Jonathan Amith (Gettysburg College)

**Tonogenesis and Reduplication in Balsas River Nahuatl of Central Guerrero, Mexico**

Several Nahuatl speaking communities in the Balsas River valley of central Guerrero, Mexico, have developed a hybrid stress and tone system from a breathy-voiced coda segment [ɦ], which has been shown to lower F0 in a tautosyllabic vowel, creating a H-L F0 contour beginning on the preceding syllable (Guion et al. 2010). However, the affected Balsas valley communities differ both in the context in which tonogenesis has occurred and its phonetic and phonological realization. In this presentation I begin with a brief overview of Balsas tonogenesis and then focus on the interaction between tone and stress in situations of reduplication.

The simplest manifestation of tonogenesis occurs in trisyllabic, nonreduplicated words. Ahuelicán, Oapan, and Ameyaltepec, three historically related villages, exemplify the three extent patterns found in the tonogenetic group of villages.

| | Historical form | Ahuelicán | Oapan | Ameyaltepec |
|---|---|---|---|---|
| 1 | *nokʷehton 'my pillow' | nó kʷèɦ 'ton | nó kʷe 'ton | no 'kʷe ton |
| 2 | *kʷehtomaλ 'pillow' | kʷèɦ 'to maλ | kʷé to 'maλ | kʷe 'to maλ |
| 3 | *kohkōlli 'grandfather' | kòɦ 'kōɫ li | kó 'kōɫ li | ko 'kōɫ li |
| 4 | *ohtli | òɦ 'tɬi | ó 'tɬi | 'o tɬi |

Ahuelican manifests the most conservative system: retention of *h which triggers a phonologized high-low F0 contour beginning on the syllable preceding that with coda [ɦ] (1). In the analysis presented here, low is specified and both inhibits stress (1, 4; i.e., *[nó 'kʷèɦ ton] and *['òɦ tɬi]) and fails to interact in a "clash avoidance" pattern with stress on the adjacent syllable (2, 3).

Oapan manifests what is hypothesized to be a more developed and fully tonal system. The trigger, *h, has been lost and, along with it, specification of low on a tautosyllabic nucleus (the case in 2, 3, 4). Tone and stress interact in a "clash avoidance" pattern, resulting in a rightward shift of the latter (2). However, clash operates at a moraic level and when the second syllable is bimoraic, stress is retained on the penultimate syllable.

Ameyaltepec is unusual. It is a prehispanic offshoot of Oapan (as is Ahuelicán) although it is embedded in the lands of Tetelcingo, a non-tonogenetic village that has retained *h and has no marked F0 excursions. Ameyaltepec manifests the same word-internal loss of *h as its parent village, Oapan, but it shows none of the F0 excursions that mark the Nahuatl of its two sister villages, Oapan and Ahuelicán. In almost all cases, Ameyaltepec stress is penultimate.

The degree to which the three villages, which exemplify the three extant patterns of the tonogenetic cluster of seven villages, have utilized tone is well illustrated by the interaction of vowel lengthening and tone in the context of reduplication. Nahuatl languages manifest three patterns of reduplication: (1) μ- (monomoraic), (2) μh- (monomoraic with a fixed coda segment), and (3) μμ- (bimoraic). All Nahuatl languages reported to date fill the melody of the reduplicant from material taken from the stem. In the table below, Tetelcingo represents this pattern.

| | Historical form | Tetelcingo | Ahuelicán | Oapan | Ameyaltepec |
|---|---|---|---|---|---|
| 5 | *tla-μ-tsona | tɬatsotsona | tɬātsona | tɬātsona | tɬatsotsona |
| 6 | *nēʧ-μh-tēmowa | nēʧteɦte'mowa | nḗʧtèɦte'mowa | nḗʃtete'mowa | nēʧtete'mowa |
| 7 | *ki-μh-tēmowa | kiteɦte'mowa | kǐɦte'mowa | kǐte'mowa | kitete'mowa |
| 8 | *mits-μh-tēmowa | mitsteɦte'mowa | mìtste'mowa | mǐste'mowa | mitstete'mowa |
| 9 | *ni-μh-nemi | nineɦ'neme | nǐɦ'nemi | nḯne'mi | nine'nemi |
| 10 | *ni-μh-kīsa | nikiɦ'kīsa | nǐɦ'kīsa | nḯ'kīsa | niki'kīsa |

| 11 | *μh-kīsa | kiɦi'kīsa | kìɦi'kīsa | kí'kīsa | ki'kīsa |
|----|----------|-----------|-----------|---------|---------|
| 12 | *ki-μμ-teki | kitē'teke | kitē'teki | kitē'teki | kitē'teki |

