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Zenzontepec Chatino Aspect Morphology
and Zapotecan Verb Classes

by

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Report

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ABSTRACT

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This report presents a classification of the verbs of Zenzontepec Chatino (ZEN) based on which allomorphs of the aspect markers they select. The selection of aspect markers is determined by the semantics of the verbs, derivational morphology, and phonological factors. Before now, aspect marking in Chatino has proven opaque because previously documented varieties have undergone considerable phonological and morphological reduction, wiping out some of the earlier patterns. ZEN, on the other hand, is conservative in this respect. There are three verb classes, each with a few sub-classes, and they line up well with the verb classes that Kaufman (1993) has proposed for Proto-Zapotec. In addition to describing the verb class system for ZEN in synchronic terms, this study provides insight into the Proto-Zapotecan verb class system and documents in Chatino several derivational morphemes reconstructed for Proto-Zapotec, proving that they are of Proto-Zapotecan vintage.

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LIST OF ABBREVIATIONS

LANGUAGES

ATP	Atepec Zapotec
BET	Zapotec of San Melchor Betaza
CHI	Zapotec of San Baltazar Chichicapan
COA	Coateco Zapotec
IZ	Isthmus Zapotec
PAN	Panixtlahuaca Chatino
POM	Proto–Otomanguean
PZN	Proto–Zapotecan
PZP	Proto–Zapotec
SJQ	San Juan Quiahije Chatino
SMT	Chatino of Santa María Tlapanalquiahuitl
TAT	Chatino of Tataltepec de Valdés
YAI	Yaitepec Chatino
ZAC	Chatino of San Marcos Zacatepec
ZEN	Chatino of Santa Cruz Zanaontepec

GRAMMATICAL CATEGORIES

COMP	Completive aspect
HAB	Habitual aspect
POT	Potential aspect/mood
PROG	Progressive aspect

1. Introduction

There have been various studies carried out on Zapotec languages in which their verbs are classified based on the allomorphs of aspect markers that they select, including Córdova (1578), Bartholomew (1983), Kaufman (1987), Stubblefield and Hollenbach (1991) Pickett et al. (1998), Long and Butler (2000), Smith Stark (2002), Beam de Azcona (2004), and López and Newberg (2005). However, there is much less work on Chatino, which is coordinate with Zapotec in the Zapotecan language family of the Oto-Manguean linguistic stock of central and southern Mexico. Previous work on Chatino, such as Rasch (2002) and Pride (2004), has so far failed to uncover any verb class system based on aspect morphology with sufficient regularity for predictive power. Therefore, it has been necessary to specify for every verb its form in each of the four principal aspects: potential (POT), progressive (PROG), habitual (HAB) and completive (COMP). This paper will present the first extensive verb classification in a Chatino language – the phonologically and morphologically conservative Chatino of Santa Cruz Zenzontepec (ZEN).

The classification system proposed here is based on Kaufman's (1987) classification of Zapotec verbs and his reconstructed aspect markers for Proto-Zapotec. Because Zenzontepec Chatino is conservative in preserving the vowels of non-prominent syllables, including those of the aspect markers, comparison with Zapotec is facilitated. In order to achieve a better understanding of verb classes at the deeper Proto-Zapotecan level, this classification of ZEN verbs will be connected to similar work on Zapotec, particularly work that is also based on Kaufman's, such as Smith Stark (2002) and Beam de Azcona (2004), who classify

the verbs of Chichicapan Central¹ Zapotec (CHI) and Coateco Southern Zapotec (COA), respectively.

Section 2 will give some background information on Chatino, and Section 3 provides a brief description of the phonological system of ZEN. Section 4 summarizes the work that has been done on verb classes in Zapotec that is most relevant for the current study, focusing on Kaufman (1987). Section 5 will review the limited but similar previous work on Chatino. And section 6 presents the ZEN verb classification in detail with connections to the work on Zapotec where insightful. Section 7 summarizes the classification, and preliminary generalizations about the Proto-Zapotecen verb class system are given, along with a description of parts of its development in Chatino.

