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Isthmus Zapotec (autoglossonym: [dìçʒà'zà]) is the common name used for a variety of Zapotec (Otomanguean family) spoken on the Isthmus of Tehuantepec, Oaxaca, Mexico (Suárez 1983: xvi; Campbell 1997: 158). It is now officially listed by the Instituto Nacional de Lenguas Indígenas (INALI 2008) as ‘zapoteco de la planicie costera’ (‘coastal plain Zapotec’) to distinguish it from other varieties of Zapotec spoken on the Isthmus. It is the mother tongue of many inhabitants of various cities and towns, as well as many smaller communities (INALI 2008), with some lexical, syntactic and phonetic variation between towns only a few kilometers apart. The ISO 639-3 code for this variety is *zai*. Since the most recent census figures do not separate out the varieties of Zapotec, and have not done so reliably when attempted, official statistics as to the number of speakers of Isthmus Zapotec are not available. (The *Ethnologue* (Lewis 2009) cites the 1990 census as listing 85,000 speakers; that figure must have been an interpretation of other statistics in the census.) INALI (personal communication, September 2008) estimates the current number to be about 104,000. In the city of Tehuantepec, the language is no longer widely used. In certain other locations, including Juchitán de Zaragoza, Spanish is becoming the dominant or the only language spoken by many people born after about 1990, although Zapotec is dominant in many outlying towns, including San Blas Atempa. Mature speakers have remarked that young people who are not fluent do not use tones correctly. Isthmus Zapotec has had active writers, including poets and novelists, since the first half of the twentieth century, well before an orthography was officially established (*Alfabeto popular* 1956), but reading and writing of the language are still not taught in schools in the region.

In this description we present a variety that is typical of the city of Juchitán de Zaragoza, the largest city of the area and an important commercial and cultural center. The recordings are of one of the authors of this article (Villalobos), a fluent female speaker and writer of Isthmus Zapotec who was born in Juchitán in 1941 and still resides there. Although the North Wind text was translated sometime before 1956 and published with the presentation of the official orthography statement (*Alfabeto popular* 1956, page 12), Villalobos prepared a new translation for this publication.

Published descriptions of the phonology of Isthmus Zapotec vary considerably – a fact that reflects the complexity of the situation. The first published detailed description of the sounds of Isthmus Zapotec was Pickett (1967), although discussion of the problems of the analysis was presented fifteen years earlier (Pickett 1951); see also Pickett & Embrey (1974). The analysis reflected in Marlett & Pickett (1987) is more in line with the analysis that underlies the official orthography utilized in publications such as Pickett et al. (1959/2007), Jiménez Jiménez & Marcial Cerqueda (1997), and Pickett, Black & Marcial Cerqueda (2001). The present description follows this same analysis.

Consonants

	Bilabial		Alveolar		Post-alveolar	Palatal	Velar	
Stop	p	b	t	d			k	g
Affricate					tʃ	ɟʃ		
Nasal		m	n:	n		ɲ		
Trill and Tap			r	r				
Fricative			s	z	ʃ	ʒ		
Approximant		w				j		
Lateral approximant			l:	l				

For more than a half century, varieties of Zapotec have generally been described as having two series of consonants: strong vs. weak (Swadesh 1947), or fortis vs. lenis (see Leal 1950 and most work since then). The division of so-called fortis and lenis consonants in Isthmus Zapotec has been the following:

Fortis:	p	t	k	tʃ	m	n:	ɲ	s	ʃ	r	w	j	l:
Lenis:	b	d	g	ɟʃ		n		z	ʒ	r			l

Note that the only sonorants displaying a fortis–lenis contrast are the alveolar ones. Examples of contrast between fortis and lenis sonorants are limited in number, with the fortis consonants /n:/, /r/ and /l:/ occurring in very few words. In word-initial position the contrast between fortis and lenis does not exist for sonorants except for the trill vs. tap contrast. The alveolar trill occurs in less than a half dozen words, including (in addition to those given in the consonant contrasts table) /rũtʃi/ [rũtʃi] ‘a cut as in fruit or fish’ and /riɛŋkẽ/ [riɛŋkẽ] ‘circles (game)’.

