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# Ixcatlán Mazatec Phonology

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## 0. Introduction

This paper describes the phonology and tone system of Ixcatlán Mazatec, an Otomanguan language of Southeastern Mexico. This phonological description is based primarily based on the speech of Mr. Mario Ignacio de Jesus, a native speaker of the Mazatec language as spoken in the village of Chichicazapa, in the district of Soyaltepec, in the state of Oaxaca, Mexico. Mr. Ignacio is in his early thirties. He was born and raised in Chichicazapa of Mazatec parents. The population of the village is approximately 2000 inhabitants, the majority of which are native speakers of Mazatec.

### List of symbols:

Nasal vowels	ä, ë, i, ü		
Phonetic representation		[	]
Phonemic representation		/	/
Morpheme gloss		"	"
References		(	)
Consonant		C	
Vowel		V	

## 1.0 The Word

Words in San Pedro de Ixcatlán Mazatec (Ix) contain a stressed syllable which may be preceded by up to three pre-stressed syllables. Words never exhibit more than one post-stressed syllable. Stress is predictable in that it always occurs on the ultimate syllable of the stem. It is not contrastive and need not be written. The post-stressed syllables are enclitics.

Rhythm segments may contain from one to four syllables with stress on the ultimate syllable. In this paper hyphens are used to separate enclitics from the final syllable of the stem.

One syllable words:

[ zi ]                    "he goes"

Words with one pre-stressed syllable:

[ zoze ]                    "he sleeps"

Words with two pre-stressed syllables:

[ khiβixo ] " it is pouring out"

Words with one post-stressed syllable:

[ zothotsaβeʔan ] "I play"

Words with two post-stressed syllables:

[ katso-na'an ] "he said to me"

## 2.0 The Syllable

Syllables in Ix are composed of a nucleus of one or two vowels. All syllables are open with an onset of one, two or three consonants.

### 2.1 Stressed Syllables

The following syllable types may occur in stressed syllables. Stressed syllables may contain any consonant cluster.

CV	[ øi ]	"he goes"
CVV	[ tie ]	"ten"
CCV	[ tsa ]	"hand"
CCVV	[ tsie ]	"brother"
CCCV	[ stsa ]	"bag"

The sequence glottal stop plus vowel may occur word initially in stressed syllables. Word initial vowels occur only in pre-stressed syllables.

[ ʔə ] " word"

[ ʔä ] " I "

## 2.2 Pre-stressed syllables

There are three types of pre-stressed syllables.

V	[ ɪchɪ ]	"women"
CV	[ ʙokoya ]	" he teaches"
CCV	[ ɔothotsabe ]	" he plays"

### 3.2.1 Syllabic / n /

"A pattern of unstressed \*nV > /ŋ/ (syllabic nasal) appears to be emerging in Ix. Evidence of /nV/ - /ŋ/ can be seen in cognate sets 249 ..., for all of these sets it seems reasonable to suggest that the Pre-Ix form was \*nV." (see Kirk pp. 32-33)

The syllabic /ŋ / syllable is always found pre-stressed word initial.

[ ŋnta ]	"bone"
[ ŋntsə ]	"tail"
[ ŋntsha ]	"he dispenses"
[ ŋntie ]	"ground"
[ ŋ?ño ]	"his teeth"

This process is well illustrated by transcriptions done at different times. At left are transcriptions published by P. Kirk in 1966 and at right are transcriptions done in 1997..

[ niñu ]	"star"	[ ŋño ]	"star"
[ ninta ]	"bone"	[ ŋnta ]	"bone"
[ nãña ]	"dog"	[ ŋña ]	"dog"

### 2.3 Post-stressed syllables

All post-stressed syllables are of type CV.

[ nkico-na ]        " my house "

[ ntse-ji ]        " your hand "

### 2.4 Restrictions in non-stressed syllables.

Non-stressed syllables are restricted as to type and content as listed below.

