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

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Workshop on the Sound Systems of Mexico and Central America
Yale University, 4 to 6 April 2014

Overview

- Embedded in a Nahuatl-speaking region of central Guerrero, Mexico, are seven historically related villages that have developed three distinct manifestations of a hybrid stress and tone system from a breathy-voiced coda segment [ɦ]. This segment has been shown to lower F0 in a tautosyllabic vowel, creating a H-L F0 contour beginning on the preceding syllable.
  - Group 1: Ahuelicán (prehispanic migrants from Oapan)
  - Group 2: Oapan, Tula del Río (19th c. migrants from Oapan), Analco (recent offshoot of Oapan)
  - Group 3: Ameyaltepec (prehispanic "barrio" of Oapan); Oacacingo (unknown historical status)

- Two of the three groups (Ahuelicán and Oapan) have also developed an unusual pattern of reduplication. Nahuatl languages manifest three patterns of reduplication:
  - *μ*- (monomoraic),
  - *μh*- (monomoraic with a fixed coda segment)
  - *μμ*- (bimoraic)

  All other Nahuatl languages reduplicate stem material. These two groups prefer, when possible, to use material left of the stem (S or O prefixes, directional on-, incorporated nouns), lengthening a short vowel (adding *μ*) or (Oapan group), simply marking a preceding long vowel with high tone.

- This presentation explores the history and phonology of tone and reduplication, particularly innovative use in two of the three groups: (1) Oapan Nahuatl and (2) Ahuelicán Nahuatl. The Ameyaltepec group has apparently lost (or had never developed) any tonogenetic phenomena.

Three patterns

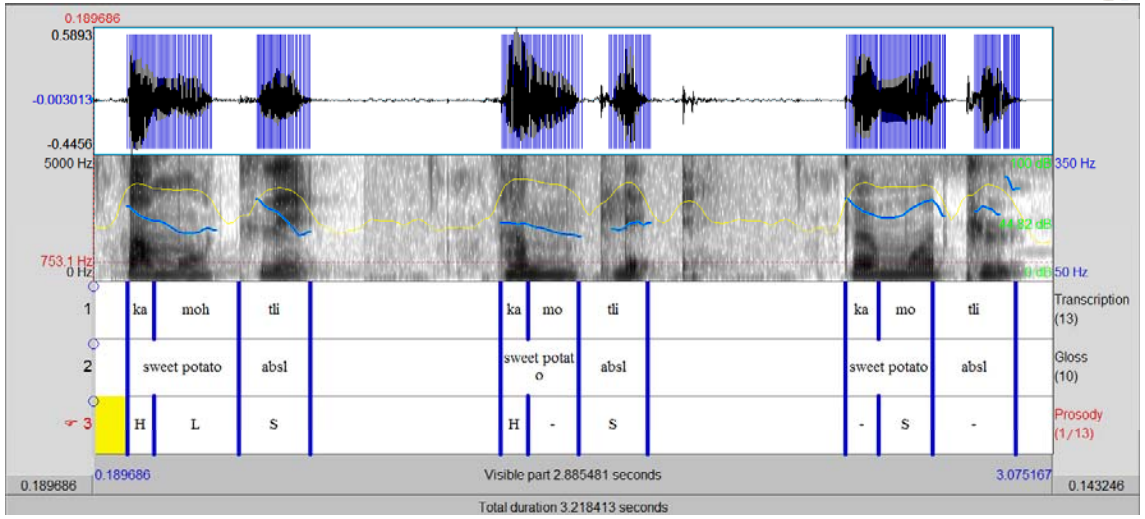
- **Ahuelican (conservative tonogenesis)**
  - retention of **h* the trigger for a phonologized high-low F0 contour beginning on the syllable preceding that with coda [ɦ]
  - low both inhibits stress and fails to interact in a "clash avoidance" pattern with tonogenetic F0 excursions on the adjacent syllable
  - reduplication: C-initial stems realize *μ-* and *μh-* reduplication by lengthening preceding short vowels in preceding open and closed syllables; **h* of *μh-* is lost in closed syllables preceding the stem

- **Oapan (highly innovative tonogenesis)**
  - trigger, **h*, has been lost and, along with it, specification of low on a tautosyllabic nucleus
  - tone and stress interact in a mora-based "clash avoidance" pattern, resulting in a rightward shift of the latter (except in at least one case of leftward shift)
  - reduplication: C-initial stems realize *μ-* and *μh-* reduplication by lengthening short vowels in preceding syllables, both open and close. V-initial stems manifest reduplication by lengthening and assigning H to short vowels and simply assigning H to long vowels.
  - reduplication: on $C_1V_1C_1V_1$ stems infixation C_1V_1 *μh*C_1V_1 overrides reduplication on elements preceding the stem

- **Ameyaltepec (loss of *h and hypothesized "regularizatiion" of stress; non-tonogenetic)**
  - prehispanic offshoot of Oapan (as is Ahuelicán) embedded in the lands of Tetelcingo, a non-tonogenetic village that has retained **h* and has no marked F0 excursions.
  - same word-internal loss of *h as its parent village, Oapan, but without the F0 excursions that mark the Nahuatl of its two sister villages, Oapan and Ahuelicán
  - reduplication: no innovations from expected historical patterns

*Tonogenetic Nahuatl: *h* in trisyllabic words comparing *h coda on second vs. first syllable*

Ahuelicán Oapan Ameyaltepec

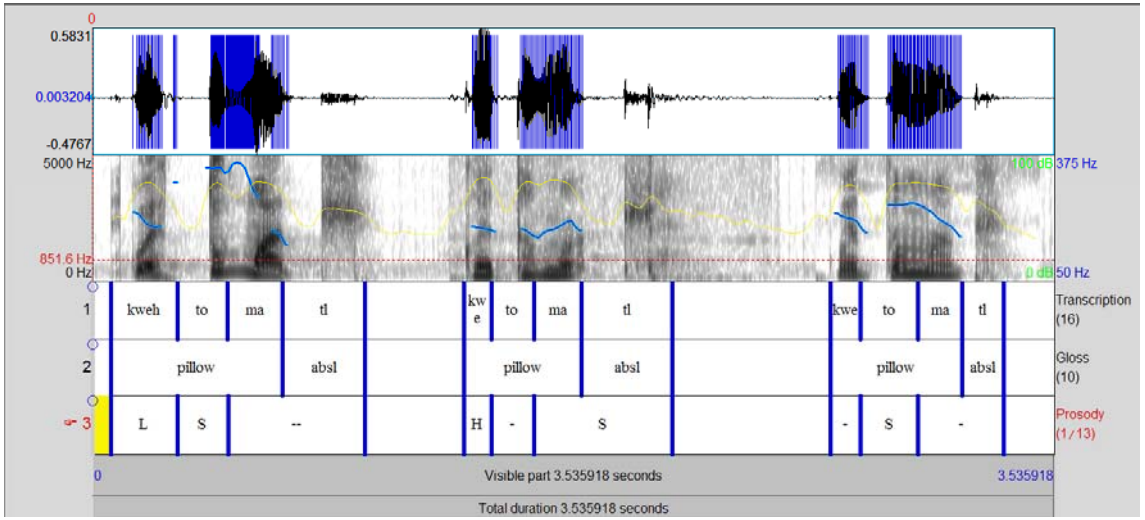


#1 | Coda **h* in the second syllable of a trisyllabic word produces a H-L pattern on the first two syllables. Stress is syllable final though analysis differs for each variant:

Ahuelicán: middle syllable is specified L and precludes stress.

Oapan: stress clashes with H and shifts right to final syllable.

Ahuelicán Oapan Ameyaltepec



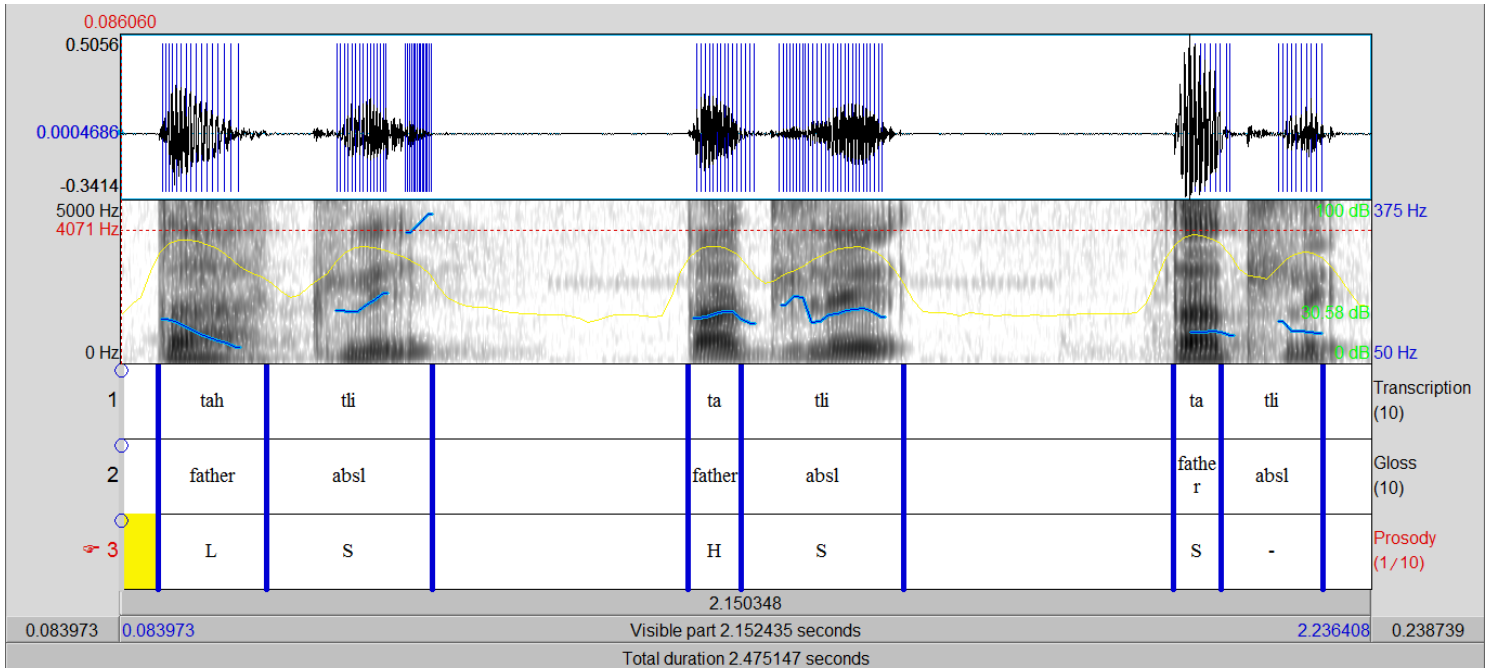
#2 | Coda **h* in the first syllable produces divergent patterns:

Ahuelicán: initial syllable is specified L and stress is realized on second syllable. No H tone.

Oapan: now free from its motivating context (overt coda **h*) initial syllable with coda **h* is realized as H; stress shifts to final syllable.

