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**OTOMANGUEAN**  
**PHONOLOGY**

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STUDIES IN

**OTOMANGUEAN  
PHONOLOGY**

**William R. Merrifield, editor**

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## INTRODUCTION

This volume of phonology papers, treating languages of the Otomanguan group, includes materials from three of its major families: Mixtecan, Popotecan, and Zapotecan.

The Mixtecan family is represented by two quite diverse approaches to Mixtec languages and a contrastive analysis of two Trique dialects. Daly provides an innovative and detailed discussion of a Mixtec tone problem for Peñoles Mixtec which challenges the kind of traditional interpretation that has dominated much of Mixtec phonological analysis. North and Shields, in contrast, present a traditional description, combining an analysis of segmental and tone phonemes with a few morphophonemic observations. Hollenbach takes a different tack altogether in her topological comparison of two Trique dialects by first inquiring into the details of the two phonological systems and then speculating upon the kinds of adjustments the speaker of one must make to understand a speaker of the other.

The Popotecan family is here represented by descriptions of both a Popolocan and a Mazatecan language. Stark and Machin highlight the roles of stress and tone in their description of the phonological word and phrase in a northern Popolocan language, while Jamieson provides a description--divided into two papers because of its thoroughness and careful attention to phonetic detail--of Chiquihuitlan Mazatec segments and tone.

Finally, the Zapotecan family is represented by two papers. Larry and Rosemary Lyman bring the fruits of several years of research to bear upon a hierarchical study of Coapan Zapotec phonology, dealing with phoneme through sentence levels, including a discussion of an extensive system of tone sandhi; and Jones collaborates with consultant Knudson to give us a first look at Guelavfa Zapotec with a traditional analysis of segmental phonemes and tone, highlighting contrastive features and distribution.

Although two or three papers in this collection do address interesting theoretical questions or innovative approaches, the volume finds its major strength and usefulness in the presentation of a wide range of phonological facts which will stand us in good stead for many years to come as we seek a greater understanding of an important group of Meso-American languages.

William R. Merrifield

## PHONETIC VS. PHONEMIC CORRESPONDENCE IN TWO TRIQUE DIALECTS

Barbara E. Hollenbach

1. SJC Trique Phonology
2. SAC Trique Phonology
3. Comparison
4. Conclusions

Because of the remarkable ability of the human brain to make topological adjustments rapidly and, to a large degree, unconsciously, a linguistically naive native of Chicago experiences only a short period of disorientation when first hearing a speaker of Australian English. He soon catches on to the shifts between phonological systems and begins to understand most of what he hears. He may think the Australian sounds funny and be perplexed by an occasional lexical item or grammatical construction, but with repeated linguistic contact, he soon learns to understand the new dialect.

If we were to compare the phonology of these two English dialects, significant differences would appear, yet the human brain has the ability to pass over these differences. The ear picks up only sound waves, but the brain interprets them according to a phonological system. We can compensate fairly well for noise or error on the part of a speaker using our own phonological system. (This would be impossible if phonology were quite as exact as the structural model of the 1940's would have led us to believe.) We can also compensate for speakers of other dialects up to the point where the load of making adjustments becomes too heavy for the brain and communication approaches zero. One way of looking at this ability is to posit that, at some level of structure, the systems are more similar to each other and that the differences are a result of low-level rules.

In this paper, I examine the relationship between two dialects of Trique, an Otomanguean language spoken in Oaxaca, Mexico. The dialects discussed are those spoken in and around the villages of San Juan Copala (hereafter SJC) and San Andrés Chicahuaxtla (hereafter SAC). The divergence between these two dialects is greater than that between the English dialects cited above, but there is some degree of mutual intelligibility between them.<sup>1</sup>

In the first two sections of the paper, I present the surface phonological systems of SJC and SAC. Because this is the first publication of SJC phonology,<sup>2</sup> it is given in somewhat greater detail than that of SAC, which has been described in several works by Longacre (1949, 1952, 1957, 1959).<sup>3</sup> In Section 3, I compare the systems of these two dialects typologically. In the final section, I suggest the sorts of topological correspondences that might account for a speaker's ability to understand the other dia-

lect and comment briefly on some of the implications of the Trique situation for orthography design.

1. The phonology of SJC Trique is conveniently described with reference to the phonological WORD (hereafter simply word) as a descriptive matrix. This description is restricted mainly to phonological structure at and below this level. The word consists of from one to four syllables. Monomorphemic words are common, but a word may contain up to five morphemes.

There are two basic types of word: EXCLAMATORY and ORDINARY. The final word of any uninterrupted utterance is exclamatory; all nonfinal words are ordinary. Thus, a one-word utterance has one exclamatory word, and a ten-word utterance has nine ordinary words and one exclamatory word. Exclamatory words have a different prosodic structure from ordinary words; they are considered in detail in 1.3. (Some response words and onomatopoeic words do not fit into either system; they are outside the scope of this paper.)

In an ordinary word, the ultima is the nucleus. The ultima carries tone and has a much greater potential for consonant, vowel, and prosodic contrasts than does a nonultima. For many words, only the ultima carries tone. For other words, however, one nonultima syllable carries a contrastive tone. Such words are often either fused compounds or Spanish loanwords. Thus, there are three kinds of syllables, distinguished by the distributional potential of phonological units within them: ultimas, tone-carrying nonultimas, and non-tone-carrying nonultimas.

1.1 There are 22 consonants in SJC Trique: fortis stops /p t k/, lenis stops /b d g/, affricates /c č ǰ/, fortis sibilants /s š ʒ/, lenis sibilants /z ʒ r/, resonants /m n l y w/, laryngeals /ʔ h/. Of these consonants, fortis stops, affricates, fortis sibilants, and laryngeals are restricted to ultimas; the remainder occur in all three syllable types.<sup>4</sup> Only laryngeals may check a syllable, and only ultimas may therefore be checked.

Fortis stops are voiceless, slightly lengthened, and unaspirated. /d g/ are voiced fricatives between vowels in the onset of ultimas, and lenis stops varying from voiced to voiceless in nonultimas or in cluster with other consonants. They are voiced lenis stops word-initial in ultimas (i.e., in monosyllabic words). /b/ does not occur between vowels in the onset of ultimas and therefore is never a fricative. Bilabial stops are a recent innovation, found in Spanish loanwords and a few onomatopoeic forms.

gopã <sup>32</sup>	<i>goblet</i>	agaʔ <sup>3</sup>	<i>metal</i>
nataʔ <sup>3</sup>	<i>to explain</i>	balã <sup>32</sup>	<i>shovel</i>
rakaʔ <sup>3</sup>	<i>twig</i>	daka <sup>3</sup>	<i>crest (of bird)</i>
bah <sup>21</sup> (~ wah <sup>21</sup> )	<i>co-father</i>	gaka <sup>34</sup>	<i>to burn (completive)</i>
rodaʔ <sup>3</sup>	<i>muller (mano de metate)</i>		



Affricates and sibilants are alveolar, palatal, or retroflex. Affricates are voiceless and unaspirated. /s ʃ/ are voiceless and slightly lengthened. /ʒ/ varies freely between a voiceless retroflex trill and a voiceless, slightly lengthened retroflex sibilant. /ʒ/ is a lenis affricate utterance-initial in nonultimas. (Affricates are restricted to ultimas.) /r/ is a voiced retroflex flap utterance-medial between vowels, in cluster with stops, or word-initial between /ʔ/ (at the end of the preceding word) and a vowel. With the exception of these two nonsibilant allophones, lenis sibilants vary from voiced to voiceless word-initial in nonultimas, or in cluster with other consonants. They are voiced word-medial between vowels or word-initial in ultimas (i.e., in monosyllabic words).

acĩh <sup>21</sup>	to sneeze	zoʔ <sup>3</sup>	he
ačĩh <sup>21</sup>	to break wind	žoʔ <sup>3</sup>	it (inanimate)
ačĩh <sup>21</sup>	to cough <sup>5</sup>	roʔ <sup>5</sup>	we two (inclusive)
laso <sup>32</sup>	braid	zoʔo <sup>3</sup>	deaf person
gešo <sup>32</sup>	garlic	žoʔo <sup>21</sup>	swamp
šo <sup>34</sup> (~ žičo <sup>34</sup> )	wrap-around pants (calzones)	roʔoh <sup>21</sup>	rash

/m n/ are voiced nasals. /n/ is velar immediately preceding /g/. /l/ is a voiced lateral. /y w/ are semivowels, except that /w/ is a bilabial fricative unless contiguous to a consonant or a low vowel.

māʔ	(negative)	maʔā <sup>53</sup>	self
nāʔ	(interrogative for yes-no questions)	naʔā <sup>3</sup>	to burn, sting
zala <sup>3</sup>	crate of bent poles	leʔeh <sup>53</sup>	young
yaʔ <sup>3</sup>	fiber of century plant	weʔeh <sup>53</sup>	red
wā <sup>34</sup>	to be (used with adjectives)	yaʔāh <sup>34</sup>	saint

/y w/ contrast with /ʒ b/, respectively.

yoʔ <sup>3</sup>	it (animal)
wah <sup>21</sup>	to grind
bah <sup>21</sup> (~ wah <sup>21</sup> )	co-father

Fortis stops, fortis sibilants, and resonants are all lengthened preceding a short vowel.

