

## Extra Harmonic Vowel in Chicahuaxtla Trique<sup>1</sup>

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### 1. Introduction

Chicahuaxtla Trique is spoken in Oaxaca, Mexico and belongs to the Trique language group of the Mixtecan family of the Otomangean stock. The Trique language group is composed of three languages (Chicahuaxtla Trique, Copala Trique and Itunyoso Trique) and each Trique language has undergone a series of historical sound changes (Matsukawa, 2005, 2006, 2007a, 2007b).

In Chicahuaxtla Trique, an extra harmonic vowel is added after a laryngealized vowel (either a glottalized vowel or an aspirated vowel) in a final syllable. The extra harmonic vowel does not exist in Copala Trique or Itunyoso Trique and is attached mostly to noun stems in Chicahuaxtla Trique. However, the extra harmonic vowel disappears when a noun is possessed or when a word with the extra harmonic vowel is followed by another word.

In this paper, I will discuss the phonological or morphological function of the extra harmonic vowel in Chicahuaxtla Trique and analyze whether the extra harmonic vowel can be reconstructed in Proto-Trique.

### 2. Extra harmonic vowel in Chicahuaxtla Trique<sup>2</sup>

Chicahuaxtla Trique has three types of vowels: short vowel (V), glottalized vowel (Vʔ) and aspirated vowel (Vh).

	<b>Proto-Trique</b>	<b>Chicahuaxtla</b>	<b>Copala</b>	<b>Itunyoso</b>	
(1)	*ne	ne	ne	<sup>3</sup>	‘to sit’
(2)	*nee	ne	nee	ne	‘plow’
(3)	*gãʔ	gãʔ	gãʔ	kãʔ	‘far’
(4)	*dah	dah	dah	tah	‘how’

In Chicahuaxtla Trique and Itunyoso Trique, contrastive vowel length has been lost. Both oral and nasal vowels can be these three types of vowels, but laryngealized vowels occur only in a final syllable.

Among the three Trique languages, only Chicahuaxtla Trique has an extra harmonic vowel and the extra harmonic vowel is added only after a laryngealized vowel:

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<sup>2</sup> Data on Chicahuaxtla Trique are basically from Good (1978), but I have tested the data in Good (1978) through my fieldwork in Oaxaca, Mexico in 2006. Data on Copala Trique are from my fieldwork data gathered from 2003 to present in Albany, New York. Data on Itunyoso Trique are from the fieldwork data gathered by Christian DiCanio.

<sup>3</sup> The cognate for ‘to sit’ in Itunyoso Trique is uncertain, but the most likely candidate is *ne*.

	<b>Proto-Trique</b>	<b>Chichahuaxtla</b>	<b>Copala</b>	<b>Itunyoso</b>	
(5)	*neʔ	neʔe	neʔ	neʔ	‘rope, cord’
(6)	*tʂaʔ	tʂaʔa	tʂaʔ	tʂaʔ	‘music’
(7)	*yah	yaha	yah	yah	‘flower’
(8)	*kih	kih	kih	kih	‘mountain’

The extra harmonic vowel is added mostly to noun stems, but about ten adjectives have the extra harmonic vowel too:

	<b>Proto-Trique</b>	<b>Chichahuaxtla</b>	<b>Copala</b>	<b>Itunyoso</b>	
(9)	*saʔ	zaʔa	zaʔ	saʔ	‘good’
(10)	*sikaʔ	zikaʔa	skaʔ	sikaʔ	‘hard’

Besides, a few nouns have the extra harmonic vowel with extra aspiration:

	<b>Proto-Trique</b>	<b>Chichahuaxtla</b>	<b>Copala</b>	<b>Itunyoso</b>	
(11)	*tāʔ	tāʔāh	tāʔ	tāʔ	‘ear of corn’
(12)	*tsiʔ	tsiʔih	tsiʔ	tsiʔ	‘pulque’