A significant result of this study is that the Zapotec verb class system of Kaufman's largely applies to Chatino and can therefore be extended back further in time to include the entire Zapotecan language family. Although the verb class system has become more diversified within most Zapotecan languages through the emergence of new sub-classes, we can see that the system as a whole has remained largely intact and stable through time. Several sets of verbs show remarkable stability in various branches of Zapotecan languages as regards their class membership. Additionally, several derivational morphemes related to valence and a progressive aspect marker **kkay-* that Kaufman reconstructs for Proto-Zapotec (PZP) are here documented in Chatino, establishing that they are of Proto-Zapotecan (PZN) vintage.

¹ I adopt the terminology for the branches of the Zapotec language family put forth by Kaufman (1987), which was summarized, modified, and placed within the context of the rest of the history of classification of the Zapotec languages by Smith Stark (2007).

In addition to providing a concise description of Zenzontepec Chatino verbal aspect morphology and a clearer picture of Proto-Zapotecan verb classes, it is hoped that this work will shed light on the aspectual systems of more innovative varieties of Chatino that have so far proven to be opaque.

2. Background

Chatino is a shallow language family of several emergent languages spoken in the southern part of the state of Oaxaca, Mexico. Most Chatino communities are located in the district of Juquila except for those in the *municipio* of Santa Cruz Zenzontepec, which is in the district of Sola de Vega. The internal diversification of Chatino has not received as much attention as that of Zapotec, but Franz Boas (1913) recognized what he called three distinct dialect areas: Zenzontepec, Tataltepec, and a third area that contains all of the communities to the south and east of those. The Ethnologue (Gordon, 2005) lists six languages: Zenzontepec, Tataltepec, Eastern Highland, Western Highland, Zacatepec and Nopala. Ongoing work within the Chatino Language Documentation Project at the University of Texas at Austin currently agrees with Boas' three divisions: Zenzontepec, Tataltepec, and what we call *Eastern Chatino*, which includes Zacatepec, the eastern and western highland areas, and Nopala (Woodbury, 2008). ZEN is the variety that is the least mutually intelligible with the rest. It has been politically isolated from the greater Chatino region and it is the most geographically remote. The area where ZEN is spoken is relatively large (including 25–30 villages and many *ranchos*, or hamlets), and the degree of linguistic uniformity there is remarkable for rural

mountainous Oaxaca. This suggests a more recent expansion of the variety, perhaps into areas that were formerly occupied by neighboring Mixtec or Papabuco Zapotec speakers. Nevertheless, the total area where the language is spoken is now shrinking as communities, especially on the periphery, have shifted or are shifting to Spanish.

Historically, Zapotecan languages had both monosyllabic and disyllabic roots (Kaufman, 1993). A common tendency in certain varieties of Zapotec and Chatino has been to undergo monosyllabification of roots through the loss of unemphasized vowels – in some varieties only in certain environments, and in others unconditionally. In Chatino, as in most Oto-Manguean languages, emphasis falls on the final syllable of a root, whereas in Zapotec, the emphasis falls on the first syllable. Aspect markers in Zapotecan are mostly single syllable proclitics or prefixes, and in many Zapotecan languages these syllables have been reduced. ZEN and the Chatino variety of San Marcos Zacatepec (ZAC), published and documented in H. Cruz and Woodbury (2006), are the two most syllabically conservative varieties, largely preserving the aspect marker vowels disyllabicity in the historically disyllabic roots. The variety of Tataltepec de Valdez (Pride and Pride, 1970) is moderately syllabically conservative with respect to roots but drastically reduced with respect to aspect vowels. San Juan Quiahije Chatino and Teotepec Chatino are completely monosyllabified in both respects. As this study will show, the syllabic conservatism of ZEN has allowed its aspect marking system to remain largely intact, which makes comparison with Zapotec more transparent.

The only published descriptive linguistic works on ZEN Chatino are a paper on the pronominal system by Carleton and Waksler (2000) and Upson and Longacre's study of Proto-Chatino phonology (1965). Weiss (1998) is a valuable study of the ethnomedicine of the Chatinos of Zenzontepec and Tataltepec.² In order to provide the reader with a basis for how the language sounds, and since there is a considerable degree of morphophonemics in the inflection of verbal aspect, I turn now to a brief phonological sketch of the language.

