

## The influence of Spanish loanwords on Juchitán Zapotec

<sup>1</sup> Pennsylvania State University, University Park, PA <sup>2</sup> Department of Anthropology, Smithsonian National Museum of Natural History, Washington, DC

Smithsonian



### Background

Juchitán Zapotec (JCH), an Oto-Manguean language spoken in Oaxaca, Mexico (1), has been influenced by the Spanish (Sp.) language since the early 16<sup>th</sup> century. Sp. words entering the JCH vocabulary undergo linguistic borrowing, the reconciliation of sound patterns in a source language into a host language (2). For instance, Juchitán assigns a tone (rising, high, or low) to each Sp. syllable (which has no tone). Also, the Sp. distinction between voiced and voiceless consonants is borrowed into the JCH lenis/fortis (weak/strong) system (3) which involves relative force of articulation; voicing alone is not always distinctive (4). The patterns of adapting sounds reflect the historical stages of borrowing in Juchitán, the differing original Sp. pronunciations, and perhaps other factors.

### Ouestions

- What are the correspondences of phonological segments (vowels, consonants, and tones) between original Spanish models and loanwords in Juchitán?
- Into which word shapes (sequences of segments) does Juchitán adapt Spanish loanwords?
- How have these patterns of adaptation changed over time?

### Methods

Two datasets were extracted from the Juchitán Zapotec Dictionary (JZD) consisting of 1,013 loanwords and 1,161 native words. The lexical items selected were all basic lexical entries (i.e. no compounds). These words were then converted to shape representations of consonants, vowels, and tones using substitution algorithms I developed.

**Orthographic conventions** Rising tone

High tone *nmarked* Low tone Extrametrical material preceding stressed syllable Clitic included in phono. word End of word

С
V
V7
VV
Ť
<>
[]

Consonant or cluster Modal (normal) vowel Checked vowel (glottal stop) Rearticulated vowel (glottalized) Shape occurs only in loanwords Spanish or Juchitán spelling nternational Phonetic Alphabet



This archaic layer, however, comprises only 2.6% of words surveyed. In fact, well over half of the loanwords are CV\*CV#. Native words have a much greater and more evenly-distributed variety of shapes. CV\*CV# is seen in native words (like gi\*dxa 'crazy'), but much less frequently (4.3%). This pattern is more recent and maintains an oppositional distinction between Sp. voiced and voiceless obstruents by reflecting them as lenis and fortis, respectively. These two classes of sounds, which were once merged in Juchitán, are now being differentiated. The data suggest that the structure V\*CV#, which is foreign to Juchitán, should

Christian D. Brendel<sup>1</sup>, Gabriela Pérez Báez<sup>2</sup>, and Ives Goddard<sup>2</sup>

## Strata

Juchitán words borrowed from Spanish show different adaptations of Spanish pronunciation in different historical periods or strata. Sicoli (5) has shown that before 1650, when Sp. <s> was an alveolar (retracted) [s], it was borrowed as JCH (zh) [3], while later, when Sp. (s) was a dental (fronted) [s] it was borrowed as JCH (s). Also, before 1650 both Sp. voiced and voiceless obstruents (e.g. (t) and <d>) were borrowed as JCH lenis stops ("weak," optionally voiced; e.g. JCH <d>), but later only Sp. voiced stops were borrowed as JCH lenis stops, and Sp. voiceless stops were borrowed as fortis stops ("strong", often protracted; e.g. JCH (t). Fig. 1 displays examples from my data that show these patterns.

Fig. 1 Archaic and recent patterns					
Stratum	Spanish model		Juchitán word		
<b>Pre-1650</b> < <b>S&gt; =</b> [§]		plato mesa camisa	<i>bladu!7</i> 'dish' <i>mezha!7</i> 'table' <i>gamizha!7</i> 'shirt'		
<b>Post-1650</b> <s> = [S]</s>	Ex. 4 Ex. 5 Ex. 6		<i>estofa*du</i> `well-cooked meat' <i>tendi*du</i> `leveled area' <i>madra*sta</i> `stepmother'		
In 1-3 Spanish voiced and voiceless ( <d>, <t>) are both borrowed as Juchitán lenis (<d>);</d></t></d>					

in 4-6 Spanish voiced an voiceless are distinguished as lenis (<d>) and fortis (<t>).

## Shapes

Word shapes are the patterns of sequences of phonological segments (vowels, consonants, and tones). The shapes of native JCH words (Fig. 2) differ from those of loanwords (Fig. 3). All loanwords of one word shape, CVCV!7, date from the pre-1650 period (they adapt all consonants as lenis). These loans, then, are among the oldest in Juchitán.

be included as part of CV\*CV#: these words begin with a vowel in Spanish and in the JCH citation form, but sometimes are treated as if they have an initial

consonant. For example, when *a\*lmu* 'bushel' (from Sp. *almud*) is possessed, it is prefixed by x and becomes x.ka\*lmu, not the expected x.a\*lmu. Perhaps the lack of a native template for this pattern causes V\*CV# to be treated like CV\*CV#.

