PARTIAL TONE POLARITY AND TONAL FEATURE DECOMPOSITION IN SOPVOMA

Overview: Sopvoma (Mao) is a poorly documented, endangered Tibeto-Burman language spoken in the Indo-Myanmar border, and – unusually – it employs four lexical level tones. We argue that these four tones need to be decomposed into smaller features, drawing on evidence from the rare phenomenon of partial tone polarity in this four-level language, which exhibits a rich microtypology of tonal sub-alternations and natural tone classes. We propose autosegmental representations for this complex tone system, where the four tones arise from two basic elements (H and L) that can occur on two different structural tiers. On this model, analyses of the alternations fall into place with standard constraints once partial underspecification is assumed. Specifically, we argue that the different surface patterns of tone polarity are epiphenomena of distinct processes, namely tone-feature spreading and phonologically conditioned allomorphy.

Data: Sopvoma tones are ExHi /ő/, High /ó/, Mid /ō/, and Low /ò/ (data from own fieldwork). While some suffixes do not alternate (indicating full tone specification), other suffixes surface with different tones depending on the stem they follow, displaying partial tone polarity. In (1a), an ExHi stem triggers suffixal Mid, but in (1d), a Low stem triggers Hi on the same suffix.
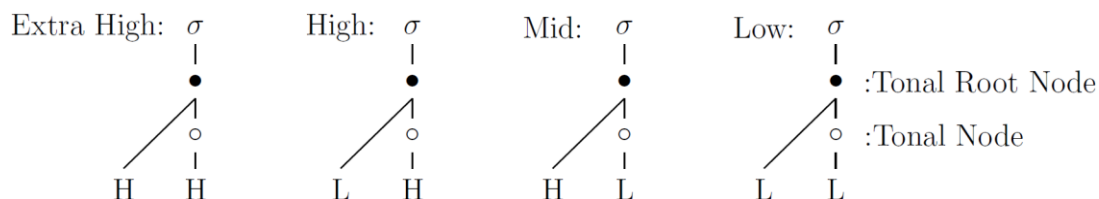
(1)	(2)	(3)	
a) **alő ʃō**	a) alő í	a) **alő wē**	'stand' + PROH/IMP/PROG
b) pé ʃó	b) pé í	b) pé wé	'say' + PROH/IMP/PROG
c) hū ʃō	c) hū í	c) hū wé	'cover'+ PROH/IMP/PROG
d) **krà ʃó**	d) **krà í**	d) krà wé	'cry' + PROH/IMP/PROG

The analysis of such a data is difficult when one assumes that tones are whole indivisible units, since not all instances have a complete spreading of tone like (1b) and (1c).

Asymmetric patterns of tone changes are observed with IMP and PROG suffixes, which also display a type of polarity in that higher stem tones trigger lower suffix tones and vice versa. With IMP (2), the suffix is always Hi except with a Low stem, where it is ExHi (2d). With PROG (3), the suffix is always Hi except with an ExHi stem, where it is Mid (3a). We thus see three distinct groupings of tones, according to which suffix tone they trigger. In (1), ExHi/Mid are opposed to Hi/Low. In (2), ExHi, Hi, and Mid show the same behavior (i.e., triggering Hi) to the exclusion of Low. In (3), Hi, Mid, and Low form another natural class to the exclusion of ExHi. We argue that all three groupings can be seen as natural classes.
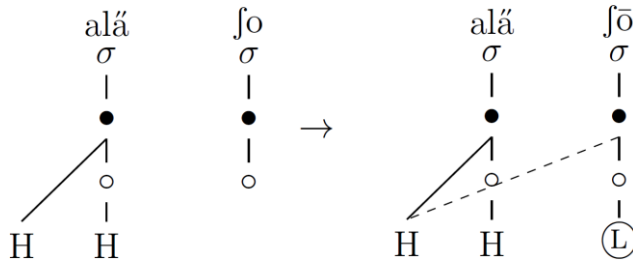
Proposal: Following Meyase's (2021) analysis of the related language Tenyidie, we propose that Sopvoma tones are composed of smaller features of H and L and autosegmentally arranged under two different nodes, as shown in (4).

