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Reconstruction of Proto-Trique phonemes

Abstract

Trique languages are spoken in Oaxaca, Mexico and belong to the Mixtecan family of the Otomanguean stock. Trique languages are composed of three languages: San Andrés Chicahuaxtla Trique, San Juan Copala Trique and San Martín Itunyoso Trique. Based on the data on these three Trique languages, Proto-Trique has been reconstructed by Matsukawa (2005, 2006a, 2006b, 2007a, 2007b). This article is the refined version of my previous reconstruction of Proto-Trique.

In Proto-Trique, seven stop sounds (*/*t/, /*d/, /*k/, /*g/, /*kw/, /*gw/, /*ʔ/*), three fricative sounds (*/*β/, /*s/, /*ʃ/*), three affricate sounds (*/*ts/, /*tʃ/, /*tʂ/*), five resonant sounds (**m/, /*n/, /*l/, /*r/, /*y/*), seven oral vowels (*/*i/, /*e/, /*i/, /*ə/, /*a/, /*o/, /*u/*) and four nasal vowels (*/*ĩ/, /*ĩ/, /*ã/, /*ũ/*) can be reconstructed as phonemes. Both oral and nasal vowels have four types: short vowels (V), long vowels (VV), glottalized vowels (Vʔ) and aspirated vowels (Vh).

Some of these reconstructed phonemes show very limited distributional constraints. All of the nasal vowels, long vowels, glottalized vowels and aspirated vowels occur only in a final syllable. In non-final syllables, only short oral vowels can occur. Although Proto-Trique has both voiced and voiceless stop sounds, voiced stop sounds can be reconstructed only in a final syllable. In non-final syllables, only voiceless stop sounds can occur.

In this article, I will show how these Proto-Trique phonemes were reconstructed and how these reconstructed Proto-Trique phonemes have undergone series of historical sound changes in the three modern Trique languages.

Reconstruction of Proto-Trique Phonemes

Kosuke Matsukawa *

1 Introduction

Trique languages (San Andrés Chicahuaxtla Trique, San Juan Copala Trique and San Martín Itunyoso Trique) are spoken in Oaxaca, Mexico and belong to the Mixtecan family of the Otomanguean stock. Based on the data on these three modern Trique languages, Proto-Trique has been reconstructed by Matsukawa (2005, 2006a, 2006b, 2007a, 2007b). This article is the refined version of my previous reconstruction of Proto-Trique phonemes. In this article, I will show how Proto-Trique phonemes were reconstructed and how the reconstructed Proto-Trique phonemes have undergone historical sound changes in the three modern Trique languages.

Among the three Trique languages, data on Copala Trique are the most extensive (e.g. Hollenbach 1984, 1992, 2004, 2005). Although data on Chicahuaxtla Trique are still limited, there is the small dictionary of Chicahuaxtla Trique (Good 1978) and there are some other articles on Chicahuaxtla Trique (e.g. Longacre 1952, 1957, 1959, 1966a, 1966b, Longacre et al. 2006). In addition to these published data sources, I have conducted fieldwork on Chicahuaxtla Trique since 2006 and Copala Trique since 2003. Itunyoso Trique has been hardly studied until recently. However, Christian DiCano started fieldwork on Itunyoso Trique a few years ago and kindly gave me some of his fieldwork data including the preliminary dictionary of Itunyoso Trique. In this article, I will use my fieldwork data on Chicahuaxtla Trique and Copala Trique unless otherwise mentioned, and Itunyoso Trique data are from DiCano's fieldwork data.

Trique languages have very complicated tone systems. All of the three Trique languages have five levels of tones, numbered 1 to 5, from lowest to highest. The number of contour tones is different from language to language. Copala Trique has two falling tones (32, 31) and one rising tone (13). The number of contour tones in Chicahuaxtla Trique is still controversial (e.g. Good 1978, Longacre 1952, 1957, 1959, Longacre et al. 2006, Matsukawa

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2006c). Although DiCano (p.c.) hypothesizes three falling tones (43, 32, 31) and one rising tone (13) in Itunyoso Trique, the Itunyoso Trique tone system is still under analysis by DiCano. Since tones do not affect the reconstruction of Proto-Trique phonemes, tones will not be marked in this article.