The two tonogenetic dialects with F0 excursions have innovated a reduplicant process found uniquely (among all documented Nahuatl languages) in these villages: the melody for the added mora of monomoraic reduplicants (μ- and μh-) can be obtained by vowel lengthening on a short vowel preceding the stem (5 for μ- and 7, 8, 9, 10 for μh-). Absence of preceding vowel (11) or a long preceding vowel (6) require that the stem provide the melody. A preceding short vowel in a closed syllable can also be lengthened (8); in Ahuelicán this has motivated the loss of the required coda segment /h/ as CC codas are prohibited by phonotactic constraint. The realization of tone on the lengthend vowel (7–10) is a descending contour in Ahuelicán and a high or slightly rising tone in Oapan. Similar to example (2), when the penultimate syllable is a short vowel adjacent to the reduplicant, rightward shift of stress occurs in Oapan but not in Ahuelicán (9); shift does not occur if the adjacent penultimate vowel is long (10). Bimoraic reduplication (12) is always realized with stem material. Finally, note that Ameyaltepec (like Tetelcingo) shows no innovation in reduplication despite its historical relation to Oapan and Ahuelicán.

Finally, Oapan has further innovated in the use of tone in reduplicant processes, as evidenced in the following:

|    | **Historical form** | **Oapan** | **Tetelcingo** |
|----|---------------------|-----------|----------------|
| 13 | *tla- μh-oya | tɬaṓ'ya | tɬao'ɦoya |
| 14 | *mits- μh-ita | mitsī́'ta | mitsi'ɦita |
| 15 | *μh-āpolaki | ā́po'laki | aɦāpo'lake |
| 16 | *ni-k-on-μh-tēmowa | nṓntetē'mowa | nikonteɦtē'mowa |
| 17 | *μh-pepetlaka | pḗpe'tɬaka | no equivalent |
| 18 | *tē-μh-tlata | tḗtɬa'ta | tētɬaɦ'tɬata |

With vowel-initial stems, monomoraic reduplication with a fixed coda segment is realized in Oapan as lenghtening and high tone on a short initial vowel (13, 14) and solely as high tone on a long initial vowel (15). Intervocalic /k/ is lost in Oapan, resulting in compensatory lengthening. The long vowel then requires that the melody of the reduplicant mora be obtained from the stem (16). Innovative reduplication of $C_1V_1C_1V_1$ stems is realized as lengthening and high tone in the initial syllable of the stem (17). Finally, in a few limited cases long vowels of a prefix may simply be marked by high tone (no added mora) to signal reduplication (18).

The preceding developments (13–18) are found only in the Nahuatl of Oapan and its associated emigrant communities (Analco and Tula del Río). They suggest a highly innovative system in which tone placement has become part of Nahuatl lexical prosody, independent from the location of the original trigger, *h. The high F0 of Oapan Nahuatl interacts with historical penultimate stress in a clash avoidance pattern while in Ahuelicán Nahuatl it is low tone specification on the nucleus tautosyllabic to coda [ɦ] that seems to motivate a shift to final syllable stress. Finally, the pattern in Ameyaltepec shows only the loss of *h that characterizes its parent village, Oapan. Neither tone nor the reduplication patterns of Oapan and Ahuelicán are present. It is not clear whether Ameyaltepec might have acquired both *h-loss and tone and subsequently regularized stress to the penultimate syllable as a result of contact with Tetelcingo.

**Ref.**: Guion, Susan, et al. 2010. Word-level prosody in Balsas Nahuatl: The origin, development, and acoustic correlates of tone in a stress accent language *Journal of Phonetics* 38:137–66.