Southern Zapotec Verb Classes

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Abstract: This paper provides a detailed description of inflectional classes of verbs based on TAM-marking morphology in Coatec Zapotec. This description is then used as a standard for comparison with other Zapotec languages spoken in the Southern Sierra region of Oaxaca, Mexico, which is considered by the author to be a diffusion zone. A comparison of 14 varieties belonging to five languages finds that the most diverse TAM-marking systems are found in the western part of the Southern Sierra while the system of inflectional classes greatly simplifies as one moves eastward. Contact and diffusion are considered to be crucial in the retention or loss of conservative features and the spread of innovations such as nasalization of certain prefixes.

Keywords: Coatec Zapotec, Southern Zapotec, verbal inflection

1. Introduction

Zapotec languages, traditionally spoken in the state of Oaxaca and extending into Veracruz (and now in diaspora in California and elsewhere) comprise ca. 20 mutually unintelligible languages that are tonal, head-initial, and head-marking. Their closest external relative is Chatino (see Woodbury, this issue; and Campbell, this issue). These languages are surrounded by fellow Oto-Manguean languages like Mixtec and Chinantec, and unrelated languages including Mixe, Huave, Chontal of Oaxaca, and historically also Pochutec Nahua.

This paper looks at verb classes in Southern Zapotec languages native to the Sierra Madre del Sur of Oaxaca, Mexico. Mainly under consideration here is how inflectional classes of verbs are defined according to TAM marking. There are also inflections for person-marking in these languages. The first person singular is often marked with tonal changes and occasionally with suppletion (Hunn *et al.* n.d.). The system of verbal inflection in Coatec Zapotec is offered as an example system in §2. §3 describes the nature of Southern Zapotec as a diffusion zone rather than a strictly genetic subgrouping of Zapotec, and introduces the 14 varieties

considered in the present study. In §4 Kaufman's historical classification of verbs in Proto-Zapotec(an) is introduced for reference. §5 identifies the most interesting isoglosses with regards to verbal inflections in Southern Zapotec languages, including ways in which the system of verb classes as a whole has complexified in some varieties and simplified in others.

2. Coatec Zapotec verbal inflection

Coatec verbs (in this section shown as they occur in San Baltazar Loxicha) may show fortition, palatalization, segmental alternations, competing prefix allomorphs, tonal alternations, etc. The underlying shape of the root and stem is important, as is the transitivity of the verb in question. Coatec verbs can be divided into classes mostly not based on the presence or absence of any single feature of morphology but rather by complex sets of overlapping patterns. Full paradigms (with respect to TAM categories) showing the main variations in Coatec verbs are found in the Appendix. However, the entire paradigm of any given verb can be reconstructed if one knows just three forms: the potential, habitual, and completive. These are the forms I will focus on in the remainder of the paper. As a convention, these principal parts of Zapotec verbs will always be presented in this order: potential, habitual, completive, in the examples given in tables throughout this paper.

We will now consider the variation in forming the three principal parts of Coatec verbs. The discussion begins with the habitual (§2.1) because its marking is the most straightforward and thus this form is the most useful in identifying the underlying form of the verb. The description then turns to the potential (§2.2) and completive (§2.3), before looking at the system of inflectional classes as a whole (§2.4).

2.1. Habitual or imperfective aspect in Coatec

Semantically, "imperfective" is probably the best label for this category, but "habitual" is the term that occurs most commonly throughout the Zapotecanist literature, and so I will use it here. This aspect is marked with a prefix *nd-* which is usually reduced to *n-* when added just before an obstruent, although before n the prefix is not apparent. The tone that appears on this form of the verb is the underlying tone associated with the verb root.

For most verbs, the habitual prefix is the only morphology associated with this aspect, while for some verbs there are differences in the stem when compared to other paradigmatic forms.

Based on the shape of the habitual stem, we can divide Zapotec verbs into two groups: vowel-stems and consonant-stems. The overwhelming majority of Coatec verbs are consonant-stems, but many of the most frequently used verbs are vowel-stems.

For verbs with vowel-initial habitual stems the possibilities are limited to /o, u, a/. The verbs with stems beginning in a round vowel are usually transitive and those beginning in /a/ are usually intransitive, though there are one or two exceptions on each count. The verbs whose habitual stems begin in a round vowel always have a different vowel in the completive (*cf.* 'kill' in Table 1). There is more variation seen on the a-stems, as they may undergo various types of alternation in the completive, or none at all, as detailed in §2.3.

Types of habitual vowel-stems	Examples (potential, habitual, completive)
(Transitive) verb stem in a round vowel	'kill' *g-ŭth,* **nd-ùth***, mbìth*[1]
(Intransitive) verb stem in *a*	'rise' *g-ăp,* **nd-àp***, ngw-àp*

Table 1: Habitual vowel-stems in Coatec

For verbs with consonant-initial habitual stems (see Table 2), there may be no stem alternations in the habitual (as in 'dry'), there may be palatalization of the stem-initial consonant if it is coronal (as in 'leap', 'boil', and 'defecate'), and/or there may be a different stem-initial consonant than that seen on the completive stem (as in 'holler' and 'defecate'). The last two patterns may be combined if the habitual stem begins in *z,* and *z*-stems like 'defecate' from Table 2 that have a different stem-initial consonant in the completive always palatalize in the habitual, though the converse is not true: not all *z*-stems that palatalize display other consonant alternations, as illustrated by 'leap' in Table 2. Other verbs that have different stem-initial

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[1] Coatec Zapotec examples in this paper are presented in a practical orthography. In this orthography, the symbol <'> indicates a glottalized vowel. Tones are indicated with diacritics: high tone *á*, low tone *à*, falling tone *â*, rising tone *ă*. Tone is neutralized on glottalized vowels. Voiced stop symbols are lenis consonants whose most common realization is as voiced fricatives. Digraphs such as *th* and *ch* have values similar to their usage in English. *Nh* is a velar nasal. *X* and *zh* are retroflex fricatives. *Eh* is a lax vowel that varies between [ɛ] and [æ].

consonants in the habitual and completive, but which lack palatalization, always have a non-coronal consonant beginning the habitual stem. This consonant is called the R1 prefix; an example is the *b* in 'holler' in Table 2.

Types of habitual consonant-stems	Examples (potential, habitual, completive)
No stem change	'dry (something)' *kwi'd*, **n-kwi'd**, *m-kwi'd*
Stem is palatalized	'leap' *zya'b*, **n-zya'b**, *ngw-za'b*
	'boil' *lya'b*, **nd-ya'b**, *ngw-la'b*
Stem begins in alternate non-coronal (R1) consonant	'holler' *kwězh*, **n-bèzh**, *nhw-têzh*
Stem begins in alternate consonant (*z*) and is palatalized	'defecate' *zyŏn*, **n-zyòn**, *nhw-xôn*

Table 2: Habitual consonant-stems in Coatec

One phonological detail that is predictable is that *l*-stems which palatalize actually lose the stem-initial *l* in the habitual but retain the palatal glide, even though in the potential of the same verbs the *ly* sequence[2] remains intact. This is illustrated by 'boil' in Table 2, and may have something to do with the fact that the habitual prefix is *nd-* and there is a correspondence between *nd* and *l* in various Zapotec languages. For example, 'fish' is *benda* in Isthmus Zapotec (Pickett *et al.* 1978: 51) but *mbêhl* in Coatec, while a posessed form of 'sandal' is *ndâb* in Coatec but *lab* in the San Agustín Mixtepec variety of Miahuatec Zapotec.[3] *Nd* is the reflex of fortis *ll in Isthmus Zapotec as well as some Valley Zapotec varieties (Smith Stark 2007; Broadwell 2010). This historical correspondence between *l* and *nd* could perhaps have made the habitual prefix *nd* redundant if added to an *l/nd*-initial stem, hence the deletion of *l* in the habitual only.

2.2. Potential mood

Throughout this section I will refer to the examples in Table 3, where both vowel-stems and consonant-stems are shown with potential forms in bold. In the left hand column tonal alternations are indicated with the lexical tone

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[2] In this language *ly* does seem to be a sequence of liquid plus glide, but in some regional varieties, such as the San Agustín Mixtepec variety of Miahuatec Zapotec, it is realized in cognates as a palatal lateral.

[3] Miahuatec forms cited in this paper, including those from San Bartolomé Loxicha, use a different convention for tonal contrasts: high tone *á*, low tone is unmarked *a* (including on glottalized syllables, which in this language do contrast tonally), a low-falling tone is indicated through a sequence of marked and unmarked vowels *áa,* whereas a rising tone is indicated by the opposite sequence *aá*. I also adapted the Cisyautepecan examples to this convention.

to the left and the tone found in the potential to the right of an arrow →. This indicates that if a verb has as its lexical tone the tone on the left of the arrow, the tone to the right of the arrow surfaces in the potential. If the verb has some other lexical tone then there is no tonal alternation.

Patterns of potential marking	Examples (potential, habitual, completive)
Vowel-stems with *g-*, L→R	'plant' ***g-ăz***, *nd-àz, ngôz*
Vowel-stem with *w-*, L→R	'eat' ***w-ă***, *nd-à, ngw-dà*
Transitive consonant-stems with *w-* portmanteau prefix, no tone changes	'knock over' ***w-gàb***, *n-gàb, mb-gàb*
Intransitive consonant-stems with L→R	'jump over' ***bĭx***, *n-bìx, m-bìx*
Intransitive *y*-stems with F→H, L→R	'turn around' ***yék***, *nd-yêk, mb-yêk*
Coronal-stems with palatalization, L→R	'get drunk' ***zyŭd***, *n-zyùd, ngw-zùd*
	'urinate' ***ñêtz***, *nyêtz, nhw-nêtz*
Palatalized form of alternate consonant (*z*), L→R	'give birth' ***zyăn***, *n-zyàn, nhw-xàn*
Fortition of R1, L→R, F→H	'pull (1)' ***kŏb***, *n-gòb, ngw-dòb*
	'pierce; shake' ***kwĭb***, *n-bìb, nhw-tìb*
	'take out' ***ko'***, *n-bo', ngw-lo'*
	'pull (2)' ***kwé***, *n-bê, nhw-tê*

Table 3: Potential marking in Coatec

Vowel-stems mark the potential with great uniformity. They always have the same vowel in the potential as they do in the habitual. With the exception of one transitive verb root, 'eat' *-a,* that constitutes its own class and takes a *w-* potential marker (*w-ă*), all vowel-stems, whether transitive or intransitive, and regardless of what vowel the stem begins in, mark the potential with *g-*. If the vowel stem has underlying low tone (as evidenced throughout most of the paradigm, see 'eat' in Table 3 and the fuller paradigm in the Appendix), then the verb will have rising tone in the potential (I abbreviate this alternation as L →R). This can be seen above in Table 1 where the verb *-ùth* has a potential form *gŭth* and the verb *-àp* has a potential form *găp,* as well as in the verb 'plant' *-àz* in Table 3.

Consonant-stems show more diversity of potential marking. Tonally, most classes of consonant-stems show the same L→R alternation found on vowel stems, with the exception of one large class of transitive verbs, represented by 'knock over' in Table 3 (note that not all transitive verbs take this pattern, though this pattern is very productive). These verbs undergo no stem allomorphy whatsoever in the TAM paradigm and they mark the potential with a portmanteau prefix, *w-,* which signals both potential mood

as well as transitivity. Low-toned verbs in this group will take a rising tone to mark a first person singular subject, but not to indicate potential mood, even though such an alternation does signal potential mood on every other regular low-toned verb in the language outside this group of verbs. This includes a related group of intransitive verbs with no stem allomorphy, which are zero-marked segmentally in the potential but have the L→R tonal alternation if the underlying tone (seen in the habitual stem) is low (see 'jump over' in Table 3). A group of *y*-initial stems, all of them intransitive and represented in Table 3 by 'turn around', shows an additional tonal pattern in the potential: falling-toned verbs in this group take the high tone in the potential (abbreviated F→H). Falling toned verbs are found in other classes but whether or not they display this alternation depends on class membership.