Impact of **h* in disyllabic words: Three variants

Ahuelicán Oapan Ameyaltepec

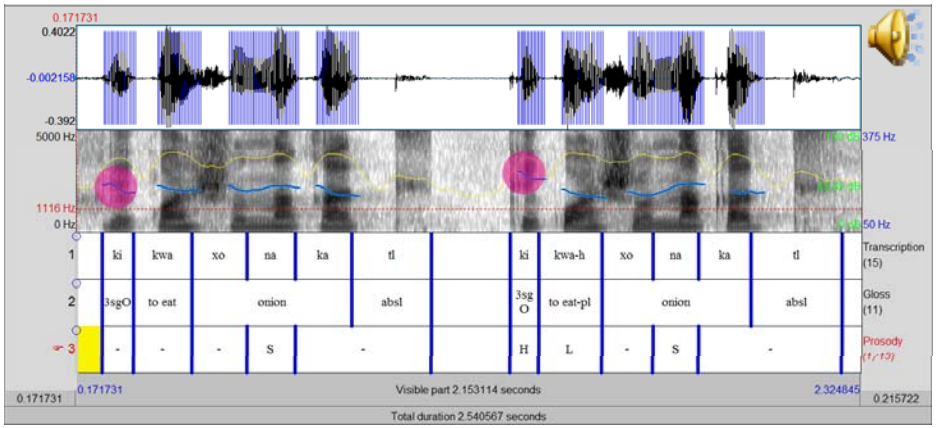


Ahuelicán: **h* coda creates falling pitch on initial syllable (specified L) and stress shifted to final syllable

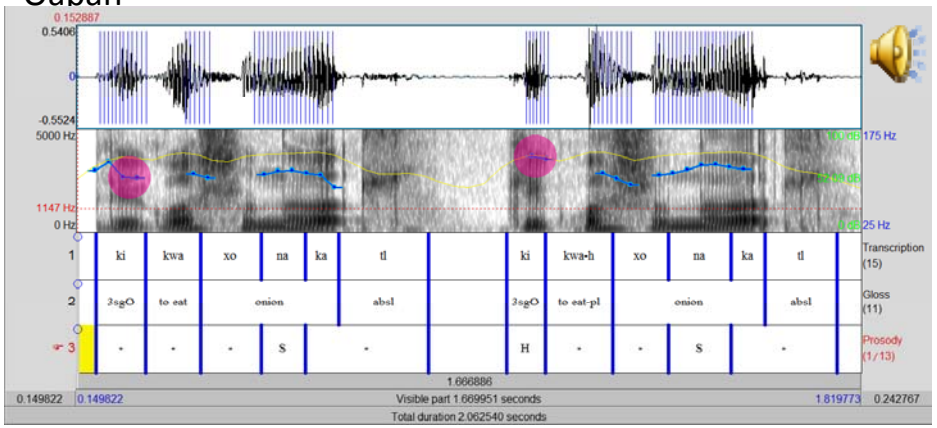
Oapan: **h* coda yields H on tautosyllabic nucleus and stress shifted to final syllable

Ameyaltepec: **h* coda has left no reflex; pattern is penultimate stress typical of Nahuatl

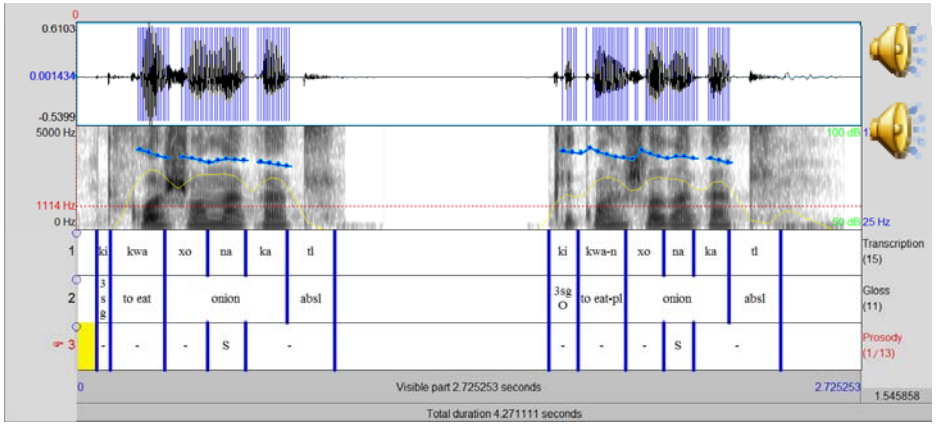
Ahuelicán



Oapan



Ameyaltepec



Realization of phrase-internal coda *-*h* plural marker in three variants

Historically, the plural marker is *-*h*.

- In the tonogenetic variants (Oapan and Ahuelicán) the plural marker -*h* in non-phrase final position has the expected reflex of a H-L sequence ending on the nucleus tautosyllabic to *-*h*. The pitch contour, not the final underlying –h plural marker, is the most salient feature of plural subject.

- In the non-tonogenetic variant (Ameyaltepec) the plural marker -*h* has shifted to a nasal (-*n*). In the absence of tonogenesis this nasal is the most salient marker of subject plurality. There is no notable pitch excursion to accompany plurality.

Summary of **h* and tonogenesis

- Coda *h lowers the pitch on the tautosyllabic nucleus. This is an acoustic phenomenon that is manifested in all Balsas Nahuatl variants, tonogenetic and non-tonogenetic (note that surface /h/ from geminates (kk > hk) are not considered *h although they have the same effect on pitch)

- Although on explanation of tonogenesis posits compensation for loss of **h* coda through phonologization of tone (in Oapan group variants) Ahuelicán has both retained the trigger and developed pitch excursions (tone) that is beyond the simple effect of breathy-voiced coda segment [ɦ].

- Ahuelicán: Syllable with breathy-voiced coda segment [ɦ] is <u>always L and is never stressed</u>. Adjacent syllables (light or heavy) may be stressed

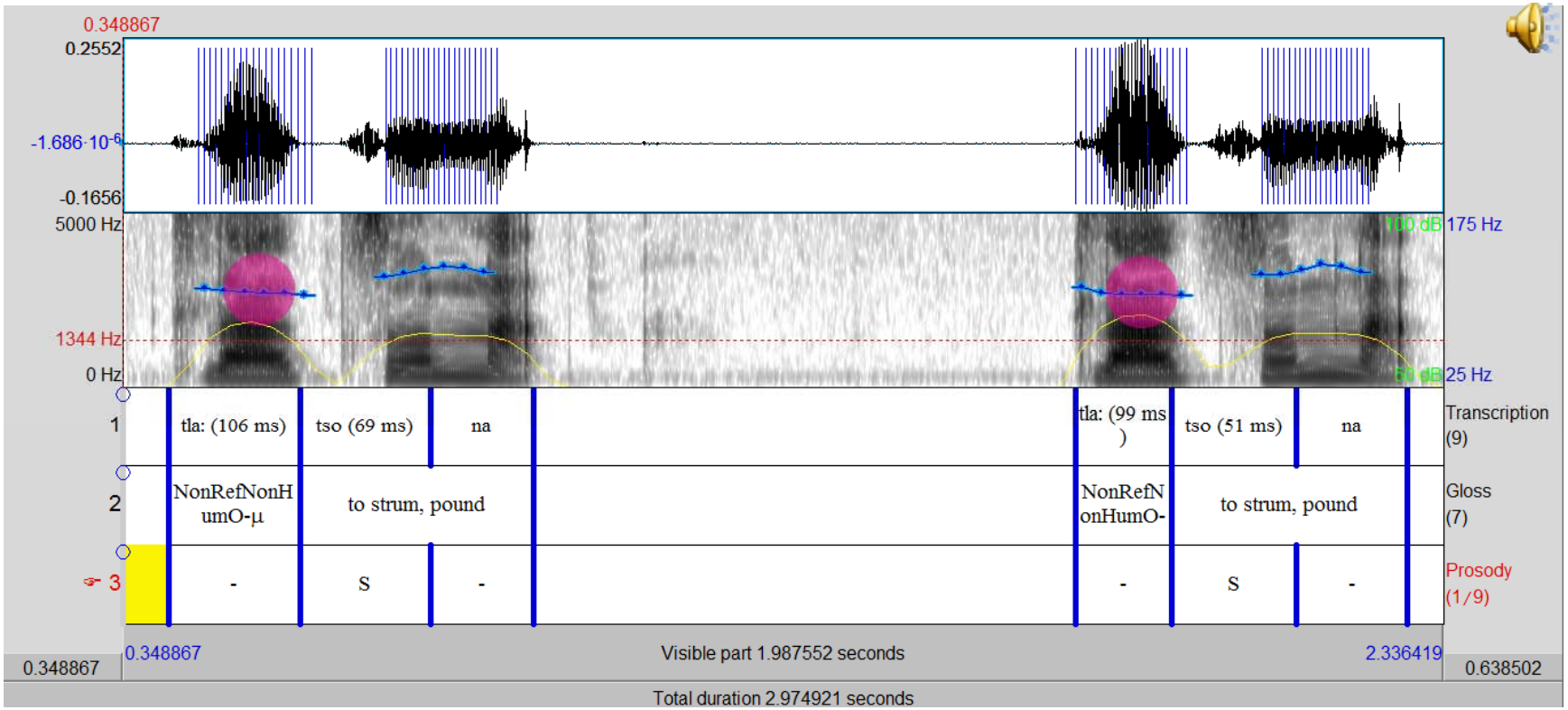
- Oapan: *h (historical breathy-voiced coda segment [ɦ]) lost in all but phrase-final position.

- H tone has become disassociated from its historical position tautosyllable to *h. The nucleus tautosyllabic to *h is now often, not always, H (depending on word syllable structure). <u>When H it cannot be stressed</u>.

Monomoraic reduplicant with no coda segment: *μ-*

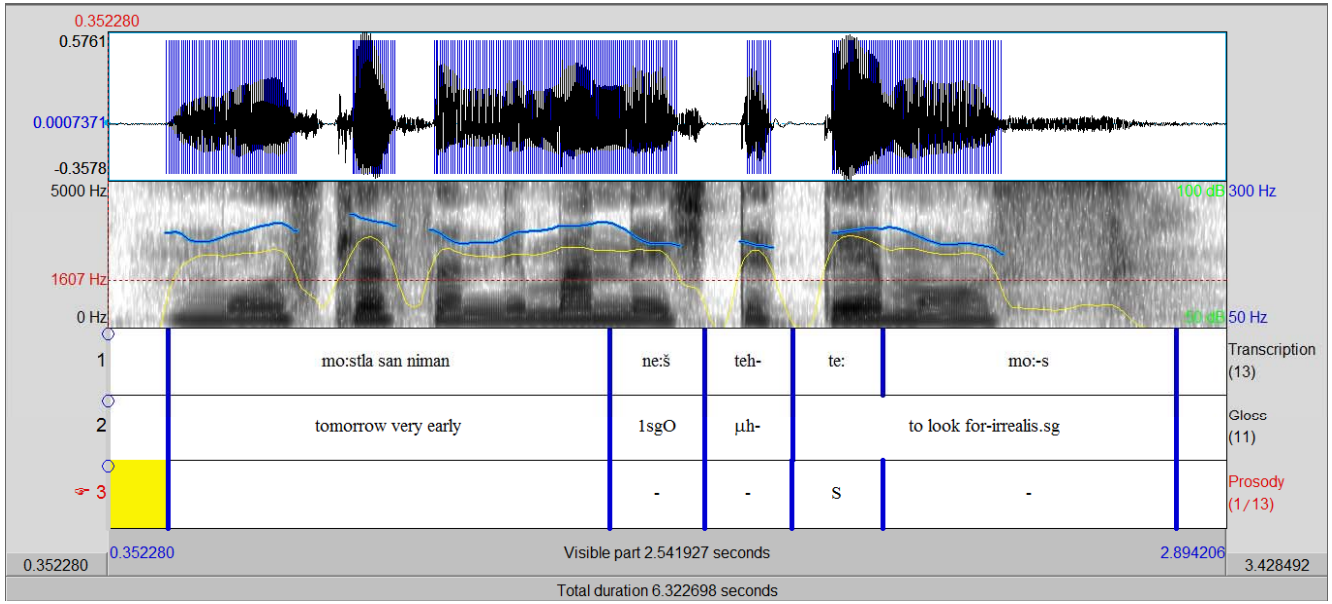
Tla-tso-tsona ('to play music') is realized in Oapan and Ahuelicán as *tlātsona* with melody for *μ* taken from the non-referencial non-human marker *tla-,* the vowel of which is lengthened.

Moreover, in Oapan **tla+μ+tsona* is never realized as *tlatsotsona* always as *tlātsona*

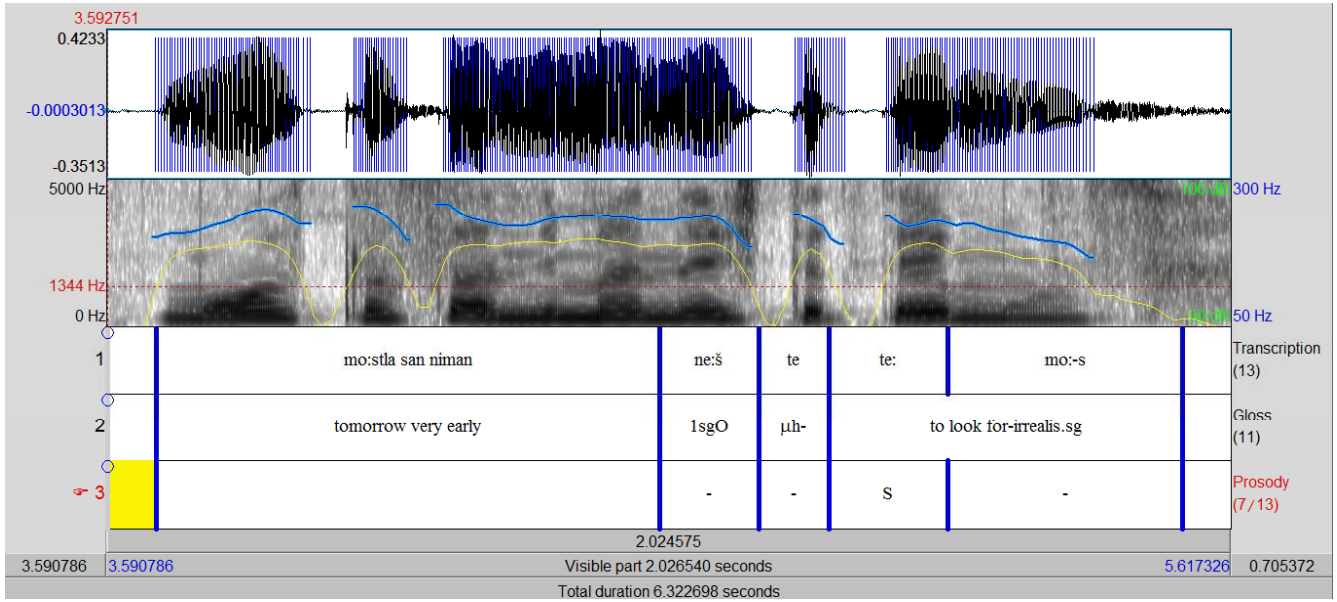


Monomoraic reduplicant with coda segment *µh-* with consonant-initial stems: Non-tonogenetic Nahuatl

San Miguel



Amey.