/ʔ/ is a glottal stop. /h/ is a palatal or labial fricative following /l ʋ/, respectively; elsewhere, it is a voiceless vocoid without audible friction.

yaʔ<sup>3</sup> *fiber of century plant*  
yah<sup>3</sup> *ashes*  
raʔa<sup>3</sup> *hand*  
reha<sup>32</sup> *metal plow point*

Clusters of two and three consonants occur in syllable onsets. Four types occur in native words. One type is nasal plus lenis stop: /mb nd ng/. /mb/ occurs in one morpheme only, where it varies with /m/ and /w/. /nd/ is also rare in native words; it sometimes varies with /n/ or /d/.

kã<sup>3</sup>mbaʔ<sup>3</sup> (~ maʔ<sup>3</sup> ~ waʔ<sup>3</sup>) *furrowed green squash*  
zindiʔ<sup>5</sup> *calf (of leg)*  
nda<sup>53</sup> (~na<sup>53</sup>) *until*  
ndah<sup>34</sup> (~ dah<sup>34</sup>) *how much?*  
nga<sup>3</sup> *cloud*

Another type is /ʔ/ plus resonant: /ʔm ʔn ʔl ʔy ʔw/.

aʔmã<sup>3</sup> *to be hot*  
aʔnã<sup>3</sup> *to be hurt*  
daʔlu<sup>21</sup> *malaria*  
laʔwa<sup>34</sup> *toothless*  
daʔya<sup>34</sup> *door*

A third type is velar stop plus /w/: /kw gw/.

nukwah<sup>53</sup> *strong*  
dugwah<sup>21</sup> *to twist*

Two clusters of three consonants occur in native words: /ʔnd ʔng/. /ʔnd/ occurs in one morpheme only, where it varies with /ʔn ʔl ʔy/.

yuwe<sup>32</sup> ziguʔndu<sup>25</sup> (~ ziguʔnu<sup>5</sup> ~ ziguʔlu<sup>25</sup> ~ ziguʔyu<sup>25</sup>) *eye-lash*  
aʔnga<sup>34</sup> *to be born*

These two clusters merely combine patterns already found in two-consonant clusters; they do not introduce any new patterns.

Certain clusters are restricted to ultimas because they contain a fortis consonant or a laryngeal. Others are theoretically possible in nonultimas, but not all of them occur there. In nonultimas, consonant clusters in native words are limited to /nd gw/.

ndoʔq<sup>34</sup> *very much*  
 gwaʔah<sup>34</sup> *vapor bath*  
 dugwanɛ<sup>34</sup> *to bathe (someone)*<sup>6</sup>

Consonant clusters which occur in Spanish loanwords considerably complicate this fairly simple picture.<sup>7</sup> There are sequences /nʃ nz/.

zanʃq<sup>32</sup> *orphan*  
 manzana<sup>32</sup> *apple*

There are sequences of stop plus /r/: /tr br dr/.<sup>8</sup>

litrq<sup>32</sup> *liter*  
 abri<sup>32</sup> *April*  
 badrɛ<sup>32</sup> *priest*

There are sequences of nasal plus stop plus /r/: /mbr ndr/.

lambɛ<sup>32</sup> *wire*  
 landrq<sup>32</sup> *coriander*

Spanish loanwords also stabilize the /mb/ cluster mentioned above.

dembq<sup>32</sup> *long ago*

There are sequences of various consonants plus semivowel: /zw hw dy sy zy ry ly wy/.

zwetq <sup>32</sup> <i>sweater</i>	maderyq <sup>32</sup> <i>flashlight battery</i>
gahwe <sup>32</sup> (~ agwe <sup>32</sup> ) <i>coffee</i>	danya <sup>32</sup> <i>litany</i>
dyq <sup>32</sup> <i>season</i>	gulyq <sup>32</sup> <i>Julia</i>
basya <sup>32</sup> <i>to take a walk</i>	wyaring <sup>32</sup> <i>government</i>
zyendq <sup>32</sup> <i>hundred</i>	

There are also sequences of two consonants plus semivowel: /ndy nsy/.

zindy<sup>32</sup> *July*  
 nansya<sup>32</sup> *Venancia*

Certain rare clusters are used only by some speakers, e.g., /bi/ and /lp/.

bleč̣a<sup>32</sup> (~ waleč̣a<sup>32</sup>) *bus*  
 alp̣a<sup>32</sup> (~ alap̣a<sup>32</sup> ~ lahwa<sup>32</sup>) *alfalfa*

Some of the clusters introduced by Spanish loanwords occur only in ultimas, some occur in both ultimas and nonultimas, and some occur only in nonultimas. These restrictions seem to be a function of two factors. The first is the phonological constraint restricting fortis stops, affricates, fortis sibilants, and laryngeals to ultimas. The second is the chance occurrence of clusters in various positions within the corpus of about 300 loanwords.

Spanish loanwords have changed the distribution of /h/. In native words, /h/ occurs only as the coda of ultimas. In loanwords, it occurs as the onset of ultimas, alone or in cluster with /w/.

liḥa<sup>32</sup> *sandpaper*  
 gahwe<sup>32</sup> (~ agwe<sup>32</sup>) *coffee*

For some speakers, /h/ occurs in a nonultima in a few words, which violates the phonological constraint mentioned in the preceding paragraph.

lehwanḍe<sup>32</sup> (~ lawanḍe<sup>32</sup>) *elephant*

There is considerable free variation among certain consonants in various morphemes. Consonants that show this variation are:  
 /g~l c~z č~š ž~r r~n r~l m~w n~l n~l~y/.

ganč̣o <sup>32</sup> ~ lanč̣o <sup>32</sup> <i>hook</i>	ra <sup>?</sup> wa <sup>34</sup> ~ la <sup>?</sup> wa <sup>34</sup> <i>toothless</i>
acĩ <sup>3</sup> ~ azĩ <sup>3</sup> <i>to jingle</i>	ru <sup>?</sup> mi <sup>?</sup> <sup>3</sup> ~ ru <sup>?</sup> wi <sup>?</sup> <sup>3</sup> <i>charcoal</i>
gač̣a <sup>?</sup> <sup>5</sup> ~ gaṣ̌a <sup>?</sup> <sup>5</sup> <i>wide</i>	gu <sup>?</sup> nu <sup>?</sup> <sup>3</sup> ~ gu <sup>?</sup> lu <sup>?</sup> <sup>3</sup> <i>to be hooked</i>
maṣ̌e <sup>35</sup> ~ mare <sup>35</sup> <i>green</i>	
naro <sup>?</sup> <sup>3</sup> ~ nano <sup>?</sup> <sup>3</sup> <i>to look for</i>	yuwe <sup>32</sup> zigu <sup>?</sup> nu <sup>?</sup> <sup>5</sup> ~ zigu <sup>?</sup> lu <sup>?</sup> <sup>5</sup> ~ zigu <sup>?</sup> yu <sup>?</sup> <sup>5</sup> <i>eyelash</i>

In some instances, a cluster varies with one of its members:  
 /gw~w mb~m~w nd~n nd~d/.

rugwah<sup>3</sup> ~ ruwah<sup>3</sup> *hearth stones*  
 kã<sup>3</sup> mba<sup>?</sup> <sup>3</sup> ~ ma<sup>?</sup> <sup>3</sup> ~ wa<sup>?</sup> <sup>3</sup> *furrowed green squash*  
 zigu<sup>?</sup>ndu<sup>?</sup> <sup>5</sup> ~ zigu<sup>?</sup>nu<sup>?</sup> <sup>5</sup> *eyelash* (see other variants above)  
 ndah<sup>34</sup> ~ dah<sup>34</sup> *how much?*

There is also variation between word-initial /y/ and its absence before vowel /u/ plus nasalization.

yũ<sup>32</sup> ~ ü<sup>12</sup> *again*

A further type of variation involves vowels and semivowels surrounding /ʔ/.

guʔwe<sup>34</sup> ~ gweʔe<sup>34</sup> *next younger sibling*

daʔyũh<sup>34</sup> ~ diʔũh<sup>34</sup> *to deceive*

raʔyũh<sup>34</sup> ~ riʔĩh<sup>34</sup> *to mistreat*

A few restrictions in the distribution of consonants across syllable boundaries appear to be systemic. /z/ cannot occur in a penult if the ultima contains /č ʧ/, nor can /ʒ/ occur in a penult if the ultima contains /c/.

zicĩʔ<sup>3</sup> *to be torn*

žičeʔ<sup>32</sup> *our spouse's younger relative*

žičãʔ<sup>3</sup> *to be shattered*

In one morpheme loss of a medial syllable results in a form that violates this constraint for some speakers:

zičã<sup>32</sup> (~ žičã<sup>32</sup> ~ zigičã<sup>32</sup>) *acorn woodpecker (Melanerpes formicivorus)*

/r/ has no co-occurrence restrictions with affricates because /r/ in nonultimas is a recent development in fused phrases by reduction from /č/ (Lorgacré 1957:68-70).

racĩ<sup>3</sup> *tomato*

račĩ<sup>3</sup> *pine (tree)*

ričũh<sup>3</sup> *oak (tree)*

Only one labial consonant may occur within a word. This has been violated by some recent loanwords.

bazikwã<sup>32</sup> ~ mazikwã<sup>32</sup> (~ gazikwã<sup>32</sup>) *Easter*

wĩwãh (*exclamation of approbation*)

1.2 There are eight vowels in SJC Trique: five long vowels /i u e o a/ and three short vowels /e̞ o̞ a̞/.<sup>9</sup> Long vowels occur in all syllable types; short vowels occur only in unchecked ultimas. Short vowels therefore seem to be more highly marked than long ones. There are no diphthongs; when two vowels occur in sequence, each is the nucleus of a separate syllable. Sequences of two vowels occur only in the final two syllables of a word. There are

no sequences of three or more vowels.