Stems that palatalize in the habitual also palatalize in the potential. For most of the coronal consonants that occur stem-initially in such verbs, there is no difference in the way that they palatalize between the potential and habitual (see 'get drunk' and 'give birth' in Table 3), with two exceptions. *L*-initial stems were mentioned in the previous section and represented by 'boil' in Table 2. Those verbs add *y* but delete the *l* in the habitual, but in the potential the full *ly* sequence occurs as expected. *N*-initial verbs also display a phonological peculiarity by palatalizing in different ways between the potential and habitual. As illustrated by 'urinate' in Table 3, *n*-initial palatalizing verbs have a palatal nasal in the potential but an *ny* sequence in the habitual. One possibility is that there is some deletion of like segments in the habitual, similar to what was proposed in the previous section regarding *l* deletion in the habitual. Table 4 proposes a set of phonological rules sensitive to morpheme boundaries in an attempt to explain this variation by proposing that the palatal nasal in the potential is the surface realization of an underlying /nj/ sequence occuring in the stem whereas the *ny* sequence in the habitual is the surface realization of an underlying /n-j/ sequence that occurs across the boundary between prefix and stem. Note that rules are written in IPA but data in the other three columns are represented in the orthography used throughout this paper. The potential and habitual forms of the example verb, 'urinate', constitute a minimal pair showing that there is a phonological contrast between a true palatal nasal and a nasal-glide sequence in this language. It is likely that this is a recent development helped along by contact with Spanish, which has a palatal nasal phoneme.

Process	Rule	Effect on potential	Effect on habitual
Prefix-Bare stem		0-nêtz	nd-nêtz
-y- infixation	$0 \rightarrow j$ / -C_	nyêtz	nd-nyêtz
Prefix reduction based on place of articulation	nd- $\rightarrow$ n- / _n	nyêtz	n-nyêtz
Deletion of second identical adjacent segment across morpheme boundary in the same word	$C_1 \rightarrow 0$ / C_1-_	nyêtz	n-yêtz
Palatalization of *ny* sequence within the same morpheme	nj $\rightarrow$ ɲ / -_	ɲêtz	n-yêtz

Table 4: Proposed phonological derivation explaining differing palatalization strategies

The same group of verbs identified in the previous section as having an "R1" non-coronal consonant at the beginning of the habitual stem show fortition of that same consonant in the potential. (More information on the nature of this R1 consonant will be provided in the next section). However, some details of Zapotec historical phonology obscure the fact that consonant alternations between the potential and habitual result from fortition. Table 3 provides three verbs belonging to this group. Between the potential and habitual, the verb 'pull' shows a *k/g* alternation, which is a prototypical case of fortition. Zapotec and Mixtecan languages are said to have a contrast between "fortis" and "lenis" consonants (e.g. Arellanes 2009; Arellanes & Hernández 2014; Chávez Peón 2010). There is variation as to what this actually means on a synchronic phonetic and phonological level from language to language (see Jaeger 1983 and DiCanio 2012 for detailed phonetic studies), but in Coatec the would-be "fortis" series is typified by voiceless obstruents, usually stops and affricates like *k*, while the would-be "lenis" series has different realizations depending on the phonological environment but the most common allophone of a segment like *g* is that of a voiced fricative. The verb 'pull (1)' thus shows clear-cut fortition in the potential. The next verb, 'pierce', presents a wrinkle which is that historically in Proto-Zapotec there was a contrast between fortis **kkw* and lenis **kw*, with the lenis segment shifting to *b* in most modern varieties but the fortis segment remaining labiovelar in most environments, thus creating a *kw/b* fortis/lenis correspondence. On a synchronic level a speaker may recognize this correspondence and treat it similarly to other fortis/lenis pairs, because *kw* occurs in the same morphological contexts as other fortis consonants, and *b* in the same place as other lenis consonants. Or, perhaps more likely, this relationship is the residue of historical phonology that is less and less transparent and at this point just has to be memorized by speakers. Even less

clear-cut is the *k/b* alternation in 'take out'. Historically this is the same as the *kw/b* alternation, except that this word has a round vowel and labiovelars dissimilate, becoming plain velars, before round vowels, creating a *k/b* opposition even though these two segments share little in common other than being non-coronal obstruents. Notably, all these verbs share a velar element in the potential and one can imagine a reanalysis where *k-* becomes a potential marker, but currently it seems that these are paradigmatic alternations which must be memorized. The potential of verbs in this class might begin in *kw* or *k*, the habitual stem might begin in *b* or *g*, the completive has another consonant entirely, which we will look at in the following section.

The final verb in Table 3, 'pull (2)' is included because it shows a tonal alternation in which the normally falling toned verb takes high in the potential. Although this is the only verb root in this general class of verbs that has been found to have this tonal alternation, instead of regarding this as an irregular verb, it is included in the general grouping of regular verbs because 1) it is the only verb root in this group recorded with falling tone, i.e. there are no competing patterns of verbs in this group with falling tone doing something different in the potential, and 2) this pattern exists elsewhere in the language, such as in the potential of *y*-stems like 'turn around' in Table 3 as well as in a large group of transitive verbs when marked for a first person singular subject. Thus, the F→H pattern is not an isolated irregularity but a known pattern that is restricted partially according to verb class.

2.3. Completive aspect

Coatec verbs could be divided up in a number of ways just looking at completive aspect morphology. The completive prefix occurs in several variations of two main allomorphs, one which is bilabial and another which is labiovelar. Likewise the dichotomy between vowel-stems and cononant-stems is particularly relevant to completive marking. Additionally, another distinction could be made between verbs which demonstrate stem alternations in the completive and those with completive stems that are identical to the bare verb root. None of these divisions completely coincides with another. Vowel-stems can take either a bilabial or a labiovelar prefix, as can consonant-stems. Completives with no stem allomorphy also occur with both prefixes and can be either vowel- or consonant-stems. The divisions intersect, and so I will treat each pattern as a unique complex in

turn. The various combinations are exemplified in Table 5 and the remainder of this section discusses each of these patterns and example verbs in turn.

Patterns of completive marking	Examples (potential, habitual, completive)
Bilabial completive, *i* instead of round vowel	'play music' *g-o'l, nd-o'l,* **mbi'l**
Velar completive, *o* instead of *a*	'bathe' *g-ăz, nd-àz,* **ngôz**
Velar completive, *u* instead of *a*	'die' *g-âth, nd-âth,* **ngùth**
Labiovelar completive, *a* remains	'jump' *g-ătz, nd-àtz,* **ngw-àtz**
Bilabial completive, no stem changes	'pick up' *w-kân, n-kân,* **m-kân**
Labiovelar completive, same consonant but unpalatalized	'walk' *zyéh[4], n-zyèh,* **ngw-zèh**
Labiovelar completive, unpalatalized *x*	'give birth' *zyăn, n-zyàn,* **nhw-xàn**
Labiovelar completive, unpalatalized *x,* L→ʔ	'appear' *zyăk, n-zyàk,* **nhw-xa'k**
Labiovelar completive, unpalatalized *x,* L→F	'close one's eyes' *zyĭn, n-zyìn,* **nhw-xîn**
Labiovelar completive, coronal consonant (R2)	'massage' *ka'b, n-ga'b,* **ngw-da'b**
	'hurt' *g-ăw, nd-àw,* **ngw-dàw**
Labiovelar completive, coronal consonant (R2), L→ʔ	'explode' *kĭch, nd-yìch[5],* **ngw-di'ch**
Labiovelar completive, coronal consonant (R2), L→F	'holler' *kwĕzh, n-bèzh,* **nhw-têzh**

Table 5: Completive marking in Coatec

Beginning with the first two verbs in Table 5, 'play music' and 'bathe', for both verbs, in the potential and habitual it is clear that the stem is vowel-initial. Subtracting the potential prefix *g-* or the habitual prefix *nd-* we are left with the vowel-stems *-o'l* and *-àz* respectively. Both verbs display the same vowel in the potential as in the habitual (and indeed, throughout most of the paradigm, *cf.* the full paradigm for 'do' in the Appendix with a similar pattern to 'play music') but a different vowel in the completive: *i* in the case of 'play music' and *o* in the case of 'bathe'.

Historically, based on comparative evidence, we know that the vowels seen in the completive forms of these two verbs come from the respective

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[4] The astute reader will notice that this verb has high tone rather than the expected rising tone in the potential. Open syllables ending in the vowel *eh* [ɛ ~ æ] go back to Proto-Zapotecan *ã (Beam de Azcona *et al*. in press; Kaufman 1994-2014). When these words have low tone, in the potential they have high rather than rising tone. Perhaps this indicates some ancient restrictions on the tones that could occur on nasalized vowels, but synchronically it is a phonologically predictable variation that occurs in more than one verb class. Rather than divide those classes up further, I choose to regard this as a phonologically conditioned variation on the L →R alternation.

[5] The stem-initial *y* in this form is due to a neutralization of the contrast between /ɣ/ and /j/ before front vowels. In this environment either segment (etymologically) is realized as a voiced palatal fricative, which I interpret as /j/ and write *y*.

completive prefixes. Consider the data from three Zapotec languages in Table 6.

	Sierra Juárez Zapotec[6]		Mitla Zapotec[7]		Coatec Zapotec	
gloss	'give'	'allow'	'read'	'wash'	'do'	'get scared'
verb root	*-únna*	*-labi*	*-oll*	*-di'ib*	*-ùn*	*-zhêb*
Potential	*g-únná*	*gú-labi*	*g-oll*	*gi-di'ib*	*g-ŭn*	*zhêb*
Habitual	*r-únna*	*ru-labi*	*r-oll*	*r-di'ib*	*nd-ùn*	*nd-zhêb*
Completive	*be-nna*	*be-labi*	*bi-ll*	*bi-di'ib*	*mbi'-n*	*mb-zhêb*

Table 6: Vowel-stems and consonant-stems in Sierra Juárez, Mitla, and Coatec Zapotec

In Table 6 we see two verbs in each language, one with a vowel-initial stem and one with a consonant-initial stem. Zapotec languages have the tendency to reduce vowel clusters to a single vowel, so that CV-VC(V) will reduce to CVC(V). Therefore, the consonant-stems show us the fullest forms of both prefix and verb stem, because the environment that conditions deletion is absent. Comparing the consonant-stems ('allow', 'wash' and 'get scared') across the three languages we see that Sierra Juárez and Mitla have retained the pre-tonic prefix vowels whereas Coatec has lost pre-tonic vowels.

In Mitla and Sierra Juárez Zapotec, the lack of pre-tonic vowel deletion means that the completive prefix *be-* or *bi-* survives intact on consonant-stems like 'allow' and 'wash'. Therefore, when this same prefix occurs on vowel-stems in those languages, like 'give' and 'read', it is clear that the vowel in surface forms like *benna* and *bill*, belongs to the prefix and the root vowel has been deleted. In Coatec Zapotec this becomes an opaque fact of historical morphology. Consonant-stems like 'get scared' do not retain the prefix vowel. Speakers have no way of knowing that verbs like 'get scared' historically had an *i* or *e* vowel, and verbs like 'do' are few in number. Consequently it is unclear to what extent the *i* in *mbi'n* may be perceived as a prefix vowel versus an irregular vowel alternation confined to the verb root itself (akin to patterns of ablaut on English strong verbs). The same type of data exists for the cognate of the *ngo-* prefix seen on 'bathe'.

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[6] Bartholomew 1983: 388. I place morpheme breaks at different places than she does.