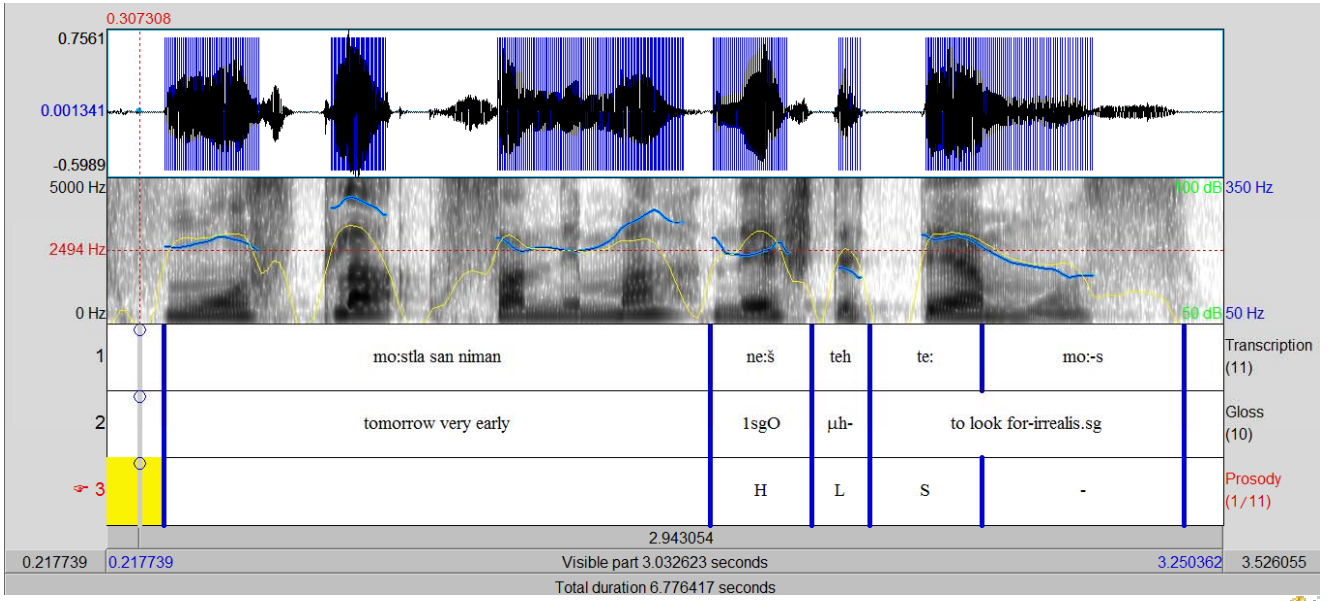


S. Miguel Tecuiciapan: **h* is retained in all contexts, here as the fixed coda segment in the monomoraic reduplicant *µh-*

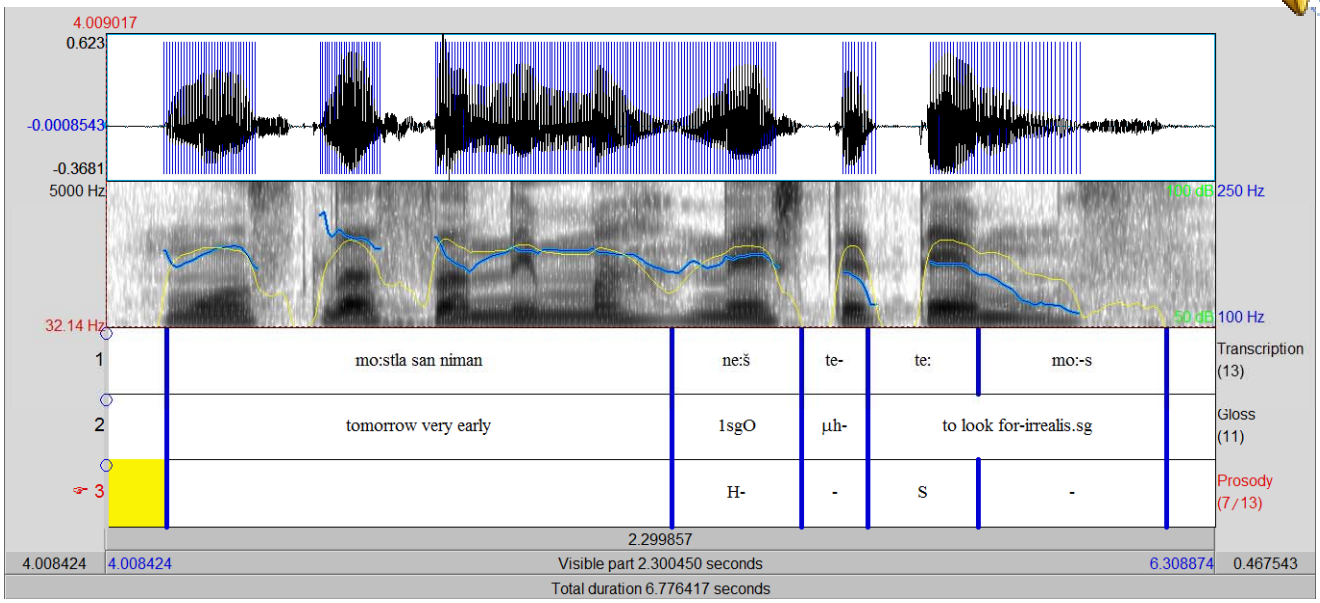
Ameyaltepec: Historically related to Oapan, Ameyaltepec loses **h* in all word-internal contexts though without any tonogenetic implications.

Monomoraic reduplicant with coda segment (*µh-*) with consonant-initial stems and long vowel in syllable preceding stem: Tonogenetic Nahuatl

Ahuel.



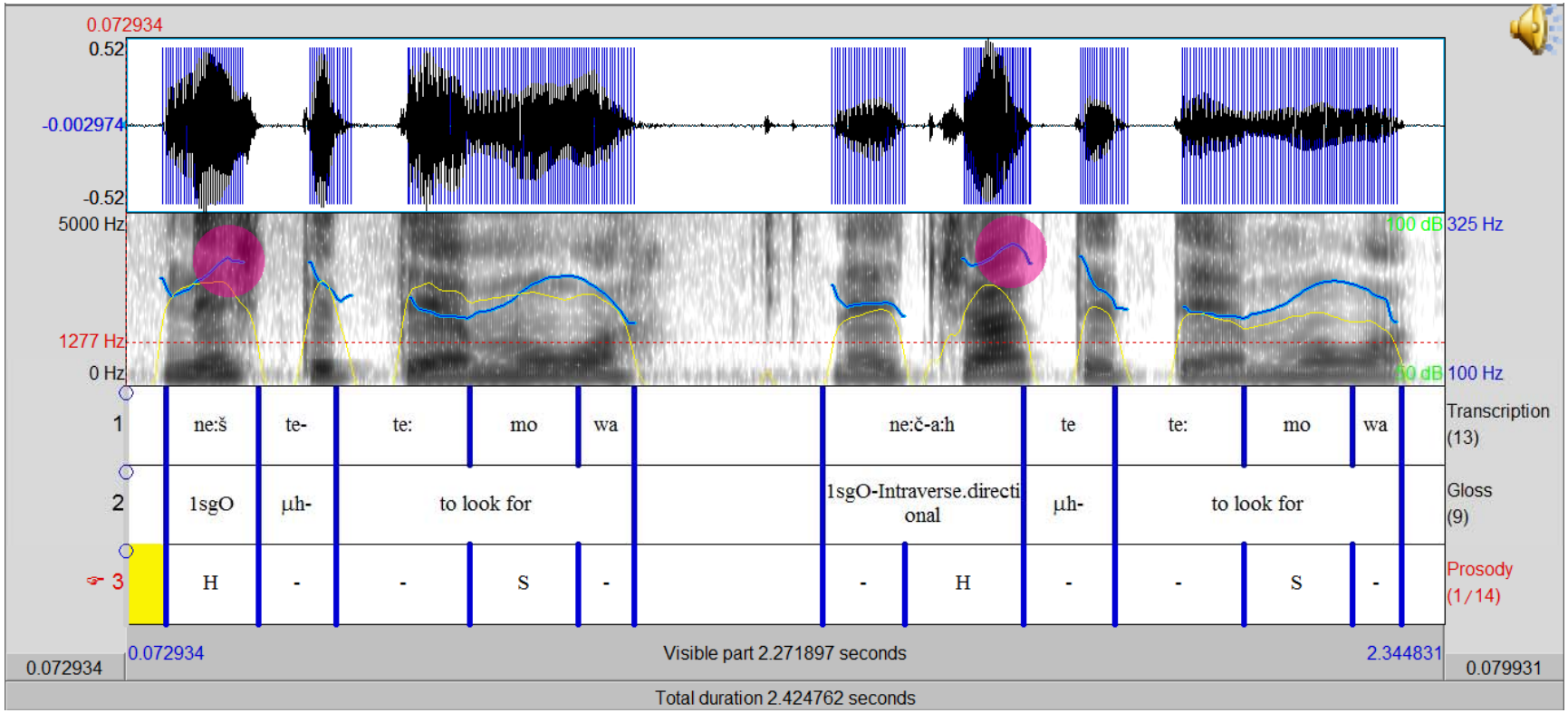
Oapan



Ahuelicán and Oapan:

With few exceptions, when the syllable preceding the reduplicant is heavy the *µh-* reduplicant is realized by taking melody from the stem and the H-L sequence ends with a L on the nucleus tautosyllabic with coda **h*.

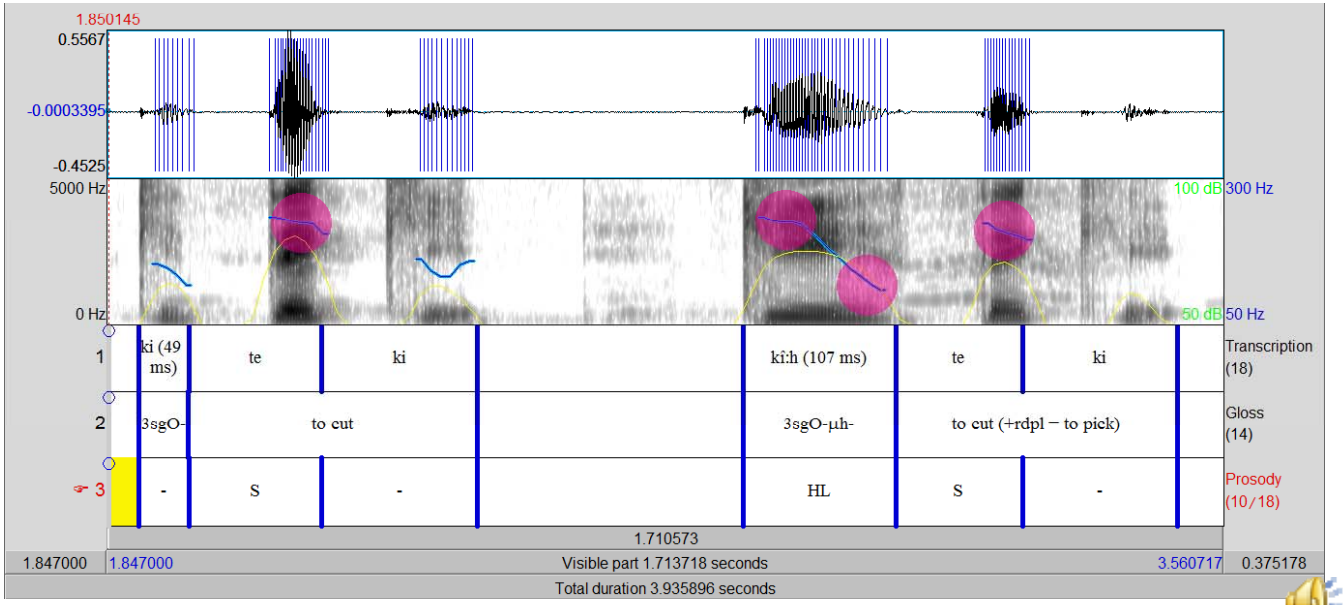
Oapan H tone preceding reduplicant **teh-tēmowa* ‘to look for’