A. The only syllable types which occur as non-stressed syllables are listed below.

V        [ ɛ ]        "word"

CV       [ zoze ]        " he sleeps "

CCV      [ hakhinti ]      "group of children"

B. /ʔ/ does not occur in a non-stressed CV syllables.  
See section 3.1.3.

C. /h/ does not occur as the first consonant in consonant clusters of nonstressed syllables.

D. Nasalized vowels do not occur in non-stressed syllables.

F. Free variation of /a/ and /o/ occurs in non-stressed syllables. See section 3.2.2.

G. Vowel clusters are not found in nonstressed syllables except in borrowed words.

[mierkue ]        "Wednesday"

[ naášcha ]        "grandmother"

### 3.0 Segmental phonemes

#### 3.1 Contrastive consonant phonemes

Bilabial Alveolar Postalveolar Palatal Velar Glottal

Stops	(p)	t		k	ʔ
-----					
Affricates				c	
-----					
Fricatives	ɸ β	s	š		
-----					
Nasals	m	n		ɲ	h
-----					
Semiconsonant			y		
-----					
Flap		r			
-----					

The stop / p / occurs only in loan words. .

[ pä ] "bread"

The flap /r/ occurs in loan words and in one other morpheme.

[ tsja-ri ] " you like (it)"

##### 3.1.1 Allophones of Consonant Phonemes

A. Stops and affricates become voiced following / n /.

t : d [ ntiʔi ] " fire"

k : g [ nko ] "one"

c : j [ njiha ] "drink mix"

B. /š/ is retroflexed before the back vowels /a/ and /o/.

[šo] REPORTATIVE

[ša] "tiger"

C. /n/ becomes velar before velar stops.

[ nka ] REL PRONOUN

[ nko ] "one"

D. /ʔ/ is realized as follows:

1. Laryngealization of vowels:

[ʔä] "I"

[ʔë] "word"

2. A full stop between vowels:

[ntiʔi] "fire"

3. When following consonants and preceding vowels /ʔ/ is actualized as laryngealized vowels.

[kʔë] "dead"

[sʔui] "fiesta"

[cʔa] "drunk"

E. The phoneme / h / and voiceless nasals

Voiceless nasals /n, m, ñ/ are considered to be a cluster of two consonants /hn, hm, hñ/. This cluster consists of the voiceless velar fricative /h/ preceding the nasal. It has the same point of articulation as that of the consonant it precedes. (see Agee and Agee, p.6)

[ nihma ] [ niMma ] "beans"

[ hno ] [ Nno ] " corn "



[ hña ]

[ Ñña ]

"chile"

3.1.2. Single consonants in stressed syllables (CV stressed syllables)

t	[ to ]	"fruit"
k	[ ke ]	"here"
c	[ ca ]	"fence"
s	[ sa ]	" moon, month"
x	[ ša ]	"tiger"
h	[ ha ]	"hawk"
ʔ	[ naʔmi ]	"father"
m	[ nima ]	"poor"
n	[ ni ]	"thing"
ñ	[ ña ]	"where"
r	[ ri ]	"you"
ø	[ øi ]	" he goes"
β	[ βe ]	" he knows"
y	[ ye ]	"snake"

3.1.3 Single consonants in nonstressed syllables

t	[ tiko ]	" pottery"
k	[ kiti ]	"it is broken"

c	[ ciʔya ]	" father-in-law"
s	[ siŋe ]	" yellow"
š	[ šinta ]	"thirst"
h	[ haxo ]	"garlic"
m	[ miyo ]	"he runs"
n	[ naxi ]	"mountains"
ñ	no example	
r	[ raxto ]	" strip of cloth used for huipils
ɛ	[ zoze ]	" he sleeps"
β	[ βixo ]	"he pours"
y	[ yihe ]	" turtle"

All the consonants are found in nonstressed syllables except /ʔ/.

### 3.1.4 Clusters of two consonants in stressed syllables

#### 3.1.4.1 Consonants preceded by / h / in stressed syllables

In consonant clusters of /hC/ only nasals occur as the second consonant.

hn	[ hnö ]	" corn "
hm	[ nihma ]	"beans "
hñ	[ hña ]	"chile"

3.1.4.2 Consonants followed by / h / in stressed syllables.

In consonant clusters of /Ch/ only stops occur as the first syllable.

th	[ tho ]	" wind "
kh	[ khi ]	" far away"
ch	[ chö ]	"wife"

3.1.4.3 Consonants followed by glottal is stressed syllable.

In consonant clusters of /C?/ the first consonant is an affricate or silibant.

s?	[ s?ui ]	"fiesta"
c?	[ c?ehi ]	" you get"

When a glottal stop occurs between a consonant and a vowel, the sequence /?V/ (glottal stop plus vowel) is actualized as a laryngealized vowel.