3. Phonological sketch of ZEN Chatino

The consonantal phonemes³ of Zenzontepec are presented below in Table 1.

Table 1. Zenzontepec Chatino consonant phonemes

	bilabial		apico- dental	lamino- alveolar	alveo- palatal	palatalized velar	velar	labio- velar	glottal
plosive	p	b	t	ty		ky	k	kw	ʔ
affricate			tz		ch				
fricative			s		x				j
nasal	m		n	ny					
tap			r						
lateral			l	ly					
glide					y			w	

The consonantal inventory proposed here for ZEN differs from Upson and Longacre's (1965) analysis in several ways. First of all, they do not consider bilabial consonants part of the phonemic inventory. Although I would not

² There is some Chatino lexical material in Weiss' work, but the transcriptions are inconsistent and not very helpful for linguistic analysis.

³ I use the practical orthography of the Project for the Documentation of the Languages of Mesoamerica (PDLMA).

reconstruct any labial consonants for Proto–Chatino other than **w* and **kw*, I include now as phonemes in ZEN the bilabial stops /p/, /b/ and /m/. They do occur, albeit rarely, in native words, but they are more common in loans from Spanish. The labio–velar glide /w/ is pronounced as a bilabial fricative [β] before [i] and as a glide [w] elsewhere. The bilabial plosive /b/ is nearly always pronounced [β], and it is neutralized with /w/ before [i]. However, pairs such as the following illustrate the contrast between /w/ and /b/:

- (1) a. *nt-u-baʔa* 's/he blows it' [nduβaʔa]
 b. *nt-u-wana* 's/he steals it' [nduwana]

The /b/ in the transitive verb in (1) is of unclear origin, but the stem appears to be related to what Kaufman (1993) has reconstructed as **laʔa*, 'to blow' (intransitive) for Proto–Zapotec.⁴ ZEN has a cognate intransitive (but active) verb stem *-u-laʔā*, which means 'to play music', something done often by blowing on an instrument.⁵ The verb in (1), 'to steal it' is related to the ZEN word *kwanā*, 'thief'. Other than /b/, there are no voiced obstruent phonemes in the language. However, voiceless obstruents are phonetically voiced following nasal consonants. For this paper I only write them as voiceless, sticking strictly to a phonemic orthography. The tap [ɾ] occurs mostly in loans, but is an allophone of /t/ in rapid speech.⁶

⁴ Proto–Zapotec(an) reconstructions henceforth in this work are from Kaufman (1993).

⁵ This verb *-u-laʔā*, 'to play music' is not the same as *-u/ā*, 'to sing', which is the reflex of Proto–Zapotecan **o:ʔla*, 'to sing'.

⁶ There are a couple of verbs that are always pronounced with the tap, even in slow speech. It is not clear whether these originally contained a /t/ that has been reanalyzed as a tap or if they fall into the domain of sound symbolism: *kurá*, 's/he will hit it'.

Upson and Longacre include two phonemes h^{ν} and h^{ω} . Here, these are treated as clusters, which I write jy and jw , because this reduces the consonantal inventory while providing symmetry to the canonical syllable structure. This is so because the only consonant clusters found in native non-sound-symbolic words are the following:

- glottal (/ʔ/ or /j/) followed by a sonorant consonant (/y/, /w/, /n/, /ny/, /m/, /l/, or /ly/)
- /n/ followed by a non-glottal obstruent

If a glottal precedes another consonant in medial position, it syllabifies in the onset of the second syllable along with that consonant. Additionally, in ZEN there is trans-laryngeal harmony, so in V7V or VjV sequences, the vowels are identical.