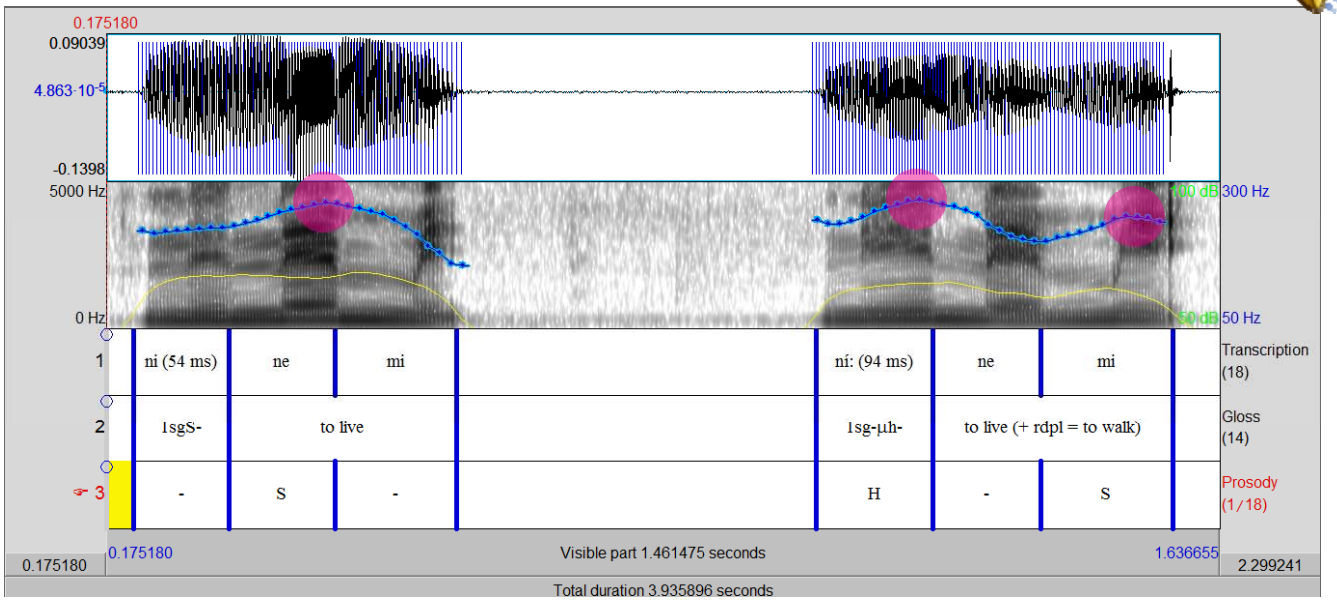
Single word with reduplicant *µh-* elicited in isolation, the H-L sequence ending on the reduplicant is clear.

Monomoraic reduplicant with coda segment *µh-* with consonant-initial stems and short vowel in preceding open syllable (*ki-*, *ni-*): Tonogenetic Nahuatl

Ahuel.



Oapan



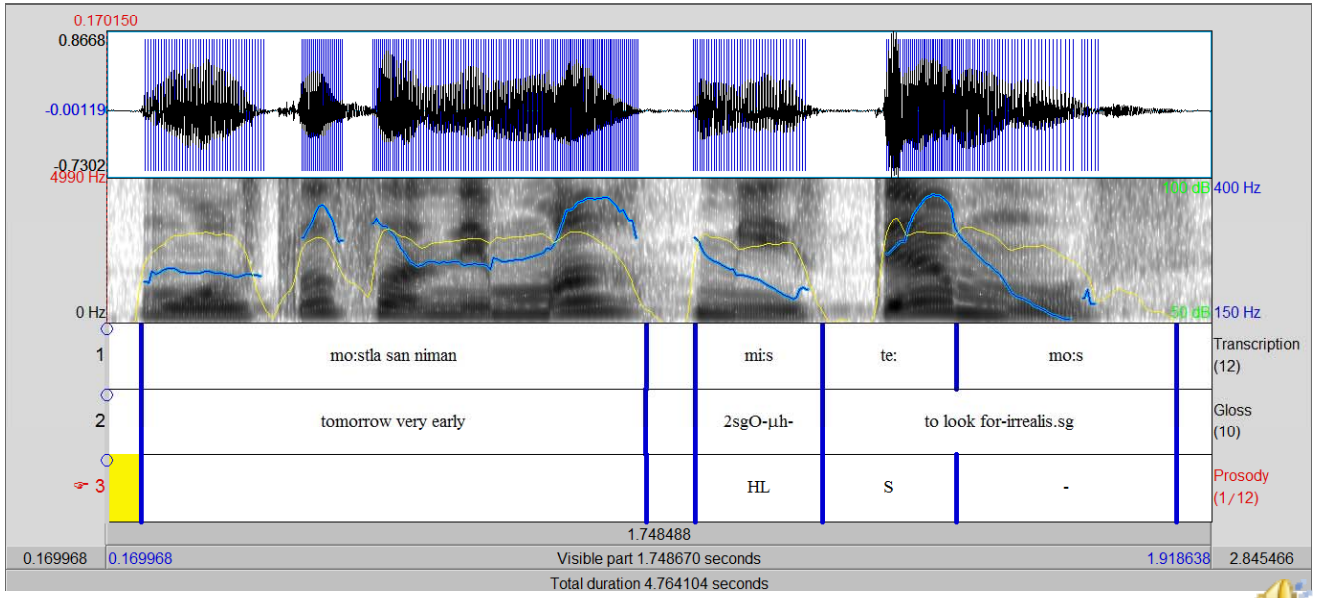
Ahuelicán:
C-initial stem and a preceding open light syllable, *µh-* lengthens the vowel preceding the stem and retains coda /h/. The portmanteau pitch is HL, the effect of the breathy voiced coda.
Notes: No rightward stress shift. Long vowel + underlying /h/ is limited to this port-manteau morpheme.

Oapan:
Similar to Ahuelicán but

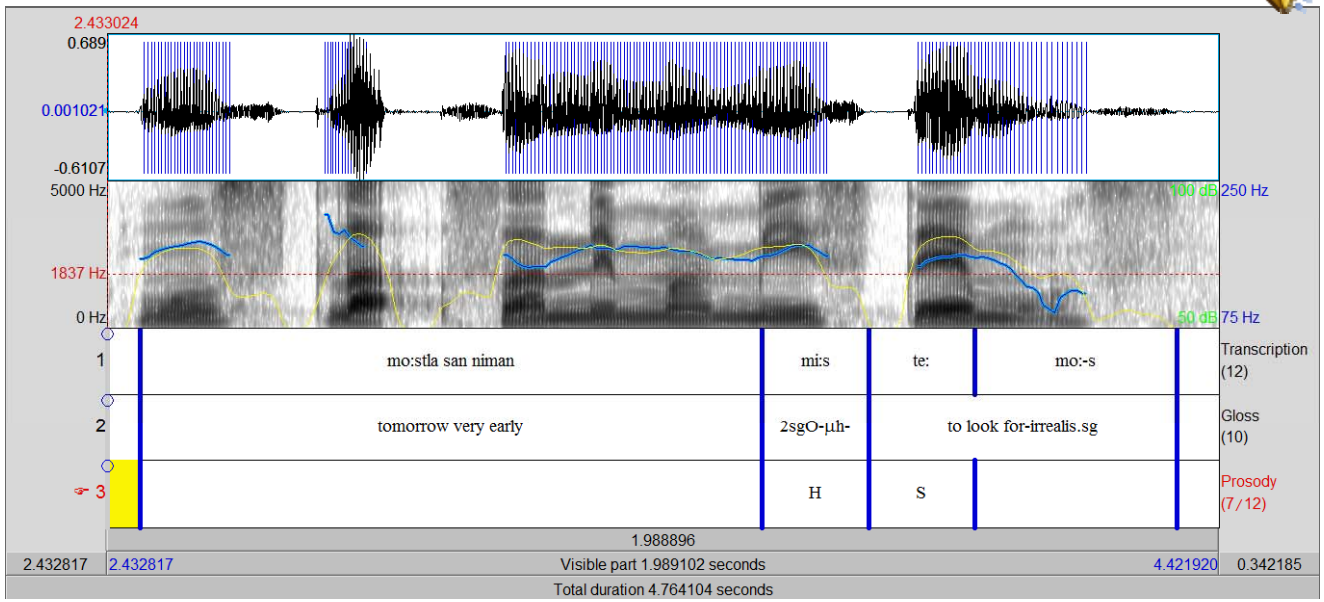
- the coda /h/ is lost,
- tone is H (rising),
- stress (high pitch) shifts rightward.

Monomoraic reduplicant with coda segment *µh-* with consonant-initial stems and short vowel in preceding closed syllable (*mits-*): Tonogenetic Nahuatl

Ahuel.



Oapan

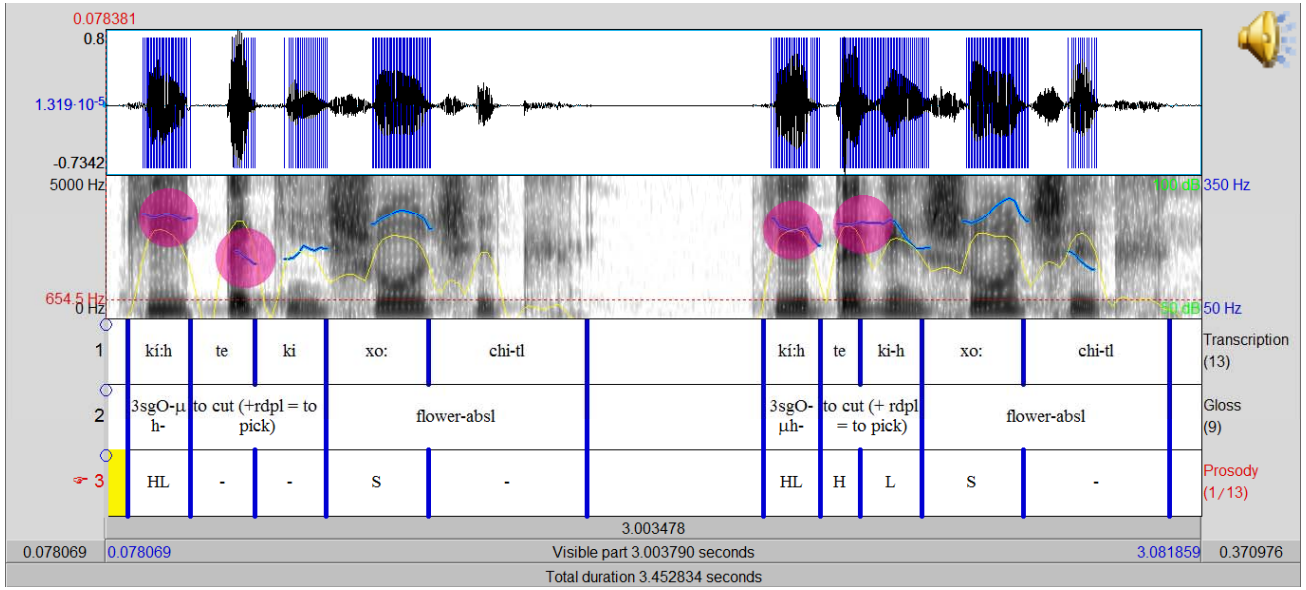


Ahuelicán:
The *µh-* reduplicant is realized lengthening the short vowel to the left of the stem which acquires a HL pitch
Note: Perhaps given phonotactic constraints on CC codas, the trigger (**h*) for tonogenesis is lost.

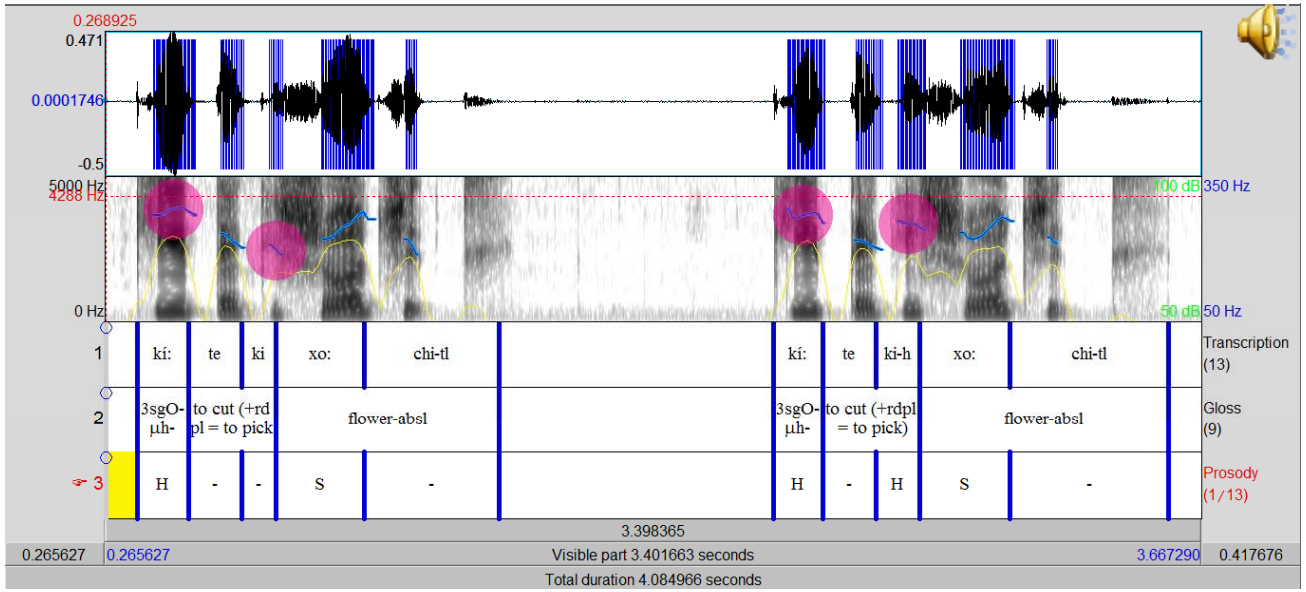
Oapan:
Process mirrors Ahuelicán with a key difference: the pitch of the bimoraic lengthened vowel is not falling. A penultimate bimoraic syllable retains stress, not so a monomoraic syllable.