[7] In these data from Stubblefield and Hollenbach (1991: 214-218), I have omitted the subject pronoun and also I have altered the orthography to make it more similar to how I am representing the Coatec data. SIL orthographies in Mexico use VV to indicate a rearticulated or creaky vowel but here I am rewriting this as V'V. Also, I am eliminating the orthographic *u* in the sequence *gui*. This orthographic strategy exists to ease pronunciation for Spanish readers, but in the context of this paper it is unnecessary. The fortis *l*, which is underlined in SIL orthography *l̲*, I have rewritten as long *ll*.

The loss of prefix vowels in Zapotec languages changes the character of verbal morphology. It creates opacity and in some cases turns the traditionally agluttinative morphology into forms that are more fusional. Given a historical analysis one could parse the completive forms of 'play music' and 'bathe' in Table 5 as *mbi'-l* and *ngô-z*.[8] One could make the argument that this is a synchronically productive process. Since the verb root (in this case identical to the stem) *-o'l* has /o/ in most paradigmatic forms, we could say that it is reasonable to argue that the underlying stem is *-o'l* and the prefix is *mbi-*. The concatenation *mbi-o'l* then reduces to surface a *mbi'l*. Likewise the completive of 'bathe' *ngôz* would be the surface realization of underlying *ngo-âz*. There is no doubt that this is what happened historically. It is one working analysis, but another is to say that these verbs are like English strong verbs and show patterns of ablaut that have to be memorized by speakers. The difference between these verbs and English strong verbs is that the inflection doesn't depend on ablaut alone but additionally on prefixed segmental material. It's more akin to if we said *ride/roded* and *run/ranned*. Both analyses have points in their favor probably because this is morphology that is in transition. What we are seeing here is agglutination turning into fusional morphology. However, in the remainder of the paper I will now mark the prefixes as *mbi-* and *ngo-*, etc., because from a conservative standpoint these vowels are still synchronically associated with the completive (and related imperative) and are not the root-initial vowel, which is known from the rest of the paradigm.

The verb 'die' has similar marking to 'bathe' except that /u/ appears instead of /o/ in the completive. Historically in this word *o became *u* due to umlaut triggered by a following post-tonic *i* which has since been lost (Beam de Azcona 1999, 2004, in preparation, Beam de Azcona *et al.* in press). Since this conditioning factor is no longer present, the result is opacity, which both solidifies /u/ as a phoneme and also creates another verb class, as speakers have to memorize which *a*-stems have a completive in *ngo- vs ngu*.

'Bathe', 'die', and 'jump' are all similar in that their habitual stems (in these cases, identical to the bare root) are *a*-initial. The completive forms

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[8] Although it is necessary to indicate here that the suprasegmental contrasts written above the prefix vowels here belong to the verb roots.

reveal three distinct patterns for what would otherwise look like very similar verbs. While the root-initial *a* is supressed in favor of a round vowel from the completive prefix on 'bathe' and 'die', in 'jump' we instead see the *a*-initial stem survive intact and the prefix desyllabifies to *ngw-*. There is also a historical explanation here. Verbs that take this pattern historically had stems beginning in a weak consonant (usually or always *y*) and so even though now that stem-initial consonant has been lost, the verbs still take the form of the prefix that usually occurs on consonant-stems (*cf.* 'walk', 'massage', 'hurt' etc.). The process of historical and underlying vowel cluster simplification that affects 'bathe' and 'die' does not affect 'jump' because the prefix vowel had already been reduced to non-syllabic *w* prior to the historical deletion of the stem-initial consonant, so when the synchronic stem-initial vowel first came into direct contact with the prefix it was already *ngw-* and not *ngo-*, meaning that the underlying sequence in this case went from *w-ya* to *w-a* and was never *o-a*. In any case, the historical facts are not apparent in the modern language and so this is simply another possible pattern found on *a*-stems which one must memorize.

Among verbs with consonant-initial completive stems, if the completive stem is identical to the habitual stem, as in 'pick up', the completive prefix is always bilabial: *mb-* before most voiced consonants, *m-* before voiceless consonants and *n*. Consonant-stems that show variation between the habitual stem and the completive stem, like the remainder of verbs in Table 5, all take the labiovelar completive prefix: *ngw-* before voiced consonants, *nhw-* (/ŋw/) before voiceless consonants and *n*.

The class of verbs represented by 'walk' have stems beginning in various coronal consonants which are palatalized in the potential and habitual. These have a completive stem beginning in that same coronal consonant but without palatalization. Note that while all verbs that palatalize have stems beginning in coronal consonants, there are verbs in other classes beginning in coronal consonants which do not palatalize. Like the verb 'walk', the verbs 'give birth', 'appear', and 'close one's eyes' similarly have palatalization in the potential and habitual, where the stem is always *z*-initial, but rather than a plain *z* in the completive the stem begins in the retroflex fricative *x*.

These three verbs differ in their tonal marking in the completive. 'Give birth' represents a pattern where there is no suprasegmental change from what is seen on the habitual stem. Most but not all verbs with this pattern have low tone, but not all low-toned verbs with an *x*-initial completive stem behave

equally. 'Appear' belongs to a group of low-toned verbs which are glottalized in the completive, whereas 'close one's eyes' has a pattern where the same low tone on the habitual changes to falling tone in the completive. Note that 'give birth, appear, close one's eyes' all have low tone in the habitual. The habitual form (as long as it occurs without a first person subject) has the tone that is the underlying lexical tone of the verb root. The tone found in the habitual is present in the majority of forms in every paradigm, as can be seen in the Appendix. Where we sometimes see suprasegmental changes is in the potential and the complement of a motion verb (which is at least partially derived from the potential) and also sometimes in the completive and imperative (two forms which share a derivational relationship). Thus, we can consider that 'give birth', 'appear', and 'close one's eyes' all have the same underlying tone. Assuming this analysis is correct, the completive tone cannot be predicted by the underlying tone found on the habitual. Thus, these three verbs constitute three different patterns and speakers must learn which pattern a given verb conforms to.

The remaining verbs in Table 5 all display what has been coined as "replacive" morphology (Kaufman 1989). To form the completive stem, i.e. the stem to which the completive prefix *ngw-* is added, a coronal consonant is added to the bare root. I call this coronal consonant the R2 prefix (Beam de Azcona 2004, 2009). In Coatec the R2 prefixes that exist are *d*, *l* and *t* (*x* could also be considered an R2 prefix in verbs like 'give birth', 'appear' and 'close one's eyes'). A look at 'toss' and 'eat' in the Appendix reveals that this R2 prefix appears stem-initially in the completive, imperative, and complement of a motion verb. In the rest of the paradigm there are two possibilities. Verbs like 'toss' in the Appendix and 'massage', 'explode' and 'holler' in Table 5 form the stem for the rest of the paradigm with a non-coronal R1 prefix (which is strengthened to its fortis counterpart in the potential). R1 prefixes that exist in Coatec are b and g (or *y* before front vowels). However, a small group of verbs including 'eat' in the Appendix and 'hurt' in Table 5 don't take an R1 prefix and instead have habitual stems that are vowel-initial and identical to the underlying verb root. Thus, most but not all verbs that form the completive stem with an R2 prefix form the habitual stem with an R1 prefix. Which R1 prefix a verb will take is not predictable based on which R2 prefix it takes and vice versa. These prefixes are called replacives because from a paradigmatic perspective R1 and R2 replace each other, occupying the same stem-initial

position and never co-occurring in the same form. Among verbs with replacive morphology there are three suprasegmental patterns that emerge in the completive. Variation is seen only on verbs with underlying low tone (as seen on the habitual stem). Verbs with other tones do not show tonal alternations. For verbs with low tone, the possibilities are the same already seen above for 'give birth', 'appear' and 'close one's eyes'. The underlying low tone can remain, as in 'massage', it can change to glottal tone in the completive as in 'explode' or falling tone as in 'holler'.

2.4. Inflectional classes of Coatec verbs

Ignoring most irregular verbs,[9] there are 16 classes of Coatec verbs, identified in Table 7 below. Although there are some phonological correlations, like certain classes that begin in round vowels or coronal consonants, and likewise there are patterns restricted to either transitive or intransitive verbs, such correlations are not entirely predictive and the different patterns of inflection that define these classes are lexically conditioned.

Coatec verb classes are defined by the combinations of morphological patterns observable in the three principal parts covered above in Tables 1-3 and 5. In Table 7, each class is named in the lefthand column using a label that indicates descriptive features like transitivity and stem shape as well as a correspondence to Kaufman's (1989, 1994) historical classification of Zapotec(an) verbs into classes "A-D" (explained in §4), expanded on for this language and neighboring Miahuatec Zapotec in Beam de Azcona (2004, 2009). This leftmost column also indicates the approximate number of verb roots in the database that exhibit each pattern of inflection. More lexical items exist, including compounds using these same verb roots. The co-occuring patterns of potential, habitual, and completive marking are identified and exemplified in the remaining columns.

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[9] Verbs I am here excluding as "irregular" involve suppletion and/or minor variations on more regular patterns, such as a tonal aberration in a single inflectional form and not found on any other verb.

	Potential marking	Habitual Stem	Completive marking	Example (PHC)
A V-stems (10 roots)	g-, L→R	round V	mbi-	'kill' *gŭth, ndùth, mbìth*
vtA C-stems (146 roots)	w-	C	mb-	'roll up' *wdûd, ndûd, mbdûd*
viA C-stems (146 roots)	L→R	C	mb-	'get rolled up' *dyûd, ndyûd, mbdyûd*
viA y-stems (50 roots)	F→H, L→R	y	mb-	'get ground' *yój, ndyôj, mbyôj*
B (34 roots)	+pal, L>R	coronal (+pal)	ngw-	'walk' *zyéh, nzyèh, ngwzèh*
C1 (23 roots)	g-, L→R	V (usually a)	ngo-	'fall' *gǎb, ndàb, ngòb*
C2 (6 roots)	g-, L→R	V (usually a)	ngu-	'die' *gâth, ndâth, ngùth*
C3 (7 roots)	g-, L→R	V (usually a)	ngw-	'rise' *gǎp, ndàp, ngwàp*
Ch1 (4 roots)	+pal, L→R	z, +pal	ngw-x	'give birth' *zyǎn, nzyàn, nhwxàn*
Ch2 (5 low-toned roots)	+pal, L→R	z, +pal	ngw-x, L→?	'appear' *zyǎk, nzyàk, nhwxa'k*
Ch3 (5 low-toned roots)	+pal, L→R	z, +pal	ngw-x, L→F	'grab' *zyěn, nzyèn, nhwxên*
vtD V-stem (1 root)	w-, L→R	V	ngw-R2	'eat' *wǎ, ndà, ngwdà*
viD V-stems (2 roots)	g-, L→R	V	ngw-R2	'hurt' *gǎw, ndàw, ngwdàw*
D1 C-stems (23 roots)	fortition, L→R, F→H	R1	ngw-R2	'pluck' *kĭb, ndyìb, ngwdìb*
D2 C-stems (7 low-toned roots)	fortition, L→R	R1	ngw-R2, L→?	'explode' *kĭch, ndyìch, ngwdi'ch*
D3 C-stems (3 low-toned roots)	fortition, L→R	R1	ngw-R2, L→F	'holler' *kwězh, nbèzh, nhwtêzh*

Table 7: Defining features of Coatec verb classes

Some of the classes listed in Table 7 result from the historical splitting of a smaller number of original classes, but now constitute patterns of their own which cannot be predicted based on phonological differences etc. For example, all classes with the letter D in their name have a coronal R2 prefix that forms the completive stem, but nothing in the phonological identity of the verb root can completely predict which of these inflectional patterns a verb will take. Classes D2 and D3 always have low tone, but a low-toned verb could fall into either of these or into D1 as well. We can predict that an

a-stem will belong to one of the C classes, but we can't predict whether it will be C1, C2 or C3. On the other hand, some of the patterns listed in Table 7 could still be considered subclasses based on phonological grounds. The class of A vowel-stems is the easiest one to predict because they all begin in a round vowel and there is not any internal variation. A *y*-stems are similar predictable, but A consonant-stems have to be further divided based on transitivity. Still though, knowing a verb's transitivity and phonological shape one could predict which subpattern of A a verb would display, and so class A patterns can be considered subclasses. While the patterns of the class A subclasses are still predictable, the former subclasses of C and D (including perhaps class Ch which is identified as class D in Kaufman's reconstruction) have more definitively split into classes of their own because changes in the historical phonology of the language have created opacity and so some patterns that were phonologically predictable historically are no longer so.