2 Reconstruction of Proto-Trique Obstruents

The three modern Trique languages have somewhat different obstruent systems as follows:

Chichahuaxtla:	t, d, k, g, k ^w , g ^w , ʔ, s, z, ʃ, ʒ, ts, tʃ, tʂ
Copala:	t, d, k, g, k ^w , g ^w , ʔ, β, s, z, ʃ, ʒ, ʂ, ts, tʃ, tʂ
Itunyoso:	t, k, k ^w , ʔ, β, s, ʃ, ts, tʃ, tʂ

Figure 1: Obstruent Systems in Three Trique Languages

Based on the obstruent systems of the three modern Trique languages, seven stop sounds (/t/, /d/, /k/, /g/, /k^w/, /g^w/, /ʔ/), three fricative sounds (/β/, /s/, /ʃ/) and three affricate sounds (/ts/, /tʃ/, /tʂ/) can be reconstructed as Proto-Trique phonemes.

2.1 Proto-Trique Stops

In Proto-Trique, seven stop sounds (/t/, /d/, /k/, /g/, /k^w/, /g^w/, /ʔ/) can be reconstructed as phonemes because of the following sound correspondences:

(1) Proto-Trique Chichahuaxtla Copala Itunyoso

a. *to	to	to	to	‘grindstone’
b. *doh	doh	doh	toh	‘more’
c. *ko	ko	ko	ko	‘twenty’
d. *gãʔ	gãʔ	gãʔ	kãʔ	‘far’
e. *k ^w eh	k ^w eh	k ^w eh	k ^w eh	‘pus’
f. *g ^w ii	g ^w i	g ^w ii	k ^w i	‘day, sun’
g. *yaʔã	yaʔã	yaʔã	yaʔã	‘fire, light’

Although Itunyoso Trique does not retain voiced stop sounds (/d/, /g/, /g^w/), the voiced-voiceless contrast of stop sounds is retained in a final syl-

lable in Chichahuaxtla Trique and Copala Trique. However, the voicing contrast of stop sounds was lost in non-final syllables in all three Trique languages. Only voiced stop sounds occur in non-final syllables in Chichahuaxtla Trique and only voiceless stop sounds occur in non-final syllables in Copala Trique and Itunyoso Trique:

(2)	<u>Proto-Trique</u>	<u>Chichahuaxtla</u>	<u>Copala</u>	<u>Itunyoso</u>	
a.	*takãã	ɖakã	takãã	takã	‘hill’
b.	*konoʔo	ɡonoʔo	konoʔo	konoʔo	‘medicine’
c.	*k ^w etãʔ	ɡ ^w etãʔã ¹	k ^w etãʔ	k ^w etãʔ	‘Saturday’

In other Mixtecan languages (Mixtec and Cuicatec languages), voiced stop sounds are very rare except Spanish loan words and prenasalized stop sounds. Furthermore, voiced stop sounds are not reconstructed as phonemes in Proto-Mixtecan (e.g. Kaufman 1983, Longacre 1957, Rensch 1976). Since it is almost impossible to know whether the voicing contrast of stop sounds existed in non-final syllables in Proto-Trique or not, I tentatively reconstructed only voiceless stop sounds in non-final syllables in Proto-Trique.

Whether /VʔV/ in Trique languages has one nucleus or two nuclei might be controversial. If /VʔV/ should be treated as one nucleus, a voiceless glottal stop /*ʔ/ might not be treated as a phonemic consonant in Proto-Trique. However, the voicing of stop sounds in non-final syllables in Chichahuaxtla Trique supports treating /VʔV/ as two nuclei:

(3)	<u>Proto-Trique</u>	<u>Chichahuaxtla</u>	<u>Copala</u>	<u>Itunyoso</u>	
a.	*taʔaa	ɖaʔa	taʔaa	taʔa	‘to grab’
b.	*koʔoo	ɡoʔo	koʔoo	koʔo	‘plate’
c.	*kaʔã(h)	ɡaʔã	kaʔãh	kaʔã	‘four’

The voiced-voiceless contrast of stop sounds always corresponds in a final syllable between Chichahuaxtla Trique and Copala Trique and all of the stop sounds became voiced in non-final syllables in Chichahuaxtla Trique.

¹Sometimes, Chichahuaxtla Trique words have an extra harmonic vowel after a laryngealized vowel (either a glottalized vowel (Vʔ) or an aspirated vowel (Vh)). However, this extra harmonic vowel seems to be an innovation in Chichahuaxtla Trique and should not be reconstructed in Proto-Trique (Matsukawa 2006a, 2007a/b).