Monomoraic reduplicant with coda segment *µh-* (consonant-initial stem and preceding short vowel) comparison of singular and plural : Tonogenetic Nahuatl

Ahuel.



Oapan



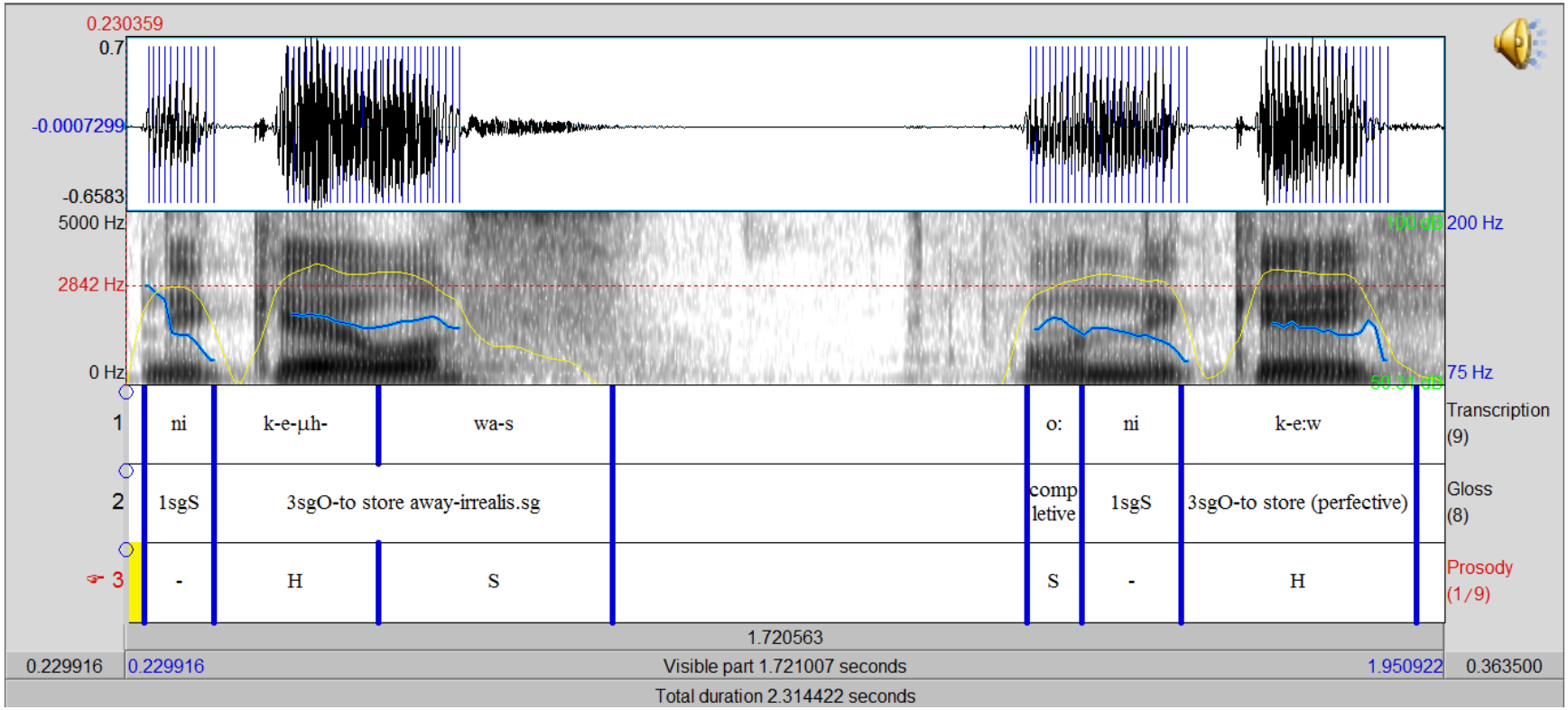
The plural marker (second clause) on the verb *teki* 'to cut' creates a high tone not present in the singular (first clause).

Ahuelicán and Oapan differ in placement of the H related to the plural marker.

Ahuelicán: "Plural" H maintained on syllable preceding that with *–h, perhaps facilitated by HL contour.*

Oapan: "Plural" H shifted right.
Note: Both stress (*ní:nemí*) and tone (*kí:tekih*) shift in Oapan.

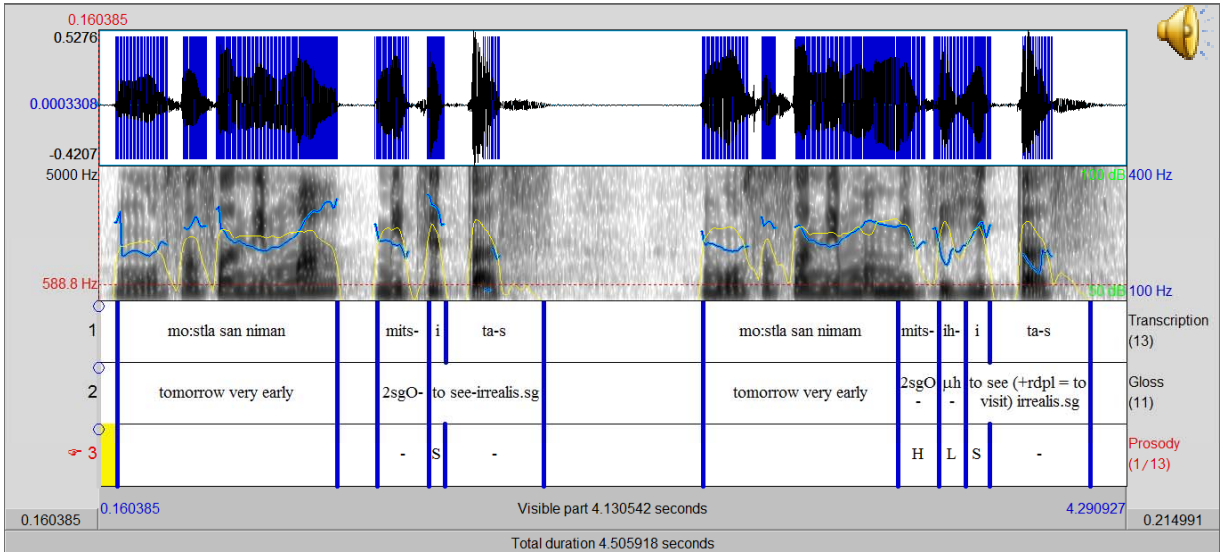
Leftward shift of stress in rare case(s) of reduplicant manifested on final syllable



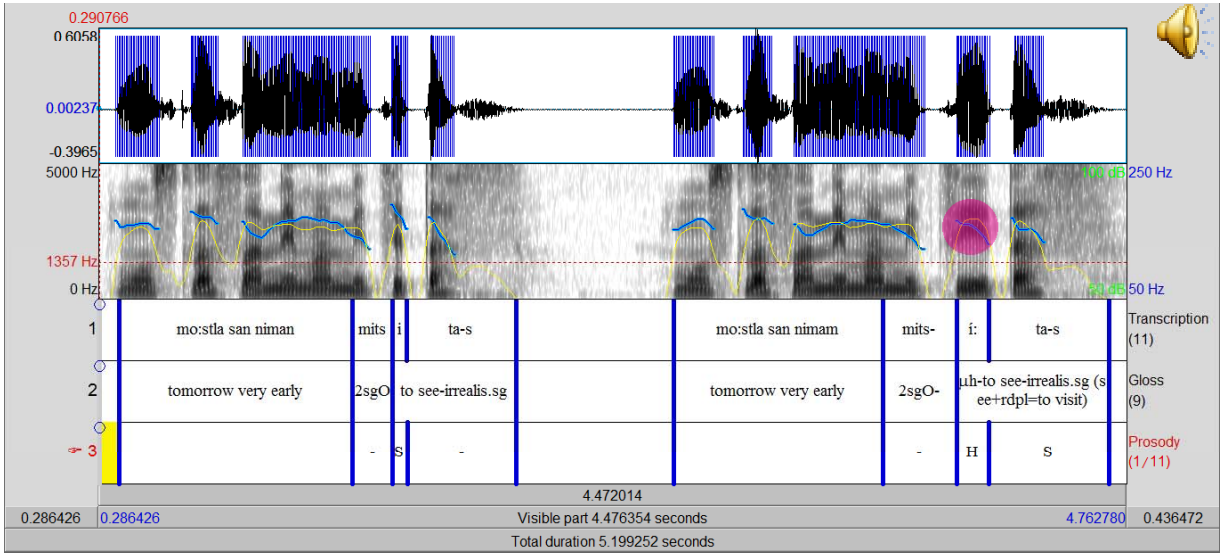
Note: Stress shift away from reduplicant H long vowel occurs in two directions depending on the morphology and syllable structure of the word in question. The primary direction of shift is rightward, as demonstrated by *niké:was* in which the syllables *ni* and *was* are both adjacent to the reduplicant. However, in *o:niké:w* stress shifts leftward from the penultimate, which would clash with syllable-final H, to the antepenultimate.

Monomoraic reduplicant with coda segment *μh-* on stems with short initial vowel:

Ahuel.



Oapan

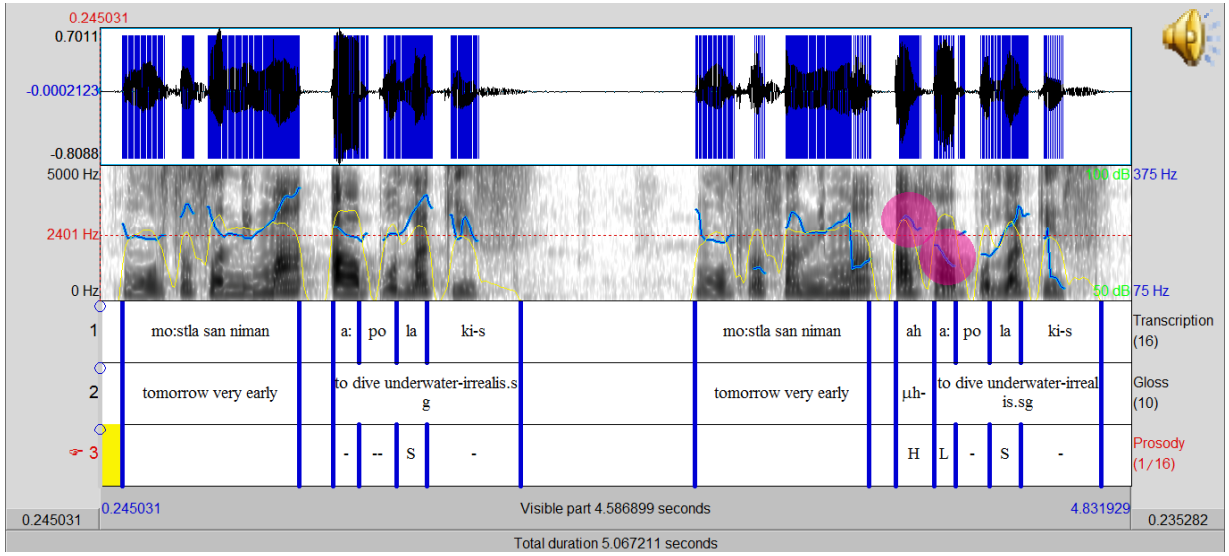


Ahuelicán:
Regardless of the preceding elements, the reduplicant utilizes melody from the stem. This process is identical to that found in other Nahuatl languages.