Although the extra harmonic vowel is mostly added to noun stems ending with a laryngealized vowel, the extra harmonic vowel disappears when a noun is possessed with the *zi-* or *d-* possessive prefix<sup>4</sup>:

	<b>Unpossessed</b>	<b>Possessed</b>	
(13)	tʂaʔa	zi-tʂaʔ	‘music’
(14)	koho	zi-koh	‘herb’
(15)	yaha	d-ah	‘flower’
(16)	yuʔuhu	d-uʔuh	‘hole’

Therefore, the extra harmonic vowel might be an unpossessed marker in Chichahuaxtla Trique, but other Mixtecan languages including Copala Trique and Itunyoso Trique do not have an unpossessed marker. Besides, some nouns ending with a laryngealized vowel do not have the extra harmonic vowel:

	<b>Proto-Trique</b>	<b>Chichahuaxtla</b>	<b>Copala</b>	<b>Itunyoso</b>	
(17)	*kāh	kāh	kāh	kāh	‘sandal’
(18)	*tʂuh	tʂuh	tʂuh	tʂuh	‘egg’
(19)	*k <sup>w</sup> eh	k <sup>w</sup> eh	k <sup>w</sup> eh	k <sup>w</sup> eh	‘pus’

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<sup>4</sup> The *zi-* possessive prefix is a default possessive marker and the *d-* possessive prefix is an allomorph, which replaces the initial *y-* of a noun stem.

The extra harmonic vowel is also lost when a word with the extra harmonic vowel is followed by other word:

- (20) a. zirakaha ‘lizard’  
       b. zirakah ne ‘iguana’
- (21) a. zika?a ‘hard’  
       b. zika? yo?o ‘The land is hard.’

Thus, only Chichahuaxtla Trique has the extra harmonic vowel after a laryngealized vowel among the three Trique languages and the extra harmonic vowel is mostly attached to noun stems. The extra harmonic vowel might be an unpossessed marker because it is lost when a noun is possessed. However, other Mixtecan languages including other Trique languages do not have an unpossessed marker and some adjectives have the extra harmonic vowel too. Besides, the extra harmonic vowel is also lost when a word with the extra harmonic vowel is followed by another word. At present, the phonological or morphological function of the extra harmonic vowel is unidentified and even whether the future investigation can clarify its function is uncertain.

### 3. Historical linguistics analysis

Although the phonological or morphological function of the extra harmonic vowel is still unidentified, both internal and external evidence shows that the extra harmonic vowel is a phonological or morphological innovation in Chichahuaxtla Trique and should not be reconstructed in Proto-Trique. In this section, I will present the reasons why the extra harmonic vowel should not be reconstructed in Proto-Trique.

#### 3.1. Internal evidence 1: voicing of stop sounds in non-final syllables

The first reason why the extra harmonic vowel should not be reconstructed in Proto-Trique is related to the distribution of voiced stop sounds in Chichahuaxtla Trique. Chichahuaxtla Trique retains the voicing contrast of stop sounds in a final syllable, which has been lost in Itunyoso Trique:

	Proto-Trique	Chichahuaxtla	Copala	Itunyoso	
(22)	*taa	ta	taa	ta	‘plain’
(23)	*dah	dah	dah	tah	‘how’
(24)	*gã?	gã?	gã?	kã?	‘far’
(25)	*kãh	kãh	kãh	kãh	‘sandal’

However, the voicing contrast of stop sounds is neutralized in non-final syllables and only voiced stop sounds occur in non-final syllables in Chichahuaxtla Trique<sup>5</sup>:

<sup>5</sup> The voicing contrast of stop sounds is neutralized in non-final syllables in Copala Trique too, but only voiceless stop sounds can occur in non-final syllables. In Itunyoso Trique, all of the stop sounds have become voiceless at any positions. Matsukawa (2005, 2007a, 2007b) tentatively reconstructed only the voiceless variants of stop sounds