Since all of the stop sounds before /*VʔV/ became voiced in Chichahuaxtla Trique and they remain voiceless in Copala Trique and Itunyoso Trique, /VʔV/ seems to be treated as two nuclei in Trique languages. Therefore, it seems better to treat /*ʔ/ as a phonemic consonant in Proto-Trique.

2.2 Proto-Trique Fricatives

In Proto-Trique, three fricative sounds (/ʔβ/, /*s/, /*ʃ/) can be reconstructed as phonemes because of the following sound correspondences:

(4)	<u>Proto-Trique</u>	<u>Chichahuaxtla</u>	<u>Copala</u>	<u>Itunyoso</u>	
a.	*βah	wah	βah	βah	‘to grind’
b.	*rasũ	razũ	razũ	rasũ	‘thing’
c.	*ʃi(h)	ʃi	ʃih	ʃi	‘big, large’

Although Chichahuaxtla Trique has /w/ instead of /β/ as a phoneme, I tentatively reconstructed /*β/ as a Proto-Trique phoneme. The main reason why I reconstructed /*β/ rather than /*w/ is that other Mixtecan languages tend to have /β/ rather than /w/ as a phoneme:

(5)		‘two’
	Chichahuaxtla Trique	wi
	Copala Trique	βih
	Itunyoso Trique	βi (DiCanio p.c.)
	Alacatzalala Mixtec	oβi (Zylstra 1991)
	Ayutla Mixtec	uβi (Hills 1990)
	Coatzacoapan Mixtec	uβi (Small 1990)
	Jamiltepec Mixtec	uβi (Johnson 1988)
	San Juan Colorado Mixtec	uβi (Campbell et al. 1986)
	Concepción Pápalo Cuicatec	βi (Bradley 1991)
	Santa María Pápalo Cuicatec	βi (Anderson and Roque 1983)

Although /*β/ was obviously /*w/ before², when and how /*w/ shifted to /*β/ in Mixtecan languages is still uncertain (Matsukawa 2006a, 2007b).

²Only resonant sounds or /*β/ can occur after a voiceless glottal stop /*ʔ/ in Proto-Trique. Besides, /*y/ cannot occur before a front vowel and /*β/ cannot occur before a back vowel. These distributional constraints imply that /*β/ was originally /*w/.

Fricative sounds ([s], [z], [ʃ], [ʒ]) in Chichahuaxtla Trique and Copala Trique show somewhat varied distribution in a final syllable. In Chichahuaxtla Trique and Copala Trique, fricative sounds are usually voiced in a final syllable (6a). However, sometimes the voicing of fricative sounds is in free variation in a final syllable (6b) and, very rarely, fricative sounds are voiceless in a final syllable (6c):

(6)	<u>Proto-Trique</u>	<u>Chichahuaxtla</u>	<u>Copala</u>	
a.	*ʃii	ʒi	ʒii	‘grandfather’
b.	*soʔ	soʔ/zoʔ	soʔ/zoʔ	‘he’
c.	*ʃi(h)	ʃi	ʃih	‘big, large’

In non-final syllables, all of the fricative sounds became voiced in Chichahuaxtla Trique and all of the fricative sounds except /*β/ became voiceless in Copala Trique. In Itunyoso Trique, all of the fricative sounds except /*β/ became voiceless and /*ʃ/ shifted to /tʃ/ except in a few words:

(7)	<u>Proto-Trique</u>	<u>Chichahuaxtla</u>	<u>Copala</u>	<u>Itunyoso</u>	
a.	*sikaʔ	zikaʔa	skaʔ	sikaʔ	‘hard’
b.	*sigəʔ	zigəʔə	sigiʔ	sikeʔ	‘mud’
c.	*ʃukuu	ʒuku	ʃkuu	tʃuku	‘animal’
d.	*ʃutah	ʒutah	ʃtah	tʃutah	‘deer’

Since voiced fricative sounds are not reconstructed in Proto-Mixtecan (e.g. Kaufman 1983, Longacre 1957, Rensch 1976) and voiced obstruent sounds are very rare in Mixtecan languages, I reconstructed only voiceless fricative sounds in non-final syllables in Proto-Trique. In a final syllable, I also tentatively reconstructed only voiceless fricatives. Since only a few words have [s] or [ʃ] in a final syllable in Chichahuaxtla Trique and Copala Trique and sometimes the voicing of fricative sounds is in free variation, fricative sounds seem to allophonically become voiced in a final syllable in Chichahuaxtla Trique and Copala Trique.

