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A SKETCH OF MALINALTEPEC TLAPANEC PHONOLOGY

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0. Introduction

This paper describes the basic phonology of Malinaltepec Tlapanec,¹ an Otomanguan² language of Mexico. First, the word and syllable structure are briefly presented, then the consonants and vowels are described by their features, distribution and variants. Finally, the consonant cluster patterns and tone are presented.

1. Word

The phonological word consists of a stem of one to three syllables and its prefixes and enclitics. Word stress occurs on the last syllable of the stem. If an enclitic is added, it is separated from the stem by a hyphen. Therefore stress occurs preceding a hyphen or if there is no hyphen, word finally.³

2. Syllable

The syllable has an optional onset of one to three consonants, followed by an optional semiconsonant. The nucleus of the syllable contains a vowel which may be oral or nasal, long or short, open or followed by a glottal. Only a glottal stop may fill the optional coda slot. Two vowels may occur contiguously since the onset and the coda are optional, but such vowels are nuclei of separate syllables. The syllable boundary occurs between a vowel and its following consonant, between vowels, or between a glottal and a following consonant or vowel.

3. Phonemes

The phonemes of Malinaltepec Tlapanec are the following:⁴

Voiceless consonants: /p t k p^h t^h k^h ts t^s s ^s h ?/

Voiced consonants: /b d g y m n l r w y/

Vowels, short: /i e a o u/

nasal: /ĩ ẽ ã õ ũ/

long: /i: e: a: o: u:/

long nasal: /ĩ: ẽ: ã: õ: ũ:/

3.1 Consonants

Voiceless stops and affricates

The voiceless stops /p, t, k/, the voiceless affricates /ts, tʃ/, and the aspirated stops /pʰ, tʰ, kʰ/, are found word initially and word medially.

/p/	pu ¹ li ¹	'wild cherry'
	wi ³ pi ¹	'butterfly'
	wa ² pa ²	'wide'
/t/	ti ² ku ²	'half'
	ni ² tu ²	'vein'
/k/	ku ² wa ²	'roof pole'
	ʃu ³ ku ⁷ 1	'animal'
/pʰ/	pʰo: ¹	'(sound of heavy rain)'
	wa ² pʰa ²	'quickly'
/tʰ/	tʰa ² na ²	'medicine'
	ma ² tʰa ²	'creek'
/kʰ/	kʰy ⁷ 21	'weasel'
	kʰo ³ we ⁷ 3	'(a certain bird)'
	mbu ¹ kʰa ³	'money'
/ts/	tse ³ no ³	'grinding stone'
	tsi ¹ ga ⁷ 3	'seed'
	tso ³ tq ⁷ 2	'goat'
	tsa ¹²	'who'
	tsa: ³	'mountain pass'
	kwi ³ tsy ¹²	'pretty'
/tʃ/	e ² tse ²	'pit barbecue'
	tʃe ³ he ⁷ 3	'horn'
	tʃo ² kʰo ³	'hollow'
	ko ³ tʃe ³	'big around'

Word medially, the voiceless stops (including the aspirated stops) and affricates may have pre-aspirated allophones when they occur initial in a stressed syllable.

wa ² [h]pa ²	'wide'	ro ³ [h]to ³	'water gourd'
ru ² [h]tʰa ¹²	'charcoal'	na ² [h]kwa ¹ -ʃo ⁷ 3	'we(excl) go'
ga ¹ [h]tsi ¹	'tomorrow'	ko ³ [h]tʃe ³	'big around'

This allophonic pre-aspiration does not occur after glottal stop.

ni⁷2tʰe:¹² 'he said'

Voiced stops and affricate

The voiced stops /b, d, g/ and the voiced affricate /j/ are found word initially and word medially.

/b/	bu ¹ ʃa ³	'bag'
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	ba³di¹	'aerial plant'
	ša¹bi¹	'earring'
/d/	du²wi⁷³	'my pepper'
	tša¹²da³	'sandal'
	i²dyu⁷³	'my lime'
/g/	gu⁷²wa¹	'house'
	gu³wa⁷³	'ten'
	tsi¹ga⁷²	'seed'
	a²gu⁷²	'fire'
/j/	ja⁷²q²	'buzzard'
	mba³ja¹²	'turkey hen'
	i²yu⁷³	'my head'

A word-initial non-stressed /b/ usually becomes a voiced fricative [b̥], when first in a consonant cluster.

[b̥]ri¹hni¹ 'ridge'

Also when word initial non-stressed, /b/ may alternate between a stop and a fricative when preceding /a/.