	<b>Proto-Trique</b>	<b>Chichahuaxtla</b>	<b>Copala</b>	<b>Itunyoso</b>	
(26)	*taʔnii	daʔni	taʔnii	taʔni	‘child’
(27)	*tuneʔ	duneʔ	tuneʔ	tuneʔ	‘tail’
(28)	*katsii	gatsi	katsii	kasi	‘white’
(29)	*koʔoo	goʔo	koʔoo	koʔo	‘plate’

With the extra harmonic vowel, however, stop sounds remain voiceless in a penultimate syllable:

	<b>Proto-Trique</b>	<b>Chichahuaxtla</b>	<b>Copala</b>	<b>Itunyoso</b>	
(30)	*tatãʔ	datãʔã	tatãʔ	<sup>6</sup>	‘lung’
(31)	*sikaʔ	zikaʔa	skaʔ	sikaʔ	‘hard’
(32)	*kih	kihî	kih	kih	‘mountain’
(33)	*koh	koho	koh	koh	‘herb’

In Chichahuaxtla Trique, stop sounds can be voiceless in a penultimate syllable only in this environment and the data presented above support the hypothesis that the extra harmonic vowel is a later addition in Chichahuaxtla Trique.

### 3.2. Internal evidence 2: position of contrastive tone<sup>7</sup>

The second reason why the extra harmonic vowel should not be reconstructed in Proto-Trique is related to the position of a contrastive tone in Chichahuaxtla Trique.

In the Trique languages, a contrastive tone always falls on a final syllable<sup>8</sup>:

	<b>Proto-Trique</b>	<b>Chichahuaxtla</b>	<b>Copala</b>	<b>Itunyoso</b>	
(34)	*koʔoo <sup>3</sup>	goʔo <sup>3</sup>	koʔoo <sup>3</sup>	koʔo <sup>3</sup>	‘plate’
(35)	*niʔi <sup>3</sup>	niʔi <sup>3</sup>	neʔe <sup>3</sup>	niʔi <sup>3</sup>	‘to know’
(36)	*yoʔoo <sup>5</sup>	yoʔo <sup>5</sup>	yoʔoo <sup>5</sup>	yoʔoh <sup>5</sup>	‘earth, ground’

However, the extra harmonic vowel never carries a contrastive tone and a contrastive tone always falls on a penultimate syllable with the extra harmonic vowel:

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in non-final syllables in Proto-Trique because voiced obstruents are very rare in Mixtecan languages and only voiceless obstruents are reconstructed in Proto-Mixtecan (Kaufman, 1983; Longacre, 1957; Rensch, 1976). However, the voicing contrast of stop sounds might have existed in non-final syllables too in Proto-Trique.

<sup>6</sup> The cognate for ‘lung’ in Itunyoso Trique is uncertain, but the most likely candidate is *tatãʔ*.

<sup>7</sup> Trique languages have five levels of tones and tones are usually represented by superscript numbers from 1 to 5 after a tone-carrying syllable. In this paper, tone 1 represents the lowest tone and tone 5 represents the highest tone. Contour tones are represented by two successive numbers: e.g. 31, 32, 13, etc.

<sup>8</sup> Some irregular words have contrastive tones both on final and non-final syllables.

	<b>Proto-Trique</b>	<b>Chichahuaxtla</b>	<b>Copala</b>	<b>Itunyoso</b>	
(37)	*neʔ <sup>3</sup>	neʔ <sup>3</sup> e	neʔ <sup>3</sup>	neʔ <sup>3</sup>	‘rope, cord’
(38)	*yoʔ <sup>3</sup>	yoʔ <sup>3</sup> o	yoʔ <sup>3</sup>	yoʔ <sup>3</sup>	‘year’
(39)	*koh <sup>3(2)</sup>	koh <sup>3</sup> o	koh <sup>32</sup>	koh <sup>3</sup>	‘herb’

Thus, the position of a contrastive tone in a word with the extra harmonic vowel also supports the hypothesis that the extra harmonic vowel is a historical innovation in Chichahuaxtla Trique.

