘ToBI’ tradition is thus limited to that of a ‘metrical foot’ whose function is to participate in the stress assignment algorithm; it has no further role in intonational phonology, since target association is to the head syllable, not to the foot itself. More recent work suggests that peak alignment does indicate association of phonological tones with some prosodic domain, rather than to positions in the linear segmental string (Ladd 2006), with some authors arguing that the domain of local tonal association is the syllable (Xu & Liu 2006, Prieto & Torreira 2007, for Mandarin and Spanish respectively). A competing view of the foot in intonational phonology, the ‘accentual foot’, is defined as a domain containing an accented syllable + all following unaccented syllables up to the next accented syllable (Abercrombie 1967). An example of use of this type of foot is the ‘Implementation Domain’ (ID) of IViE transcription (Grabe 2001), within which local variations in the f_0 contour are transcribed (for mapping to phonological categories on a separate tier). For English the ID equates to a left-headed accentual foot defined as above, whereas Post & Delais-Roussarie (2006) analyse French using a right-headed accentual foot, with the ID defined as an accented syllable + all preceding unaccented syllables.

In Egyptian Arabic (EA) the role of the ‘metrical foot’ is well-established; the EA stress algorithm builds bimoraic trochees left-to-right within the PWd, assigning primary stress to the head of the rightmost foot (Hayes 1995). Hellmuth (2007a) tested the hypothesis that the domain of local tonal association of EA pitch accents is the syllable by examining the fine-grained alignment of f_0 peaks in different syllable types; in EA it is possible to test whether the foot or the syllable is the relevant domain by comparing peak alignment in monosyllabic (CVC or CVV) vs. bisyllabic (CV.CV) feet. The results showed consistent peak alignment within the second mora of the bimoraic foot, rather than within the syllable. The EA facts thus motivate a role for the ‘metrical foot’ in intonational phonology, as the domain of local tonal association in EA, and arguably in a wider sample of languages, contra claims that association to the syllable is universal (Xu & Liu 2006). Is there a role for the ‘accentual foot’ in EA? In fact, in EA the culminative domain within which accents are distributed can be equated straightforwardly to a domain in metrical structure, namely the PWd (Hellmuth 2007b). If we forego the assumption that feet are necessarily demarcative (headed at one extreme edge), then for EA we can dispense with the accentual foot and recognise the PWd instead. In this scenario the accentual foot is simply an interaccentual interval, rather than an element of phonological structure. Nonetheless the accentual foot notion, in the form of the ID, has proved invaluable in the establishment of phonological categories (e.g. in the IViE system). We assess the practical merits of redefining the ID either as the domain within which accents are distributed in a particular language (thus it becomes important to establish what this domain is, early on in the work of intonational description) or in a non-language-specific manner (simple adjacent syllables) as in the RaP transcription system (Dilley & Brown 2005).

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