[b̥]a³di¹ 'aerial plant'

When preceding front vowels, the stop allophone occurs.

bi³yu¹ 'hawk' **ša¹bi⁷³** 'my soap'

The voiced dental stop /d/ has no fricative allophones. It is found in stressed and non-stressed syllables.

a²da³ 'child' **di²ye⁷³** 'my(fem) brother'

A syllable-initial non-stressed /g/ has the fricative allophone [g̥] when preceding a vowel or semiconsonant.

[g̥]u⁷²wa¹ 'house'

[g̥]o³hq³ 'tuber'

[g̥]we¹yq³ 'very'

The stop allophone /g/ occurs elsewhere, especially in stressed syllables and in consonant clusters following /n/ or contiguous to /r/.

hu¹go² 'closed'

gq⁷³ 'moon'

gq⁷¹ 'I am seated'

ngu¹wq¹ 'cold'

rgo⁷³q³ 'alder tree'

Fricatives

The dental fricative /s/ occurs word initially and word medially. In native words /s/ occurs only in consonant clusters.

/s/ **sko³ho³** 'much'

syā⁷¹ 'animosity'

sma¹ma⁷² 'corn silk'

mi⁷²smba² 'grimy'

In loan words /s/ may appear preceding a vowel.

la ² sa: ¹³	'sorrel-colored (from Sp. <i>alasan</i>)'
sa ¹ rko ³	'elderberry (from Sp. <i>saúco</i>)'

The /s/ contrasts with /ts/ after a glottal stop.

ya ⁷² si ⁷²	'clear water'	vs.	mi ⁷² tsi ⁷¹	'greasy'.
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The retroflexed alveopalatal fricative /ʃ/ occurs word initially and word medially. The /s/ contrasts with /ʃ/ preceding a consonant or following a glottal. (See examples of /s/ above.)

/ʃ/	ʃi ³ go ³	'forked post'
	ʃa ³ mbo ³	'ember'
	ʃu ² wa ²¹	'gourd bowl'
	ʃma ⁷³ i: ¹	'Teocuitlapa (town)'
	ʃki ⁷³ ʃi ⁷¹	'tick'

The /ʃ/ becomes non-retroflexed when contiguous to /i/, but it may fluctuate from retroflexed to non-retroflexed if it is also contiguous to /u/. It is slightly retroflexed when preceding a consonant.

i ² ʃe ³	'tree'
ru ² ʃi ²	'corn weevil'
ʃpa: ⁷¹	'roof ridge'

Nasals

The nasals /m n/ are found word initially and word medially.

/m/	ma ² tʰa ²	'creek'
	gu ¹ ma ¹	'thread'

/n/	na ² do ²	'corn husk'
	tʰa ² na ²	'medicine'

The /n/ preceding a velar stop has the allophone [ŋ].

[ŋ]ga ¹ tso ²	'marrow pudding'
ma ² [ŋ]gu: ⁷¹	'me also'

Liquids

The lateral /l/ occurs word initially and word medially.

/l/	la ¹ ka ⁷¹	'small (pl.)'
	tsi ² lu: ⁷²	'its tail'

The vibrant /r/ is found word initially and word medially. It does not occur in stressed syllables.

/r/	re ⁷³ e ³	'flower'
	ra ³ gq ⁷³	'chirimoya fruit'
	ma ¹ hə ¹ -ra ¹	'that's fine, now'
	ni ² ri ¹² ya ⁷²	'I removed it'

A trilled allophone may occur when /r/ is word-initial non-stressed and when first in a consonant cluster.

ra ³ mbo ³	'tomato'
a ² ta ² rti ¹ gu ¹	'lower it'

When preceding the vowel /i/, the allophone of /r/ may be a voiced alveopalatal retroflexed fricative [ʒ].

ni ² ri ¹² ya ⁷²	'I removed it'.
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A flapped allophone occurs in other environments, except it may be trilled when emphasized.

a²ra²thə¹ 'say it!'

There is contrast between /d/ and /r/ in non-stressed syllables.

di²ya: ?³² 'your (fem) brother' vs. **ri¹ga³** 'there is'
ma³di¹nga: ?² 'it will spill' vs. **ma³ri¹ga³** 'there'll be'

Semiconsonants

The voiceless bilabial semiconsonant /w/ occurs word initially and word medially. It occurs contiguous to all vowels except that it does not occur preceding /u/ or /o/.