3. Southern Zapotec

Zapotec has been divided into five branches (see Smith Stark 2007 and a proposed modification by Sicoli 2015[10]). Precolumbian Zapotec society at one time was centralized in the Valley of Oaxaca but expanded into the Northern and Southern Sierra, as well as other zones including the Isthmus of Tehuantepec, due to a variety of factors that included both military conquests and migrations motivated by the political and economic collapse of the capital Zaachila (see Oudijk 2012). The diversity found in Zapotec languages today is partly resulting from such migration.

The Southern Zapotec group that is the focus of this paper is best thought of as a small linguistic área composed of related languages. There was probably never a Proto-Southern-Zapotec language spoken by a single group of migrants. Rather, multiple migrations over time, by groups probably speaking different varieties of Zapotec, arrived into the Southern Sierra Madre, where over centuries their various descendants have been in contact (Beam de Azcona 2014a). Southern Zapotec languages are *genetically*

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[10] Sicoli argues that the extinct Soltec variety was not a radically different kind of Zapotec but rather a variety of Western Zapotec exhibiting features found in some Western Zapotec varieties that had not been documented when Smith Stark made his classification.

related as "Zapotec" but they are *areally* related as "Southern". There are seven mutually unintelligible Southern Zapotec languages, shown below in Figure 1, which Beam de Azcona (2014b) divided into three genetic groupings, that perhaps reflect different migrations into the region: Macro-Coatecan, Miahuatecan, and Cisyautepecan.

In the linguistic prehistory of the Southern Sierra, two points of intrigue stand out. There is a long-standing suspicion, especially among SIL linguists working in the region, that the Cisyautepecans are recent arrivals from the Valley of Oaxaca, sharing features such as the progressive prefix ka- (Broadwell 2015). Secondly, the language of Asunción Tlacolulita (AT), which is a Zapotec island surrounded by Chontal and possibly representing a pre-Columbian military expansion, was classified as Southern by Smith Stark (2007), who considered it its own subgroup. Subsequently it was grouped with Amatec by Beam de Azcona (2014b) because of shared isoglosses related to vowels and coronal consonants, and Beam de Azcona (2016) found it to share isoglosses with languages from three Southern zones: Chatino, Papabuco and Western Zapotec in the west, Amatec and other languages in the heart of the Southern Sierra, and Transyautepecan languages to the east of Tlacolulita. The comparison of the inflectional morphology that defines verb classes in all these languages is an additional body of evidence to apply to these questions. Indeed, TAM-marking morphology does reveal certain sharp differences between Cisyautepecan and the rest of Southern Zapotec, in particular whereas potential marking is concerned. However, other features, especially completive aspect marking, variously show signs of either diffusion across varieties or departure of some varieties from other Southern Zapotec languages.
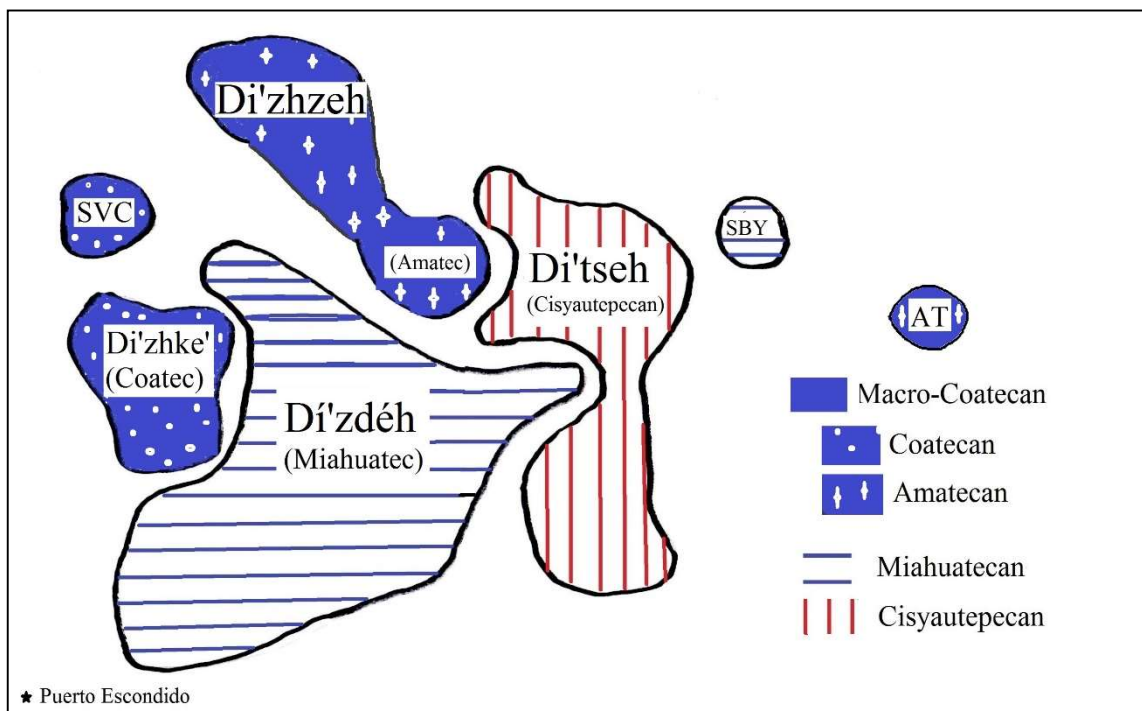
Figure 1: Southern Zapotec languages

For the present study, I used data from 14 varieties, shown in Figure 2. Here Macro-Coatecan languages are shown in solid. The data presented in §2 for Coatec come from San Baltazar Loxicha, but below I also consider data from Santa María Coatlán. Coatec shares a cluster of sound changes with Amatec (Beam de Azcona in preparation [b]). Here I consider data from the Amatlán variety of Amatec (Riggs n.d.) as well as the Coatecas Altas variety. San Bartolomé Loxicha, San Agustín Mixtepec and Santa Catarina Cuixtla (Kaufman 1996), shown in horizontal stripes, are three mutually intelligible varieties of the neighboring Miahuatec language. The remaining varieties, shown in vertical stripes, are 6 of the 7 subgroupings of Cisyautepecan (Antonio Ramos 2015; Black 1994; Hopkins 1995; Hunn *et al.* n.d.; Méndez 2004; Olive 1995; Piper 1995; Ward 1987) identified by Smith Stark (2007). At least some of these are mutually intelligible but the limits of intelligibility are not well established (but see Méndez 2004 for speakers' intelligibility assessments of nearby varieties). Cisyautepecan appears to constitute a dialect continuum. The map in Figure 2 is intended to provide insight on localized diffusions in the discussion that follows. Data from Cuixtla, Amatlán and all the Cisyautepecan varieties are taken from the sources cited, while data from the other five varieties were gathered by the author.
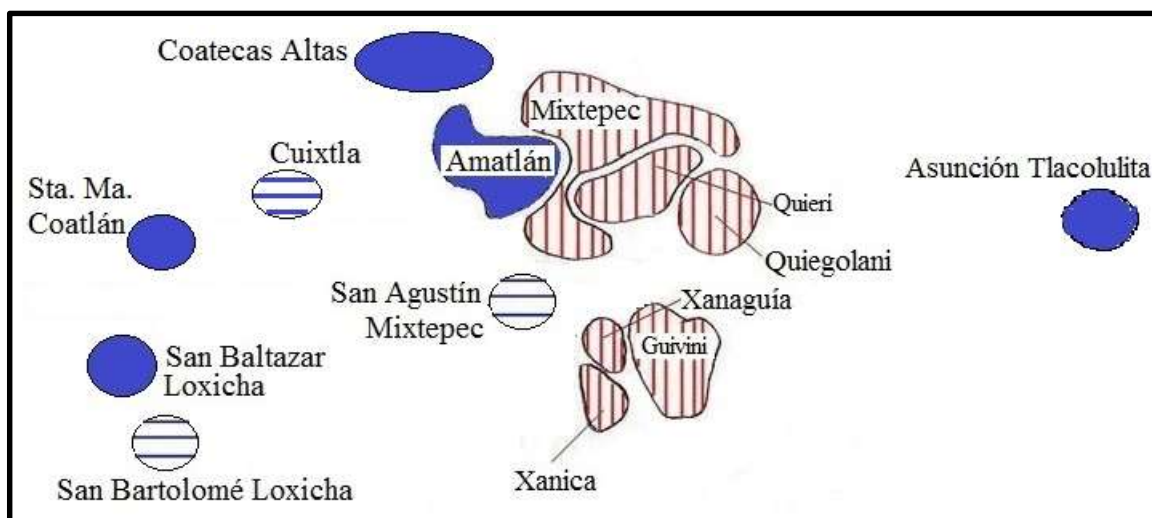
Figure 2: Varieties used in the present study

4. Kaufman's historical analysis of Zapotec verb classes

Kaufman (1989, 1994-2014) lays out a historical classification of Zapotec(an) verbs that has been applied to modern Zapotecan languages as well (Beam de Azcona 2004, 2009; Campbell 2009; Smith Stark 2002; Pérez Baez & Kaufman 2011; Sullivant 2015). Table 8 provides the defining features of Kaufman's four-way classification.

	class A	class B	class C	class D
potential	*ki+	*ki+	*k+	*k+
completive	*kwe+	*ko+	*ko+	*ko+
replacives	NO	NO	NO	YES
begin with	V	C	V,C	V,s

Table 8: Kaufman's Proto-Zapotec(an) Verb Classes

Although the potential allomorphy Kaufman identified for Proto-Zapotec(an) does not always hold up that well in Southern Zapotec, the *k+ marker in class D can be understood as the historical cause for fortition. This consonant added to the R1 prefix would have rendered an underlying consonant cluster which surfaced as geminate in Proto-Zapotec, yielding modern fortis consonants. In class B the *i in *ki+ is *possibly* the cause for the palatalization in class B in Coatec and some other languages.[11]

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[11] However, the intransitive nature of this class suggests that the anticausative *y is involved (see Operstein 2015). A fusion of the two sources is another possibility. *W-* is an example of a derivational valency-changing marker which has become part of the inflectional system by fusing with potential marking in class A. The same could have happened with anticausative *y* and the potential and habitual markers in class B.

In Coatec as in Proto-Zapotec, allomorphy of the completive marker separates class A patterns from the rest. However, in some varieties this distinction is only preserved on vowel-stems, and in others it seems to be falling apart all together.

Replacive morphology continues to define class D, though in Cisyautepecan the R2 prefix is being reinterpreted as a completive prefix.

Stem shape is still noteworthy when looking at Southern Zapotec verb classes, although there have been changes such as the addition of consonant-stems to class A in Coatec.

5. Southern Zapotec verbal isoglosses

Data from the varieties in Figure 2 were compared to the Coatec system described in §2. Space limitations make it impossible to provide a detailed comparison here, but such a comparison yielded a few specific observations that are worth focusing on in the remaining sections. Each of the following subsections highlights an isogloss related to a specific morphological feature, beginning with the completive allomorphy seen on consonant-stems and vowel-stems.