V\*CV# CV!VCV# CV!#

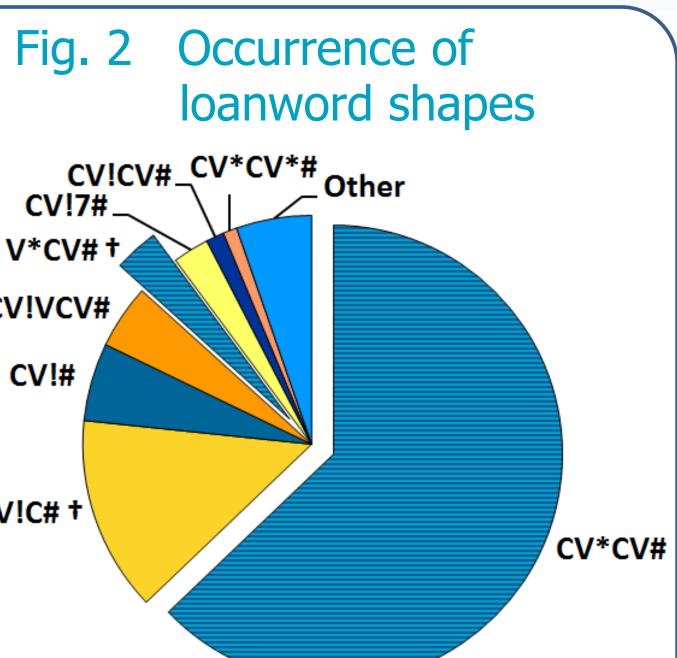
CV!C# †

CV7CV CV\*CV#

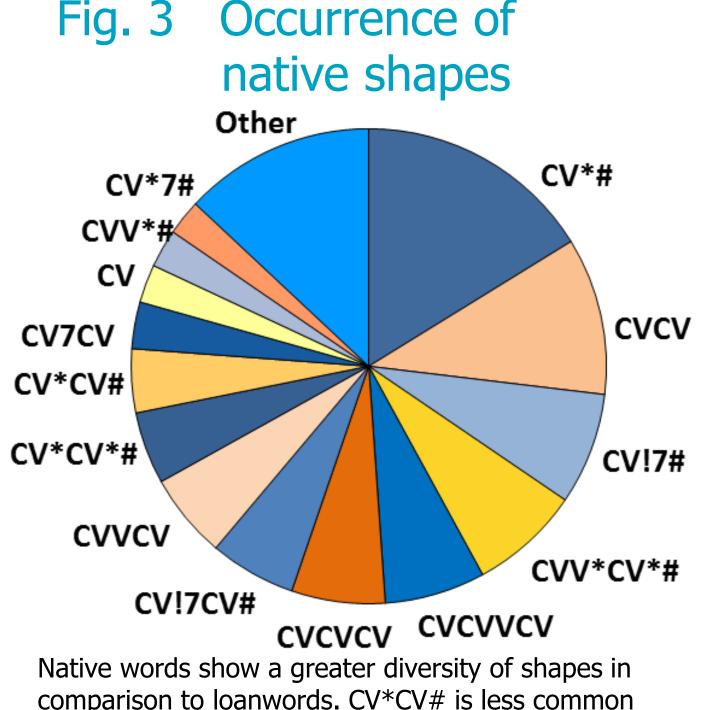
# 100.0% 50.0%

## Future Research

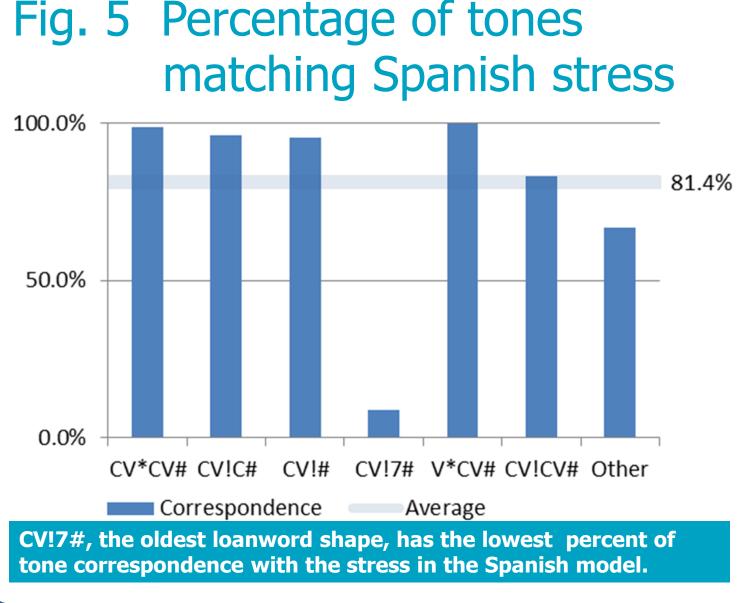
Other patterns in the data demand further investigation. Many exceptions in my data, such as word-final [s] deletion, could be explained by the [s] having disappeared in the Spanish model prior to contact. Next, the usage of rearticulated vowels for several Spanish names is common, but in a few cases, common nouns (like *pii\*su* 'deck' for *piso*) have unexplained rearticulation. Additionally, the correspondence Sp.  $\langle h \rangle \rightarrow$  JCH  $\langle j \rangle$  (e.g. *jo!ra* 'at once' for *hora*) indicates either that now-silent Sp. (h) was pronounced at the time of borrowing or that Juchitán added a consonant because of CV\*CV preference, a possibility which correlates with the treatment of V\*CV. Further research into similar cases could reveal the extent that Juchitán has preferred and continues to prefer native structures.