/w/	wa³yi²	'often'
	we³?e³	'sand'
	ha²wa: ?¹	'below'
	ša³wi¹	'crab'
	mo³wa: ?¹²	'will join'
	hu¹wa ?²	'they exist'

The /w/ follows all consonants except voiced resonants /m n r l y/.

bwa²nu¹	'elders'	ni³tswa¹hə²	'I made stand'
šwa²	'market'	hwə²	'seven'
ywa ?²a³	'orphan'	na³ngwa¹²	'none'
a ?³khwe³	'there'	na²twa ?²ə¹	'it revolves'

As the first member of a consonant cluster, /w/ occurs only before /y/.

šu³wyā: ?¹² 'your dog'
na ?²ne² ška¹wya ?³ 'he is mistreating you'

When /w/ occurs preceding a nasal vowel, a nasalized allophone [w̃] occurs unless separated from the stressed nasal vowel by a consonant other than /h, ?, w or y/.

a²wə² 'measure'
štwa¹hə ?² 'rabbit'
wa²bū: ?¹ 'I am weak'

The sequence /hw/ may be realized as a voiceless bilabial fricative [p̥] in the idiolects of some speakers.

i³hwi³ 'griddle'
e²hwa ?¹ 'banana bunch'

The voiced alveopalatal semiconsonant /y/ occurs word initially or medially contiguous to any vowel. It may follow any consonant.

/y/	ya: ?²	'honey'	yu²ska²	'fertilizer'
	wa³yi²	'often'	di²ye ?³	'my (fem) bro.'
	gwe¹yq³	'very'	ši³yi ?¹²	'my scorpion'
	hya²ma²	'boys'	a ?³mya: ?¹²	'your bees'
	rya²hma³	'second'	na¹nya: ?¹²	'your mother'

When syllable-initial /y/ precedes nasal vowels, but is not in a consonant cluster, the allophone [ɲ] may fluctuate with the nasalized allophone /ỹ/.

gi ² [ɲ̃y]u ²	'cactus juice'
i ³ [ɲ̃y]a ³	'coyote'
tša ¹ [ɲ̃y]a ³	'helpless'
[ɲ̃y]u ² hu ²	'their beans'

When /y/ occurs between a consonant and a nasal vowel, it becomes nasalized unless separated from the stressed nasal vowel by a consonant other than /h, ʔ, w, y/.

a ³ k[y]a ³ ʔ ²	'your heart'
gya ¹ ʃu ²	'their appearance'

Laryngeals

The laryngeal /h/ may occur word initially or word medially.

/h/	ha ² mba ³	'road'
	tše ³ he ³	'horn'

The /h/ takes the quality of whatever phoneme it precedes.

hw	> [Ww]	as in	a ² hwa ³	'metal'
hm	> [Mm]	as in	hme ² gwi ³	'my father-in-law'
hn	> [Nn]	as in	ni ² ga ¹ hnu ²	'he went out'
hng	> [ŋg]	as in	a ³ hnga ²	'word'
hi	> [Ii]	as in	hi ³ yū ³	'heavy'

The glottal stop /ʔ/ does not occur word initially; it occurs only in syllable-final position. However, it may occur either word medially or word finally.

/ʔ/	ga ³ u ²	'spider'
	ga ³ no ³	'new corn'

There are certain morphemes whose basic allomorphs have an initial glottal stop. This glottal stop is actualized only when that morpheme follows a morpheme ending with a vowel.⁵ In such a sequence, the glottal stop is pronounced with the first morpheme.

i ² še ³	+	(?)mba ³	>	i ² še ³	mba ³
'stick		'long		'long	'stick'

If the basic allomorph of the first word ends in a glottal stop, the morpheme-initial glottal stop of the second morpheme assimilates with the first glottal stop.

ki ¹ to ²	+	(?)ša ³	>	ki ¹ to ²	ša ³
'noose		'tight		'tight	'noose'

3.2 Vowels

The vowels may be described as follows: high, close, unrounded /i/; mid, open, unrounded /e/; low, open /a/; mid, close, rounded /o/; high, close, rounded /u/. All may be nasalized⁴ and/or lengthened making a total of twenty vowel phonemes.

	Short	Nasal	Long	Nasal + Long
High:	i	ĩ	i:	ĩ:
	u	ũ	u:	ũ:
Mid:	e	ẽ	e:	ẽ:
	o	õ	o:	õ:
Low:	a	ã	a:	ã:

Vowels /i e a/ may occur word initially, while all vowels may occur syllable initially. All are in contrast in syllable-final position. Long vowels contrast with short vowels only in the stressed syllable.