5.1. Extension of the bilabial completive marker

As reconstructed by Kaufman (1989), the bilabial completive marker only applied to V-stems in Proto-Zapotec. Via sound change and analogy today there is a large class of C-stems that take this class A marker in Coatec. This change is not unique to Southern Zapotec. C-stems with a bilabial completive are also found in Northern (Bartholomew 1983), Central (Stubblefield & Hollenbach 1991), Papabuco Zapotec (Operstein 2015) and Chatino (Campbell 2009).[12]

Leveling of completive allomorphy is characteristic of Southern Zapotec (Beam de Azcona 2014a). Throughout varieties of the central part of the Southern Sierra, the bilabial completive marker has extended even to verbs displaying the distinctive morphology (e.g. palatalization and replacives) of other classes. For example, Proto-Zapotec class D is defined by the presence

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[12] Considering the extent of this feature we may want to reconsider the reconstruction in future work and posit consonant-stems that took the class A completive marker as far back as Proto-Zapotecan, but for now I will assume that the reconstruction is correct and explain the changes which presumably took place to bring about this state of affairs.

of replacive morphology (see Table 8). The verbs in Table 9 all display replacive morphology, yet the Amatlán variety of Amatec, all varieties of Miahuatec, and the Mixtepec variety of Cisyautepecan all mark the completive of these verbs with a bilabial marker that was originally exclusive to class A. Only Coatec and Tlacolulita, at the western and eastern frontiers, conserve the labiovelar marker on 'explode' (which, incidentally, is cognate with Amatec 'break') and 'plant' respectively.

	Coatec (SBalL)	Amatlán	Miahuatec (SBarL)	Cisyautepecan (Mixtepec)	Tlacolulita
	'explode'	'break'	'put'	'push'	'plant'
Potential	*kǐch*	*kich*	*ko*	*kwiín*	*ko'*
Habitual	*nd-yìch*	*n-gich*	*ngóo*	*r-bin*	*r-go'*
Completive	***ngw**-di'ch*	***m**-dich*	***mb**-ló*	***b**-rin*	***w**-lo'*

Table 9: Class D verbs across five Southern Zapotec languages

In Figure 3 we see that varieties which conservatively preserve both labiovelar and bilabial completive prefixes on consonant-stems are geographically disparate: Coatec in the extreme west, Coatecas Altas in the extreme north, Quierí in the northern near-east, Xanica in the southern near-east, and Tlacolulita in the far east. Conversely we see that most varieties that now apply the bilabial marker to all consonant-stems (all varieties of Miahuatec, the Amatlán variety of Amatec, and at least the Mixtepec variety of Cisyautepecan) are all contiguous with one another with the exception of San Bartolo Yautepec. Likewise, a contiguous eastern bloc of three Cisyautepecan varieties have an even more extreme reduction of the system, with all verbs, both vowel- and consonant-stems, taking the same completive marker, *w-*.
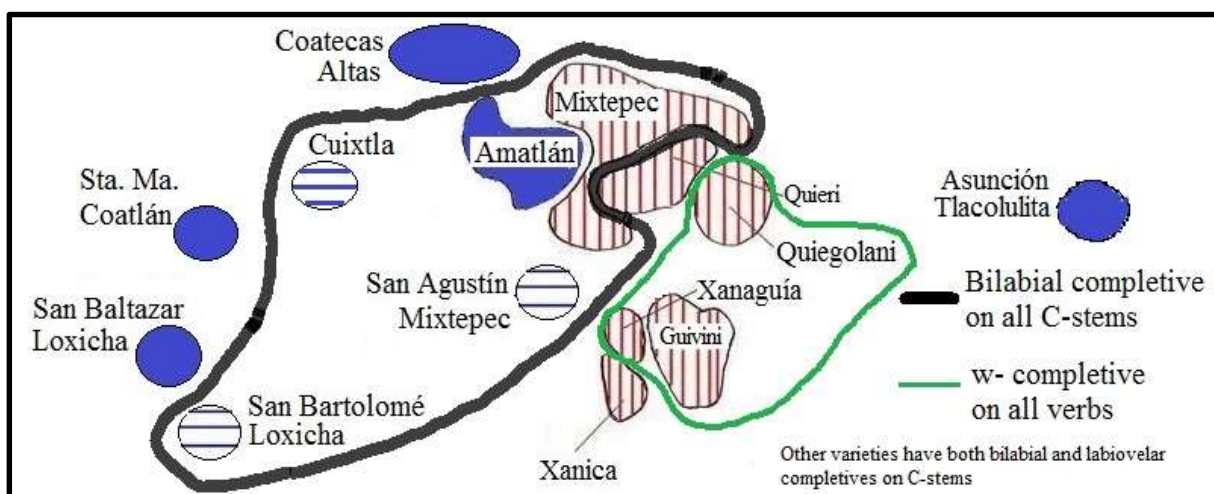

Figure 3: Completive allomorphy on consonant-stems

In Table 6 we saw that even Valley and Northern Zapotec languages now have consonant-stems that take the bilabial completive marker. Assuming that the reconstruction of class A as consisting of vowel-stems is correct, the explanation for the widespread use of class A morphology on consonant-stems relates to causative morphology and what must have been early analogy. A causative auxiliary verb *o, took class A inflectional markers. This *o is the initial segment of the class A vowel-stems (recall from §2 that they all begin in round vowels), which must go back to the concatenation of *o and another vowel-stem, resulting in the deletion of the second vowel (e.g. *o+atti 'caus+die' = *otti[13] 'kill'). The causative auxiliary could also be added to consonant-stems, and we see it today residually in Coatec as the w- potential marker found only on transitive consonant-stems. Since the w only survives in the potential and has been lost in other paradigmatic forms, the bilabial completive marker that used to mark the auxiliary *o is now adjacent to consonant-stems. This explains the existence of transitive consonant-stems with bilabial completive markers. The existence of intransitive consonant-stems with the same bilabial completive marker can be explained via analogy. Most of these intransitive consonant-stems are in a derivational relationship with transitive consonant stems and have probably adopted the same completive marker as their derivational partner via proportional analogy.

Although not identical to Proto-Zapotec, we can assume that the diverse completive allomorphy found in both varieties of Coatec surveyed and in Coatecas Altas, Quierí, Xanica, and Tlacolulita is conservative compared to the other varieties in Figure 3. The other varieties, which have reduced the inventory of completive markers to a single prefix for consonant-stems or even for all verbs, display two patterns that are observed mostly in contiguous varieties, including contiguous varieties belonging to different genetic subgroups. This pattern suggests that levelling of a single completive marker across multiple current or former verb classes, is an innovation that has spread via diffusion.

I speculate that the bilabial pattern of completive marking on all consonant stems originated in Miahuatec varieties spoken in and around Miahuatlán and spread to the other languages. Miahuatlán is the most important municipality

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[13] This verb is reconstructed by Kaufman as *utti, but I reconstruct only *o and not *u for Proto-Zapotec as laid out in Beam de Azcona (in preparation) and Beam de Azcona *et al.* (in press).

in the *Sierra Sur* region and speakers of most Southern Zapotec languages have frequent reasons, both now and in the colonial past, to go there to market etc., a fact which could create economic motivation to accommodate to features of local varieties of Miahuatec. The change took place demonstrably earlier in Miahuatec varieties near Miahuatlán vs. the more distant variety of San Bartolomé Loxicha. The Cuixtla data considered come from a speaker born in 1912 and the San Agustín Mixtepec data from a consultant born in 1932, both of whom had the bilabial marker on all consonant-stems, with no free variation. In San Bartolomé Loxicha I have worked with the C. S. family, in which older speakers (including Abdón, born in 1949, and Alfredo, born in 1970) have a labiovelar prefix on the same verbs that have a labiovelar completive in Coatec, with some free variation with the bilabial marker, whereas younger speakers (including Zenaida, born in 1981, and Emiliano, born in 1986) only have the bilabial completive marker. Not only is San Bartolomé Loxicha more distant from Miahuatlán than both Cuixtla and San Agustín Mixtepec, it is also a close neighbor to Coatec-speaking San Baltazar Loxicha, which may have historically exerted some influence. These factors may relate to the late arrival of this diffused morphological change to this Miahuatec-speaking town. Considering that the change is found in only one Amatec variety and one Cisyautepecan variety, and considering that these towns have historically had less influence than Miahuatlán, they seem less likely as the source of the change. Of the two main varieties of Amatec, the change is seen in the Amatlán variety, which politically forms part of the Miahuatlán district, and not in the Coatecas Altas variety, which politically is part of the Ejutla district. Because of both proximity and political affiliations speakers from Coatecas Altas may have had less contact with Miahuatec than speakers from Amatlán have had, at least during the last two centuries, when the change likely took place and spread.

The Northern variety of Coatec spoken in Santa María Coatlán may have been influenced by the spread of the bilabial completive marker in neighboring Northern Miahuatec. Southern Coatec, as spoken in San Baltazar Loxicha, has the class A bilabial completive marker with allomorphs *mb-* and *m-* on consonant-stems, and the class B-D labiovelar completive marker which, when added to consonant-stems, has allomorphs ηg^w- and η^w. Corresponding to both ηg^w- and η^w- Santa María Coatlán has *mw-* in free variation with *w-*. This could be seen as the result of a natural

sound change, the velar nasal assimilating to the labial nature of the approximant offglide, and subsequently reducing further to *w-,* and it probably is, but it may have been helped along by contact with northern varieties of Miahuatec such as Cuixtla which has a bilabial prefix, *mb-* or *m-*, on all C-stems. It is notable that Santa María Coatlán with it's *mw-* prefix is in proximity to Cuixtla where a speaker born in 1912 has only a bilabial prefix on consonant stems, whereas San Baltazar Loxicha with it's ŋ*ʷ* prefix is adjacent to San Bartolomé Loxicha, where speakers born at least as late as 1970 retain a ŋ*ʷ* prefix. Although Santa María Coatlán is unique in (further) labializing the class B-D completive prefix without fully merging it with the class A prefix, the possibility of the *mw-* prefix being partially influenced by Miahuatec lends further support to the idea that Miahuatlán is the epicenter for the spread of a bilabial marker to classes B-D. Santa María Coatlán is located in the district of Miahuatlán while San Baltazar Loxicha is located in the district of Pochutla.

In varieties that have extended the bilabial completive to all consonant-stems, special morphology like palatalization and stem-initial consonant alternations take on increased importance for defining verb classes. So, for example, a class B verb in the San Bartolomé Loxicha and Cuixtla varieties of Miahuatec can still be recognized by its pattern of palatalization despite the fact that it now takes a bilabial completive marker. In Amatlán, the neighboring San Agustín Mixtepec variety of Miahuatec, and in the Mixtepec variety of Cisyautepecan, a lack of palatalization on cognates of Coatec class B verbs, combined with uniform completive marking across C-stems, means that class B has merged with class A. Figure 3 shows a synchronic classification for cononant-stems that does not take completive allomorphy into consideration. Note that this schema works for the San Baltazar Loxicha variety of Coatec as well, since the bilabial completive can be predicted when there is stem regularity. Note also that varieties like Amatec and San Agustín Mixtepec do not have all of the possible classes shown in Figure 4.