The vowel phonemes of Zenzontepec Chatino include the five oral vowels /i, e, a, o, u/. Vowels can be contrastively nasalized, but the height contrast for i/ϵ and $o/\varnothing$ is neutralized in nasalization.⁷

Basic Vowels	Nasalized Vowels
<div style="border: 1px solid black; padding: 10px; text-align: center;"> <div style="display: flex; justify-content: space-between;"> iu</div> <div style="display: flex; justify-content: space-between; margin-top: 20px;"> eo</div> <div style="margin-top: 20px;">a</div> </div>	<div style="border: 1px solid black; padding: 10px; text-align: center;"> <div style="display: flex; justify-content: space-between;"> ɛ̃ø̃</div> <div style="margin-top: 20px;">ã</div> </div>

The phonetic realization of the front and back nasalized vowels is dependent upon tone. They are realized as higher vowels [ĩ] or [ũ] with high tone, and mid

⁷ Nasalized vowels are written with a hook underneath them.

vowels [ɛ] and [ɔ] with mid or unmarked tone. The oral vowel /o/ and the nasalized vowels only occur phonemically in root-final (prominent) syllables. The glottal stop is a consonant whose distribution is unique in that it is the only consonant that lexically occurs in coda position.

Vowel length is contrastive in a very limited set of environments due to some probably relatively recent historical changes in the language. Historically disyllabic roots of the shape $C_1V_1C_2V_2$, in which V_1 was a high vowel and C_2 was a coronal resonant consonant, /n/ or /l/, became monosyllabic words of the shape [h C_2V_2] in most cases.⁸ These words, and a handful of other monosyllabic words that were historically disyllabic, have an extra short (monomoraic) vowel. Roots that were historically monosyllabic (and still are) have longer vowels. Therefore, words were previously strictly bimoraic regardless of whether they had one or two syllables. The fact that monosyllabification is not mora preserving in ZEN has led to a limited but real distinction of vowel length. In (2) there are two minimal pairs followed by a near minimal pair:

- (2) a. *kee* 'rock' (PZN **keyek*)
 *ke*¹ 'head' (PZN **yekkek*)
- b. *jlyaaʔ* 'bitter' (PZP **llaʔ*)
 jlyaʔ 'cold' (PZN **sillaʔ*)

⁸ Upson and Longacre (1965) pointed out this change but considered only /i/ to have been in the V_1 position. Interestingly, data gathered by the present author in Santa María Tlapanalquiahuitl (SMT), a village in the south-western part of the ZEN area, shows that this change has gone further there, and some of the words that appeared to be exceptions to the rule in ZEN have been monosyllabified in SMT: 'cactus prickle' is *sulu* in most of the ZEN area but *jlu* in SMT.

- c. *jnyaq* 'spicy'
 jnya 'griddle' (PZN **tyi7la*)

In (2) Kaufman's Proto-Zapotec(an) reconstructions are given, showing how the ZEN bimoraic monosyllable (written as a double vowel) is the reflex of a monosyllabic root, whereas the short monosyllable is the reflex of a historically disyllabic root. These are true minimal pairs, for even though there is no orthographic marking for tone on them, they all have the same tonal pattern – they have the "unmarked" tone. The final elements to be briefly discussed in this phonological summary are the tones, to which we turn now.

Chatino, like nearly all Oto-Manguean languages, has contrastive tone. E. Cruz and Woodbury (2006) have found that San Juan Quiahije Chatino (SJQ) has ten contrastive lexical tones, and Villard (2008) analyzes ZAC with 9 lexical tones whose domain is the word, regardless of whether or not the root is monosyllabic or disyllabic. In contrast, the domain of tone in ZEN is the mora, and a mora may be specified for high tone /H/, mid tone /M/, or it may be unmarked for tone /Ø/, as we saw in the examples in (2). The following is a near minimal triplet representing the three tonal contrasts on monomoraic words, two of which are provided with reconstructions illustrating their original disyllabic shape:

(3)	a.	<i>jlyə7</i>	'cold'	(PZN * <i>silla7</i> , 'cold')	/Ø/
	b.	<i>jlyā</i>	'morning'	(PZN * <i>ssila</i> , 'morning')	/M/
	c.	<i>jlyá</i>	'fast'		/H/

In example (3), (a) is *unmarked* for tone lexically /Ø/ and therefore orthographically; (b) is marked for mid tone /M/, which is represented by a

macron over the vowel; and (c) is marked with a high tone /H/, represented by an acute accent over the vowel.