/i ɪ i: ɪ:/	i ² tsi ¹ gi ² tsɪ ¹ ga ¹ tsi: ¹ dɪ: ³	'stone' 'game' 'tomorrow' 'guava'
/u ʊ u: ʊ:/	i ² du ² i ² yʊ ² ʃu: ⁷³ a ² dʊ: ¹³	'eye' 'tooth' 'his breath' 'their shoes'
/e ɛ e: ɛ:/	e ² de ³ e ³ ?e ³ a ³ de: ¹³ ni ² ?tʰe: ¹³	'head' 'bamboo' 'his child' 'he said'
/o ɔ o: ɔ:/	a ³ do ²³ ni ² tʰq ² mi ² ʃo: ² brq: ³	'caterpillar' 'it was cut' 'dry' 'roaring noise'
/a ʌ a: ʌ:/	a ² da ³ a ² kwã ¹² mba: ³ dã: ²	'child' 'ant' 'big' 'pot'

The vowels have allophonic length in pre-stressed syllables when preceding a voiced consonant.

ma[:] ¹ ga ⁷¹	'onion'	vs.	na ¹ ʃa ⁷¹	'acacia'
ra[:] ² ya ⁷²	'jug'	vs.	ya ² ha ⁷²	'louse'
tʰa[:] ² na ²	'medicine'	vs.	ya ² ha ²	'beans'
ʃa[:] ¹ bi ¹	'earring'	vs.	ʃpi ¹ pi ¹	'wing'

Vowels have allophonic nasalization in pre-stressed syllables preceding a nasal vowel unless separated from that vowel by a consonant other than /y w h ?/.

[ɪ] ¹³ ya ⁷³	'coyote'	vs.	a ² dʊ: ¹	'load me!'
[ã] ² hwã ⁷³	'metal'	vs.	a ³ kwĩ ⁷³	'my heart'
[ã] ⁷³ ʊ ¹³	'iguana'	vs.	a ³ ?mĩ: ¹³	'their bee'

All vowels, oral and nasal, long and short, may be followed by a glottal stop except for /q:/.

yi: 73	'paper'	mu ¹ hq: 71	'I am good'
yɛ: 72	'steam bath hut'	yɛ: 733	'leech'
tso ³ tq 72	'goat'	yo: 72	'bed'
ga ² ma 73	'fever'	mba: 72	'land'

4. Sequences

Some aspects of distribution have been discussed above in the presentation of individual phonemes. This section addresses the sequences or clusters which occur in Tlapanec. Since more than one vowel does not occur in one syllable, the only clustering of vowels is across syllable boundaries.

a ² ʔ 71	'my stomach'	ha ² o: 23	'down below'
hu ¹ ʔ: 23	'he wears it'	me ³ kʰo ³ o: 13	'he'll eat it up'

Other vowel sequences are separated by glottal stop.

mbi 72 i 2	'day'	na ² ga 72 a ¹	'it boils'	ha 72 o ²	'clean'
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The distribution of consonants has few restrictions. Most consonants occur both in stressed and non-stressed syllables, however the majority of monosyllabic words have consonant cluster onsets.

ʂta ¹	'skin'	mba: 3	'big'	ʂko 73	'my valley'
smba ²	'grime'	ndi: 71	'cigar'	ʂna ²	'feather'

We have found no significant restriction on the co-occurrence of single consonants in different syllables of one word. The distribution of consonant clusters is similarly unrestricted. Clusters occur in both stressed and non-stressed syllables, though not in clitics. Two clusters may occur in the same word, although they are rarely similar clusters.

kra ³ hnga: 1	'stretched across'
ʂta ¹ rna 72 ʔ 2	'placenta'
tsu 72 tsu ¹	'humming bird'

The consonant clusters which occur in Tlapanec are charted on Table 1.7. Each cluster type has one consonant which we consider to be the core of the cluster. The consonants which can be cores of clusters are listed in the column labeled CORE. The consonants which may precede a given set of core consonants are listed in the column labeled PRE, and those which may follow a core are in the POST column. The consonant clusters of Tlapanec are composed of only one consonant from each cluster position or column, except for Type 3 and Type 8, which have two consonants in the core position as shown below.