Length is one of the characteristics of Isthmus Zapotec fortis consonants in trochaic foot-medial position, as in /tʃũpã/ [tʃũp:ã] ‘two’, /ɟʒũmĩ/ [ɟʒũm:i] ‘basket’ (see Conventions section below for more examples); fortis consonants are not long in other contexts.

Voicing is one of the characteristics of Isthmus Zapotec lenis consonants, but relevant phonetically only for obstruents. Fortis obstruents are voiceless and lenis obstruents are voiced. Fortis stops may be slightly aspirated in the onset of a stressed syllable; this is not shown in the transcriptions in this article. Lenis stops vary to fricatives in many cases (see Conventions).

Fortis and lenis consonants are also distinguished by the effect that they have on a preceding vowel in the trochaic foot. The vowel is shorter before a fortis consonant than before a lenis one (see Conventions).

Some linguists have analyzed and represented Zapotec fortis consonants as geminates (see Swadesh 1947 for Proto-Zapotec); no current analysis of this type has been proposed and defended, however. Pickett (1967) posited a fortis/lenis contrast as well as a geminate contrast, but later abandoned this analysis in favor of the former in order to eliminate redundancy.

The postalveolar fricatives are ‘slightly retroflexed, varying to clearly retroflexed in some idiolects’ (Pickett 1967: 293).

A glottal fricative [h] occurs in three interjections besides being an allophone of /ʃ/ (see Conventions).

A syllabic bilabial trill occurs in the archaic pronunciation of the word for ‘ant lion’ /bèrè'né/ (archaic) ~ /bèrè'ndrú?/.

Consonants are presented in two positions in the table of data illustrating the contrasts: word-initial position and word-medial position.

p	pěsù ‘scar’	t	tòbì ‘one’	k	kùbà ‘dough’
	tàpà ‘four’		gìtù ‘squash’		ìkè ‘head’
b	bèl:è ‘flame’	d	dàní ‘hill’	g	gèlà ‘young corn plant’
	kùbà ‘dough’		zìdì ‘salt’		diàgà ‘ear’
				ʃ	ʃòn:ã ‘three’
					gìʃí ‘thorn’
				ʒ	ʒã? ‘full’
					biàʒì ‘plum’

Vowels

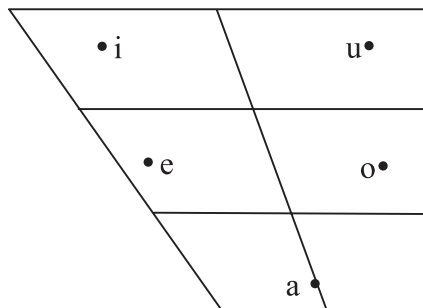
Since the 1950s (see *Alfabeto popular* 1956 and Pickett et al. 1959/2007), the five vowels of Isthmus Zapotec have been described as occurring in three phonation types when in stressed syllables: modal, checked, and laryngealized. (Pickett 1967 backed away from this analysis, but subsequent work on Isthmus Zapotec did not.) Only one phonation type is found distinctively in a given morpheme.

Checked vowels typically sound like a vowel that ends in a glottal stop; that is, in fact, an analysis that has been proposed by some linguists (see Swadesh 1947 and Esposito 2003, for example) and that is how they are represented (but not analyzed) here. We do not see glottal stop as a coda in this variety of Zapotec that otherwise has no closed syllables. Speck (1978) presents evidence for the vowel-feature analysis for Texmelucan Zapotec, arguing that the phonetic glottal stop does not pattern with syllable-final consonants with pronoun cliticization, for example (p. 71). Speck also reports that native speaker reaction in literacy efforts across the family has been consistent with treating this phonetic glottal stop as a vowel feature (Charles Speck, personal communication, June 2010). Nellis & Hollenbach (1980) provide additional arguments for the vowel-feature analysis for Cajonos Zapotec, as Avelino (2001) does for Yalálag Zapotec. Checked vowels in Isthmus Zapotec may also be slightly laryngealized at times preceding the abrupt glottal closure, as in /kòʔrè?/ [kòʔrèʔ] ‘high’.

Laryngealized vowels are slightly longer and typically pronounced with creaky voice. They are also sometimes pronounced with a clear rearticulation of the vowel after a weak

glottal stop, especially with low tone. Isthmus Zapotec does not have the breathy vowels found in some varieties of Zapotec such as Mitla (Stubblefield & Miller de Stubblefield 1991) and San Lucas Quiavini (Munro & Lopez 1999). See also Gordon & Ladefoged (2001), which includes a discussion of phonation types in some varieties of Zapotec, Esposito (2010), and Silverman (1997) for a discussion of phonation in Otomanguan languages more generally.