The various systems of completive marking described here suggest a possible evolution, with one change triggering another. I present the proposed sequence of events in Table 10.
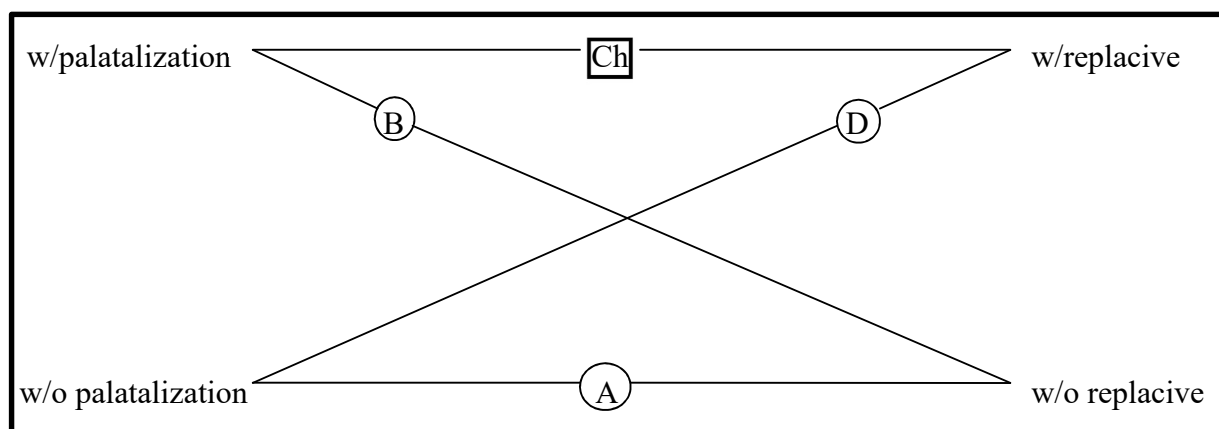
Figure 4: Classification of Southern Zapotec consonant-stems

Stage	State or change	Representative varieties
1	*kwe- (later *pe-) occurs only on o-stems (all formed with the causative auxiliary verb)	Proto-Zapotec
2	Causative auxiliary *o reduces to w- and/or deletes, rendering its former complements as transitive consonant-stems with class A (bilabial completive) morphology	
3	Intransitive partner verbs to the new class A transitive consonant-stems, adopt the bilabial completive via analogy	San Baltazar Loxicha, Quierí, Xanica, Tlacolulita, (Sierra Juárez, etc.)
4	Palatalization is lost in Amatec and neighboring San Agustín Mixtepec but the opposition between bilabial and labiovelar completive markers maintains the distinction between classes A and B	Coatecas Altas
5	Verbs still belonging to the original classes of the new class A consonant-stems adopt the bilabial completive via analogy	San Bartolomé Loxicha, Cuixtla, Mixtepec variety of Cisyautepecan
6	The distinction between classes A and B is lost in varieties which have lost palatalization and subsequently extend the bilabial completive marker to all C-stems.	San Agustín Mixtepec, Amatlán, San Bartolo Yautepec
Other	Extension of *ko-, now w-, to all verbs is perhaps influenced by the similar extension of *kwe- in neighboring varieties. The bilabial completive marker is reanalyzed as a sociolinguistic variable associated with "other" varieties of Cisyautepecan and Zapotec in general.	Quiegolani, Xanaguía, Guivini

Table 10: Evolution of completive allomorphy in Southern Zapotec

Originally, in Kaufman's classification of Proto-Zapotec verbs, the class A completive marker separated that class from all others, in a sense defining it. The changes identified here have the effect of expanding class A (to include consonant-stems), redefining it (based on lack of stem allomorphy

as opposed to completive marking), or eliminating it (when all verbs are marked with *w-*) in various varieties of Southern Zapotec languages.

The domino effect starting with vowel deletion and ending with the elimination of one completive allomorph is a regularizing force among consonant-stems. With the exception of the eastern bloc of Cisyautepecan, this series of changes has left vowel-stems untouched. The effect is to create a divide between consonant-stems, with ever increasing levels of regularity, and vowel-stems, which are conservative and irregular.

5.2. Innovative vowel-stems in Eastern Cisyautepecan

Most Zapotec languages, including 11 of the 14 varieties surveyed here, have a small number of (often-used) verbs with vowel-initial stems, and these verbs undergo vowel alternations within the paradigm, resulting from underlying and/or historical vowel cluster simplification as described earlier. 11 Southern Zapotec varieties surveyed mark the completive with a bilabial prefix on verbs with underlying round vowels, and with a labiovelar prefix on verbs with underlying a or e, along with the corresponding surface vowel alternations. This is to say, the stem allomorphy seen on vowel-stems belonging to classes A and C1-3 in Coatec occurs almost unchanged in Amatec, Miahuatec, Tlacolulita and in the western dialects of Cisyautepecan. Table 11 provides cognate vowel-stems in Coatec (San Baltazar Loxicha), Amatec (Amatlán), Miahuatec (San Bartolomé Loxicha), and the Mixtepec variety of Cisyautepecan. Note the regularity across these four languages. The only case of a labiovelar prefix corresponding to a bilabial prefix in another language is the completive form of 'rise'. In Cisyautepecan it has a bilabial prefix. However note that in that language the completive stem is not vowel-initial but y-initial, so the bilabial prefix there represents a regular development for consonant-stems. Likewise Amatlán has two completive forms recorded, a vowel stem with a labiovelar prefix and a y-stem with a bilabial prefix. So, the languages in Table 11 behave similarly with respect to vowel-stems.

	Potential				Habitual				Completive				Gloss
	Co	A	M	Ci	Co	A	M	Ci	Co	A	M	Ci	
A	güth	gut	guth	guút	ndùth	nzhut	ndxúuth	rut	mbìth	mbit	mbíith	beét	'kill'
C1	găl	gal	gal	gáál	ndăl	nzhal	ndxal	ráál	ngŏl	ngol	ngol	góól	'be born'
C2	gâth	yet	gath	gyeét	ndâth	nzhet	ndxáth	ret	ngùth	ngut	ngúth	gut	'die'
C3	găp	yep	yap	tseép	ndàp	nyep	ndxa'p	ryep	ngwàp	ngwep ~myep	ngwa'p	byep	'rise'

Table 11: Vowel-stems across four Southern Zapotec languages

Recall from Table 10 that the changes in completive marking on consonant-stems are triggered by pre-tonic vowel loss that reduces or eliminates the causative auxiliary *o, creating a new class of consonant-stems that take a bilabial completive marker. Zapotec vowel-stems have always lacked pre-tonic vowels because of the process of vowel cluster simplification applied whenever CV- prefixes were added to V-initial stems. Prefix vowels are pre-tonic when added to consonant-stems, but when added to vowel-stems the prefix vowel either deletes or replaces the root vowel as the tonic vowel. Tonic vowels enjoy a measure of protection from sound changes that delete or reduce unstressed vowels in these languages. Because of this, there is much less cross-dialectal variation in vowel-stems as compared to consonant-stems.

Figure 3 above identifies the exception to this conservatism of vowel-stems. 3 Cisyautepecan varieties, all in the east, have reduced the completive to a single allomorph, *w-*, including on all vowel-stems. This also means a lack of the vowel alternations that occur in most Zapotec languages. For example, consider the Coatec verb 'become' -*ak* with the completive form *ngok* and compare this to the Quiegolani completive of the same verb, *wak* (Black 1994: 43). Likewise, in Amatec the verb 'die' -*et* has a completive *ngut* but Quiegolani adds *w-* and retains the stem vowel in the completive form *wet* (Black 1994: 77). And, compare the Miahuatec verb 'listen' -*ón* with its completive form *mbín* and compare this to the Quiegolani completive *won* (Black 1994: 84). In every Coatec class where there are paradigmatic vowel alternations the easternmost varieties of Cisyautepecan have levelled the paradigm to use one vowel consistently. So, in general Kaufman's classification, especially the distinction between classes A and C, holds up better for vowel-stems than for consonant-stems,

but in the eastern varieties of Cisyautepecan the system nevertheless falls apart.

5.3. Loss of *ts-* in Miahuatec, Coatec and Amatec

All documented forms of Cisyautepecan (Méndez 2004: 83-85), San Bartolo Yautepec and Tlacolulita have an additional potential marker, *(t)s-*, that is not found in Miahuatec, Coatec or Amatec to date. This marker is used on verbs corresponding to Coatec class C3. Class C3 consists of vowel-stems that do not undergo paradigmatic vowel alternations but instead add the completive form *ngw-* directly to the verb stem with no deletion. The historical explanation for this is that class C3 are former *y*-stems that have become vowel-stems through the loss of the *y*. The verb 'rise' above in Table 11 is a good example of this, still occurring as a *y*-stem in Cisyautepecan and Tlacolulita (along with the *ts-* potential marker), occurring in Amatlán as a *y*-stem that in the completive is in free variation with a vowel-stem, and ocurring as a vowel-stem that takes the *ngw-* completive in Coatec and Miahuatec. Note that none of the other languages here mark *ts-* on the potential form of 'rise'.

This *ts-* prefix is found in Sierra Juárez Zapotec in the Northern Sierra (Bartholomew 1983: 397) and occurs as *ch-* in Mitla (Stubblefield & Hollenbach 1991: 220) and Colonial Valley Zapotec (Córdova 1578ª; Lillehaugen *et al.* 2014). Its appearance in two other geographic regions outside of the Southern Sierra suggests that this is a retention rather than an innovation and has simply been lost in Miahuatec, Coatec and Amatec. Whether these last three languages share a node in a genetic family tree or whether they simply resemble each other due to centuries of diffusion is an on-going question of research, but this isogloss can be added to others under consideration.

5.4. Reanalysis of R2 in Cisyautepecan

In at least the northermost dialects of Cisyautepecan (Mixtepec and Quierí, see Méndez 2004 and Antonio Ramos 2015) the R2 prefix of historical class D verbs with habitual vowel-stems has been reinterpreted as a completive marker. Table 12 shows the verb 'eat' in the same varieties as in Table 11.

Potential				Habitual				Completive			
Co	A	M	Ci	Co	A	M	Ci	Co	A	M	Ci
wǎ	*gaw*	*wa*	*gáw*	*ndà*	*nzhaw*	*ndxwáa*	*ráw*	*ngwdà*	*ndaw*	*nhwdáa*	*dáw*

Table 12: The verb 'eat' across four languages

By subtracting the habitual prefix we find that this word has a vowel-initial habitual stem in Coatec and Amatec, -*à* and -*aw* respectively. Miahuatec has added the transitive *w*- marker even in the habitual. Cisyautepecan, like Amatec, has a habitual stem -*áw*. However, in the completive we see a familiar labiovelar prefix in Coatec and Miahuatec being added to a *d*-initial stem. In Amatec there appears to be some homorganic nasal assimilation but still we see a nasal prefix added to a *d*-initial stem. Not fitting in Table 12 but displaying a similar pattern is Tlacolulita where a cognate verb root -*ow* has a potential form *gow,* habitual *row*, and completive *wdow*. In the Mixtepec variety of Cisyautepecan though, all we have is the would-be *d*-stem without a traditional completive prefix. Only a few verbs have been identified in Coatec as having a vowel-initial habitual stem but an R2-initial completive stem. The pattern is so sparse and irregular that it lends itself to reinterpretation. In at least two varieties of Cisyautepecan the R2 prefix in these verbs has been reinterpreted as the sole completive prefix selected by such a verb, in effect creating a new class of paradigmatically homogenous vowel-stems with a completive prefix *d*-.