Of the three lexical tones, /Ø/ is the most common, and unless it follows /H/ it is phonetically realized as a mid–falling pitch. A string of words unmarked for tone will begin on a pitch in the middle of the speaker's normal range and drift downwards, where it will remain until there is either a pause that triggers pitch reset or a /M/ or /H/ to bring the pitch back up. This is an intonational pattern of declination. /H/ spreads rightward through subsequent words that have unmarked tone, and this phenomenon provides an empirical method for identifying both the high and the unmarked tones.⁹ The mid tone is level, lower in pitch than /H/, higher in pitch than /Ø/ (on a mono–moraic word in isolation), and does not spread. A rightward spreading /H/ will cause a following /H/ to downstep in pitch to the mid range. The downstepped high tone is still /H/ because it will spread rightwards if unblocked. A spreading /H/ will also downstep a /M/ to the mid–low or low pitch range. This happens word–internally in addition to across word boundaries, so a word like *súkwā*, 'food', that is marked with the tone sequence /HM/ will be realized phonetically as [HL], where L is a phonetic low pitch.

Bimoraic words, either mono– or disyllabic, can be specified for two lexical tones, one for each mora. However, not all of the nine imaginable tone

⁹ Daly and Lyman (2007) show that in Peñoles Mixtec high tone spreading occurs in certain environments. They also show that "underspecified" tone is transparent to the rightward movement of a floating L tone in a way quite similar to how unmarked tone is transparent to spreading /H/ tone in ZEN. In Peñoles however, the unmarked tone is in the mid pitch range, whereas in ZEN it is phonetically falling or low.

combinations over two morae are found, and the main lexical patterns are as follows, illustrated on disyllabic words:

(4)	ZEN	GLOSS	TONE
a.	<i>ntyukwa</i>	'second' (ordinal number)	/Ø/ [ML]
b.	<i>ntyukwā</i>	'to be in a sitting position'	/ØM/ [MM]
c.	<i>ntyūkwá</i>	'it goes out (habitual)'	/MH/ [MH]
d.	<i>túkwa</i>	'two'	/HØ/ [HH]
e.	<i>tyékwą</i>	'needle'	/HM/ [HL]

Tone is important in aspect marking in as far as the tone of a verb stem can change depending on which aspect it is inflected for. However, unlike in some varieties of Eastern Chatino, aspect is never coded solely by tone in ZEN. Many ZEN verbs have the same tone in all four aspects. However, there are several patterns by which tone varies across aspects, but in those cases tone is always the same between the potential and habitual and between the progressive and completive aspects. The tone variation is independent of the Zapotecan verb class system presented here for ZEN because each tonal variation pattern is found in nearly every sub-class of ZEN verbs. Therefore, the tone variation across aspects will be summarized briefly in the conclusion but reserved for full discussion in a later work specifically devoted to tone.

4. Zapotec verb classes

Kaufman (1987) has proposed four verb classes for Zapotec based on the aspect markers that they take and labels them classes A, B, C and D. He reconstructs two allomorphs of the potential marker for proto-Zapotec, **ki-* and **k-*, and two allomorphs for the completive marker, **kwe-* and **ko-*. Although

these allomorphs probably descend from one form in each of the pairs, they were separate at the level of Proto-Zapotec, and probably at the level of Proto-Zapotecan, because they are separate in Chatino as well. They were already diverged enough to be considered separate. Classes A and B share the potential marker **ki-* and differ in that class A has **kwe-* to mark the completive while class B has **ko-*. Classes C and D both take the vowelless **k-* potential marker, separating them from A and B. Classes C and D take the **ko-* completive marker like class B. Kaufman's (1987: 73) classification is given below in Table 2.

Table 2. Kaufman's (1987) Zapotec verb classes

	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

Class A contains mostly transitive stems that begin with the vowels /u/ or /e/. Class B stems are mostly intransitive and begin with consonants. Class C are mostly intransitive and begin with either vowels or consonants. Class D verbs are the same as class C except they have stem-initial *replacive* consonant alternations, whereby a verb stem begins in one consonant in the completive and a different or no consonant in the potential and habitual.