CONSONANT CLUSTERS

	PRE			CORE			POST			
TYPE 1 (2&3)	s	š	r		p	t	k	r	w	y
TYPE 2 (2)	s	š			p ^h	t ^h	k ^h	r	w	y
TYPE 3 (2&3)	s	š	h	r	mb	nd	ng	r	w	y
TYPE 4 (2)				r	b	d	g	r	w	y
TYPE 5 (2)	s	š	h	r	m	n				y
TYPE 6 (2)				r	s	š	h	r	w	y
TYPE 7 (2)		š				l				y
TYPE 8 (2)					ts	j	nj	r	w	y
TYPE 9 (1)			o		tš	ʔ				o

TABLE 1

The table should be read as follows: Cluster Type 1 includes clusters of both two and three consonants. That is, a CORE consonant may be preceded by one of the PRE consonants, may be followed by a POST consonant, or may occur with both. The nine types of consonants listed have differing restrictions which are mentioned below.

A general restriction applies to /r/ as the only consonant listed in both PRE and POST positions. /r/ never occurs both before and after a core in a three-consonant cluster. /rp/ and /pr/ occur, but never /rpr/.

TYPE 1 clusters consist of the voiceless stops /ptk/, which may occur with preceding sibilants or /r/ and may be followed by /r/ or the semiconsonants.⁹ Most of the 18 possible /CC/ and

24 possible /CCC/ clusters of Type 1 actually occur in our data, and are illustrated with the following representative examples.

/šp/	ra ³ špa ³	'roof beam'
/rt/	a ² ta ² rti ¹ gu ¹	'lower it!'
/tr/	tra ¹ ma ⁷²	'they're upon'
/tw/	na ² twa ⁷² a: ¹	'it rotates'
/ty/	šu ³ kya: ⁷¹²	'your animal'
/špr/	špri ² gu ¹	'hanging down'
/spy/	spya ² ha ²	'skin mole'
/rtw/	a ² ta ² rtw ² a: ¹	'rotate it!'
/škw/	škwa ³	'flat land'

These do not occur in our data: /sp pw špy rpy spw sty rty stw sky šky rky rkw/.

TYPE 2 clusters are built on the aspirated voiceless stops /ph th kh/, which may occur with preceding sibilants or with following /r/ or a semiconsonant. We have no /CCC/ clusters of this type. All clusters which occur are illustrated below.

/šk/	ni ² škha: ⁷²	'he chased you'
/sk/	na ² skho: ²	'he is lazy'
/thr/	a ² thra ¹ me ³	'whistle!'
/khr/	ma ³ khro ⁷¹ o: ²	'will be wedged up'
/khw/	a ⁷³ khwe ³	'there'
/phy/	wi ² phyu: ¹	'I'm light'
/thy/	a ² thya ² wa: ²¹	'care for it!'
/khy/	khy ³ ma: ²¹	'I trust you'

TYPE 3 clusters have a core of a nasal-voiced stop combination /mb nd ng/, which may occur with a preceding fricative or /r/ and with following /r/ or a semiconsonant.⁹ Of the 21 possible /CC/ clusters of this type, samples of the 17 which actually occur follow.

/smb/	smba ²	'grime'
/hnd/	ni ² hndo: ⁷²	'it dried'
/rng/	a ² ta ² rnga ¹ še ³	'knock it down!'
/mbr/	mbro ⁷² q ²	'night'
/ndy/	ru ¹ ndya: ⁷²	'your pitch pine'

These do not occur: /mbw ndw ndr rnd/.

Of the 33 possible /CCC/ clusters in Type 3, the following 7 occur.

/hmby/	a ³ hmb(y)a: ⁷²	'your husband (some speakers)'
/šndr/	šndru ¹² to ³	'large gourd bowl (some speakers)'
/sngr/	wa ² sngra ⁷¹ a: ¹³	'he was misled'
/šngr/	ma ³ šngro ⁷¹ o: ²	'I will scatter'
/hngr/	ni ² hngri ¹ gu ¹	'he hung it'
/hngy/	i ³ hngya: ⁷¹²	'your gopher'
/hngw/	ma ³ rma ¹ hngwa ⁷²	'I will push'

TYPE 4 clusters consist of the the voiced stops /b d g/, with either a preceding /r/ or a following /r/ or semiconsonant. Ten /CC/ clusters occur, but we have no /CCC/ of this type.

/rg/	rgo ⁷³ q ³	'elderberry tree'
/br/	bri ¹ hni ¹	'mountain ridge'
/dr/	dra ³ kɛ: ³	'(certain bird)'
/gr/	gri ⁷³ i ¹	'weeding tool'
/bw/	bwa ² hu ²	'elders'
/dw/	ni ² dwa ⁷¹ q ¹	'they fell in'
/gw/	gwe ¹ yq ⁷³	'much'
/by/	ša ¹ bya: ⁷¹²	'your earring'
/dy/	a ⁷³ dya: ⁷¹²	'your child'
/gy/	a ⁷³ gya: ⁷²	'your wife'

TYPE 5 clusters are built on the nasals /m n/, which may occur with a preceding fricative or /r/ or may have a following /y/. Samples of the ten occurring clusters of this type follow.