5.5. Potential *y-/i*- in the East

In the San Agustín Mixtepec variety of Miahuatec, Tlacolulita, and every variety of Cisyautepecan except the one spoken in Quierí and its sister town Quioquitani (though I also have fewer data for this variety), some or all consonant-stems take a *y*- or *i*- prefix in the potential. In San Agustín Mixtepec some consonant-stems are zero-marked segmentally and others take this *y*- prefix. The tendency seems that *y*- marked verbs there are more likely to be intransitive, and some correspond to verbs that have a palatalized stem in Coatec and in western varieties of Miahuatec (the palatalized stems in classes B and Ch in these languages are also associated with intransitivity). The marker could be related to anti-causative **y* (see Operstein & Sonnenschein 2015) and have become a portmanteau marker of potential mood as well as valency, the counterpart to *w*-. However, in some Cisyautepecan varieties this is the default potential marker appearing on all

consonant-stems, including transitive ones. In Tlacolulita and San Agustín Mixtepec *y*- appears on all consonant-stems of class A/B (it is absent on class C and D verbs). For these languages, a better explanation is that potential *y*- is simply what remains of Kaufman's **k*i*- potential marker for classes A and B. This is phonologically highly plausible since single/lenis **k* is a weak consonant that often lenites. The marker may have extended to other classes in some Cisyautepecan varieties the same as we have seen with the bilabial completive marker elsewhere. This marker merits closer examination in the future but here the point is simply to establish an isogloss that includes Tlacolulita, most of Cisyautepecan and the neighboring San Agustín Mixtepec variety of Miahuatec.

5.6. Palatalization in the West

In the San Bartolomé Loxicha and Cuixtla varieties of Miahuatec, class B and Ch verbs undergo palatalization much as in all varieties of Coatec, though the pattern is slightly more regular. As in Coatec, palatalization of class B verbs appears only in the potential and habitual, and not the rest of the paradigm (see Table 8). However the segmental idiosyncracies seen above in Coatec (different types of palatalization on /n/, deletion of /l/ in the habitual) are absent in Miahuatec. Miahuatec has numerous dialects not considered in this paper but it is notable that the San Agustín Mixtepec variety seems to lack classes B and Ch. No verbs have been documented in that variety that palatalize in the potential and habitual.

Innovations should be given greater weight than retentions and so we may ask ourselves whether the development of palatalization is an innovation or whether the loss of palatalization is an innovation. It is quite possible that both developments are innovations. If palatalization in classes B and Ch develops from metathesis of an **i* in the potential and habitual markers or a **y*- intransitive marker, in Miahuatec and Coatec, this could be a shared innovation that might indicate (together with other isoglosses) a genetic grouping that includes these two groups but excludes Cisyautepecan. Alternatively this shared innovation could be diffused between Miahuatec and Coatec. If palatalization existed in earlier forms of the core Southern Zapotec languages is lost in Amatec and in the San Agustín Mixtepec variety

of Miahuatec, this could be seen as induced by contact between these varieties and Cisyautepecan.

5.7. Tonal eccentricities in the Loxichas

In Table 7 verbs from San Baltazar Loxicha show some suprasegmental idiosyncracies that constitute the difference between classes Ch1/2/3 and D1/2/3. These same patterns are found on cognate verbs in San Bartolomé Loxicha, as shown in Table 13. Although the tones are different (San Bartolomé low to San Baltazar rising, San Bartolomé falling to San Baltazar low, San Bartolomé high to San Baltazar falling), these are the regular tonal correspondences seen throughout these two languages (Beam de Azcona 2008).

Coatec class	SBalL example	SBarL example
Ch1	'give birth' *zyăn, nzyàn, nhwxàn*	'give birth' *dyan, ndyáan, nhwxáan*
Ch2	'appear' *zyăk, nzyàk, nhwxa'k*	'appear' *dyak, ndyáak, nhwxa'k*
Ch3	'defecate' *zyŏn, nzyòn, nhwxôn*	'defecate' *dyon, ndyóon, mpxón*[14]

Table 13: Tonal morphology in Classes Ch1-3 in the Loxichas

Tonally reliable data from other varieties are sketchy. The data from Santa María Coatlán mostly seem more regular, belonging to pattern 1 with no change in the completive, although there is one verb that seems to have a Ch2 pattern. Coatecas Altas cognate verbs also seem to sometimes have pattern 1, with low tone in both habitual and completive, corresponding to patterns 2 and 3 in San Baltazar Loxicha, though one Ch2 and one Ch3 verb from San Baltazar correspond to Coatecas Altas verbs that are glottalized throughout. The lone verb I was able to find for Cuixtla, 'suck' corresponding to pattern 2, is glottalized throughout the paradigm. In San Agustín Mixtepec, the only variety surveyed which has a phonological contrast between checked VʔV and rearticulated VʔV vowels, has two verbs

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[14] In this table am reporting forms listed in the dictionary (Cruz Santiago and Beam de Azcona in preparation). It seems that the forms reported here reflect some known sociolinguistic variation discussed above. It should be the case that younger speakers can also say *mpxáan* and *mpxa'k* and that older speakers can say *nhwxón*.

corresponding to San Baltazar Loxicha class D3 which have low tone and a checked vowel in the habitual but a rearticulated vowel in the completive.

More data need to be gathered to fully analyze the patterns found on these verbs but it would appear that these irregular patterns 2 and 3 found in the Loxichas have a phonological history that relates to glottalization somehow, and perhaps to a contrast between checked and rearticulated vowels which generally has been lost everywhere in Miahuatec, Coatec and Amatec with the exception of San Agustín Mixtepec. What is striking is how regular the correspondences are between San Baltazar and San Bartolomé Loxicha. In fact, they are more regular than the correspondences between each of these and mutually intelligible varieties of the same languages (Santa María Coatlán for San Baltazar Loxicha and both Cuixtla and San Agustín Mixtepec for San Bartolomé Loxicha). This regularity should not be attributed strictly to genetic interitance since the correspondences within each language, Miahuatec and Coatec, are not as regular. One hypothesis that could explain this regularity is language shift in San Bartolomé Loxicha. The Miahuatec speaking communities in the Loxichas arrived in the region in the 17th century (San Bartolomé Loxicha may have been founded by migrants from Río Hondo according to Gerhard 1993: 73), with Coatecs present in the region earlier (Gerhard 1993: 189). If a number of Coatec speakers were integrated into a new Miahuatec community in the region and shifted to Miahuatec, they would have produced cognate forms for patterns 2 and 3 where they expected them to be. If this group of language shifters were significant in San Bartolomé Loxicha then their L2 errors could have influenced others and spread through this dialect.

5.8. Prenasalization

In Xanica, both *m-* and *ngw-* appear as completive prefixes attached to both vowel-stems and consonant-stems (Piper 1995). Additional data provided by Méndez (2004) shows the Class C1 pattern on the verb 'have' with the completive form *ngop.*

Xanica is the only Cisyautepecan variety to have nasal or prenasalized completive markers. This is a feature it shares with all the Southern Zapotec languages to its west and with Chatino beyond them. There can be no doubt that this feature's presence in Xanica is due to diffusion from Miahuatec.

San Andrés Lovene, which Smith Stark (2007) groups together with Xanica in the same dialect, is today an *agencia municipal* subject to San Juan Ozolotepec. In fact it has been subject to San Juan since the early colonial period. Today Xanica itself is its own municipality but during the colonial period it was subject to San Mateo Piñas (González Pérez 2013). Although Lovene and Xanica speak the same variety of Cisyautepecan, both San Juan Ozolotepec and San Mateo Piñas speak the Ozolotepec variety of Miahuatec. Thus, throughout the colonial period these Cisyautepecan communities were dependent on Miahuatec communities. All sorts of official business required trips to the Miahuatec-speaking region, where the Miahuatec speakers would have had the overt social prestige. Speakers of the Xanica variety of Cisyautepecan would have had incentive to accommodate Miahuatec features, but Miahuatec speakers in the Ozolotepec region would have had little reason to accommodate the speech of their visitors. There are thus long-standing socio-political reasons for the Xanica variety to be influenced by Miahuatec. The only mystery is why this influence seems to have affected Xanica more than Xanaguía, which likewise has been politically dependent on San Juan Ozolotepec.

Chatino is the likely source of diffusion for the prenasalization seen in TAM prefixes (Beam de Azcona 2014b).[15] Chatino languages have prenasalization in the habitual, progressive, and completive but not in the potential. Coatec, Miahuatec and Amatec likewise have prenasalization on the prefixes of the habitual, progressive, and completive but no other TAM category. Located in the extreme east, Tlacolulita has prenasalization of the progressive prefix only.

5.9. Fortition in classes B and Ch

Table 8 shows that for Proto-Zapotec the potential prefix is *ki- for classes A and B and *k- for classes C and D. *k-, when added to a consonant-initial stem caused gemination of that consonant, the historical source of modern fortition. In Cuixtla and in Santa María Coatlán it appears that *s-initial verbs of classes B and Ch undergo such fortition. In Coatec this means a potential in *sy* and a habitual stem beginning in *zy*, In Cuixtla this means

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[15] It seems possible that Chatino in turn could have acquired/developed prenasalization via influence from Mixtec.

habitual *dy* and potential *ty*. This feature is not shared by other varieties of these languages, or by other languages in the region, so I assume it originated in one of these speech communities and spread to the other through contact. My class Ch (Beam de Azcona 2004, 2009) is reconstructed by Kaufman as part of class D, where the *k-* potential could have indeed caused fortition. In class B this fortition is only seen on stems beginning in *s,* the initial segment of all class Ch consonant-stems. The pattern could have spread to class B *s-*stems via analogy to class Ch.

5.10. Epenthesis in Coatecas Altas

The Coatecas Altas variety of Amatec, unlike other Southern Zapotec varieties, has pretonic vowels in many prefixes, among these the habitual and completive. The same alternations are seen on V-stems as in Coatec. Before C-stems the prefixes begin in similar consonants to those of Coatec but have a vowel in the prefix preceding the stem and may have some consonant reduction. Where San Baltazar Loxicha has habitual *nd-* Coatecas Altas has *ni-*. Where San Baltazar has completive *mb-* Coatecas Altas has *mi-*. Corresponding to San Baltazar *ŋgʷ-* Coatecas Altas has allomorphs *ŋgʷ, ŋgᵘ-, ŋʷ-, w̃-*. The labial element in this latter set of allomorphs is obviously cognate with *o* in Proto-Zapotec *ko-* and corresponds to a labial element in other regional languages such as that of San Baltazar Loxicha. Therefore we might assume that the *i* in *ni-* and *mi-* is a historical reflex of the vowels in the habitual prefix *tʲi* and completive prefix *kʷe*. After all, among class A V-stems we see *i* in the completive as in other languages (Coatecas Altas 'kill' habitual [nᵈʒ-ut], completive [mbi-t]. However, the distribution makes it appear instead that *i* is an epenthetic vowel that appears in combination with consonant deletion to break up would-be clusters of three consonants. Before vowels the habitual prefix is /nẓ-/ and the class A completive is /mbi-/. The /nẓ-/ habitual does not reduce when attached to stems beginning in vowels or glides but before consonants it changes to /ni-/. If /nẓ-/ were to be added directly to a C-stem with no changes to either morpheme, the result would be a /nẓC/ cluster. It is typologically natural for such a cluster to reduce to something closer to a CV syllable. By both deleting /ẓ/ and adding /i/ we get just such a CVCV structure. If we posit an underlying /nẓi-/ prefix we have to question 1) why we don't see vowel alternations in habitual forms the way we do in completive forms such as *mbit,* and 2) what the motivation for deletion of /ẓ/ would be if an underlying /i/ means that it is never adjacent

to the stem-initial consonant. For these reasons it is preferable to analyze /i/ as an epenthetic vowel rather than a historical one. The very same arguments can be applied to the completive class A prefix by assuming that, although it remains *mbi-* when added to V-stems, it had historically reduced to *mb-* before C-stems as we see in sister variety Amatlán as well as in the numerous varieties of Coatec and Miahuatec. Subsequently the *mbC* clusters must have been broken up by deletion of *b* and epenthesis of *i*. This is a change only observed in Coatecas Altas.