The shapes—the compositions of consonants, vowels, and tones—of Sp. loanwords in Juchitán can differ from those of native words. CV\*CV#, including V\*CV#, is the most common loanword shape and comprises the most recent and ongoing borrowings from Spanish.



comparison to loanwords. CV\*CV# is less common here, suggesting it is mostly reserved for borrowings.



### Correspondences **Consonantal**

Sicoli (5) describes many consonant correspondences, and my analysis largely agrees with his. In general, words imported into a CV!7# shape show correspondences like  $\langle d \rangle \rightarrow [d], \langle t \rangle \rightarrow [d], whereas a$ more recent loan of the shape CV\*CV# distinguishes voiced (d) and voiceless (t) as lenis [d] and fortis [t] respectively. I have not represented all of these anticipate correspondences in full here. However, other consonants, like in Fig. 4, have less clear-cut patterns of correspondence.

Fig. 4 JCH correspondences of Sp. <ii></ii>					
Sp. orthography	JCH corresp.	Examples			
<11>	<y> (IPA [j])</y>	Ex. 7 <i>calle</i> $\rightarrow$ <i>ka*ye</i> 'street' Ex. 8 <i>hebilla</i> $\rightarrow$ <i>bi-bya!</i> 'buckle'			
	$\varnothing$ (deleted)	Ex. 9 <i>cuchillo</i> $\rightarrow$ <i>gu-dxi!w</i> `knife' Ex. 10 <i>castillo</i> $\rightarrow$ <i>ka-sti!w</i> `rod chain for construction'			

(11), likely representing [j] in Oaxaca at this time, either remains [j], like in Ex. 7 and 8, or disappears, like in Ex. 9 and 10. Sicoli (5) proposes that the deletion in Ex. 9 and 10 is a result of surrounding vowels being high vowels (i.e. [i] and [u]). Similarly, he states that Ex. 8 results from a modern rule turning [iya] into [ya]. However, the more recent data in the JZD indicates some words like Ex. 8, such as *zapatilla*, being pronounced as *sapati*\*ya 'women's shoe', not the predicted *sapa-tya*!. Another example of the apparent violation of the syllable simplification rule is the coexistence of attested three-syllable *se-pi!wu* 'brush' and two-syllable *se-pi!w* 'brush' for Sp. *cepillo*. The [iya]/[iwu] patterns are assumed to be more recent and may be confirmed by investigation of the sources of these forms.

### Tonal

Spanish stress can be reflected as a high or a rising tone in Juchitán. In Fig. 5, the lowest percent correspondence lies with CV!7#, as expected; this shape is one of the earliest patterns of adoption (5), and also one of the most unfaithful to the phonetics of the Spanish original (importing all consonants as lenis, regardless of voicing). There are several suggested reasons for the occurrence of a form so divergent from the Sp. original, including borrowing through an intermediary language like Zoque or Nahuatl, or the explicit "marking" of a word as non-native (5).

Also, CV!7# is one of the most common shapes, as seen in Fig 3. Without further research, I cannot say why this shape was preferred for loanwords over CV\*#, which is more common natively but practically nonexistent in loanwords.

Note that my criteria for identifying a correspondence between a stressed Spanish syllable and a tone are:

The rising/high tone is the only such tone in the word, and either

- of which bore primary stress.

I would like to thank Elizabeth Cottrell, Gene Hunt, and Virginia Power, the coordinators of the Natural History Research Experiences program at the Smithsonian Institute; the faculty and staff of Penn State Berks and the University of Leeds; and the National Science Foundation.

Pickett, V. Villalobos, M. & Marlett, S. (2010). Isthmus (Juchitán) Zapotec. Journal of the International Phonetic Association, 40(3), 365-372. Haugen, E. (1950). The analysis of linguistic borrowing. *Language*, 26(2), 210-231. Jaeger, J. (1983). The fortis/lenis question. Journal of Phonetics, 11, 177-189. Malécot, A. (1969). The lenis-fortis opposition: its physiological parameters. *Journal of the Acoustical Society* of America, 47(6), 1588-1592. Sicoli, M. (1999). A comparison of Spanish loanwords in two Zapotec languages. (Master's thesis.) University of Pittsburgh, Pittsburgh, PA.

a) It occurs in the same syllable as the one bearing primary stress in Spanish, measured from the right-hand word boundary in loans which preserve the number of syllables.

b) It occurs on a Juchitán syllable which is the result of the merger of two Spanish syllables, one

### Acknowledgments and References