/sm/	smi ¹ du ¹	'narrow'
/šn/	ni ² šne ⁷¹	'he gave me it'
/hm/	a ³ hma ³	'two'
/rn/	šta ¹ rna ⁷² q ²	'placenta (some spkrs)'
/my/	a ⁷³ mya: ⁷²	'your bee'

TYPE 6 clusters have as their core the same fricatives, /s š h/, which fill the PRE position of other clusters. Only /š/ occurs with a preceding /r/.

/rš/	a ⁷³ da ¹ rša ³ hmo ⁷³	'my cousin'
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Of the nine possible combinations of /s š h/ followed by /r w y/, all occur except /sr/. For example:¹⁰

/šr/	na ² šri ¹ gu ¹	'it goes down'
/hr/	na ³ hra ¹² mu ⁷³	'I'm cold'
/sw/	swa ²	'swelling'
/hw/	hwa ²	'seven'
/hy/	mi ² hya ⁷²	'watery'

TYPE 7 consists of two clusters in which /l/ occurs either with a preceding /š/ or with a following /y/.

/šl/	šla: ²	'bushy'
/ly/	šti ¹ lya: ⁷²	'your chicken'

TYPE 8 clusters involve the affricates /ts ɟ/ and the combination /nɟ/. Only /ts/ precedes /r/.

/tsr/	ka ² tsra ⁷² a ¹	'inserted'
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Both /ts/ and /ɟ/ precede /w/ and /y/, and /nɟ/ precedes /w/.

/tsw/	a ² ta ² tswa ¹ hq ²	'stand them up!'
/tsy/	tsya ¹ ngwa ¹²	'who knows?'
/ɟw/	ɟwa ⁷² a ²	'orphan'
/ɟy/	mba ³ ɟya: ⁷¹²	'your turkey hen'
/nɟw/	nɟwa ³ he ³	'Halloween'

TYPE 9 is included in the chart to show the two consonants, /tʃ/ and /ʔ/, which do not cluster with other consonants in syllable onsets. Within words, /ʔ/ may occur preceding all consonants except the non-aspirated voiceless stops /p t k/. The affricate /tʃ/ does not occur in any consonant clusters.

Exceptions

There are a few clusters which are exceptions to the general patterns presented in the Table 1. The sequence /wy/ occurs in some idiolects following /u/ or velar consonants. Due to the absence of a /yw/ sequence, we prefer not to create a cluster type with semiconsonants in its CORE position. We simply note that for some speakers /wy/ is an exception occurring in certain inflected words.¹¹ Other speakers omit the (w) in the following examples.

/wy/	ʃu ³ (w) ya: ʔ ¹²	'your dog'
	du ² (w) ya ² ʃo ^{ʔ3}	'our(excl) pepper'
/kwy/	a ³ k (w) ya: ʔ ³²	'your heart'
/gwy/	a ^{ʔ3} g (w) ya: ʔ ³²	'your wife'
/ngwy/	a ³ ng (w) ya: ʔ ³²	'your relative'

Another anomaly involving /w/ is the sequence /wr/ which occurs only following /h k g/. The sequence /hwr/ is always pronounced /[p]r/.

/hwr/	na ² hwra ^{ʔ2} a: ʔ ³	'you understand'
	hwro: 2	'a chill feeling'

The rare sequences /kwr/ and /gwr/ are problems because the labialization occurs simultaneously with both the stop and the /r/. It appears that /kwr/ could also be written /krw/.

/kwr/	ma ² kwri ¹² ʃta: ʔ ²¹	'Xochiatenco (town)'
/gwr/	na ³ gwri ¹ gu ¹	'I receive' ¹²
	na ³ gwri ^{ʔ3} ya ^{ʔ1}	'I dump into' ¹³

A final exception to the general cluster patterns occurs in the sequences /rw/ and /ry/. We have only these examples:

/rw/	rwa ² ʃku ²	'(a certain mushroom)' ¹⁴
/ry/	ryu ^{ʔ1} ʔ ¹	'that(remote) one' ¹⁵
	rya ² hma ³	'second'