Diphthongs are transcribed here as /ia/ [i̯a], /i̯u/ [i̯u̯], etc.



i	gì	‘fire’	lìɕì	‘home (of)’
	giʔ	‘excrement’	giʔɕùʔ	‘pimple’
	ʒì	‘nose’	dìɕàʔ	‘word’
e	bè	‘mold’	gèzà	‘tobacco’
	lèʔ	‘fence’	gèʔtùʔ	‘dead person’
	zè	‘fresh corn’	gèzèʔ	‘toasted corn meal’ (<i>pinol</i>)
u	lulù	‘face’, ‘eye’	bùpù	‘foam’
	ɕũʔ	‘outsider’	dùʔgàʔ	‘fig’
	bũ	‘charcoal’	gùɕiʔ	‘mucus’

Tones

After considering different analyses, Pickett (1960) posited three phonemic tones for Isthmus Zapotec: High, Low, and Rising, and this analysis is reflected in the published vocabulary (Pickett et al. 1959/2007) and grammar (Pickett, Black & Marcial Cerqueda 2001); these three tones are used in the transcriptions in this illustration. Earlier work posited only High and Low (Pickett 1951), and later work posited these two organized as four pitch accents (Mock 1985, 1988). (Mock’s pitch-accent analysis is questioned in Yip 2002: 235–236.) Following an analysis similar to the one in Mock (1988), although many details remain to be worked out, we propose that the language may be better analyzed as having five tone melodies available for noun roots: High, Low, High-Low, Low-High, and Low-High-Low. How these five melodies are realized phonetically is dependent on the syllable profile of each morpheme, together with the influence of grammatical and phonological factors in the environment. Sometimes a Low-High combination appears on a single syllable.

These melodies are demonstrated on monosyllabic and disyllabic nouns in the respective tone tables below as they appear in two situations: in isolation and in the context of the distal enclitic demonstrative /kǎ/.

Melody	Modal*		Checked		Laryngealized	
	Isolation	In context	Isolation	In context	Isolation	In context
H	(none)		(none)		(none)	
L	gì 'fire'	gì kǎ	bàʔ 'tomb'	bàʔ kǎ	dô 'rope'	dô kǎ
LH	lě 'echo'	lě kǎ	ɕúʔ 'outsider'	ɕú kǎ	bũ 'charcoal'	bũ kǎ
HL	(none)		(none)		(none)	

*We set aside monosyllabic nouns with modal diphthongs, for which examples of the melodies H, L, and LH (but not HL) are attested.

Melody	Modal Penult		Checked Penult		Laryngealized Penult	
	Isolation	In context	Isolation	In context	Isolation	In context
H	bǎzǎ 'arrow'	bǎzǎ kǎ	(none)		bũbũ 'male grackle'	bũbũ kǎ
L	bizù 'bee'	bizù kǎ	bèʔtèʔ 'skunk'	bèʔtè kǎ	bëndàʔ 'snake'	bëndà kǎ
LH	bèzǎ 'blackhead'	bèzǎ kǎ	màníʔ 'animal'	màní kǎ	(none)*	
HL	lézù 'rabbit'	lézù kǎ	gáʔnàʔ 'raccoon'	gáʔnà kǎ	(none)	
LHL	pěsù 'scar'		(none)		(none)	

*One example appears in the 2007 edition of Pickett et al. (1959/2007), but it is an error that was introduced in that edition. The word *lannd* (b.al) 'olor a metal o a pescado' (/lanaʔ/ L.H 'smell like metal or fish') of earlier editions appears as the incorrect *laana* (b.al) /lanaʔ/ in the 2007 edition.

Stress

Stress has been posited for Isthmus Zapotec; it affects the length of the vowel itself (before lenis consonants), or the length of the consonant that follows (if it is fortis), or the tone (see Conventions). It usually falls on the penultimate (or the only) syllable of the root when the vowels are modal, although there are exceptions. Convincing examples clearly showing that the generalization is not appropriately stated as referring to the first syllable of the root are not easy to come by since stems longer than two syllables often seem to be compounds or to derive from compounds. The word /wakaʔaba/ [wakaʔaʔβa] 'a particularly venomous tarantula' may be an appropriate example.