(4) Autosegmental representation of four phonological tones (Meyase 2021):
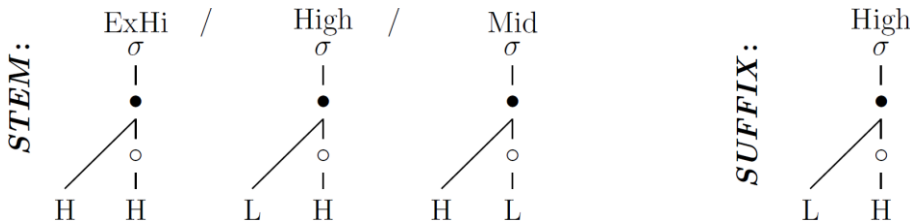

The decomposition and representation then lend themselves to the analysis of the tone alternations in (1) with standard phonological mechanisms. In (5), we illustrate spreading of the (•) node to the tonally deficient suffix while the suffix's empty (○) node is filled by either H or L depending on need to avoid highly marked tones ExHi and Low at the extremes of the pitch range.

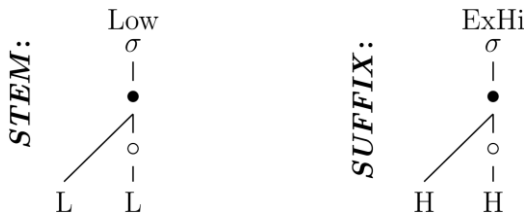(5) *Autosegmental representation of (1a)* /alǎ+ʃo → alǎ ʃõ/:

```
     alǎ        ʃo                     alǎ        ʃõ
      σ          σ                      σ          σ
      |          |                      |          |
      ●          ●         →            ●          ●
     /|          |                     /|         ⌐|
    / ○          ○                    / ○    ‾ ‾ ‾ ○
   /  |          |                   /  |         |
  H    H         H                  H    H        Ⓛ
```

Following (4), the pattern in (2) is represented as in (6):

(6) (a) *Representations for (2a, 2b, 2c)*

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STEM:    ExHi  /    High  /    Mid                    SUFFIX:   High
          σ           σ          σ                               σ
          |           |          |                               |
          ●           ●          ●                               ●
         /|          /|         /|                              /|
        / ○         / ○        / ○                             / ○
       /  |        /  |       /  |                            /  |
      H    H      L    H     H    L                          L    H
```

(b) *Representations for (2d)*

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STEM:    Low                       SUFFIX:   ExHi
          σ                                   σ
          |                                   |
          ●                                   ●
         /|                                  /|
        / ○                                 / ○
       /  |                                /  |
      L    L                              H    H
```

We see that in (6a), ExHi/Hi/Mid tones form a natural class by virtue of containing at least one H feature – regardless of which node it is under. This enables an analysis of (2) as phonologically conditioned allomorphy: a stem containing a H feature triggers a Hi suffix (2a, b, c), while the Low tone triggers ExHi (2d). Likewise, in (3) tones with at least one L feature form a natural class (3b, c, d) vs. ExHi which has no L (3a).

Coherent analyses are not possible with representations like Yip (1980) or Pulleyblank (1986), which rely on four primitives [±upper], [±raised] that cannot capture the observed natural classes. More generally, the Sopvoma case challenges the hypothesis of Hyman (2010) and Clements, Michaud & Patin (2010) that tonal representations need not be further divided; and it provides evidence for phonological polarity as an epiphenomenon rather than a process in itself, *à la* Kenstowicz, Nikiema & Ourso (1988).

References
Clements, Michaud & Patin 2010. 'The Hierarchical Representation of Tone Features.' *Current Approaches to African Linguistics* 1. **Hyman 2010**. 'Do tones have features?' *Tones and features: Phonetic and phonological perspectives*. **Kenstowicz, Nikiema & Ourso 1988**. 'Tonal polarity in two Gur languages.' *Studies in the Linguistic Sciences* 18. **Meyase 2021**. 'Polarity in a four-level tone language.' *Phonology* 38(1). **Pulleyblank 1986**. *Tone in Lexical Phonology*. Reidel, Dordrecht. **Yip 1980**. 'The Tonal Phonology of Chinese', doctoral dissertation, MIT.