5. Tone

5.1 Basic Tones

Tlapanec has three basic tones, written with /¹/ high, /²/ mid, and /³/ low:

mba ¹	'one'	ʃpa: 1	'roof ridge'
smba ²	'grime'	hmbu: 2	'slanted'
ʃkwa ³	'plain'	mba: 3	'large'

ša ¹ ya ¹	'nest'	smi ¹ du ¹	'narrow'
i ² yq ²	'tooth'	sku ² ni ²	'black'
e ³ he ³	'children'	ri ³ ga ³	'lying there'

The difference in pitch between high and mid tone is approximately a musical half-step. Between mid and low tone there is a difference of three to four whole notes. All possible combinations of single tones occur in two-syllable Tlapanec words:¹⁶

pa ¹ tsi ¹	'cliff'	ru ³ bu ¹	'chayote'
ri ¹ gu ²	'put upon'	a ³ ga ²	'pig'
mba ¹ šte ³	'hen'	tsu ³ du ³	'back'
i ² tsi ¹	'stone'		
ru ² ši ²	'weevil'		
a ² na ³	'father'		

Long vowels may occur in the stressed syllable of a word and may carry more than one tone. All possible combinations of two tones appear as glides on long vowels, and at least two three-tone glides also occur.¹⁷

/12/	tša ¹²	'who?'	/13/	i ² nu ¹³	'their face'
/21/	ha ¹ ma ²¹	'earlier'	/23/	i ² nu ²³	'his face'
/31/	hi ³ yq ³¹	'I'm heavy'	/32/	hu ¹ ba ³²	'on a mountain'

/313/	i ³ hi ³¹³	'their children'
	no ³ t ^h q ³¹³ -šo ⁷³	'we tell him'

/323/	i ³ hi ³²³	'his children'
	no ³ hndo ⁷³²³	'it dries again'

In addition to the glides on long vowels, there are some glides on short vowels, both stressed and non-stressed.¹⁸

/12/	a ² hnga ¹²	'word'	mba ³ ya ¹²	'turkey hen'
/23/	a ³ do ²³	'caterpillar'	a ³ nga ²³	'rat'
/12/	tša ¹² da ²	'sandal'	nja ¹² ma ²	'banana'
/21/	ya ²¹ gwi ¹	'sister (of man)'	ya ²¹ ma ²	'boy'

All vowels carry contrastive tone, but the semiconsonants /y/ and /w/ do not. The nasal consonants have the tone of the following vowel, except in the case of nasals preceding voiced stops, /mb/ /nd/ and /ng/. In this position the nasal is pronounced with a mid tone when utterance initial. Otherwise it has the tone of the preceding vowel.

ha ¹ ma ²¹	'earlier today'	a ² na ⁷³	'your father'
mba ³	'large'	ndi ⁷¹	'cigarette'
wa ¹ mba ³	'it ended'	na ³ ngwa ¹²	'none'

5.2 Allotones

The allotones of Tlapanec include the following:¹⁹ (1) High tone is lowered when it follows a low tone within a word. In the following examples, the pitch of the last syllable is lower than that of the first.

ša¹bya⁷³-lo⁷¹ 'our(incl) soap' **wa¹mba³-ma⁷¹** 'it ended now'
Across word space high is not affected by a preceding low.
ša¹bo³ ma¹hə⁷¹ 'good soap'

(2) High tone is raised when it precedes a low tone within a word. The pitch of the second syllable is higher than that of the first syllable in the following examples.

gu¹ma¹-šo⁷³ 'our(excl) thread' **smi¹du¹-ne³** 'it is narrow'

(3) A high tone is also raised in a syllable checked with glottal stop which occurs prepausal:

ma¹hə⁷¹ 'good' vs. **ngu¹wə¹** 'cold'

5.3 Tone Sandhi

There is no perturbation of tones across word boundaries. Words have the same tones regardless of what precedes or follows them. However, there is tone sandhi within the word. The tones of some words change when they are compounded, and some affixes provoke changes of tone. Although a full discussion of sandhi is beyond the scope of this paper, the following examples illustrate its influence.