Non-laryngealized vowel [ tso ] "he said"

Laryngealized vowel [ ts?o ] "hupil"

The syllable sequence /C?V/ contrasts with the two-syllable sequence /CV?V/.

Laryngealized vowel [ s?i ] " you drink"

Full glottal stop [ si?i ] " he will do"

3.1.4.4 Consonants preceded by nasals in stressed syllables.

nt	[ nta ]	"man"
nk	[ nko ]	"one"
nc	[ nci ]	"wet"

3.1.4.5 Consonants preceded by / ʔ / in stressed syllables.

All are sonorants.

ʔm	[ ʔmi ]	"named"
ʔñ	[ ʔñö ]	"strong"
ʔβ	[ ʔβ ]	"he plants"
ʔy	[ ntiʔya ]	"house"

3.1.4.6 Consonants preceded by sibilants in stressed syllables.

št	[ xta ]	"people"
šk	[ xka ]	"grass or leaves"
šč	[ sca ]	"old"

3.1.5 Clusters of two consonants in nonstressed syllables.

3.1.5.1 Consonants preceded by / n / in nonstressed syllables.

nt	[ ntaho ]	"soap"
nk	[ nkatha ]	"door"
nc	[ nciʔβi ]	"they are drinking"

3.1.5.2 Consonants followed by / h / in nonstressed syllables.

th [ thiʔβi ] "bicycle tire"

kh [ khatso ] "he said"

ch [ chanka ] "grey"

3.1.5.3 Consonants preceded by sibilants in nonstressed syllables.

s no examples

št [ xtië ] "forehead"

šk [ xkaso ] "palm leaves used for tamales"

3.1.6 clusters of three consonants in stressed syllables.

sts [ stsa ] "bag"

tsh [ tshë ] "milk"

škh [ xkhe ] "frog"

ŋth [ ŋtha ] "comal"

nts [ ntse ] "grinding stone"

3.2 Contrastive vowel phonemes

Ix uses a four vowel system.

Oral vowels:

/ a / [ ha ] "hawk"

/ e / [ he ] "already"

/ i /            [ ciki ]        "breast"

/ u /            [ ntakua ]      "hail"

Nasal vowels:

/ ä /            [ hä ]            "three"

/ ë /            [ hë ]            "no"

/ ī /            [ cikī ]          "firewood"

/ ü /            [ hü ]            "six"

Nasalized vowels only occur in stressed syllables. When a morpheme which contains a nasal vowel in a stressed syllable occurs in a nonstressed syllable, the nasalization is lost.

nasal /a/            [kä]            "twenty"

non-nasal /a/        [ katie ]        "thirty"

### 3.2.1 Allophones of vowel phonemes

#### A. Allophones of / u /

In a previous phonological study done by Paul Kirk the phoneme /o/ was posited as an allophone of /u/ in Ix. The environments in which each phoneme is realized in my data is listed below under the respective phoneme. The environments in which each vowel was found are listed below as described by P. Kirk. The data listed in each environment was taken from my own transcriptions. (see "Proto-Mazatec Phonology" by P. Kirk, p. 29)

/ u /

/ o /

1. First member of /VV/ cluster.

1. Second member of /VV/ cluster.

[ ncikuä ]        "aunt"

[ cištio ]        "cousin"

2. Preceeded by /hñ/, /ʔñ/ only.

/hñ/ [ hñu ] "dark"

/ʔñ/ no example

3. -Nasalized  
-preceeded by /h/  
-not in cluster with other  
consonants.

[ hü ] "six"

4. Preceeded by /th/ in nonstressed  
syllables.

(no examples)

Preceeded by /ch/ in nonstressed  
syllables.

[ chuʔü ] "lightening"

2. Preceeded by various  
consonants.

/ñ/ [ ʔño ] "strong"

3. -not nasalized  
- same as /u/  
- same as /u/

[ ho ] "two"

4. Preceeded by /th/ in  
stressed syllables.

[ tho ] "wind"

Preceeded by /ch/ in  
stressed syllables.