A long vowel is extra-long in an unchecked ultima, the position in which it contrasts with short vowels. In a checked ultima, or nonultima, it is fairly short. In a nonultima, a front vowel is slightly backed following /r/, and /a/ is raised and fronted following /y/.

ki <sup>3</sup> <i>yesterday</i>	ne <sup>ʔ</sup> eh <sup>3</sup> <i>baby</i>
zih <sup>21</sup> <i>to total up</i>	to <sup>34</sup> <i>milk</i>
gili <sup>ʔ3</sup> <i>prickly pear</i>	oh <sup>21</sup> <i>to shell (corn)</i>
lu <sup>3</sup> <i>cat</i>	gopā <sup>32</sup> <i>goblet</i>
nuh <sup>3</sup> <i>skin</i>	çā <sup>3</sup> <i>tortilla</i>
uçā <sup>21</sup> <i>to vomit</i>	çā <sup>ʔ3</sup> <i>song</i>
ne <sup>34</sup> <i>knife</i>	yati <sup>ʔ3</sup> <i>star</i>
ne <sup>ʔ3</sup> <i>rope</i>	

A short vowel is notably shorter when it receives a phrase stress (see 1.4). /e̞ o̞/ have a more open articulation than /e o/.

ne̞ <sup>3</sup> <i>to be sitting</i>
to̞ <sup>34</sup> <i>grindstone (metate)</i>
gata̞ <sup>53</sup> <i>to carry (potential)</i>

Although all five long vowels occur in nonultimas, it is almost possible to reduce the number of contrasts in this position to three. In words of native origin, the occurrence of /i u/ or /e o/ respectively, is to a large degree predictable from the ultima vowel, but in Spanish loanwords, the contrast clearly occurs in a few sets of words for some speakers.

mesā <sup>32</sup> (~ misā <sup>32</sup> ) <i>table</i>
misā <sup>32</sup> <i>mass</i>

In both Spanish loanwords and native words, however, nonultima vowels vary freely in many morphemes, both between speakers and even for the same speaker.

ra <sup>3</sup> tō <sup>4</sup> ~ ro <sup>3</sup> tō <sup>4</sup> <i>blanket</i>
--

In addition, nonultimas are articulated so rapidly that the vowel is often reduced and/or devoiced.

The following generalization can be made about the near-complementation of /i u/ with /e o/. /e o/ are uncommon in nonultimas.

They occur mainly when the ultima vowel is itself mid. /e/ often precedes /ə ɛ/, and /o/ often precedes /o ɔ/. This is particularly true when the intervening consonant is /ʔ/ or the onset of the nonultima is /r/. Before all ultima vowels, /i u a/ are common in nonultimas, except that /u/ does not precede /o/.

neʔeh <sup>3</sup>	<i>baby</i>	dako <sup>21</sup>	<i>foot</i>
neʔe <sup>3</sup>	<i>to see</i>	ʒlta <sup>21</sup>	<i>to sting (insect)</i>
roko <sup>34</sup>	<i>custard apple</i>	utah <sup>21</sup>	<i>to anoint</i>
noʔo <sup>34</sup>	<i>man (woman speaker)</i>	ata <sup>3</sup>	<i>to take a vapor bath</i>
riki <sup>21</sup>	<i>grasshopper</i>	nikə <sup>53</sup>	<i>poor</i>
uci <sup>3</sup>	<i>to nurse</i>	yuwe <sup>5</sup>	<i>hidden</i>
gaki <sup>21</sup>	<i>nail</i>	ane <sup>34</sup>	<i>to bathe</i>
nitu <sup>34</sup>	<i>face down</i>	zino <sup>32</sup>	<i>native skirt</i>
guku <sup>32</sup>	<i>Inca dove (Scar-</i> <i>dafella inca)</i>	uno <sup>34</sup>	<i>to sow</i>
dakuh <sup>21</sup>	<i>sty</i>	ako <sup>32</sup>	<i>to sob</i>
ni <sup>3</sup> ke <sup>5</sup>	<i>chocolate</i>	misə <sup>32</sup>	<i>mass</i>
uče <sup>34</sup>	<i>to get wet</i>	uta <sup>3</sup>	<i>to gather</i>
gače <sup>21</sup>	<i>to walk (completive)</i>	gata <sup>53</sup>	<i>to carry (potential)</i>
ʒiko <sup>35</sup>	<i>groove</i>		

When no consonant intervenes, vowel sequences are restricted to /iu le lo la iə iə ai au ao/.

riu <sup>34</sup>	<i>whistle</i>	ʒia <sup>32</sup>	<i>neck</i>
diêh	<i>ant! (man speaker)</i>	yaih <sup>3</sup>	<i>stone</i>
rio <sup>34</sup>	<i>trough</i>	yau <sup>3</sup>	(~ yu <sup>3</sup> ) <i>armadillo</i>
ria <sup>3</sup>	<i>to shoot</i>	ao <sup>3</sup>	<i>to hit</i>
zerio <sup>32</sup>	<i>match</i>		

Although there are no vowel sequences with /u/ as the first member, there are sequences /uwi uwe uwa uwe uwa/.

yuwi <sup>35</sup>	<i>people</i>
ʒuwe <sup>3</sup>	<i>dog</i>
yuwa <sup>5</sup>	<i>angry</i>
yuwe <sup>32</sup>	<i>hair</i>
ruwa <sup>32</sup>	<i>squash seed</i>

There are very few distributional restrictions between consonants and vowels. Front vowels /i e e/ do not immediately follow /y/. Back vowels /u o o/ do not immediately follow /w/. Front vowels do not precede /y/, but back vowels do precede /w/. See examples in preceding paragraph.

Simple /k g/ do not occur following a back vowel and preceding a nonback vowel. /kw gw/, however, are common in this environment.

dukwa<sup>32</sup> *possessed house*

žugwah<sup>21</sup> *to be twisted*

/m/ does not precede back vowels except in loanwords.

dimo<sup>32</sup> *plow beam*

In some cases, vowels vary freely in ultimas. Pairs of vowels that show this variation are often nasalized. /i~e i~u u~o e~o e~a/.

yuwi<sup>21</sup> ~ yuwe<sup>21</sup> *palm mat*

gat<sup>5</sup> ~ gat<sup>5</sup> *narrow*

nuh<sup>21</sup> ~ noh<sup>21</sup> *we (exclusive)*

ret<sup>34</sup> ~ ret<sup>34</sup> *vegetable pear (Sechium edule)*

yan<sup>3</sup> ~ yan<sup>3</sup> *loft*

Sometimes a sequence of two vowels varies with a single vowel: /a~e au~u/.

lela<sup>21</sup> ~ lel<sup>21</sup> *sling*

yau<sup>3</sup> ~ yu<sup>3</sup> *armadillo*

A further variation involves the sequences /aya/ and /la/.

naya<sup>21</sup> ~ nla<sup>21</sup> *to diminish*

1.3 The SJC system of tones is analyzed as a contour system similar to those reported for Asian languages, rather than as a register system, such as those reported for various Middle American languages, including SAC Trique. Because of their mnemonic value, however, and to facilitate comparison with SAC, tones are symbolized by numbers which reflect their phonetic composition (1 is high, and 5 is low). There are eight tones in SJC Trique: mid-high gliding to high /21/, mid gliding to mid-high /32/, mid /3/, mid gliding to mid-low /34/, mid gliding to low /35/, mid-low



/4/, low /5/, low (or mid-low) gliding to mid /53/.

yã <sup>21</sup>	<i>to be sitting</i>	yã <sup>35</sup>	<i>scar</i>
yã <sup>32</sup>	<i>corn cob</i>	yã <sup>4</sup>	<i>unmarried</i>
yã <sup>3</sup>	<i>he is sitting</i>	yã <sup>5</sup>	<i>one (in certain number phrases)</i>
yã <sup>34</sup>	<i>sell</i>	yã <sup>53</sup>	<i>Spanish moss</i>

Only /2: 3 4/ occur in nonultimas.

ya<sup>21</sup>nuh<sup>3</sup> *drum*  
 gwe<sup>3</sup>se<sup>5</sup> *judge*  
 ga<sup>4</sup>yã<sup>21</sup> (~ gayã<sup>21</sup>) *to sit (potential)*

In this position, /3/ has a variant /35/ preceding /m/.

ʒu<sup>3</sup>mɛ<sup>32</sup> *barn owl (Tyto alba)*

/4/ is phonetically intermediate between /4/ and /5/ in ultimas, and seems to represent a neutralization of these two tones; it is here assigned arbitrarily to /4/. It occurs contrastively only when the ultima tone is /21 32 3 34 35/. Non-tone-carrying non-ultimas, when not devoiced, have a carrier tone around level 3 when the following tone is /21 32 3 34 35/, and around level 4 when the following tone is /4 5 53/. Tone-carrying nonultimas with /3/ are more prominent than non-tone-carrying nonultimas.

In ultimas, all eight tones occur with long unchecked vowels. See examples above. All but /21 35/ occur in ultimas with short vowels.

ganɔ <sup>32</sup>	<i>to grab (completive)</i>	gunɔ <sup>4</sup>	<i>to sow (potential)</i>
gunɔ <sup>3</sup>	<i>to hear (completive)</i>	ganɔ <sup>5</sup>	<i>to grab (potential)</i>
gunɔ <sup>34</sup>	<i>to sow (completive)</i>	gunɔ <sup>53</sup>	<i>to hear (potential)</i>

All but /32/ occur in ultimas checked by /h/, but /35/ is very rare.

ya <sup>2</sup> ah <sup>21</sup>	<i>gourd</i>	nuh <sup>4</sup>	<i>generous</i>
ya <sup>2</sup> ah <sup>3</sup>	<i>chili pepper</i>	ni <sup>3</sup> nuh <sup>5</sup>	<i>bean gruel</i>
ya <sup>2</sup> ãh <sup>34</sup>	<i>god</i>	ga <sup>3</sup> nuh <sup>53</sup>	<i>shoe</i>
mayah <sup>35</sup>	<i>yellow</i>		

All but /34/ occur in ultimas checked by /ʔ/, but /21 35/ are very rare, and /3:/ occurs only as a sandhi variant (see 1.4).

cɿʔ <sup>21</sup> (~ cɿʔ <sup>3</sup> )	<i>tiny</i>	rune <sup>34</sup>	nana <sup>24</sup>	<i>large black beans</i>
nã <sup>232</sup>	zo <sup>5</sup>	<i>you start for home</i>		
nã <sup>23</sup>	<i>to start for home</i>		mã <sup>25</sup>	<i>two (tortillas)</i>
ca <sup>235</sup> (~ a <sup>3</sup> za <sup>25</sup> )	<i>how? (with a component of surprise)</i>		zaga <sup>253</sup>	<i>spleen</i>

Nasalization is a word-level feature; a word is either nasalized or it is not. Nasalization is actualized mainly on the vowel of the ultima, but extends regressively to nonultimas until a consonantal barrier (any consonant other than /ɣ w ʔ/) is reached.