The weight of a syllable also affects the placement of stress. Final diphthongs attract stress: /biʒià/ [biʒià] 'reed (*otate*)'. Final laryngealized vowels also attract stress: /gùṅà/ [gùṅà] 'woman'.

Stress does not occur on the prefix of a word. Enclitic pronouns are never stressed. The plural morpheme is a proclitic that appears before the noun or pronoun that it pluralizes; it is never stressed. Stress appears on the root /ně/ in an example such as the following: /rì-ně kǎ bè nǐ/ [rìně kǎ bè nǐ] (HABITUAL-carry PLURAL 3.HUMAN 3.INANIMATE) 'they are carrying it'.

In compounds and in phrases, the primary stress is generally the last one. The loss of primary stress in compounds (and sometimes in phrases) typically has the concomitant result of weakening or eliminating checking and laryngealization. Examples: /bàʔdù/ [bàʔdù]

‘child’, /wìniʔ/ [wìniʔ] ‘little’, [bàdù wìniʔ] ‘baby’, /ɕʰàpàʔ/ [ɕʰàpàʔ] ‘young woman’, [bàdù ɕʰàpà wìniʔ] ‘girl’. (In Pickett, Black & Marcial Cerqueda 2001 the compounds are written etymologically, but it is stated clearly that the phonetic facts are as presented here.) Also note that the autoglossonym given in the first paragraph of this paper illustrates this fact.

Conventions

Fortis consonants (sonorants as well as obstruents) are long when intervocalic following a stressed modal vowel in the same morpheme: /tápà/ [tápà] ‘four’, /gìtù/ [gìtù] ‘squash’, /ìkè/ [ìkè] ‘head’, /gìtʃì/ [gìtʃì] ‘thorn’, /pèsù/ [pèsù] ‘scar’, /gìʃè/ [gìʃè] ‘hammock’, /ɕʰùmí/ [ɕʰùmí] ‘basket’, /tʃòn:á/ [tʃòn:á] ‘three’, /bèj:è/ [bèj:è] ‘mud’, /nàwí/ [nàwí] ‘wears (long skirt)’, /làjà/ [làjà] ‘tooth’. Consonants in the enclitic pronouns are not long despite occurring after a stressed vowel: /ʃtí tú/ [ʃtí tú] (possession 2.PLURAL) ‘your (PL) possession, yours’.

Lenis /b/, /d/ and /g/ are commonly fricatives or approximants intervocalically, especially after modal vowels: /kùbà/ [kùbà] ‘dough’, /zìdì/ [zìdì] ~ [zìðì] ‘salt’, /jàgà/ [jàgà] ‘tree’, and sometimes even in initial position. An initial /g/ is often very weakly articulated, sometimes fricative, and often varies to something closer to [j] before /i/: /gìdì/ [gìðì] ~ [jìðì] ‘leather’.

A nasal has the same point of articulation as an immediately following consonant: /ngǎ/ [ŋǎ] ‘that one’, /ngòlà/ [ŋòlà] ‘male’, /ʃjùkù/ [ʃjùkù] ‘youngest child’, /mbǒtǎ/ [mbǒtǎ] ‘huge’, /nɕʰérè/ [nɕʰérè] ‘deprecatory term for a Valley resident’. (See Marlett & Pickett 1987 for more discussion of phonotactics.) An exception is the archaic pronunciation of the word for ‘ant lion’ mentioned above which has an alveolar nasal before the syllabic bilabial trill: /bèrèné/.

Immediately preceding a nasal or lateral approximant, the sibilant /ʃ/ is most often phonetically the voiceless version of the sonorant. This is clearly seen when the derivational affix /ʃ-/ is added to simple nouns in order to derive a possessed noun: /nèzà/ ‘road’, /ʃnèzà bě/ [ʃnèzà bě] ‘his/her road’, /lùnáʔ/ ‘cot’, /ʃlùná bě/ [ʃlùná bě] ‘his/her cot’; compare /dò/ ‘rope’, /ʃtò bě/ [ʃtò bě] ‘his/her rope’; /bìʔkùʔ/ ‘dog’, /ʃpìʔkù xuán/ [ʃpìʔkù xuán] ‘Juan’s dog’. Nevertheless, some fluent speakers use the allophone [ʃ] even before sonorants when /ʃ-/ is used in a less common derived situation; less fluent speakers also are likely to use exclusively [ʃ] except in monomorphemic situations.