[ cho ] "egg"

3.2.2 Free variation of /a/ and /o/ in nonstressed syllables.

In nonstressed syllables there is fluctuation between  
/a/ and /o/.

[ngotʔe] "today, now"

[ngatʔe] "today, now"

3.2.3 Vowel clusters

ie ai ui

ia            ue

iu            ua

### 3.2.4 Person Pronouns suffixed to nouns and verb stems.

The table below shows the combination of person pronoun with verb stem ending in each of the four vowels.

#### A. Verbs

		Verbs ending in:			
		a	o	i	e
<u>Person Pronoun</u>		<u>(teach)</u>	<u>(leave it)</u>	<u>(go)</u>	<u>(play)</u>
Third	none	βokoya	?βinto	ei	zothotsaβe
1 sing	?ä	βokoya?ä	?βinto?ä	ei?ä	zothotsaβe?ä
2 sing	hi	βokoyeji	?βintehi	?mihi	zothotsaβehi
2 pl	hü		?βintohü	mangihü	
1 incl					
1 excl	hĩ		?βintohne	mangihĩ	

The second person possessive is formed when the vowel /i/ is fused to the final vowel of the verb stem giving the following results:

a + i = e

o + i = e

i + i = i

e + i = e

See verb chart above for examples.



## B Nouns

The 2nd person possessive for obligatorily possessed nouns is formed as described above.

### 1. Obligatorily possessed

Nouns ending in:	a	o	i	e	
<u>Person Pronoun</u>	<u>(stomach)</u>	<u>(head)</u>	<u>(neck)</u>	<u>(forehead)</u>	
3 sing	none	nkatsa	tako	kasī	štië
1 sing	ʔä	nkatsaʔä	takoʔä	kasīʔä	štiëʔä
2 sing	hi	nkatsahi	takahi	kasīhi	štiëhi

### 2. Non-obligatorily possessed

Nouns ending in:	a	o	i	e	
<u>Person Pronoun</u>	<u>(shoulder)</u>	<u>(navel)</u>	<u>(thigh)</u>	<u>(chest)</u>	
3 sing	none	thia	šiʔo	tiʔmi	nisië
1 sing	na	thiana	šiʔona	tiʔmina	nisiëna
2 sing	hi	thiáa	šiʔóo	tiʔmíi	nisiéé

Nazalization is lost when the tone downglide l4 is used to indicate the 2nd person possessive.

## 4.0 Tone

### 4.1 Contrastive tone

There are four contrastive tones in Ix.

[ hī <sup>1</sup> ]	"blood"
[ hī <sup>2</sup> ]	NEGATION
[ thi <sup>3</sup> ]	PRESENT PROGRESSIVE
[ tho <sup>4</sup> ]	"wind"

## 4.2 Tone patterns on two syllable words

The following tone combinations have been found:

1-1 [kos?e] "and moreover"

1-2 [cito] "cat"

1-3 [thinto] "they are"

1-4 (no example)

2-1 [mañe] "she washes"

2-2 [cinka] "shirt"

2-3 [cinka] "pig"

2-4 [naši] "deer"

3-1 [ntati] "petroleum"

3-2 [ciki] "firewood"

3-3 [ci?ya] "father-in-law"

3-4 [nto?o] "spider"

4-1 (no examples)

4-2 [chaho] "he talks with"

4-3 [khihi] "he went"

4-4 [βoho] "you wear it"

## 4.3 Allotones

A. Low tones downglide prepause.

1. ña<sup>3</sup> ti<sup>3</sup>kon<sup>3</sup> chjon<sup>4</sup> So<sup>3</sup>to<sup>3</sup> (level tone)

2. ña<sup>3</sup> ti<sup>3</sup>kon<sup>3</sup> chjon<sup>4</sup> So<sup>4</sup>to<sup>4</sup>

In #2 above tone 3 downglides to tone 4 prepause.

#### 4.4 Tone Clusters

##### 4.4.1 Upgliding tone clusters

Tone upglides may occur on monomorphemic syllables as shown below:

1. Tone 43 [na<sup>43</sup>] "mother"

##### 4.4.2 Downgliding tone clusters

Downglides on non-obligatorily possessed nouns is indicated by a 14 tone downglide.

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