/a a/ are raised to mid central when nasalized. /u/ has an extremely close variant, approaching a syllabic labiovelar nasal, when nasalized.

There are limitations on the distribution of nasalization with respect to consonants and vowels. A word with nasal plus stop as onset of its ultima is never nasalized.

nda <sup>53</sup>	<i>until</i>
nga <sup>3</sup>	<i>cloud</i>

If the onset of the ultima ends in a nasal, and the vowel of the ultima is /i e e u o o/, the vowel is always phonetically nasalized. I do not mark nasalization in such words.

ne <sup>23</sup>	<i>rope</i>
nuh <sup>3</sup>	<i>skin</i>

In this same context with /a a/, the word may be either nasalized or not (although it is most often nasalized when the nas<sup>1</sup> is /m/).

nah <sup>3</sup>	<i>barrio of Yosoyuxi</i>	ʒinã <sup>32</sup>	<i>paint</i>
nãh <sup>3</sup>	<i>net bag</i>	má <sup>2</sup> (~ má <sup>2</sup> )	<i>(, negative)</i>
da <sup>2</sup> nah <sup>34</sup>	<i>ghost</i>	amã <sup>23</sup>	<i>to rain</i>
ʒi <sup>2</sup> nãh <sup>34</sup>	<i>to abound</i>	nimã <sup>32</sup>	<i>heart</i>
nã <sup>34</sup>	<i>water</i>		

The same constraints apply to sequences of nasal-vowel-glottal stop-vowel.

ne <sup>2</sup> eh <sup>3</sup>	<i>baby</i>	na <sup>2</sup> ah <sup>21</sup>	<i>to be faint</i>
gono <sup>2</sup> o <sup>32</sup>	<i>medicine</i>	ʒina <sup>2</sup> ãh <sup>21</sup>	<i>language</i>

/e/ occur in the ultima of nasalized words only in Spanish loanwords. Monolinguals usually replace /e/ by /i/, and sometimes /o/ by /u/. All other vowels occur with nasalization.

raɾ <sup>3</sup>	tomato	naɾã <sup>3</sup>	stringbean	
çũ <sup>21</sup>	box	reɾẽ (~ reɾõ)	vegetable pear	
trẽ <sup>32</sup>	~ trĩ <sup>32</sup>	train	açõ <sup>32</sup>	to write
rayõ <sup>32</sup>	~ rayũ <sup>32</sup>	stallion	yaʔã <sup>34</sup>	fire

Nasalization occurs with all eight tones.

yã <sup>21</sup>	to be sitting	yã <sup>35</sup>	scar
yã <sup>32</sup>	corn cob	yã <sup>4</sup>	unmarried
yã <sup>3</sup>	he is sitting	yã <sup>5</sup>	one (in certain number phrases)
yã <sup>34</sup>	salt	gaʔãh <sup>53</sup>	four

A few words have nasalized and non-nasalized variants.

dãh <sup>53</sup>	~ dah <sup>53</sup>	thus
açẽ <sup>32</sup>	~ açe <sup>32</sup>	to pass

In exclamatory words the distinction among long unchecked vowels, long vowels checked by /h/, and short vowels is lost. All these vowels show a breathy fade, which I have chosen to consider a manifestation of /h/.<sup>10</sup> Thus, in exclamatory words, there is a contrast only between those that end in /h/ and those that end in /ʔ/.

The eight-contour tone system does not occur in exclamatory words. Instead, there is a set of five pitch-stress patterns, symbolized by diacritics over vowels: level mid-high or mid tone on the ultima /-/, level mid-low or low tone on the ultima /˘/, a glide falling from mid to mid-low on the ultima /˘/, level mid or mid-high tone on the penult with a glide falling from mid-low to low on the ultima /-˘/, a glide rising from low or mid-low to mid on the ultima /˘/. Each morpheme normally occurs with only one of these patterns in any one idiolect.

áh (declarative in answer to a question)

žíʔ grandfather!

gàh (~ gãh) (interrogative for content questions)

žàʔ (interrogative for yes-no questions with affirmative answer expected)

zitâh *relative's husband!*  
 mâ? (~ má?) (negative)  
 žúwèh *dog!*  
 žókò? *relative's wife!*  
 dirěh *father-in-law!*  
 duwĩ? *aunt! (woman speaker)*

Certain morphemes occur only as exclamatory words. These comprise a few exclamations and some members of a set of particles with meanings similar to those carried by intonation contours in English. They occur only utterance-final. There are many morphemes which I have never observed as exclamatory words, e.g., verbs. There are also a large number of morphemes which may occur as either word type, depending on their syntactic function. Most nouns belong to this group. When a noun is used as a vocative, it occurs as an exclamatory word; when it is used within a clause, it occurs as an ordinary word.

The correspondences between the vowels and laryngeals in the two systems are fairly simple. All ordinary words checked by /ʔ/ correspond to exclamatory words checked by /ʔ/. All ordinary words checked by /h/ correspond to exclamatory words checked by /h/. All ordinary words ending in long unchecked vowels or in short vowels also correspond to exclamatory words checked by /h/. /ə ɔ ə/ in ordinary words correspond to /e o a/, respectively, in exclamatory words.

daʔnuʔ <sup>32</sup> <i>our uncle</i>	lupɛ <sup>32</sup> <i>Lupe</i>
daʔnúʔ <i>uncle!</i>	lúpèh <i>Lupe!</i>
raʔwih <sup>34</sup> <i>woman's brother</i>	betɔ <sup>32</sup> <i>Albert</i>
raʔwĩh <i>brother!</i>	bétòh <i>Albert!</i>
žuwe <sup>3</sup> <i>dog</i>	litə <sup>32</sup> <i>Margaret</i>
žúwèh <i>dog!</i>	lítàh <i>Margaret!</i>

Following a question, however, final /h/ in names and kinship terms used as vocatives becomes /ʔ/.

bétòʔ *Albert!*  
 dínúʔ *man's brother! (from dínúh).*

The correspondences between the two tone systems are not entirely regular. A detailed listing of such correspondences is beyond the scope of this paper.

1.4 There appear to be at least two levels of organization above the word.

One of these is the phonological PHRASE, a level marked by a stress on the ultima of the word which functions as its nucleus. A phonological phrase may contain up to four words. Very often it contains only one. Some morphemes, mainly pronouns and particles, rarely or never occur as the nucleus of a phrase. Some of these are proclitic, and others are enclitic. All other morphemes occur only as the nucleus of a phrase. Whatever the number of words in a phrase, stress occurs on either the first or second word. Phrase stress /' / is marked both by intensity on the ultima of the word receiving it and by a lengthening of unchecked long vowels or a shortening of short vowels. The latter is accompanied by compensatory lengthening of an immediately preceding fortis stop, fortis sibilant, or resonant.

'dã<sup>32</sup> zo<sup>75</sup> âh *your pet*  
 zɛ<sup>34</sup> la'pɛ<sup>32</sup> zo<sup>75</sup> âh *your pencil*  
 'mã<sup>3</sup> 'zo<sup>73</sup> âh *to him*  
 'mã<sup>32</sup> zo<sup>75</sup> âh *to you*

The second level of organization is the UTTERANCE, which has been mentioned above in connection with the distribution of ordinary and exclamatory words. The final word of an utterance is always an exclamatory word. One phrase of an utterance, normally the final one, is marked by a slightly stronger stress /' /.

At the utterance level, there are some intonation-like phenomena. Strong emphasis can be expressed on an ordinary word by extra-strong utterance stress, by greatly lengthening consonants and vowels except for short vowels (which are, if anything, even shorter), and by raising the noncontrastive pitch on non-tone-carrying nonultimas.

ʒa<sup>5</sup> kã<sup>5</sup> zo<sup>75</sup> âh *you are tall!*

Insistence can be expressed by greatly lengthening the utterance-final exclamatory word, by giving it utterance stress, and by nasalizing and laryngealizing it.

ri'kɛ<sup>4</sup> zo<sup>75</sup> ni<sup>4</sup> 'ʔyah<sup>34</sup> 'ʔũh<sup>5</sup> "âh *come on now, give it to me  
 to look at!*

Sympathy can be expressed by superimposing a falling pitch accompanied by increasing laryngealization on the tone system and lengthening the final syllable.

ni<sup>1</sup>kə<sup>32</sup> di<sup>75</sup> âh *poor you!*

Impatience or annoyance can be expressed by shifting the pitch of the utterance to a higher key.

nə<sup>3</sup> ne<sup>1</sup>?eh<sup>3</sup> "mā? *I don't know!*

A further phenomenon within the phrase or utterance is tone sandhi. A group of five pronouns changes the ultima tone of any immediately preceding word ending in a vowel or /ʔ/ and having tones /<sup>3 35 53</sup>/ to /<sup>32</sup>/. These pronouns also change the ultima tone of any immediately preceding word ending in /h/ and having /<sup>3 53</sup>/ to /<sup>21</sup>/ with loss of /h/.<sup>11</sup>

2. The WORD in SAC Trique is also well-marked. The ultima is the position of phonemic differentiation, and nonultimas are positions of neutralization. The contrast between fortis and lenis consonants, for example, occurs only in ultimas and is neutralized in nonultimas. In addition, a far greater range of tonal possibilities occurs in ultimas than in nonultimas.

Words have stress on the ultima. There is also a phonetic stress on a penult with tone 2, and on a penult preceding an ultima with a medially-checked vowel (V<sup>2</sup>V or VhV).

2.1 There are 25 consonants in SAC Trique: fortis consonants /p t k s ʃ m n l y w/, lenis consonants /b d g z ʒ m n l y w/, and consonants undifferentiated as to fortis-lenis /c ʃ r ʔ h/. The fortis-lenis contrast is found only in ultimas. Neutralized phonemes occurring in nonultimas have been identified with the lenis series. /m n l y w/ occur only in monosyllabic words. /c ʃ/ occur only in ultimas, except that a few speakers substitute /ʃ/ for /ʒ/ in non-ultimas in a few words. The only consonants which may close a word are /ʔ h/.