### 3.3. External evidence: cognates in other Mixtecan languages

In addition to the internal evidence presented above, external evidence also supports the hypothesis that the extra harmonic vowel is individual innovation in Chichahuaxtla Trique.

In other Mixtecan languages (Mixtec and Cuicatec languages) and other Trique languages, corresponding cognates do not have the extra harmonic vowel:

(40)		‘ice/frost’	
Chichahuaxtla Trique		ʔweʔe <sup>9</sup>	
Copala Trique		yuʔβeʔ	
Itunyoso Trique		yuʔβeʔ	(DiCanio, p.c.)
Atatlahuca Mixtec		yuʔβa	(Longacre, 1957)
Jamiltepec Mixtec		yuʔβa	(Pensinger, 1974)
Metlatonoc Mixtec		yuʔβa	(Longacre, 1957)
San Juan Colorado Mixtec		yuʔβa	(Campbell et al, 1986)
San Miguel El Grande Mixtec		yuʔa	(Dyk and Stoudt, 1965)
Concepción Pápalo Cuicatec		ʔiiʔβa	(Longacre, 1957)
Santa María Pápalo Cuicatec		ʔiʔβa	(Anderson and Roque, 1983)

In (40), Chichahuaxtla Trique has the extra harmonic vowel after a glottalized vowel, but the corresponding cognates in other Mixtecan languages do not have the extra harmonic vowel.

Unlike the extra harmonic vowel after a glottalized vowel, Proto-Mixtecan /\*VʔV/ sequence is retained in all Mixtecan languages:

(41)		‘plate’	
Chichahuaxtla Trique		goʔo	
Copala Trique		koʔoo	
<u>Itunyoso Trique</u>		koʔo	(DiCanio, p.c.)

<sup>9</sup> In Chichahuaxtla Trique, initial /\*yu/ has been lost before /ʔw/.

Atlatlahuca Mixtec	koʔo	(Alexander, 1986)
Diuxi-Tilantongo Mixtec	koʔo	(Kuiper and Oram, 1991)
Jamiltepec Mixtec	koʔo	(Pensinger, 1974)
Jicaltepec Mixtec	koʔo	(Longacre, 1957)
San Juan Colorado Mixtec	koʔo	(Campbell et al, 1986)
San Miguel El Grande Mixtec	koʔo	(Dyk and Stoudt, 1965)
Concepción Pápalo Cuicatec	kuʔu	(Longacre, 1957)
Santa María Pápalo Cuicatec	kuʔu	(Anderson and Roque, 1983)

Thus, the extra harmonic vowel does not occur in other Mixtecan languages and this external evidence also supports the hypothesis that the extra harmonic vowel is phonological or morphological innovation in Chicahuaxtla Trique.

#### 4. Conclusion

In Chicahuaxtla Trique, the extra harmonic vowel is added after a laryngealized vowel (either a glottalized vowel or an aspirated vowel) in a final syllable and is mostly attached to nouns stems. Since the extra harmonic vowel is lost when a noun is possessed with the *zi-* or *d-* possessive prefix, the extra harmonic vowel might be an unpossessed marker. However, an unpossessed marker does not exist in other Mixtecan languages including Copala Trique and Itunyoso Trique and about ten adjectives have the extra harmonic vowel too. Besides, the extra harmonic vowel is also lost when a word with the extra harmonic vowel is followed by other word.

Although the phonological or morphological function of the extra harmonic vowel in Chicahuaxtla Trique is still unidentified and whether even future research can clarify its function is uncertain, both internal and external historical linguistics evidences supports the hypothesis that the extra harmonic vowel is a historical innovation in Chicahuaxtla Trique and should not be reconstructed in Proto-Trique.

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