Many disyllabic words and some monosyllabic words have a pre-pausal form that is slightly different from the phrase-medial form; they end with glottal closure in pre-pausal position. (See Beam de Azcona 2008 for discussion of similar facts in another variety of Zapotec.) Because these words are pronounced and written by native speakers with the final glottal stop whenever the word is before a pause (including when given in isolation), these words are transcribed here phonemically with that glottal stop when given in isolation: /bàʔdùʔ/ ‘child’ [bàʔdùʔ] (pre-pausal), [bàʔdù kǎ] (child DISTAL) ‘that child’; /dìɕʰàʔ/ ‘word’ [dìɕʰàʔ] (pre-pausal), [dìɕʰà kǎ] (word DISTAL) ‘that word’, /ɕʰùʔ/ ‘outsider’ [ɕʰùʔ] (pre-pausal), [ɕʰù kǎ] (outsider DISTAL) ‘that outsider’. This glottal closure is an important realization, though usually redundant, of the glottal feature that is associated with the root. It is lost absolutely, however, when words with the LH melody are pronounced in context. Thus, the word for ‘animal’, for example, is claimed to be a LH melody word that has the feature for a checked vowel associated with it (see the second tonal contrast table). The final glottal stops that appear in the pre-pausal forms [màníʔ] ‘animal’ and [gèt:éʔ] ‘deep’ are typical and expected, as explained above. What is unusual about words of this tone melody is that the glottal feature does not ever appear on the stressed vowel of a disyllabic word, making the analysis of those words somewhat opaque since in context they have no glottal feature evident; see [màní kǎ] (animal DISTAL) ‘that animal’ and [gèt:é ní] (deep 3.INANIMATE) ‘it is deep’.

Stressed modal vowels are slightly longer when they precede a lenis consonant or word break (see also Ward, Zurita Sánchez & Marlett 2009 for Quiquitan Zapotec; but contrast

with Avelino 2001 for Yalálag Zapotec): /kùbà/ [kùβà] ‘dough’, /gìdì/ [gìðì] ‘leather’, /jàgà/ [jàγà] ‘tree’, /biàč̥ì/ [bìàč̥ì] ‘plum’, /nèzà/ [nèzà] ‘road’, /lézù/ [lèzù] ‘rabbit’, /fònò/ [fònò] ‘eight’, /bèrè/ [bèrè] ‘hen’, /gèlà/ [gèlà] ‘young corn plant’, /gì/ [gì] ‘fire’, /fĩ tú/ [fĩ tú] (possession 2.PLURAL) ‘your (PL) possession, yours’.

An acoustic study of the vowels of Isthmus Zapotec (Martin 2010) shows that the vowels /a/, /e/, and /u/ have centralized allophones when they are unstressed.

Low tone starts slightly lower in unstressed pre-pause syllables, whereas in stressed syllables it typically has a sharp fall to lower (not represented here): /nèzà/ [nèzà] ‘road’, /bà?dù? č̥àpà? wìnì?/ [bàdù č̥àpà wìnì?] ‘girl’.

Transcription of the recorded passage

tì č̥ì kàkà jú bì jófò nè gùbìč̥à || tù tòbì dè làkà f̣má nàdìpá? || ràkě nũ kã
 bédàndã tí ngù rëndã tí làrì ngòlà || pàrà ùnì? sṭč̥à kà? | gù?jà kà? tù lá
 gáfá? làrì làdì ngù kě || bìzùlù ndà? bì jófò bìndùbì nè sṭl:ě sṭípà || pèrù làgã
 f̣má nàdìpá lá kùndùbì lá | f̣má rùsì bìrëndã č̥ìf̣ì ngù kě f̣bà || nì bí?nì tí bì
 lá | biànã č̥ì || òràkě bìzùlù gùbìč̥à bìzànì nè ìrã f̣ṭf̣ù || òràkěkã gùlě ngù
 kè f̣bà | nè zàkã ḅjà? | bì f̣má nàdìpá gùbìč̥à kě là ||

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