Although Copala Trique has a voiceless retroflex fricative /ʂ/ as a phoneme, /ʂ/ is a phonologically derived phoneme in Copala Trique and /ʂ/ cannot be reconstructed as a Proto-Trique phoneme. In Copala Trique, a vowel was lost between two particular consonants (*V > ø / *s, *ʃ or *r _ *t, *k, *k^w, *m, *n or *l):

- (8) Proto-Trique Chichahuaxtla Copala Itunyoso
 a. *sikaʔ zikaʔa skaʔ sikaʔ ‘hard’
 b. *ʃutah ʒutah ʃtah tʃutah ‘deer’

/*r/ was also spirantized and became a voiceless retroflex fricative /ʃ/:

- (9) Proto-Trique Chichahuaxtla Copala
 a. *rumii rumi rmii → ʃmii ‘ball’
 b. *runee rune rnee → ʃnee ‘bean’

In addition to this environment, /ʃ/ was also derived from a /*ʃ/ + /*tʃ/ cluster. In Copala Trique, a vowel was lost between /*ʃ/ and /*tʃ/ and then a /*ʃ/ + /*tʃ/ cluster became /ʃ/:

- (10) Proto-Trique Chichahuaxtla Copala
 a. *ʃitʃaa ʒitʃa ʃtʃaa → ʃaa ‘back’
 b. *ʃitʃuu ʒitʃu ʃtʃuu → ʃuu ‘cheek’

These two phonological environments are the most common environments where /ʃ/ was derived in Copala Trique. Therefore, /ʃ/ is a derived phoneme in Copala Trique and /*ʃ/ cannot be reconstructed as a Proto-Trique phoneme.

2.3 Proto-Trique Affricates

In Proto-Trique, three affricate sounds (/ʃts/, /*tʃ/, /*tʃ/) can be reconstructed as phonemes because of the following sound correspondences:

- (11) Proto-Trique Chichahuaxtla Copala Itunyoso
 a. *tʃiʔ tʃiʔ tʃiʔ tʃiʔ ‘sweet’
 b. *tʃih tʃih tʃih tʃih ‘seven’
 c. *tʃũũ tʃũ tʃũũ tʃũ ‘tree’

In Chichahuaxtla Trique, /*tʃ/ is retained only before a front vowel in a final syllable and /*tʃ/ shifted to [ʒ] in non-final syllables and before a non-front vowel in a final syllable:

(12)	<u>Proto-Trique</u>	<u>Chichahuaxtla</u>	<u>Copala</u>	<u>Itunyoso</u>	
a.	*tʃa	ʒa	tʃa	tʃa	‘to eat’
b.	*tʃana	ʒana	tʃana	tʃana	‘woman’
c.	*tʃuʒee	ʒuwe	tʃuʒee	tʃuʒe	‘dog’

3 Reconstruction of Proto-Trique Resonants

Although Chichahuaxtla Trique has an additional resonant sound /w/, the three Trique languages have basically the same resonant system as follows:

Chichahuaxtla:	m, n, l, r, w, y
Copala:	m, n, l, r, y
Itunyoso:	m, n, l, r, y

Figure 2: Resonant Systems in Three Trique Languages

Since the sound correspondence of resonant sounds among the three Trique languages is very consistent, the reconstruction of Proto-Trique resonant sounds is straightforward. In Proto-Trique, five resonant sounds (*m/, /*n/, /*l/, /*r/, /*y/) can be reconstructed as phonemes because of the following sound correspondences:

(13)	<u>Proto-Trique</u>	<u>Chichahuaxtla</u>	<u>Copala</u>	<u>Itunyoso</u>	
a.	*māh	māh	māh	māh	‘thick’
b.	*nee	ne	nee	ne	‘plow’
c.	*ʃiluu	ʒilu	(ʃ)luu	tʃilu	‘cat’
d.	*raʔa	raʔa	raʔa	raʔa	‘hand’
e.	*yah	yah	yah	yah	‘now’

Among these reconstructed Proto-Trique resonant sounds, /*l/ has very limited distribution and only a few cognates have /*l/. However, /l/ shows consistent sound correspondence among the three Trique languages and /*l/ can be reconstructed in Proto-Trique. Although Chichahuaxtla Trique has /w/ as a phoneme instead of /ʒ/, I reconstructed /*ʒ/ as a Proto-Trique phoneme (see section 2.2). Therefore, /*w/ cannot be reconstructed as a Proto-Trique phoneme.