Fortis stops and sibilants are voiceless and slightly lengthened. Fortis nasals, lateral, and semivowels are quite long.

la <sup>3</sup> pih <sup>3</sup> <i>pencil</i>	m·i <sup>354</sup> <i>bridge</i>
to <sup>343</sup> <i>grindstone (metate)</i>	n·e <sup>5</sup> <i>naked</i>
ko <sup>4</sup> <i>twenty</i>	l·ih <sup>3</sup> <i>little</i>
me <sup>2</sup> sa <sup>3</sup> <i>table</i>	y·a <sup>34</sup> <i>tongue</i>
ʃi <sup>3</sup> <i>large</i>	w·ih <sup>5</sup> <i>two</i>

/b/ is a voiced fricative in the onset of ultimas, except after nasals, where it is a stop. /d g/ vary from voiced fricatives to voiced stops to voiceless stops in most environments. They are stops after nasals. Lenis sibilants vary from voiced to

voiceless. lenis nasals, lateral, and semivowels are short, and /n/ is velar immediately preceding /g/.

be <sup>2</sup> e <sup>5</sup>	(as)severative)	mɿ <sup>21</sup>	yellow
da <sup>3</sup>	plain	nɿ <sup>25</sup>	all
gah <sup>2</sup>	to grind (completive)	lu <sup>21</sup>	worm
zãhã <sup>3</sup>	twelve and a half	yũ <sup>2</sup>	another time
	centavos	wah <sup>2</sup>	to grind
ʒa <sup>3</sup> ɿ <sup>3</sup>	mosquito		

Affricates are voiceless; /ʃ/ is slightly retroflexed.<sup>12</sup> /r/ is a retroflexed grooved flap. It is voiceless utterance-initial or following /h/ and voiced elsewhere. /ʔ/ is a glottal stop. /h/ is a voiceless velar fricative in the onset of a syllable; elsewhere, it is a voiceless vocoid.

ci <sup>5</sup>	tough
ča <sup>12</sup>	canyon
re <sup>25</sup>	you (formal)
ɿ <sup>4</sup>	nine
wah <sup>2</sup>	to grind

Clusters of two and three consonants occur in syllable onsets. Several types occur in the ultima of native words. One type is /n/ plus lenis stop: /nd ng/.

nda <sup>43</sup>	until
nga <sup>3</sup>	cloud

Another type is /ʔ/ plus resonant: /ʔm ʔn ʔl ʔy ʔw/.

ga <sup>3</sup> ʔmã <sup>3</sup>	to be warm (completive)
ga <sup>3</sup> ʔnɿ <sup>21</sup>	to put in (completive)
de <sup>2</sup> ʔlohc <sup>54</sup>	rooster
ga <sup>3</sup> ʔyãh <sup>2</sup>	to blow (completive)
du <sup>3</sup> ʔwɿ <sup>3</sup>	thunder

A third type is velar stop plus semivowel: /ky kw gy gw/. /ky/ occurs only across morpheme boundary. Some speakers do not have /gy/ but have simple /g/ in its place.

ga<sup>4</sup>ta<sup>2</sup> k-yũh<sup>5</sup> a<sup>3</sup>    *carry you-me!*  
 kweh<sup>3</sup>    *pus*  
 ni<sup>3</sup>gyã<sup>21</sup> (~ ni<sup>3</sup>gã<sup>21</sup>)    *town of Tlaxiaco*  
 gweh<sup>2</sup>    *to jump*

Other clusters of two consonants which occur in ultimas are: /dr zn nz/.

drã<sup>34</sup> yũ<sup>4</sup>?ũh<sup>34</sup>    *to bother*  
 znah<sup>3</sup>    *language*  
 žu<sup>3</sup>ku<sup>3</sup> la<sup>3</sup>nzihi<sup>43</sup>    *daddy-long-legs*

One cluster of three consonants occurs in ultimas: /?ng/.

?ngo<sup>4</sup>    *one*

Clusters are more common in ultimas than in nonultimas. Of the clusters listed above, the only ones which occur frequently in non-ultimas are /ng ?n gw zn/.

ngu<sup>3</sup>ya<sup>43</sup>    *roadrunner*  
 ?na<sup>2</sup>křhř<sup>54</sup>    *opossum*  
 du<sup>3</sup>gwa<sup>3</sup>ne<sup>34</sup>    *to melt*  
 znã<sup>3</sup>?ãhã<sup>43</sup>    *conversation*

There are also several clusters which occur only in nonultimas: /hn žy zd ngw zgw/. Of these, /žy zgw/ each occurs in one morpheme only.

hna<sup>3</sup>ři<sup>3</sup>    *to awaken (someone)*  
 žya<sup>3</sup>čaha<sup>43</sup>    *duck*  
 zdu<sup>3</sup>ku<sup>43</sup>    *necklace*  
 ngwã<sup>4</sup>?ãh<sup>3</sup>    *four more*  
 a<sup>3</sup>zgua<sup>4</sup>?a<sup>3</sup>    *earlier*

Clusters beginning with /z/ most frequently occur word-initial.

Many other consonant clusters occur in Spanish loanwords. There are sequences /nč nž/.

le<sup>3</sup>nčuh<sup>3</sup>    *Lawrence*  
 nži<sup>2</sup>u<sup>3</sup>    *an old coin worth six centavos*



There are sequences of nasal plus stop plus /r/: /mbr ndr/.

dl<sup>2</sup>mbre<sup>3</sup> *postage stamp*  
la<sup>2</sup>ndru<sup>3</sup> *coriander*

There are sequences of various consonants plus semivowels: /ry ly hw/.

de<sup>2</sup>ryu<sup>3</sup> *Emeterio*  
hu<sup>3</sup>lya<sup>3</sup> *Julia*  
ga<sup>3</sup>hwe<sup>2</sup> *coffee*

Other consonant clusters introduced through loanwords are: /mb nt st sk rk zg zy nsy nty skw/.

re <sup>2</sup> mbuhu <sup>14</sup> <i>top (toy)</i>	zga <sup>3</sup> le <sup>2</sup> ra <sup>3</sup> <i>ladder</i>
za <sup>2</sup> ntu <sup>3</sup> <i>All Saints' Day</i>	zye <sup>2</sup> ndu <sup>3</sup> <i>hundred</i>
kweh <sup>3</sup> stah <sup>3</sup> <i>mustard greens</i>	be <sup>2</sup> nsyu <sup>3</sup> <i>Florencio</i>
ska <sup>23</sup> <i>fiscal (a religious official)</i>	za <sup>3</sup> ntyo <sup>2</sup> <i>Santiago</i>
bo <sup>3</sup> rkeh <sup>3</sup> <i>George</i>	ba <sup>2</sup> skwa <sup>3</sup> <i>Easter</i>

Some of these clusters occur only in ultimas, some only in non-ultimas, and some in both.

Spanish loanwords have introduced two new distributions for /h/: in the onset of ultimas, alone or in cluster with /w/; and alone in the onset on non-ultimas.

a<sup>2</sup>hu<sup>3</sup> *garlic*  
ga<sup>3</sup>hwe<sup>2</sup> *coffee*  
hu<sup>3</sup>lya<sup>3</sup> *Julia*

In some morphemes, there is free variation in nonultimas between a consonant cluster and the second member of that cluster. Sets which show this variation are: /zd~d nz~n ng~g dr~r/.

zda<sup>3</sup>ne<sup>43</sup> ~ da<sup>3</sup>ne<sup>43</sup> *goat*  
zna<sup>2</sup>du<sup>3</sup> ~ na<sup>2</sup>du<sup>3</sup> (also ?na<sup>2</sup>du<sup>3</sup>) *soldier*  
ngu<sup>3</sup>nʔʔ<sup>43</sup> ~ gu<sup>3</sup>nʔʔ<sup>43</sup> *prickly pear*  
druh<sup>3</sup> ~ ruh<sup>3</sup> *clay pot*

There is one restriction on the distribution of consonants across syllable boundaries. The onsets of two contiguous syllables (in native words) cannot each contain a labial consonant (Longacre 1957:28)

2.2 There are thirteen vowels in SAC Trique: oral vowels /i ɨ u e o a/, nasalized vowels /ɿ ʔ ü ẽ õ ä/, and undifferentiated vowel /ʌ/. Nasalized vowels occur only in ultimas unless the onset of an ultima is /ʔ/, in which case the preceding vowel is usually also nasalized (Longacre 1957:25). A few morphemes such as ra<sup>3</sup>ʔä<sup>3</sup> *mushroom* do not have nasalization on a vowel followed by /ʔ/ plus nasalized vowel. The contrast of /i ɨ/ with /ɿ ʔ/, respectively, is neutralized immediately following nasals. In ultimas, only the nasalized vowels are considered to occur. /ẽ õ/ are rare. There are no diphthongs; when two vowels occur in sequence, each is the nucleus of a separate syllable.