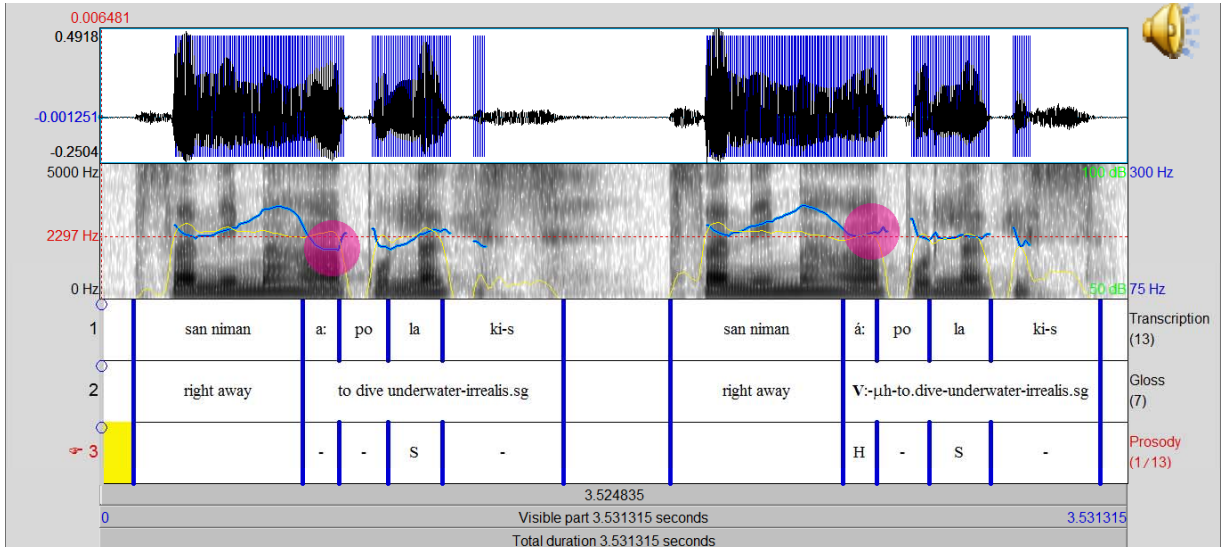
In the same context **Oapan** apparently lengthens the stem-initial vowel, which receives H tone. Note: It is possible that the analysis is best understood as *μh*-V followed by loss of *h and vowel degemination (*i:i* > *i:*). But such degimination does not occur with *μμ*-reduplication.

Monomoraic reduplicant with coda segment *µh-* on stems with long initial vowel
Tonogenetic Nahuatl

Ahuel.



Oapan



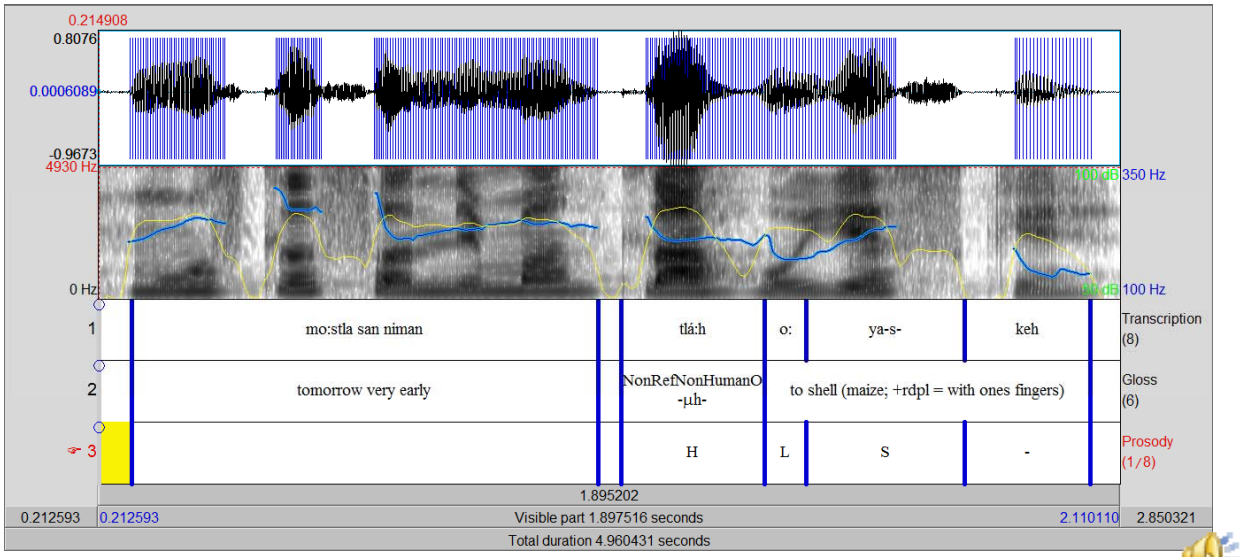
Ahuelicán:
Overt manifestation of the *µh-* reduplicant with material from the stem. There is a clear H-L contour spread across the reduplicant and stem-initial vowel.

Oapan:
No overt segmental manifestation of the *µh-* reduplicant such as a double (e.g., *aā*) or extra long vowel. Reduplicant manifested simply by H tone.

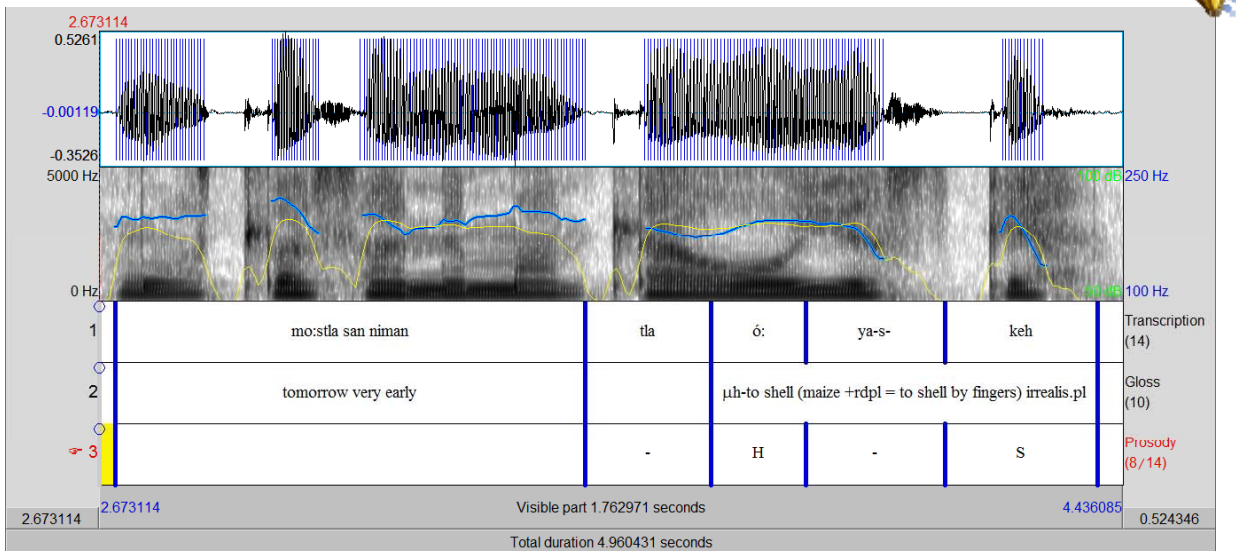
Note: Although **h* in Ahuelicán follows the first vowel, it is the second that is low in the *ahā…* sequence.

Monomoraic reduplicant with coda segment *µh-* on stems with long initial vowel and preceding short vowel prefix in open syllable: Comparison of *tla - µh - ōya* ‘to shell corn’ in Ahuelicán and Oapan

Ahuel.



Oapan

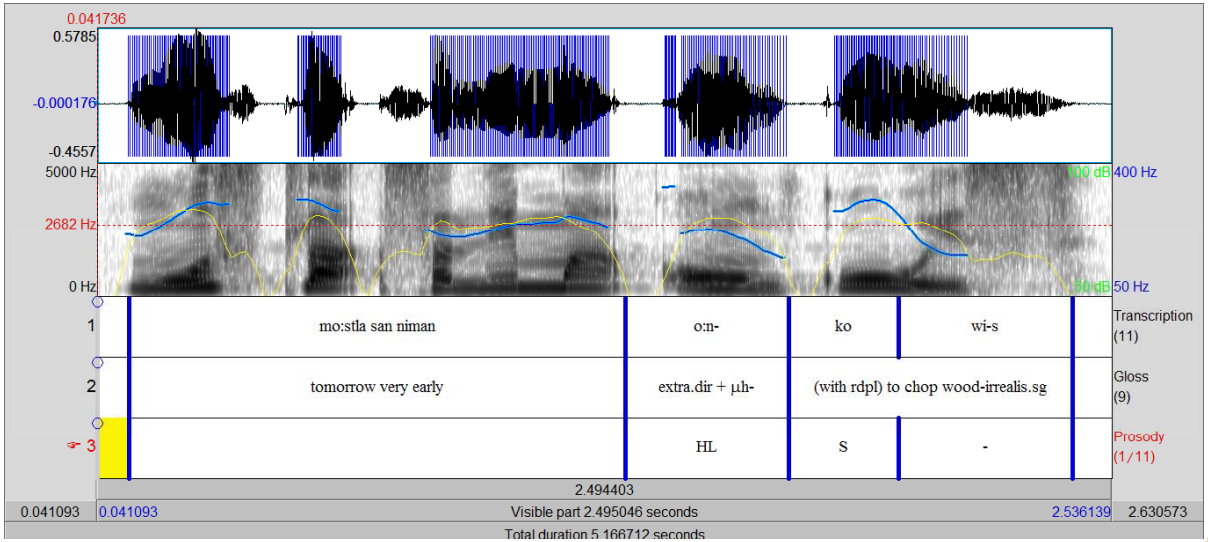


Ahuelicán:
The *µh-* reduplicant is manifested on the nonreferential nonhuman object prefix *tla-* (lengthened and H-L pitch excursion).
Note: *Mitsihita* shows no manifestion of reduplication on the prefix while *tlá:hōyaskeh* does.

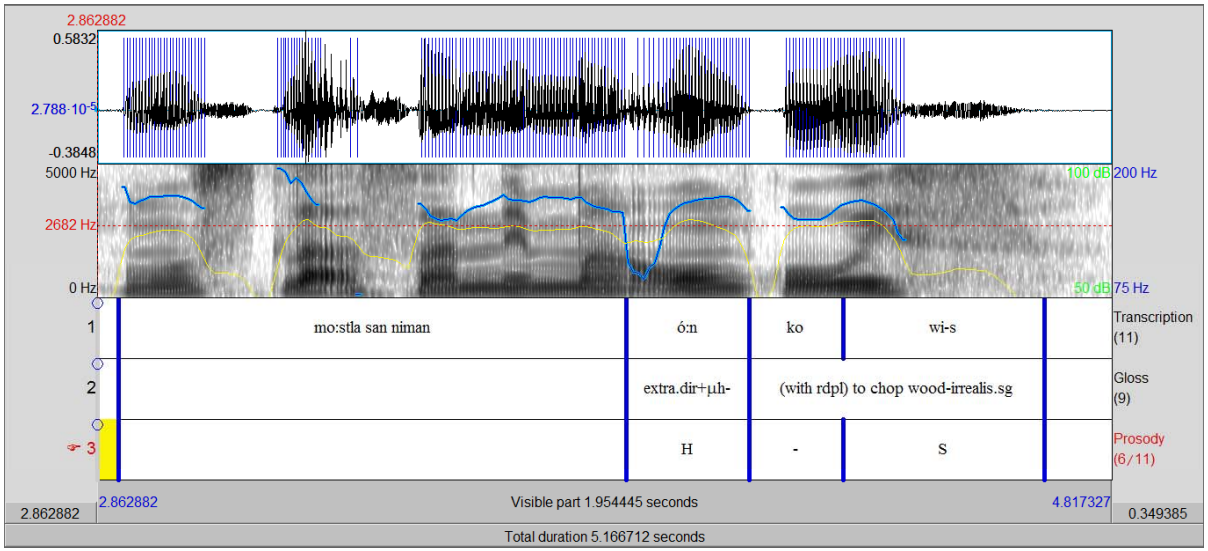
Oapan:
On vowel-initial stems, Oapan favors *µh-* reduplication on the stem-initial vowel. It thus produces a surface form quite distinct from Ahuelicán

Monomoraic reduplicant with coda segment *µh-* on stems preceded by extraverse directional *on-*

Ahuel.