5.11. Inventory of verb classes

Table 7 identifies 16 verb classes in Coatec based on patterns of TAM morphology. Five of these patterns are differentiated by tonal peculiarities. Some of the varieties surveyed in this paper do not have tonal descriptions available, nor is tone always recorded in the data at all. So, excluding tonal morphology there are 11 larger classes of Coatec verbs identified based on segmental morphology alone. Amatec, Mixtepec, and San Agustín Mixtepec retain a good deal of the diversity while lacking the feature of palatalization. These systems, like Coatec, can easily fit into Kaufman's historical classification of Zapotec verbs. However, the minimal Cisyautepecan system is composed of only three verb classes defined by the potential markers *g-, y-, ts-*. These roughly correlate to vowel-stems, consonant-stems, and *y*-stems (though the *y*-stems might present or be analyzed as vowel-stems). This type of system is best represented by the easternmost varieties, Quiegolani and Guivini. The similarities with more conservative systems of verb classes are fleeting. It would be more descriptive and insightful to simply label these "Class *y*", "Class *g*", and "Class *ts*" and abandon Kaufman's Proto-Zapotec classes in the description of those varieties. All the way to the east, Tlacolulita seems like a cross between the three-way system of eastern Cisyautepecan varieties and the conservative systems to the west which preserve class D morphology, a contrast between bilabial and labiovelar completive allomorphs, and a distinction between C-stems and V-stems. With ten inflectional patterns (excluding suppletion), Tlacolulita resembles the most diverse Cisyautepecan system, that of Mixtepec, which borders Amatec and Miahuatec. The Mixtepec variety of Cisyautepecan has at least 11 patterns, identified in Table 14, and this is not even taking into account patterns of suprasegmental morphology, or the complex set of inflections based on the different persons that serve as subjects, as described in Hunn *et al.* (n.d.).

Having already identified the divisions of the Coatec system in Table 7, the class divisions found for the other varieties considered are shown in Table 14.

Variety or language	Stem-initial segment	Potential	Completive
Quiegolani, Guivini	V	g-	w-
	C	y-	w-
	V, z	ts-	w-
San Francisco Ozolotepec	V	g-	w-
	C	y-	w-, p-
	V, z	ts-	w-
Xanaguía	V	g-	w-
	y	ts-	w-
	C	y-	w-
	C	fortition	w-
Mixtepec	round vowel	g-	bi-
	round vowel	g-	be-
	a	g-	go-
	e	g-	gu-
	V	g-	d-
	V, y	ts-	b-, gw-
	C	g-, k-	b-, p-
	C	y-	b-, p-
	dz	fortition	b-
	R1, R2	fortition of R1	b-R2-
	Palatalized sibilants	fortition /sy/	b-zhy
Quierí, Quioquitani	round vowel	g-	be-
	a	g-	ko-
	a	g-	d-
	C	k-, g-	p-, b-, kw-
	V, y	ts-	kw-
Xanica[16]	a	?	ngo-
	round vowel	?[17]	mi-
	C	y-	m-
	C	y-	ngw-
	a, y	ts-	ngw-
	R1, R2	fortition of R1	ngw-R2
Amatec	round vowel	g-	mbi-
	a, e	g-, y- before e	ngo-

[16] One verb which appears in the sources available has been excluded as irregular (due to lack of information about the rest of the paradigm, and whether the pattern is productive or not). The potential and completive of the verb 'kill' have surprising forms: potential *wëht* and completive *mkëht*. I suspect that both the *w-* of the potential and *–k-* of the completive are old causative morphemes.

[17] No forms appear in the data to confirm what potential markers occur on vowel-stems that take these completive prefixes. Other than the vowel-stems that take *ts-* in the potential, the only potential form of a vowel-stem that appears in the data is *kaw* 'eat'. These empty cells might have *k-* as does 'eat', or might have *g-* as do vowel-stems in all other varieties of Cisyautepecan. The verb 'eat' does not occur in the completive in the data, so it is also not known whether in this variety as in Mixtepec and Quierí the R2 replacive *d* has been reanalyzed as a completive marker, or whether it simply forms the stem to which is added *ngw-* as in Miahuatec.

	a, e	g-, y- before e	ngu-
	a, e	g-, y- before e	ngw-
	C	0-	m-
	a	0	/m/ [n]+ R2
	R1, R2	fortition of R1	m+R2
Coatecas Altas	round vowel	g-	mbi-
	a	g-	ngo-
	a	g-	ngu-
	a	g-	ngw-
	j	0-	ng-
	C	0-	mi-
	C	0-	ngu-/ngw-/w̃-/ng-
	R1, R2	fortition of R1	ngu-/ngw-/w̃-/ng- + R2
	V	g-	n+d (d is R2)
Santa María Coatlán	round vowel	g-	mbi-
	round vowel	g-	mbe-
	round vowel	g-	mby-
	a	g-	ngo-
	a	g-	ngu-
	a	g-	ngw-
	C	w-	m-
	C	0-	m-
	C	palatalization (except before /i/)	(m)w-
	z, ș	palatalization and fortition of /z/ to /s/	(m)w- + ș
	R1, R2	fortition of R1	(m)w+R2
	V	w-	(m)w+R2
Santa Catarina Cuixtla	Round vowel	g-	mbi-
	Round vowel	g-	mbe-
	e, o	g-	ngo-
	C	0-	m-
	C [+coronal]	palatalization, fortition of /d/ to /t/	m-
	d, ș	Palatalization, fortition of /d/ to /t/	m+ș
	R1, R2	fortition of R1	m+R2
San Agustín Mixtepec	round vowel	g-	mbi-
	a	g-	ngo-
	a	g-	ngu-
	C	y-	mb-
	C	0-	mb-
	R1, R2	fortition of R1	mb+R2
San Bartolomé Loxicha	round vowel	g-	mbi-
	a	g-	ngo-
	a	g-	ngu-
	a	g-	ngw-
	C	0-	mb- ~ ngw-
	coronal consonant	palatalization	mb- ~ ngw-
	z	palatalization	mb- ~ ngw- + x

	a	w-	mb- ~ ngw- + R2
	R1, R2	fortition of R1	mb+R2
Tlacolulita	round vowel	k-	pi-
	y	k-	bi-
	y	k-	p-
	C	0-	bi-
	C	i-	bi-
	C	i-	be-
	C	i-	w-
	j	ts-	w-
	a	k-	ko-
	R1, R2	0-	w-

Table 14: Known patterns of segmental morphology other than San Baltazar Loxicha

6. Conclusions

The differences between inflectional patterns that constitute verb classes in the varieties that have been considered here reveal several vertical isoglosses that divide eastern and western zones relative to one another.

A notable divide exists just to the west of Cisyautepecan, though there is also diffusion across this imaginary border. The *ts*- prefix is retained to the east of this line and lost to the west. The *i*- or *y*- prefix mostly occurs to the east of this line but bleeds westward into San Agustin Mixtepec. The prenasalization of certain TAM markers emanates eastward from Chatino and stops at the Cisyautepecan border, only diffusing into the Xanica variety. One possible explanation for the prenasalization in Tlacolulita is if it used to be in closer contact with Miahuatec and Amatec and a Cisautepecan migration interrupted this relationship.

Within Cisyautepecan itself we find a much reduced system in the easternmost varieties and greater complexity in the system of inflectional classes to the west. It would be hard to simply borrow this complexity so it is probably the case that the easternmost varieties have simplified the system whereas other varieties conserve complexity. Eastern varieties of Cisyautepecan are where we see Kaufman's classification disintegrate to the greatest extent.

In the non-Cisyautepecan area eight varieties of four languages were covered. Smith Stark (2007) proposed a genetic relationship between Coatec and Amatec based on shared sound changes. Nevertheless there are

similarities between Coatec and Miahuatec verb classification systems. It was proposed that tonal similarities in the verbal morphology of San Baltazar and San Bartolomé Loxicha could be due to a Coatec substrate in the Miahuatec spoken in San Bartolomé, yet the palatalization found in class B and Ch verbs in Coatec and in both San Bartolomé Loxicha and Santa Catarina Cuixtla hint at the possibility of genetic inheritance.

Northern varieties of Miahuatec historically spoken in and around Miahuatlán were proposed as the source of the levelling which promotes the bilabial completive marker at the expense of the labiovelar marker on consonant-stems. This extension of the bilabial marker can be understood as a recent change affecting Amatec and Miahuatec, and to a lesser degree Santa María Coatlán.

The history and sociolinguistics of this region are surely vast in all the details unknown to this author, but certain political and historical factors do correlate with zones of diffusion. The Xanica variety of Cisyautepecan shows diffusion of nasalized TAM prefixes from Miahuatec, and different communities that speak this variety are now or historically have been politically subject to Miahuatec speaking towns. Miahuatec today covers a large area stretching from Miahuatlán down to the coast, but did not arrive in the Loxicha region until the colonial period. Loanword evidence (Beam de Azcona 2012) indicates that the Coatecs were in this area first. San Baltazar and San Bartolomé Loxicha are hilltop towns that are visible from one another but the former speaks Coatec and the latter Miahuatec. The verb class systems of these two varieties are more similar to each other than to any of the other varieties covered in this paper, and the one-time prestige of Coatec in the region may be a factor in this, as could be a hypothetical shift of some speakers from Coatec to Miahuatec. Just as the Miahuatecs were late arrivals in the Loxichas the Cisyautepecans may have been late arrivals in the Southern Sierra. A colonial painting from San Andrés Mixtepec (Oudijk & Dummond 2008) talks about arriving in Miahuatec-speaking Cuixtla, a first base on the migration from the Valley of Oaxaca, before ending up in the Mixtepec region. Mixtepec and Xanica appear, of all the Cisyautepecan varieties, to be the most similar to Miahuatec, though with different features in common.

Across the Southern Zapotec area, the trend is to regularize the completive morphology, sometimes on consonant-stems only, sometimes across the board. Sometimes in favor of one marker, sometimes in favor of another. The most irregular features of the historical morphology also erode away. Palatalization, ablaut, replacive morphology, all of these are lacking in certain varieties, and generally speaking there is more leveling in the center and more retention in the peripheries, a classic pattern of dialectology. The westernmost Southern Zapotec language, Coatec, has developed a more complex system than that reconstructed for Proto-Zapotec, much of it built on the residue of fossilized patterns made opaque by phonological changes. Conversely, the easternmost variety of Cisyautepecan, Quiegolani, has a greatly simplified system compared to Proto-Zapotec.

These verb classes, like all of language, encode the histories of their speech communities. The story of how inflectional morphology complexifies and simplifies runs parallel in real time to the stories of different groups of people who leave their homes as part of a military expansion, or flee the former capital during a political and economic collapse. Having left, they make their way into new territory, land still or until recently inhabited by others, with whom they form new relationships, for better or worse. The growing body of comparative linguistic evidence is one tool that can help us interpret that story –both of those stories, the linguistic one and the human one.

Acknowledgements

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Appendix

	'scare'	'see'	'toss'	'grab'	'do'	'eat'
Future	s-chêb	s-nâ	s-gò	sèn	s-ùn	s-à
Irrealis	nh-chêb	nh-nâ	nh-gò	nh-zèn	ng-ùn	ng-w-à
Infinitive	w-chêb	nâ	gò	zèn	y-ùn	y-à
Habitual	n-chêb	**nyâ**	n-gò	nd-**zyèn**	nd-ùn	nd-à
Potential	w-chêb	**ñâ**	kǒ	**zyěn**	g-ǔn	w-ǎ
M Comp.	w-chêb	nâ	**lǒ**	**xěn**	y-ǔn	**dǎ**
Completive	m-chêb	nhw-nâ	ngw-**lô**	nhw-**xên**	**mbi'n**	ngw-**dà**
Imperative	b-chêb	w-nâ	w-**lô**	w-**xên**	**bi'n**	w-**dà**

Table 15: Selected verb conjugations in Coatec Zapotec, with stem alternations in bold