/ɨ ʔ/ are high central. /ʌ/ is mid central. Other vowel symbols have their usual phonetic values. /e/ is more open immediately following /l·/, and in nonultimas between /r/ and any consonant other than /ʔ/. /ä/ is higher than /a/ (Longacre 1957:21, 23).

ci <sup>5</sup>	<i>tough</i>	kʔ <sup>3</sup>	<i>river</i>
dɨ <sup>21</sup>	<i>calm</i>	dü <sup>3</sup>	<i>palm tree</i>
ču <sup>343</sup>	<i>powder</i>	žu <sup>3</sup> gwěh <sup>34</sup> -ě <sup>3</sup>	<i>brother!</i> ( <i>honorific, woman speaker</i> ) <sup>13</sup>
n·e <sup>354</sup>	<i>meat</i>	zõ <sup>343</sup>	<i>work</i>
čo <sup>354</sup>	<i>soot</i>	kã <sup>43</sup>	<i>seeds</i>
ča <sup>12</sup>	<i>canyon</i>	ya <sup>h3</sup>	<i>stone</i>
cɿ <sup>3</sup>	<i>a drop</i>		

Vowels in ultimas may be unchecked, medially-checked by /ʔ h/, or finally-checked by /ʔ h/. When unchecked, they are longer; when medially-checked, they are interrupted; and when finally-checked, /ʔ h/ close the word. Medially-checked ultimas have the phonetic stress on the first mora when checked by /ʔ/, or when checked by /h/ with a nonrising tone sequence or level tone; and on the second mora when checked by /h/ with a rising tone sequence.

y·a <sup>34</sup>	<i>tongue</i>
yɔ <sup>ʔo3</sup>	<i>year</i>
yaha <sup>3</sup>	<i>flower</i>
yã <sup>ʔ34</sup>	<i>teeth</i>
yah <sup>3</sup>	<i>ashes</i>

Medially-checked ultima vowels are in contrast with disyllabic sequences having /ʔ h/ in the onset of the second syllable.

yã<sup>3</sup>ʔã<sup>5</sup> twins  
a<sup>2</sup>hu<sup>3</sup> garlic

The distribution of vowels across syllable boundaries is restricted. /i u a/ occur in nonultimas before all ultima vowels. /e o/ occur in nonultimas only before restricted lists of ultima vowels. /ʌ/ occurs in nonultimas only when followed by /ʔʌ/. /ɬ/ never occurs in nonultimas. Nasalized vowels occur contrastively in nonultimas only if the ultima vowel is also nasalized. When no consonant intervenes, vowel sequences are restricted to /iu io ia iũ iã eu ai au aɪ/ (Longacre 1957:25).

There are two distributional restrictions between consonants and vowels: /w w·/ cannot immediately precede /u o/, and /y y·/ cannot occur contiguous to /i/ within the same word (Longacre 1957:16).

2.3 SAC: Trique is analyzed as a highly asymmetrical five-tone register system (<sup>1</sup> is high, and <sup>5</sup> is low). All syllables carry tone, although ultimas have the greatest potential for tonal contrast.

Penults may carry level tones /2 3 4 5/; antepenults may carry only /3 4 5/.

re <sup>2</sup> ta <sup>3</sup>	rope	na <sup>3</sup> gi <sup>3</sup> ʔyah <sup>2</sup> kwã <sup>4</sup> nTɰ <sup>3</sup>	they made it
ʒi <sup>3</sup> iu <sup>3</sup>	cat		purple
ga <sup>4</sup> ta <sup>3</sup>	she'll carry	na <sup>4</sup> du <sup>4</sup> na <sup>4</sup> zi <sup>3</sup>	he'll change it
gã <sup>5</sup> ʔã <sup>3</sup>	four	gu <sup>5</sup> du <sup>5</sup> we <sup>5</sup> kã <sup>3</sup>	I'll sell squash

In ultimas, level tones /2 3 4 5/ (but not /1/) occur.

yo<sup>2</sup> pa.lm basket  
kã<sup>3</sup> squash  
ʔʔ<sup>4</sup> nine  
ʒã<sup>5</sup> eleven

Sequences of two tones in ultimas are: /12 13 21 23 32 34 35 43 45 51 32 53 54/. Of these, /13 32 51 52/ each occur in one morpheme only.

ga <sup>3</sup> ki <sup>12</sup> <i>nail</i>	na <sup>3</sup> to <sup>43</sup> <i>banana</i>
ã <sup>13</sup> <i>yes</i>	a <sup>3</sup> ?i <sup>45</sup> nĩh <sup>3</sup> <i>they're heavy</i>
ni <sup>3</sup> gyã <sup>21</sup> <i>town of Tlaxiaco</i>	ga <sup>3</sup> wĩ <sup>3</sup> yo <sup>51</sup> <i>I was quick</i>
dũ <sup>23</sup> <i>person in charge of religious festival (mayordomo)</i>	ga <sup>3</sup> wĩ <sup>3</sup> yo <sup>52</sup> re <sup>75</sup> <i>you were quick</i>
ma <sup>3</sup> ka <sup>32</sup> <i>Mexico City</i>	za <sup>34</sup> ʒe <sup>5</sup> ?e <sup>53</sup> <i>long stuff</i>
a <sup>3</sup> ne <sup>34</sup> nĩh <sup>3</sup> <i>they're bathing</i>	za <sup>34</sup> na <sup>2</sup> ko <sup>54</sup> <i>dried stuff</i>
to <sup>35</sup> ga <sup>5</sup> ci <sup>53</sup> <i>white milk</i>	

Only two sequences of three tones occur: /<sup>343</sup> <sup>354</sup>/.

ci <sup>343</sup> <i>roasting ear</i>
to <sup>354</sup> <i>milk</i>

All the above tones and tone sequences occurring in ultimas are found in unchecked syllables. In medially- or finally-checked syllables, restricted sets of tones and tone sequences occur. Syllables checked medially by /?/ occur with /<sup>3</sup> <sup>43</sup> <sup>53</sup>/.

m·ĩ?ĩ <sup>3</sup> <i>soap</i>
a <sup>3</sup> tã?ã <sup>43</sup> <i>foam</i>
ga <sup>3</sup> ʒũ?ũ <sup>53</sup> <i>shadow</i>

Syllables checked medially by /h/ occur with /<sup>3</sup> <sup>43</sup> <sup>53</sup> <sup>54</sup>/.

kaha <sup>3</sup> <i>log</i>
zã <sup>3</sup> ?ãhã <sup>43</sup> <i>money</i>
ri <sup>3</sup> uhu <sup>53</sup> <i>reed</i>
yã <sup>2</sup> ãhã <sup>54</sup> <i>musical instrument</i>

Syllables checked finally by /?/ occur with /<sup>2</sup> <sup>3</sup> <sup>4</sup> <sup>5</sup> <sup>34</sup> <sup>35</sup> <sup>45</sup>/.

di <sup>3</sup> ?nĩ <sup>72</sup> <i>our corn</i>	da <sup>3</sup> rã <sup>734</sup> nĩh <sup>3</sup> <i>all of them</i>
gĩ <sup>73</sup> zi <sup>3</sup> <i>he stinks</i>	u <sup>3</sup> ta <sup>735</sup> zi <sup>3</sup> <i>he's fighting</i>
či <sup>74</sup> <i>ten</i>	zdu <sup>3</sup> kũ <sup>745</sup> <i>nephew</i>
zi <sup>3</sup> -ga <sup>5</sup> ki <sup>75</sup> <i>our nails</i>	

Syllables checked finally by /h/ occur with /<sup>2</sup> <sup>3</sup> <sup>4</sup> <sup>5</sup> <sup>23</sup> <sup>34</sup> <sup>45</sup> <sup>43</sup> <sup>53</sup>/.

zɪ<sup>3</sup>-neh<sup>2</sup> *my meat*      žu<sup>3</sup>gweh<sup>34</sup> zɪ<sup>3</sup> *his sister*  
 ruh<sup>3</sup> *clay pot*      ru<sup>3</sup>gu<sup>3</sup>cɪh<sup>45</sup> *armpit*  
 čih<sup>4</sup> *seven*      ni<sup>3</sup>kah<sup>43</sup> *her husband*  
 žu<sup>5</sup>wih<sup>5</sup> *twelve*      zɪ<sup>3</sup>-neh<sup>53</sup> *her meat*  
 tah<sup>23</sup> *dad!*

There are some restrictions on combinations of tones across syllable boundary. Most of these restrictions involve the high tones /1/ and /2/.

2.4 The phonological structure of SAC Trique above the level of the word has not been studied in detail. One feature of interest, however, is the replacement of tone by intonation contours on certain kinship terms functioning as vocatives at the end of either a dialogue or hortatory paragraph. There are three contrasting contours, which involve final laryngeals as well as tone. One contour ends in open vowel or /h/ and has a level tone around levels /2/ or /3/ of the regular tone system. This contour means 'casual'. The second ends in /ʔ/ plus reduplicated final vowel and has a level tone around level /3/ of the regular tone system. This contour means 'insistent'. The third has no laryngeal and a falling tone from around level /2/ to around levels /4/ or /5/ of the regular tone system. This contour means 'calling'. Examples of these contours on the word di<sup>3</sup>nʔ<sup>21</sup> *man's brother*: di<sup>3</sup>nʔ<sup>3</sup>, di<sup>3</sup>nʔʔ<sup>3</sup>, di<sup>3</sup>nʔ<sup>25</sup>. These vocatives are preceded by one or more of a set of ten particles which have meanings giving emotional coloring. These particles belong to the regular tone system (Longacre 1964:143).

In SAC Trique, a group of four pronouns is accompanied by tone changes in an immediately preceding word of the proper phonological and grammatical description. The application of such changes is not automatic, and Longacre has analyzed these tone changes as a separate morpheme (1959:22-27).

3. In this section, I compare the phonological systems of the two dialects as systems. My orientation is typological, not comparative in the sense of reconstructing a proto-language. Nevertheless, historical considerations will be mentioned when relevant, including the comparison of cognate morphemes.

3.1 Both Trique dialects have the same sets of fortis and lenis stops /p t k b d g/ and the same two laryngeals /ʔ h/. Both have the same five resonants /m n l y w/, but SJC lacks the corresponding fortis resonants of SAC /m̄ n̄ l̄ ȳ w̄/. The greatest difference between the consonant systems of the two dialects is in the patterning of affricates, sibilants, and flap. SJC has nine phonemes in this area, in a symmetrical three by three pattern.

There are three points of articulation--alveolar, palatal, and retroflex--and three manners of articulation--affricate, fortis sibilant, and lenis sibilant. The lenis retroflex sibilant has a flap allophone. SAC, however, has only seven phonemes. There are affricates, fortis sibilants, and lenis sibilants at alveolar and palatal points of articulation, and a flap with a retroflex sibilant quality. The palatal affricate has a somewhat retroflex articulation. (See footnote 12.)

SAC fortis resonants developed mainly by a lengthening of simple resonants to compensate for the loss of a penult (Longacre 1957:18).