Oapan



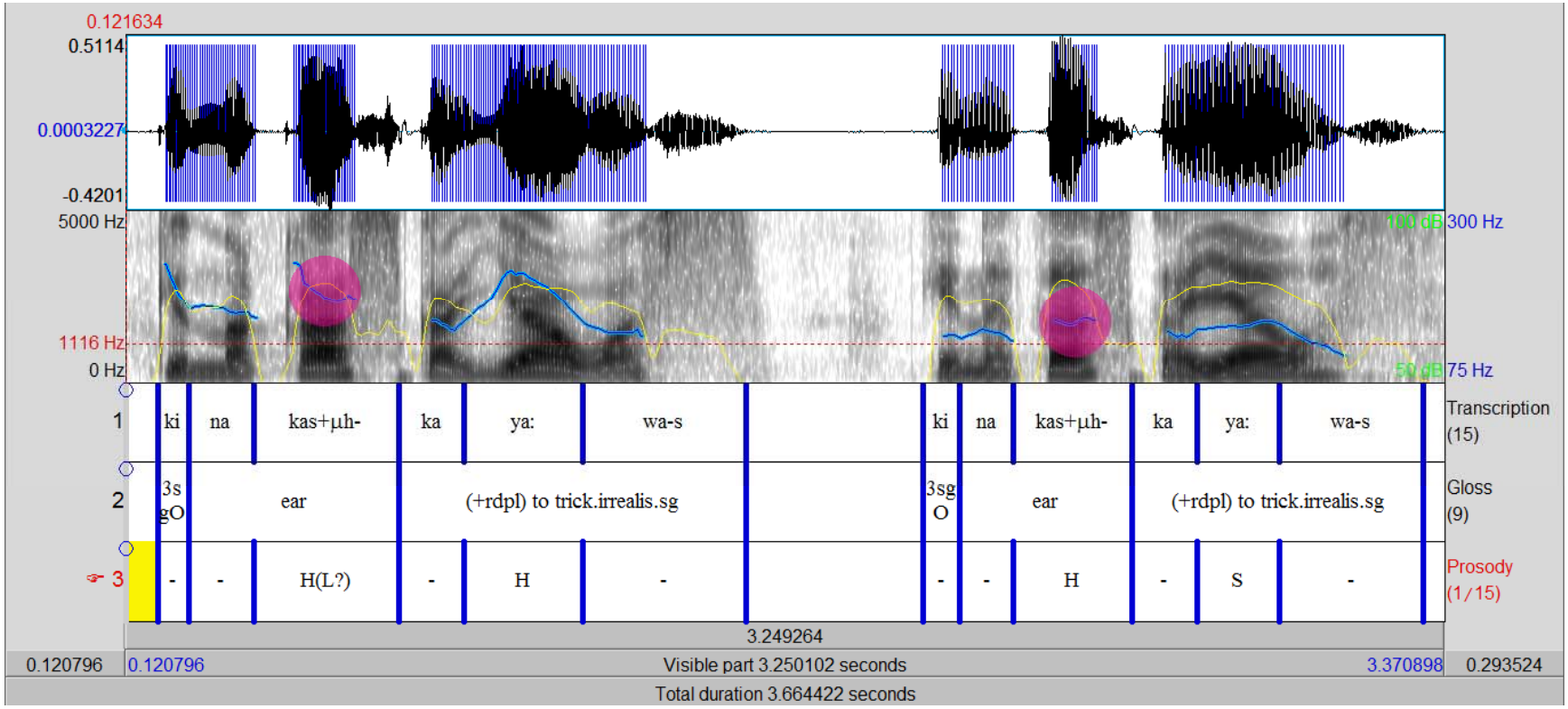
Ahuelicán and Oapan: Any element with a final light syllable (open or closed) preceding a consonant-initial stem can manifest the monomoraic reduplicant (e.g., extraverse directional *on-*, incorporated noun stem)

Note: Ahuelicán manifests a falling tone and no rightward shift of stress. Oapan has a high tone and rightward shift of stress.

HL realization in Ahuelicán might avoid "clash" and make shift unnecessary

Monomoraic reduplicant with coda segment *µh-* on stems with preceding incorporated noun (*nakas* 'ear') with light final syllable

Ahuelicán Oapan

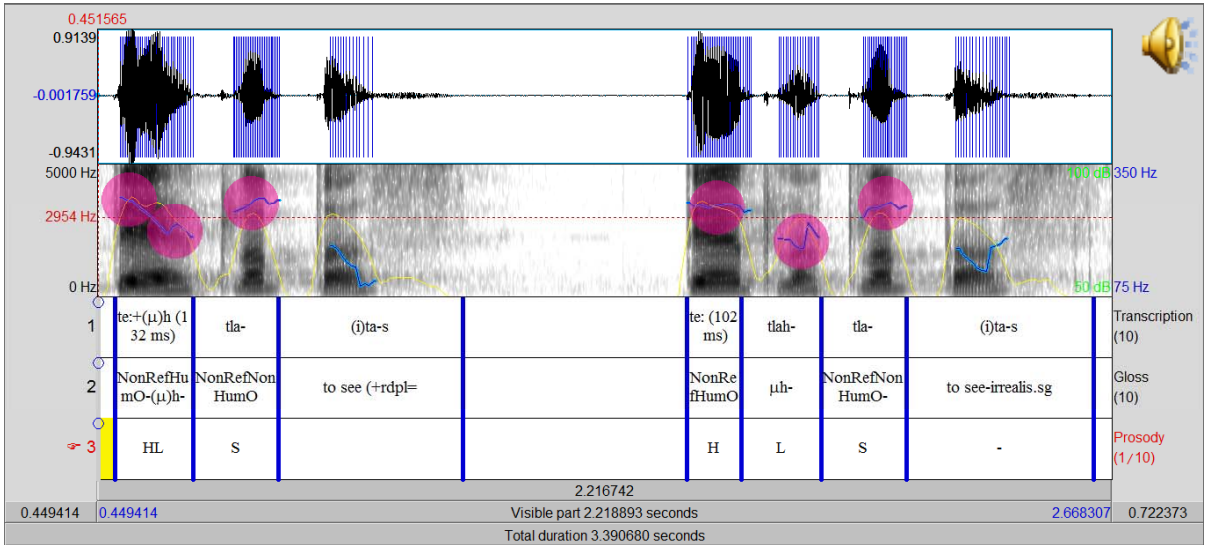


As with the object marker *mits-* (2sgO), infixation of a reduplicant in a closed syllable impedes surface realization of underlying /h/, which would otherwise occur in Ahuelicán.

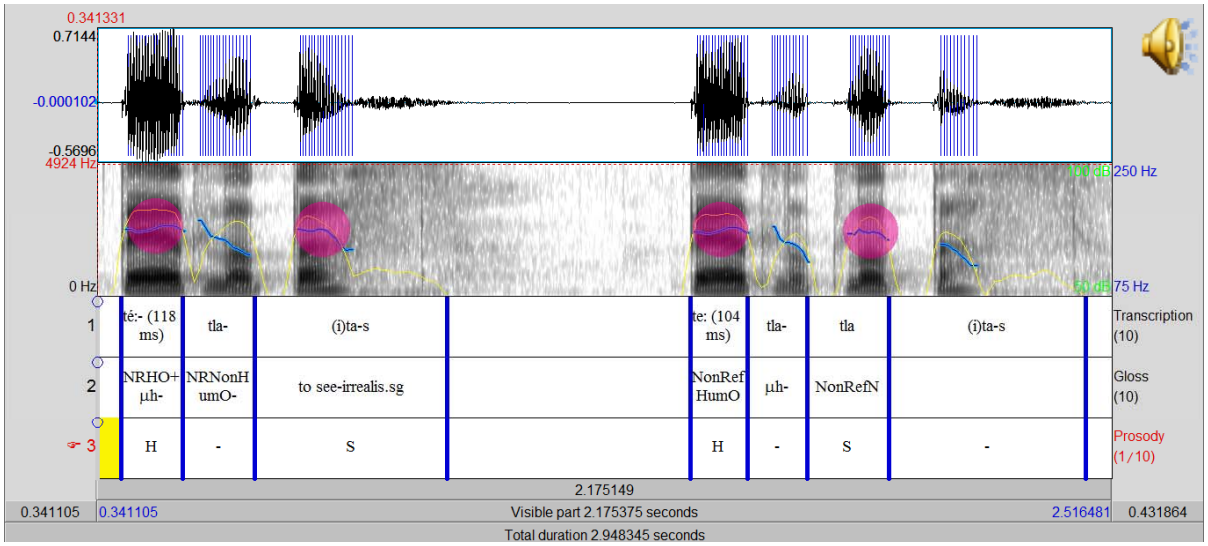
Note: Despite loss of trigger in a closed syllable the Ahuelicán pitch contour is still falling and quite distinction from the Oapan pattern.

Monomoraic reduplicant with coda segment *µh-* manifested on long vowels in syllables preceding the "reduplicated" stems (limited manifestation)

Ahuel.



Oapan



Reduplicant realized on *te:-* Nonreferential human object

Ahuelicán:

Te: + *µh-* yields slightly longer /e:/, falling pitch. No rightward stress shift in trisyllabic forms.

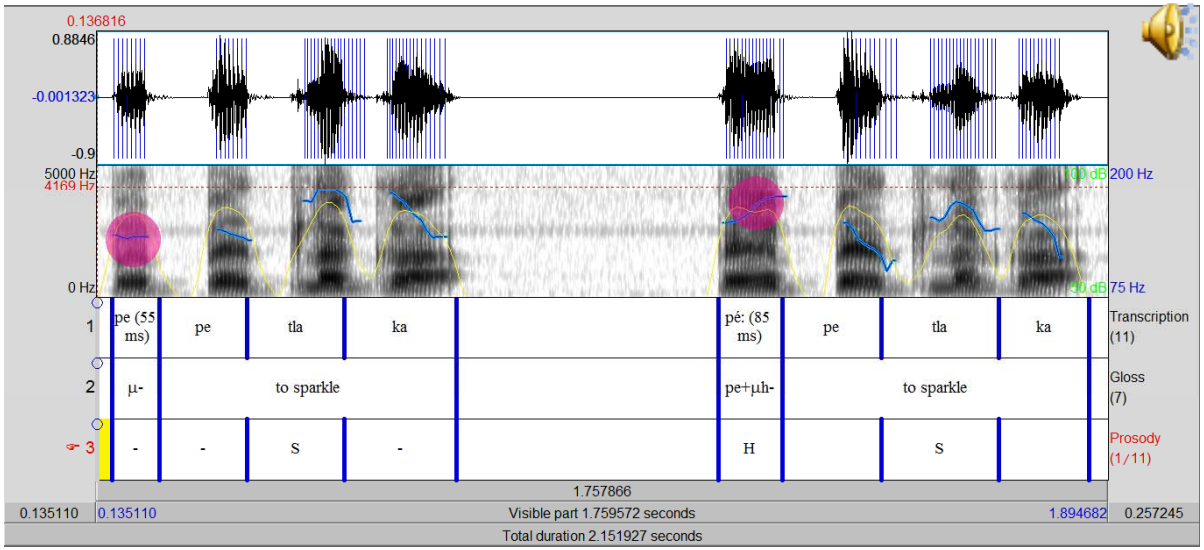
Note: Lengthened *te:h-* might represent effect of contour tone.

Oapan:

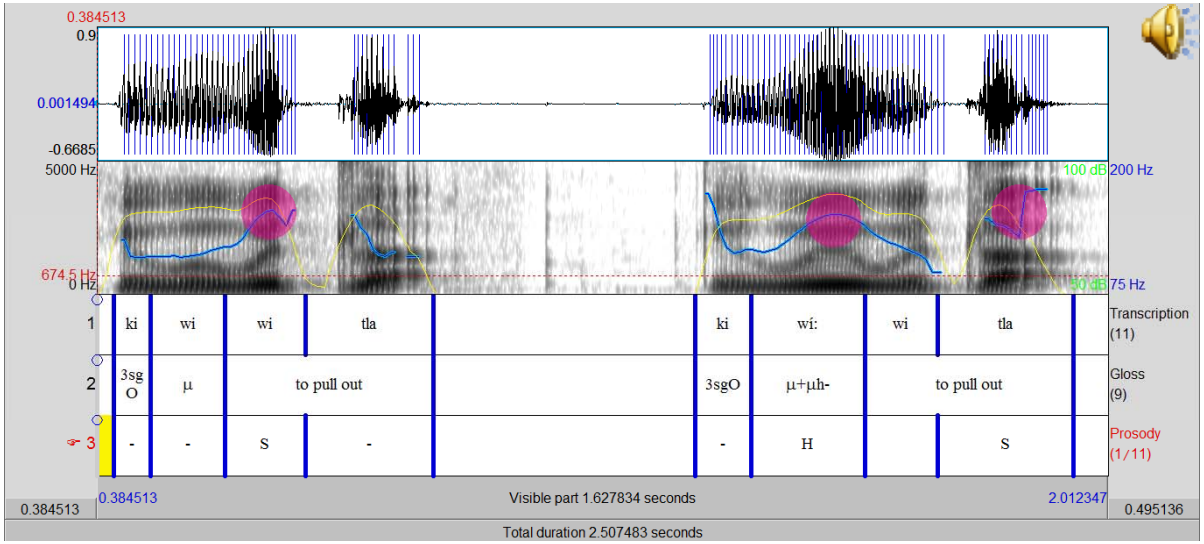
Te: + *µh-* yields no apparent difference in comparison to the /e:/ followed by an overt stem *µh-* reduplicant. Rightward shift of stress in trisyllabic form.