4 Reconstruction of Proto-Triquet Vowels

The three Triquet languages have somewhat different vowel systems as follows:

Chichahuaxtla:	i, e, i̇, ə, a, o, u, i̇, i̇, ã, ù
Copala:	i, e, a, o, u, i̇, ě, ã, õ, ù
Itunyoso:	i, e, a, o, u, i̇, ã, ù

Figure 3: Vowel Systems in Three Triquet Languages

There are only two differences among the vowel inventories of the three Triquet languages. Chichahuaxtla Triquet has three more central vowels (i̇, ə, i̇) than other Triquet languages and Copala Triquet has two more nasal vowels (ě, õ) than other Triquet languages. Although the vowel systems among the three Triquet languages show these two differences, the sound correspondences of vowels among the three Triquet languages are very consistent.

Based on the vowel systems of the three Triquet languages, seven oral vowels (/i̇/, /e/, /i̇/, /ə/, /a/, /o/, /u/) and four nasal vowels (/i̇/, /i̇/, /ã/, /ù/) can be reconstructed as Proto-Triquet phonemes. These eleven Proto-Triquet vowels have four types: short vowels (V), long vowels (VV), glottalized vowels (Vʔ) and aspirated vowels (Vh).

4.1 Proto-Triquet Oral Vowels

In Proto-Triquet, seven oral vowels (/i̇/, /e/, /i̇/, /ə/, /a/, /o/, /u/) can be reconstructed as phonemes:

(14) Proto-Triquet	Chichahuaxtla	Copala	Itunyoso	
a. *g ^w i̇i	g ^w i	g ^w i̇i	k ^w i	‘day, sun’
b. *nee	ne	nee	ne	‘plow’
c. *k ^h i̇h	k ^h i̇hi	kih	kih	‘mountain’
d. *yəh	yəh	yih	yeh	‘stone’
e. *tʂaa	tʂa	tʂaa	tʂa	‘tortilla’
f. *too	to	too	to	‘milk’
g. *yuu	yu	yuu	yu	‘sour’

Among these seven Proto-Triquet oral vowels, two central vowels (/i̇/, /ə/) are retained only in Chichahuaxtla Triquet, having undergone a series of

historical sound changes in Copala Trique and Itunyoso Trique. In Copala Trique, both /*i/ and /*ə/ became /i/. In Itunyoso Trique, /*i/ became /i/ and /*ə/ became /e/:

(15)	<u>Proto-Trique</u>	<u>Chicahuaxtla</u>	<u>Copala</u>	<u>Itunyoso</u>	
a.	*kɨh	kɨhi	kih	kih	‘mountain’
b.	*(ku)kɨ	gukɨ	kii	kuki	‘yesterday’
c.	*yəh	yəh	yih ³	yeh	‘stone’
d.	*sigəʔ	zigəʔə	sigiʔ	sikeʔ	‘mud’

4.2 Proto-Trique Nasal Vowels

Four nasal vowels (/ɨ̃/, /ĩ̃/, /ã̃/, /ũ̃/) can be reconstructed as Proto-Trique phonemes and these nasal vowels occur only in a final syllable:

(16)	<u>Proto-Trique</u>	<u>Chicahuaxtla</u>	<u>Copala</u>	<u>Itunyoso</u>	
a.	*(k)atɕɨ̃h	atɕɨ̃h	atɕɨ̃h	katɕɨ̃h	‘to cough’
b.	*gɨ̃	gɨ̃	gũũ	kĩ	‘tepid’
c.	*kã̃	kã̃	kã̃	kã̃	‘seed’
d.	*tɕũ̃	tɕũ̃	tɕũũ	tɕũ̃	‘tree’

Although /*ĩ̃/ is retained only in Chicahuaxtla Trique, /*ĩ̃/ should be reconstructed as a Proto-Trique phoneme. /*ĩ̃/ became /ũ̃/ (or [õ]) in Copala Trique and /*ĩ̃/ became /ĩ̃/ in Itunyoso Trique. In Copala Trique, /ũ̃/ becomes [õ] only when /ũ̃/ is a short vowel in a final syllable. The same allophonic rule applies to the other high vowels (/i/, /u/, /ĩ̃/) too and they become mid vowels ([e], [o], [ẽ]) when they are short vowels in a final syllable:

(17)	<u>Proto-Trique</u>	<u>Chicahuaxtla</u>	<u>Copala</u>	<u>Itunyoso</u>	
a.	*niki	niki	nike	niki	‘poor’
b.	*tuku	duku	tuko	tuku	‘to play’
c.	*(k)atɕĩ̃	atɕĩ̃	atɕẽ	katɕĩ̃	‘to pass’
d.	*tũ̃	tũ̃	tõ	tũ̃	‘blood’

³In Copala Trique, the sequence /yi/ is basically prohibited and *yih* (‘stone’) is the only exception. This irregularity appeared because of the historical sound change (*ə > i) in Copal Trique.