SJC yuŋ<sup>34</sup>, SAC m·ɿ<sup>343</sup> *sweet potato*  
 SJC yan<sup>3</sup>, SAC n·a<sup>3</sup> *loft*  
 SJC yuwe<sup>34</sup>, SAC w·e<sup>343</sup> *century plant*

Affricates and sibilants show fairly regular correspondences. SAC /č/ is phonetically intermediate between SJC /č/ and /č̣/. (See footnote 12.)

SJC gač<sup>3</sup>, SAC ga<sup>3</sup>č<sup>3</sup>i<sup>4</sup>?<sup>43</sup> *fever*  
 SJC č<sup>35</sup>, SAC č<sup>354</sup> *soot*

SJC /ṣ̌/ has developed mainly from a fusion of /žič̣/.

SJC ṣ̌a<sup>21</sup> (~ žič̣a<sup>21</sup>), SAC ži<sup>3</sup>č̣a<sup>21</sup> *back*

The distribution of the consonant phonemes is similar in the two dialects. In SAC, however, /ʔ h/ sometimes occur in nonultimas.

The two dialects show different inventories of consonant clusters. SJC does not have clusters with a sibilant as the first member, but such clusters are quite common in SAC. This difference is more apparent than real, in that there is free variation in SJC among sibilant-vowel-consonant (stop or nasal) and sibilant-consonant sequences, e.g., zit- ~ zīt- ~ zət- ~ zt- ~ zt-. Even though the forms without vowels are statistically more common, I have chosen to write the full forms with vowels. Such sequences correspond somewhat to SAC clusters with a sibilant as the first member, and sometimes to sequences of sibilant-vowel-consonant.

SJC a<sup>3</sup>zigwa<sup>2</sup>a<sup>53</sup>, SAC a<sup>3</sup>zgwa<sup>4</sup>?a<sup>3</sup> *earlier*  
 SJC žuku<sup>3</sup>, SAC žu<sup>3</sup>ku<sup>3</sup> *animal*

Clusters introduced via Spanish loanwords differ largely because of chance differences in the phonological structure of the

words that happened to be borrowed.

A few clusters which belong to neither of the above two categories occur in only one dialect or the other. SJC has a rare /mb/ cluster. SAC has rare clusters /ʒy hn/ and /ky/ which occur only across morpheme boundary. SAC also has clusters /ngw gy/ which correspond to SJC /gw Ø/, respectively.

SJC yu<sup>3</sup>çwaʔǎh<sup>3</sup>, SAC ngwǎ<sup>4</sup>ʔǎh<sup>3</sup> *four more*  
 SJC niǎ<sup>21</sup>, SAC ni<sup>3</sup>gyǎ<sup>21</sup> *town of Tlaxiaco*

Note that SJC /y/ does not occur contiguous to /i/.

3.2 The most obvious difference in the vowel systems as analyzed is the presence of a series of nasalized vowels in SAC and the lack of such a series in SJC. This difference is more apparent than real, in that nasalization functions almost identically in the two dialects. In SJC, nasalization is considered a word-level feature rather than a component of a series of vowel phonemes. Sporadic irregularities make such an analysis difficult in SAC.

Remaining differences in vowel systems are the long versus short opposition in SJC and the two extra tongue positions in SAC. SJC short vowels correspond to various SAC vowels: SJC /e/ corresponds to SAC /i ð e/, SJC /o/ to SAC /ð u o/, and SJC /a/ to SAC /a/.

SJC gač̣ɛi<sup>32</sup>, SAC ga<sup>3</sup>č̣ɛɽ<sup>23</sup> *to pass (completive)*  
 SJC reɽ̣ɛi<sup>34</sup> (~ reɽ̣ɔ̣<sup>34</sup>), SAC ni<sup>3</sup>tɽ<sup>43</sup> *vegetable pear*  
 SJC gaṇɛi<sup>32</sup>, SAC ga<sup>3</sup>ne<sup>23</sup> *to chew (completive)*  
 SJC naṇɔ̣<sup>32</sup>, SAC na<sup>3</sup>nɽ<sup>23</sup> *to tell*  
 SJC ṭɔ̣<sup>31</sup>, SAC tũ<sup>3</sup> *blood*  
 SJC ʔngɔ̣<sup>4</sup>, SAC ʔngo<sup>4</sup> *one*  
 SJC waʔɛi<sup>32</sup>, SAC wa<sup>3</sup>ʔa<sup>23</sup> *to spin (thread)*

The short vowels of SJC are often preceded by lengthened allophones of consonants, some of which correspond to SAC fortis resonants. Note that SAC /e/ is more open after /i/.

SAC /i/ usually corresponds to SJC /u/ when there is a nasal or nasalization in the syllable, but to SJC /i/ elsewhere.

SJC waʔnuh<sup>5</sup>, SAC wa<sup>5</sup>ʔnɽh<sup>5</sup> *three*  
 SJC dakii<sup>21</sup>, SAC da<sup>3</sup>kɽ<sup>21</sup> *nose*  
 SJC ki<sup>2</sup>, SAC ki<sup>12</sup> *tree bark*

The SAC form is thus phonetically intermediate. SAC /ʌ/ corresponds to SJC disyllabic cluster /ai/ or to /i/.

SJC yaih<sup>3</sup>, SAC yʌh<sup>3</sup> *stone*  
 SJC zigiʔ<sup>3</sup>, SAC zi<sup>3</sup>gʌʔʌ<sup>4</sup><sup>3</sup> *mud*

Note that SJC /a/ is raised and fronted following /y/ in nonultimas.

3.3 Probably the most outstanding difference between the two dialects is in their tone systems. At first glance, they would seem to be totally different, because one is analyzed as a register system and the other as a contour system. Again, the difference results largely from analytical choices by the investigators. The register system of SAC is highly asymmetrical, although not so asymmetrical that a contour analysis would be simpler. A contour analysis for SAC would have nineteen contrasting contours. A register analysis would be possible in SJC but quite inefficient. If fewer than five registers are posited, severe phonetic distortion is introduced when the level tones and the end points of glides are assigned to specific registers. If five registers are posited, the distortion disappears, but neither of the two highest registers occurs except in sequence with another register.

One historical fact largely accounts for the far greater range of tonal possibilities in ultimas in SAC: an unstressed particle of the form \*V<sup>3</sup>, meaning 'end of noun phrase', fused to the end of many words. Such words also have forms without the fused particle, which occur phrase-medial. In many cases, all that remains of the particle is its tone, which appears as the final member of a tone sequence, usually as /<sup>3</sup>/. All of the following SAC tone sequences have this source: /<sup>12</sup> <sup>43</sup> <sup>53</sup> <sup>54</sup> <sup>343</sup> <sup>354</sup>/ (Longacre 1957:78-79). As soon as this fact is taken into account, the two systems begin to look similar, and the correspondences are fairly regular. SJC /<sup>21</sup> <sup>3</sup> <sup>34</sup> <sup>35</sup> <sup>4</sup> <sup>5</sup>/ correspond to the same tones in SAC.

SJC niã<sup>21</sup>, SAC ni<sup>3</sup>gyã<sup>21</sup> *town of Tlaxiaco*  
 SJC kã<sup>3</sup>, SAC kã<sup>3</sup> *squash*  
 SJC anɛ<sup>34</sup>, SAC a<sup>3</sup>ne<sup>34</sup> *to bathe*  
 SJC yuwi<sup>35</sup>, SAC gwi<sup>35</sup> *people*  
 SJC ũ<sup>4</sup>, SAC ʔʔ<sup>4</sup> *nine*  
 SJC gaci<sup>5</sup>, SAC ga<sup>5</sup>ci<sup>5</sup> *white*

SJC /<sup>32</sup>/ corresponds to SAC /<sup>2</sup>/; SJC /<sup>53</sup>/ to SAC /<sup>4.3</sup>/ (disyllabic sequence).



SJC dǎ<sup>32</sup>, SAC dǎ<sup>2</sup> *possessed corncob*

SJC nič̣a<sup>3</sup>, SAC ni<sup>4</sup>č̣a<sup>3</sup> *full*

Four of the remaining SAC tones are of unique occurrence: /<sup>13</sup> <sup>32</sup> <sup>51</sup> <sup>52</sup>/. The morphemes which have /<sup>13</sup> <sup>51</sup>/ do not have cognate forms in SJC; /<sup>32</sup> <sup>52</sup>/ correspond to SJC /<sup>21</sup> <sup>32</sup>/, respectively.

SJC maka<sup>21</sup>, SAC ma<sup>3</sup>ka<sup>32</sup> *Mexico City*

SJC yo<sup>32</sup> zo<sup>5</sup>, SAC ga<sup>3</sup>wɿ<sup>3</sup> yo<sup>52</sup> re<sup>5</sup> *you were quick*

The remaining two tones in SAC, /<sup>23</sup> <sup>45</sup>/, correspond to SJC /<sup>32</sup> <sup>5</sup>/, respectively.

SJC ganɛ<sup>32</sup>, SAC ga<sup>3</sup>ne<sup>23</sup> *to chew (completive)*

SJC ʔe<sup>5</sup> ni<sup>3</sup>, SAC a<sup>3</sup>ʔi<sup>45</sup> nɿh<sup>3</sup> *they're heavy*

A further difference between the two dialects is the distribution of tone in nonultimas. Although tone does occur in all nonultimas in SAC, it has a fairly low functional load. In the cases where it carries meaning, the cognate forms in SJC usually show the significant tone also.

SJC gi<sup>4</sup>ʔa<sup>21</sup>, SAC gi<sup>4</sup>ʔa<sup>21</sup> *to make (anticipatory, sandhi form)*

Sometimes the tone is carried over to the ultima as the first part of a contour; SAC /<sup>4.3</sup>/ corresponds to SJC /<sup>53</sup>/.

SJC nič̣a<sup>53</sup>, SAC ni<sup>4</sup>č̣a<sup>3</sup> *full*

Other SJC words with tone in nonultimas are usually loanwords or recently fused compounds which are not cognate with single words in SAC.