Oapan only (not in Ahuelicán): Monomoraic reduplicant with coda segment *µh-* on stems with $C_1V_1C_1V_1$ (*pepetlaka 'to sparkle'* and (*wiwitla* 'to pull out')

Oapan



Oapan



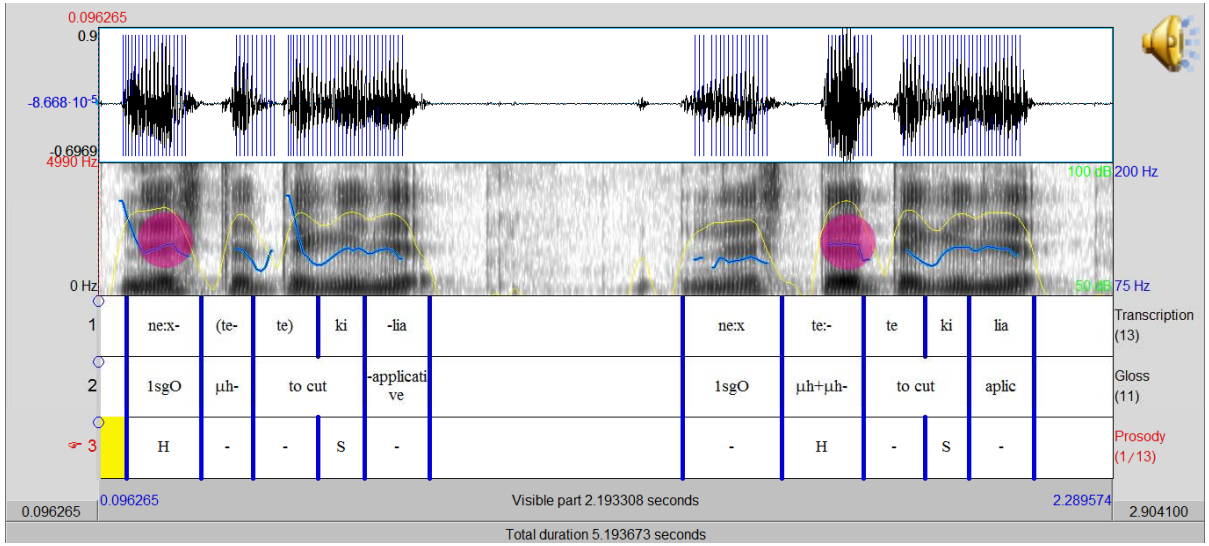
Oapan: $C_1V_1C_1V_1$ stems "infix" the monomoraic reduplicant: lengthening initial syllable and assigning H tone. Cognate process has not developed in Ahuelicán though one speaker Tetelcingo speaker did give *pehpepetlaka* 'to sparkle in places'.

Note: Stems $C_1V{:}_1C_1V_1$ do not allow infixation of the reduplicant *µh-*. Thus ne:chpi:pitsowa 's/he kisses me' reduplicates through prefixation to the stem: *né:chpipi:pitsowa*

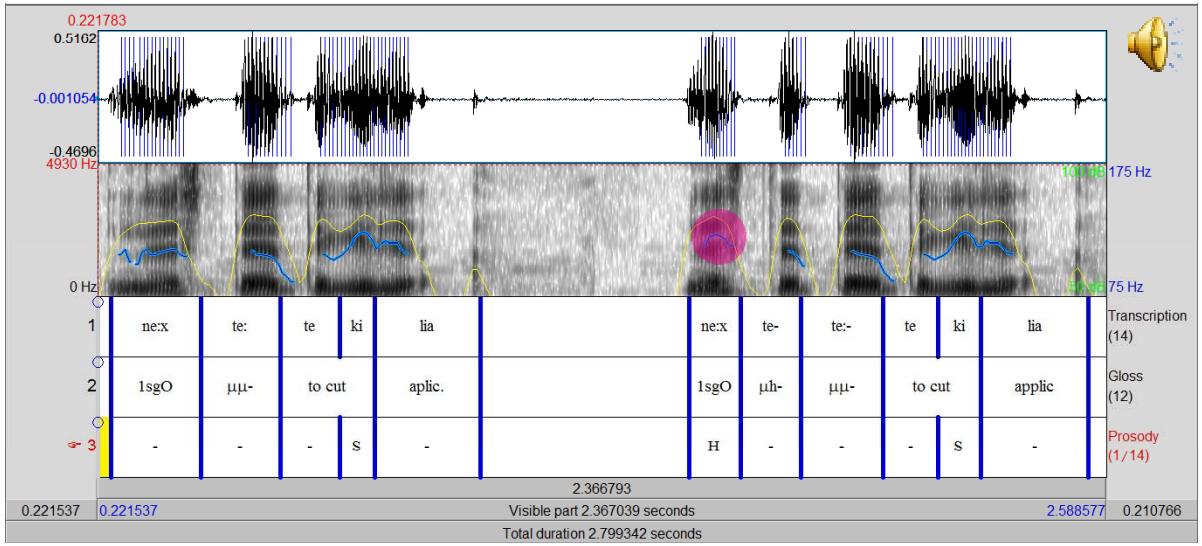
Note: $C_1V_1C_1V_1$ stem *pepetla* can be analyzed as *µh-petla-ka and pé:petlaka as µh-µh-petla-ka*

Multiple reduplicants can be manifested in “overlapping” fashion given the morphological processes innovated in Oapan and Ahuelicán:

a Oapan



b Oapan

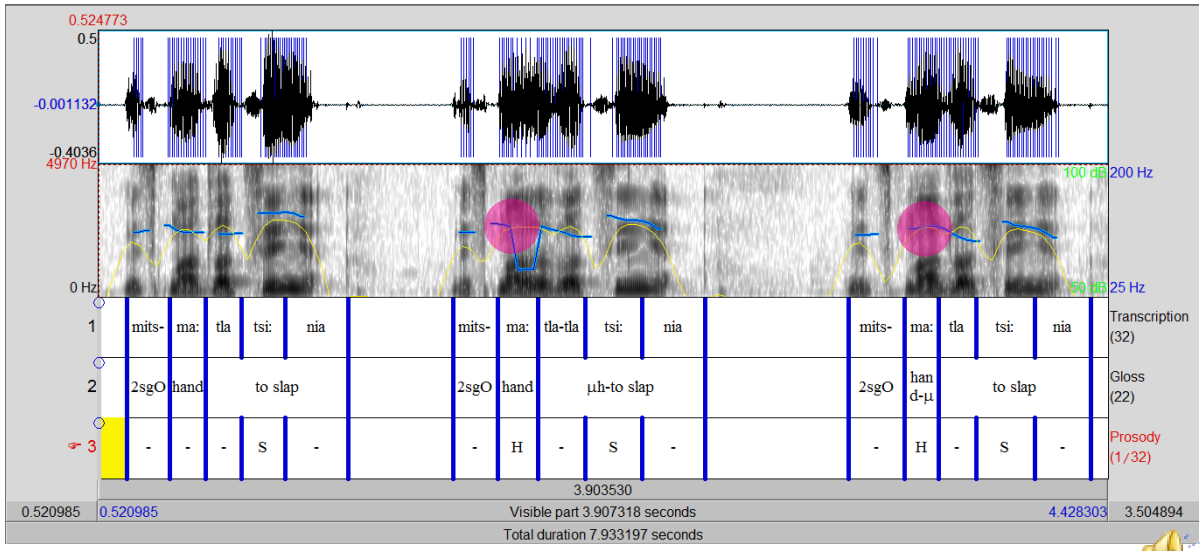


Oapan: “Infixation” of $C_1V_1C_1V_1$ occurs regardless of the morphological structure of the $C_1V_1C_1V_1$ pattern. It is often the case, however, that the first syllable is a synchronically productive reduplicant (*µh- or µ-*). Form a2: *µh-µh-* is realized as a long vowel reduplicant with H tone.

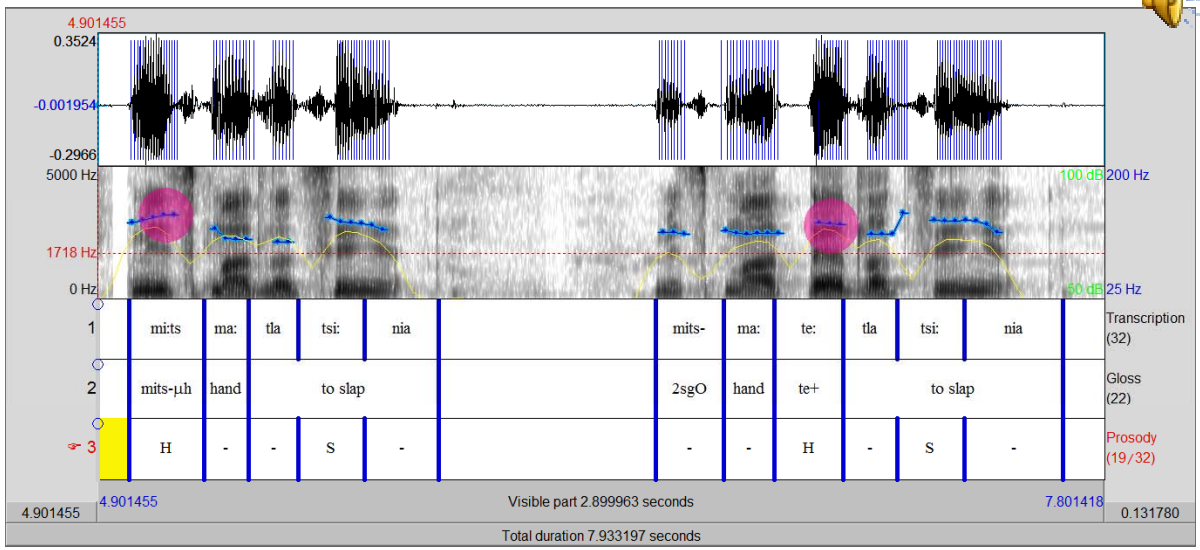
For bimoraic reduplicants (*µµ-*) the initial pattern is $C_1V{:}_1C_1V_1$ and the *µh-* reduplicant is either expressed overtly (b2) or, if there is a preceding short vowel, with lengthening and high tone on the stem-preceding syllable: *mí:ste:teklia* {(*mits+ µh*)-(*µµ-tekilia*)}.

If a heavy syllable precede the reduplicated stem *µh-* reduplicant may be realized in various manners: (1) overt stem material; (2) tone on heavy syllable; (3) tone and lengthening on prefix; (4) dummy morpheme *-te-*

a
Oapan



b
Oapan



Multiple realizations of *µh-reduplicant* on transitive compound *ma:tlatsi:nia* (‘hand + slap’) :

a2) overt stem reduplicant

a3) tone on heavy syllable of incorporated noun *ma:* (common on body part incorporation)

b1) lengthening and tone on object prefix *mits-* (in this case the ma:- noun stem is reduplicated, not the verb stem)

b2) insertion of semi-dummy morpheme *te-* (intensifier) to carry lengthening and tone

Summary of reduplication and tonogenesis: Ahuelicán and Oapan variants

- **µ- reduplicant** is realized as lengthening on short vowels preceding the stem or reduplication of stem material (C)V- if there is no stem preceding vowel or the vowel is long
- **Consonant initial stems**: *µh-* reduplicant is realized as lengthening on short vowels preceding the stem or reduplication of stem material (C)V- if there is no stem preceding vowel or the vowel is long (certain exceptions in Oapan, mostly body part incorporation, *te:-*)
- **Vowel initial stems**: Ahuelicán manifests expected stem reduplication with intervocalic /h/. Vowel preceding /h/ is H, following vowel L > HL pattern but without coda *h
- **Vowel initial stems**: Oapan manifests lengthening and H on stem-initial vowels irregardless of material to the left of stem. HL on the reduplicant seems to be a phonetic development from Stress on adjacent syllable [mits í: ‘ta] but is absent in other cases [á: po ‘la ki]
- **Oapan innovation**: *µh+µh-* reduplication is realized as a H and lengthened vowel of reduplicated stem material: ki-*µh+µh-teki > kité:teki.* Cf. ki-*µh+µµ-teki > kí:te:teki.*
- **Oapan innovation:** *µh*-$C_1V_1C_1V_1$ > C_1Ý:$_1C_1V_1$ probably derived from *µh+µh-* despite lack of productivity in stem forms such as *pepetlaka* (frecuentative)
- **Oapan:** multiple manifestations of reduplicant patterns may occur when target vowel (left of stem) is long (cf. *ma:tlatsi:ntla*). Note that in general long vowels do not carry reduplicant. Thus *ni-k-on- µh-te:mowa* > (1) *nikó:nte:mowa* or (2) nó:ntete:mowa (loss of intervocalic /k/).

In memory of Susan Guion