Sandhi in Compounds

a²da³	+	šu³wə⁷¹	>	a⁷³da¹šu¹wə⁷¹
'child	+	dog	>	puppy'
a²da³	+	mi¹štɥ:³	>	a⁷³da¹mi¹štɥ:⁷¹
'child	+	cat	>	kitten'

Sandhi in Affixes

ra³-	+	ma²ša⁷²	>	ra³ma¹ša⁷²
'NEG	+	green	>	not-green'
ra³-	+	hu³ba⁷³	>	ra³hu¹ba⁷³ ~ ra¹hu³ba⁷³
'NEG	+	dirty	>	not-dirty'

Notes

¹Malinaltepec Tlapanec is one of six dialects of Tlapanec, a language currently spoken by approximately 60,000 people in eastern Guerrero, Mexico. (For more information about the dialects and population see Weathers 1976:367.) This paper is based on the pronunciation of speakers from several different towns in the Malinaltepec municipality (pop. 20,000). In our early study we were aided by Viola Waterhouse and Allan Jamieson. We are grateful to Eunice Pike for her help in accurate recording and analysis of phonetic details, and for numerous suggestions regarding this presentation. To Antonio Morán and Francisco Basurto of Paraje Montero, Guerrero, both over 50 years of age, we are indebted for their patient repetitions in the final check of our data. And we are especially thankful for the detailed work of the late Jorge A. Suárez in La lengua tlapaneca de Malinaltepec. Although our data and analyses differ in some respects, his book has provided useful insights.

²Tlapanec has been classified by Rensch (1977:77) as an Otomanguean language, most similar to Zapotec in historical development (Rensch 1977:95).

³Here our analysis differs from that of Suárez (1983:7) in that he claims MT has no contrastive stress.

⁴Suárez (1983:7) treats /ph, th, kh/ as clusters, and his inventory includes /p/ (see our allophones of /w/).

⁵This data seems to support the observation of Rensch (1977:92) that word-initial glottal stop of Proto Otomanguean is apparently preserved in Tlapanec when protected by a preceding vowel.

⁶Although we have chosen to posit a series of nasalized vowels, nasalization could be treated as a word level feature. Nasalization which occurs on the vowel of the stressed syllable and on certain enclitics regresses to the non-stressed syllables unless a consonant other than /y, w, h, ?/ is reached. A similar regression of nasalization is seen in Trique (Hollenbach 1977:46).

⁷An account of Tlapanec consonant clusters using a multilinear model and the Sonority Sequencing Generalization is presented in Everett and Weathers (1985).

⁸Voiceless stops (both Type 1 & 2) may be preceded by [h], but this preaspiration is allophonic.

⁹In describing consonant clusters, we treat /mb nd ng ny/ as units. To treat these sequences like other clusters would require a column on the chart for nasals before voiced stops. Since no other consonants follow nasals, such a column seems to us an unnecessary complication. Furthermore, if /mb nd ng/ were regarded as normal clusters, then sequences like /hngr/ would be the only clusters of four consonants. We consider the maximum consonant cluster to be /CCC/, but Suárez posits maximum clusters

of five consonants with /hngrw/ in **-ma¹hngywa³** 'to push' as his only example (1983:32,35). Our data include **ma³rma²hngwa⁷³** 'I will push', but no examples of /hngrw/ or /hngwr/.

¹⁰As indicated under the allophones of /w/ above, in certain words the sequence /hw/ is pronounced [p] by some speakers.

¹¹According to Marlett and Weathers (1983), nouns of Class 2 add a class vowel /-i-/ before possessive suffixes. The /i/ becomes /y/ when the suffix vowels are added, so if the root consonant was /w/, the cluster /wy/ results.

¹²Suárez records this stem with /wr/ (1983:32), which is a sequence we have not observed.

¹³Suárez records this stem with /grw/ (1983:35).

¹⁴This word is sometimes pronounced **ra³wa²šku²**. The example **-rwan³** 'to pierce', which Suárez gives for /rw/ (1983:37) appears as **-ru³wa⁷³** in our data.

¹⁵This word consists of **ri¹** 'which' + **yu⁷¹q¹** 'over there'.

¹⁶Further examples of the possible tone combinations are given by Suárez (1983:55).

¹⁷If each level pitch and each glide are counted as separate tones as has been done for some other languages, then Tlapanec has eleven tones (3 level, 6 glides and 2 double glides). All tones occur on stressed syllables, but only the level tones and two glides, /¹²/ and /²¹/, occur on non-stressed syllables. By comparison, Pride lists seven contrasting tones which occur in tonic syllables of Tataltepec Chatino, only four of which occur on penultimate syllables, and only two of which occur on antepenults (1984:75).

¹⁸Some glides on unstressed syllables occur in apparent compound words in which a syllable or vowel of a constituent morpheme is lost but its tone is added to the tone of a remaining vowel.

¹⁹The allotones we report are all variants of high tone. They bear out the generalization of Pike that high pitch in a tone system will be affected by its environment (1974:169).

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