SJC has nothing which corresponds to the medially-checked vowels of SAC. These vowels result, however, from the same historical fusion of a \*V<sup>3</sup> particle that resulted in six new tone sequences. When this particle fused to words with final /ʔ/ or /h/, the result was a medially-checked vowel (Longacre 1957:77-79). All words with medially-checked vowels have phrase-medial forms with final laryngeal; Longacre analyzes the loss of the final mora as a morpheme meaning non-phrase-final (1959:14-15). Although there is no particle in SJC which means 'end of noun phrase', there is a particle âh (*statement*) used only sentence-final. This particle may be cognate with the fused \*V<sup>3</sup> of SAC (but note also cognate relation stated in 3.4).

3.4. SJC exclamatory words represent a broader phenomenon than SAC intonation contours, although SJC final /ʔ/ on kinship terms used as vocatives at the end of questions is probably cognate with the SAC insistent intonation contour.

SJC dínùʔ, SAC di³nʔʔʔ³ *man's brother!*

The set of particles which precede these kinship terms in SAC has meanings similar to the set of particles which occur as exclamatory words in SJC, and several pairs show a clear cognate relation.

SJC níʔ alternating with níʔ³, SAC nĩʔ² (*interrogative for yes-no questions*)

SJC âh, SAC a³ (*mildly asseverative*)

SJC máʔ (~ mǎʔ ~ mâʔ ~ mǎʔ) alternating with mǎ³⁴, SAC mǎh³ (*negative*).

At the present time, SAC does not show any tendency to slur or drop nonultimas, while such a tendency is quite strong in SJC. The SAC development of fortis resonants and clusters with a sibilant as the first member, however, indicates that such a tendency existed in SAC at some time in the past.

4. In most cases, phonetic differences between cognate morphemes in the two dialects do not preclude morpheme recognition, especially in meaningful context. The speaker of one dialect hears the other and matches it to his own. Even where there are discrete phonemic differences, phonetic actualizations are often fairly close. For example, in the ultimas of SJC yanǎ³ and SAC n·a³ *loft*, the phonemic length on SAC /n·/ is matched by phonetic length on SJC /n/, because it precedes a short vowel. Another example is found in words with sibilant-vowel-consonant sequences in SJC, which vary to sibilant-consonant and which correspond sometimes to one, and sometimes to the other, SAC sequence. A third example is SAC /ɨ/, which is phonetically intermediate between /i/ and /u/, the two SJC vowels that correspond to it. SJC speakers have no trouble assigning the phonetically odd vowel to /i/ or /u/, because of their phonological and lexical expectations. SAC speakers have more difficulty because their dialect has all three vowels, and they hear some words with a wrong vowel, not merely an odd one. They nevertheless learn to compensate.

I have attempted to show that two systems, which set side by side appear very different, can in fact seem quite similar when spoken. The phonetic actualization of the speaker's phonological system allows the hearer to reinterpret what is said in the direction of his own phonological system.

I believe that this has implications for the design of orthographies to be used by speakers of such dialects for practical communication. Because of the considerations mentioned above, spoken materials are likely to show greater intelligibility between Trique dialects than written materials. Any orthographies based on the phonological systems described will maximize the differences, because orthographies do not pass through a phonetic limbo between the writer and the reader. By this I mean that the nondiscreteness of phonetic actualizations allows a speaker of one dialect to reinterpret an utterance in the other dialect according to his own phonological system. The discreteness of written materials, on the other hand, makes such a reinterpretation difficult if not impossible.

It is quite possible to imagine a situation where the reverse would be true: very similar phonological systems with extreme phonetic diversity. In such a case, written materials would show greater intelligibility between dialects than spoken materials. This is apparently the case among many dialects of English, especially with respect to the vowels (cf. Smith 1967).

It might be possible to design a writing system which would serve for both Trique dialects by writing morphophonemically a sort of "Proto-Trique". There are considerations which make such a project impractical, however. One is the range of lexical difference between the two dialects, which alone seriously impairs communication. Another consideration is sociolinguistic: a certain degree of hostility between Trique villages makes people from SJC unwilling to accept anything associated with SAC.

A third, purely practical, consideration in orthography design is time. Government literacy programs often ask a linguist to design an orthography for some language in a few weeks, virtually forcing him to base it on a surface analysis.

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## NOTES

1

The percentage of shared cognates on the Swadesh 100-word list is 75. In January 1970, Eugene Casad and my husband, Bruce Hollenbach, carried out an intelligibility testing project among Trique dialects. The test procedure involved having subjects listen to sentences and answer content questions about them. Intelligibility, defined as average percentage of correct answers to the question, was approximately 79 percent for SAC subjects on material in the SJC dialect, and 58 percent for SJC subjects on material in the SAC dialect. On material in their own dialects, SAC subjects scored approximately 98 percent and SJC subjects scored approximately 99 percent. The lack of reciprocity in the scores is explained by the fact that intelligibility is not the same thing as relatedness between dialects; many factors are involved, including interdialectal learning. Intelligibility testing is described in detail in Casad (1974); the Trique project is described on pp. 78-81.

2

These data were collected on trips to Copala from 1962 to 1974 under the auspices of the Summer Institute of Linguistics. I am grateful to my husband Bruce for many helpful insights and for many fruitful discussions about various aspects of Copala Trique phonology.

3

The transcriptions used in these sources differ. I have converted them all to a transcription parallel to that used here for Copala. Longacre has also read this manuscript and supplied additional data beyond that in the above sources. Throughout the paper, I make specific reference only to the 1957, 1959, and 1964 works. Most examples in 2.1 and 2.2 are from the index of Trique forms on pp. 181-191 of the 1957 work, and most examples in 2.3 are from the 1952 and 1959 works.

4

It would be possible to interpret SJC neutralized obstruents, i.e., the ones that occur in nonfinal syllables and in cluster with nasals, as fortis rather than lenis. Such an analysis implies that fortis, rather than lenis, is the unmarked member of the opposition; it is parallel to the analysis of neutralized vowels as long rather than short, making length the unmarked member (see 1.2; but cf. also footnote 9). In favor of interpreting neutralized obstruents as fortis are the following considerations. Firstly, in intervocalic position, neutralized stops, like fortis stops, retain a stop articulation, while lenis stops are actualized as voiced fricatives. Secondly, an optional rule permits vowels to drop between a sibi-

lant and a fortis stop or nasal, and also between a sibilant and a neutralized stop. (These two points are related: the vowel drop rule is blocked before a stop actualized as a fricative.) A third consideration is that a fortis sibilant replaces a neutralized sibilant when a disyllabic word is contracted to a monosyllable by loss of a repeated vowel and a medial /ʔ/. A fourth consideration is that SJC Triques consistently prefer to write the neutralized stops by Spanish symbols for voiceless stops (p t c qu). (Reactions to symbols for sibilants are mixed, largely because Spanish has so few available symbols in this area.) There are also, however, strong considerations in favor of interpreting neutralized obstruents as lenis. Firstly, in word-initial position, neutralized obstruents (in polysyllabic words) and lenis obstruents (in monosyllables) have a very similar articulation. Secondly, in all positions, the lenis retroflex sibilant has the same articulation as the neutralized retroflex sibilant. A third consideration is that interpreting neutralized stops as lenis simplifies allomorphy. 'Noncontinuative' is sometimes expressed by /g/ replacing /w/, and 'possessed' is sometimes expressed by /d/ replacing /y/; both are actualized as lenis stops in monosyllables and as neutralized stops in polysyllabic words. In that the evidence is inconclusive, I take the conservative position and interpret neutralized obstruents as lenis. This fits both universal markedness conventions and probable historical development; cf. the allomorph example above. Both native reaction to orthography and the contraction example, on the other hand, perhaps show an emerging alignment of neutralized obstruents with the fortis series.

5

The semantic similarity (forcible expulsion of air) among the members of this minimal triplet invites speculation about the development of these forms from the same etymon. Longacre (1962:237) gives the Proto-Popolocan-Mixtecan cognate set underlying at least some of them; it includes forms glossed both 'cough' and 'sneeze'. These three words are, nevertheless, in clear contrast synchronically.

6

Clusters /gw nd/ are reflexes of Proto-Mixtecan unit phonemes /\*k<sup>w</sup> \*n<sub>d</sub>/, respectively (Longacre, 1957:10). In addition, Longacre suggests that in Proto-Mixtecan, words with medial /ʔ/ were one syllable rather than two (1957:75-56).

7

A detailed treatment of the influence of Spanish on SAC Trique is given in Hollenbach (1973).

8

The existence of a /tr/ cluster from Spanish loanwords creates

a contrast between a cluster of stop plus retroflex sibilant and the retroflex affricate /č/. There is no corresponding contrast, however, between the alveolar and palatal affricates, and such nonexistent clusters as /\*tz/ and /\*tʃ/.

9

A full set of five short vowels can be posited in underlying forms, because /e o/ sometimes become /i u/ rather than /e o/ when a laryngeal suffix is added to the word.

mɛ<sup>3</sup> to le

mɪʔ<sup>32</sup> we (inclusive) are

Word-final /i u/ would then become /e o/ by a vowel lowering rule:  $\check{V}$  (+high) →  $\check{V}$  (-high) -#.

10

The following phenomenon supports the identification of the breathy fade (n exclamatory words with /h/. Some Spanish names occur more commonly as exclamatory words than as ordinary words. These names are sometimes converted back to ordinary words with final /h/. Thus, the nickname 'Chila' would normally be borrowed into SJC Trique as an ordinary word in the form ʒiɪa<sup>32</sup>. Sometimes, however, by back-formation from an exclamatory word it has the form ʒi<sup>3</sup>lah<sup>3</sup>.

11

A detailed description of SJC tone sandhi is given in Hollenbach (1974).

12

Claude Guod recently discovered that some SAC speakers have a /č/:/č/ contrast.

če<sup>21</sup> brother-in-law

če<sup>21</sup> devil

13

A few morphemes add a postultima syllable not described in this paper. The honorific morpheme in the example adds nasalization to the ultima, plus an additional postultima mora of nasalized vowel (set off by a hyphen), which reduplicates the vowel quality of the ultima (Longacre, personal communication).