Although Copala Trique has two mid nasal vowels ([ẽ], [õ]), they are allophones of /ĩ/ and /ũ/ respectively, and these two mid nasal vowels cannot be reconstructed as Proto-Trique phonemes.

4.3 Four Types of Vowels in Proto-Trique

In Proto-Trique, four types of vowels can be reconstructed: short vowels (V), long vowels (VV), glottalized vowels (Vʔ) and aspirated vowels (Vh):

(18)	<u>Proto-Trique</u>	<u>Chichahuaxtla</u>	<u>Copala</u>	<u>Itunyoso</u>	
a.	*ne	ne	ne	ne	‘to sit’
b.	*nee	ne	nee	ne	‘plow’
c.	*neʔ	neʔe	neʔ	neʔ	‘rope’
d.	*neh	nehe	neh		‘dream’ ⁴

Both oral and nasal vowels have these four types of vowels. Although contrastive vowel length was lost in Chichahuaxtla Trique and Itunyoso Trique, the short-long contrast of vowels is retained in Copala Trique. Furthermore, only Proto-Trique short high vowels became mid in a final syllable in Copala Trique (see section 4.2). Therefore, the short-long contrast of Proto-Trique vowels should be reconstructed. Among these four types of vowels, long vowels, glottalized vowels and aspirated vowels occur only in a final syllable. In non-final syllables, only short oral vowels can occur.

5 Conclusion

Based on the data on the three Trique languages, seven stop sounds (/ʔt/, ʔd/, ʔk/, ʔg/, ʔkʷ/, ʔgʷ/, ʔʔ/), three fricative sounds (/ʔβ/, ʔs/, ʔʃ/), three affricate sounds (/ʔts/, ʔtʃ/, ʔtʃʃ/), five resonant sounds (*m/, *n/, *l/, *r/, *y/), seven oral vowels (/ʔi/, ʔe/, ʔi/, ʔə/, ʔa/, ʔo/, ʔu/) and four nasal vowels (/ʔĩ/, ʔĩ/, ʔã/, ʔũ/) were reconstructed as Proto-Trique phonemes:

⁴Itunyoso Trique data for ‘dream’ are unavailable.

	<u>Lab</u>	<u>Alv</u>	<u>Pal</u>	<u>Ret</u>	<u>Vel</u>	<u>L-Vel</u>	<u>Glott</u>
Stops		t, d			k, g	k ^w , g ^w	ʔ
Fricatives	β	s	ʃ				
Affricates		ts	tʃ	tʂ			
Nasals	m	n					
Liquids		l, r					
Glide			y				

	<u>Front</u>	<u>Central</u>	<u>Back</u>
High	i, ĩ	i, ĩ	u, ũ
Mid	e	ə	o
Low		a, ã	

Figure 4: Reconstructed Proto-Triquet Phonemes

In addition, both oral and nasal vowels have four types: short vowels (V), long vowels (VV), glottalized vowels (Vʔ) and aspirated vowels (Vh). Some of these reconstructed phonemes have a very limited distribution. For example, nasal vowels, long vowels, glottalized vowels and aspirated vowels can occur only in a final syllable. In non-final syllables, only short oral vowels can occur.

Although both voiced and voiceless stop sounds can be reconstructed in Proto-Triquet, the three modern Triquet languages lost the voicing contrast of stop sounds in non-final syllables. Stop sounds are always voiced in non-final syllables in Chichahuaxtla Triquet and always voiceless in Copala Triquet and Itunyoso Triquet in non-final syllables. Since voiced stop sounds are very rare in other Mixtecan languages and voiced stop sounds are not reconstructed in Proto-Mixtecan (e.g. Kaufman 1983, Longacre 1957, Rensch 1976), I tentatively reconstructed only voiceless stop sounds in non-final syllables.

In the three modern Triquet languages, these reconstructed Proto-Triquet phonemes have undergone a series of historical sound changes. In this paper, I presented most of the identified historical sound changes that happened in the three modern Triquet languages.

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