Central claim. This talk demonstrates that tonal contrasts on the surface do not have to imply that a language has lexical tone. This is shown for Uspanteko (Mayan): the language has previously been analyzed as tonal; yet we argue that a foot-based approach to the contrast leads to a more insightful analysis of the patterns. This metrical analysis is in line with current foot-based analyses of tone accent oppositions in Franconian (e.g. Hermans 2009; Author 2011, to appear; Kehrein to appear; Van Oostendorp, to appear), Scandinavian (e.g. Morén-Duolljá 2013), and Scottish Gaelic (Iosad 2013).

Background. Uspanteko shows a remarkably rich interaction between the location of stress, vowel quality, and pitch accent / tone, which has been described in detail in Bennett & Henderson (2013; henceforth B&H). The basic empirical facts are as follows (see (1) for examples): i) stress falls on one of the two last syllables; ii) heavy syllables are restricted to the final syllable and always receive stress (indicated by underlining: 1a, b, c, d); iii) in sequences of two light syllables, the vowel with the higher sonority receives stress in disyllabic words (1e, f) – if the vowels have equal sonority, both syllables can be stressed (1 g, h); iv) in trisyllabic words, stress is always final (1i); v) some words carry a distinctive high tone, which is restricted to the penultimate vocalic mora of a word and can only occur in stressed syllables (1 c, d, f, h) – consequently, light final syllables never carry tone, even if they are stressed (1 e, g); vi) if stress is on the penult, the stressed syllable always has a high tone (1 f, h); vii) heavy final syllables sometimes have a high tone on the first mora (1 c, d), or not (1 a, b).

Why a tonal analysis is problematic. B&H provide a detailed tonal analysis of the patterns but also point out that the occurrence of tone is highly predictable; in most instances, it follows from vowel sonority and the number of syllables. As a consequence, the authors have to express how tone can be lexical and post-lexical ‘simultaneously’. To capture the predictable patterns, B&H need to refer to a highly complex OT constraint, which is given in (2). The authors acknowledge that “we should prefer an account with many separate constraints over an equivalent account that has one constraint with many clauses” (pp. 622); yet they argue that such an account cannot be provided (at least not under their assumption that H is a lexical tone; author).

A foot-based approach – representations. A more elegant analysis of the patterns can be provided if we recognize that tonal oppositions in (stressed) syllables do not necessarily have to be attributed to lexical tone but can be a phonetic / phonological correlate of underlying contrasts in foot structure. Notably, this is largely in line with B&H, who themselves argue that foot structure plays an important role in Uspanteko. Similar to B&H, I assume that the language has iambic and (even) trochaic feet. Iambs are always headed by the rightmost syllable, while troches can be headed by a syllable (σ-trochee, two light σ’s, V.V) or a mora (µ-trochee, heavy final syllable, VV). Following Author (2011, to appear), foot heads constitute head domains, which comprise the foot head itself as well as metrical structure dominated by it. In feet with a syllabic head (iamb, σ-troches), the mora(s) dominated by the head will be part of the head domain (and therefore metrically ‘strong’). In µ-troches, the first mora is the head (‘strong’), and the second mora is the dependent (‘weak’). In (3), heads are indicated with superscript pluses, and dependents with superscript minuses; elements in head domains are indicated with straight lines, elements outside of head domains have dotted lines (all of these are purely notational devices).

A foot-based approach – tonal associations. I argue that word prominence in Uspanteko is marked with a H*µL pitch accent, a cross-linguistically common melody (the L can also be seen as a foot-final boundary tone); (vocalic) moras are TBUs. The grammar governs how tones associate with moras, depending on the respective foot type. The crucial constraint for the mapping is *Ft-Hd/L (de Lacy 2002), which, in our interpretation, states that low tones are banned from foot head domains. In the case in hand, this means that a low tone cannot associate to a mora in a foot head domain (= strong moras with straight association lines). This leads to the mappings in (4): H* always associates with the foot head. In trochaic feet (a, b), the low tone associates with the weak branch of the foot. In iambic feet (c), moras in stressed syllables (one or two) are dominated by the foot head and thus strong; consequently, L cannot associate. Instead it remains floating (indicated with a circle around the L) and lowers the pitch of the associated high tone. As a consequence, the high tone in iamb is phonetically less distinct than in troches. As we show, it follows directly from the mapping that ‘distinctive’ high is always restricted to the penultimate mora and that stressed penults always have tone.

A foot-based approach – distribution of word stress. The analysis also provides a straightforward explanation for the distribution of word stress (partially in line with B&H): i) all feet have to be aligned with the right word edge (ALL-Ft-RIGHT), which derives the two-syllable window; ii) trisyllabic words cannot have penultimate stress because the foot head must be aligned with the first or last syllable of a prosodic word (EDGEMOST); c) the observed sonority effects follow from interactions of vowel quality and headedness in metrical feet (Kenstowicz 1997, de Lacy 2002).
Tone as a correlate of contrastive foot structure: the case of Uspanteko

(1) a. [alkˈ waal] ‘son’
   b. [ʃən kleen] ‘lame’
   c. [in.wúux] ‘my paper’
   d. [kúuk] ‘squirrel’
   e. [tu.kex] ‘cramp’
   f. [wáli] ‘my daughter in law’
   g. [o.koʃ] ‘mushroom’
   h. [i.wir] ‘yesterday’
   i. [la.xo.ri] ‘today’

(2) PERFECT PROSODIC WORD (PPW)
Assign one violation mark for every prosodic word \( \omega \) that does not meet all of the following criteria:
   a. \( \omega \) is coextensive with a single foot \( F \).
   b. The head syllable of \( F \) (\( \sigma S \)) bears tone.
   c. \( F \) is bisyllabic.
   d. The nucleus of \( \sigma S \) is at least as sonorous as the nucleus of \( \sigma W \), the syllable occupying the weak branch of foot \( F \).

(3) Foot types in Uspanteko
   a. -trochee
   b. -trochee
   c. iamb

   \[
   \begin{array}{cccc}
   \text{F} & \text{F} & \text{F} \\
   \mu & \mu & \mu + \mu - \\
   \text{H*} & \text{L} & \text{H*} \\
   \end{array}
   \]

(4) Tonal mapping in Uspanteko
   a. -trochee
   b. -trochee
   c. iamb

   \[
   \begin{array}{cccc}
   \text{F} & \text{F} & \text{F} \\
   \mu & \mu & \mu + \mu - \\
   \text{H*} & \text{L} & \text{H*} \\
   \end{array}
   \]

References
Kehrein, W., “There's no tone in Cologne: against tone segment interactions in Franconian”, in W. Kehrein et al. [Eds], Segmental structure and tone, Walter de Gruyter, forthcoming.
Oostendorp, M. van, “Tone, Final Devoicing and Assimilation in Moresnet”, in W. Kehrein et al. [Eds], Segmental structure and tone. Walter de Gruyter, forthcoming.