The class D replacive consonant phenomenon is a key part of Kaufman's Zapotec verb analysis that explains what otherwise could appear as greater

irregularity in the aspect marking. The following verb 'to pay' (tr.) from Betaza (Villa Alta) Northern Zapotec (BET) inflected for three aspects will show a class D pattern with replacives.¹⁰ The replacive consonants can be seen as *g* ~ *ɣ* in the potential and habitual, and *d* in the completive. The reflex of PZP **k* in BET is /*g*/, a lenis velar stop. The BET class D potential marker *g*- fuses with stem-initial /*g*/ to yield the fortis [k] that we see in the potential form. The stem-initial /*g*/ appears as a [ɣ] in the habitual because in Northern Zapotec **g* > *ɣ* before front vowels. This verb would thus be classified as a class D (*g* --> *d*) verb in BET. The (*g* --> *d*) means that in the potential and habitual the stem begins with /*g*/ and the completive stem begins with /*d*/.

- (5) a. /*g*-*g*.izxgh/¹¹
 POT-REPL.pay
kizxgh [kiʒɤ] 's/he is going to pay it'
- b. /*dz*-*g*.izxgh/
 HAB-REPL.pay
dzyizxgh [dzyiʒɤ] 's/he pays it'
- c. /*b* - *d*.izxgh/
 COMP-REPL.pay
bdizxgh [bdiʒɤ] 's/he paid it'

¹⁰ This data was collected by my colleague Amador Teodocio Olivares, a native speaker of Betaza Zapotec, and me as part of ongoing research on his language. Betaza is a fairly monosyllabified variety of Zapotec with complicated morphophonological rules, the full details of which are not within the scope of this paper.

¹¹ /*zx*/ is a retroflex lenis fricative, /*gh*/ is a lenis uvular fricative, and /*dz*/ represents a lenis alveolar affricate.

Replacive consonants like those shown in example (5) for BET have been documented (even if not treated as such) in other Northern varieties (Bartholemew, 1983; Lopez and Newberg, 2005) and most of the other major branches of Zapotec, including Western Zapotec (Mark Sicoli, 2008), Central Zapotec (Smith Stark, 2002; Pickett et al., 1998), and Southern Zapotec (Beam de Azcona, 2004).¹² However, there is no record of these replacive consonants in any Chatino language, and Zenzontepec Chatino does not have them. Therefore, this phenomenon was either (a) an innovation in Proto-Zapotec after the Chatino/Zapotec split, or (b) it was found in Proto-Zapotecan and lost in Chatino due to leveling after the split with Zapotec but before the breakup of the modern Chatino languages. The lack of replacive consonants means there is no equivalent to class D in Chatino.

The ZEN transitive verb *-aku*, 'to eat (it)' is cognate with Kaufman's reconstructed PZP **aku*. Kaufman reconstructs a second verb meaning 'to eat' that is **awo*, and both of these verbs were class D ($\emptyset \rightarrow t$) verbs in PZP. In most modern varieties of Zapotec this replacive pattern is ($\emptyset \rightarrow d$), which means that in the POT and HAB aspects there is no replacive consonant, where in the COMP there is a stem-initial /d/. The following comparison illustrates the lack of class D replacives in Chatino where they are found in three branches of Zapotec in the verb meaning 'to eat it'.

¹² Aside from the extinct Solteco, the other main branch of Zapotec is Papabuco. In Speck (1984), one can see the class D replacive phenomenon in Texmelucan Papabuco as well, and interestingly the replacive consonants usually unique to the completive aspect are found in ALL aspects in the 1st person.

Table 3. Zapotecan cognate verbs 'to eat it'

	POT	HAB	COMP
ZEN	k-aku	nt-aku	y-aku
CHI	g-âwu	r-awu	gu-d.awu
BET	g-aw	dz-aw	b-d.aw
COA	w-ă	nd-à	ngw-d.à

The completive marker γ - in the ZEN occurs on class C verbs in ZEN, many of which are not attested as class D verbs or as d -initial verbs in Zapotec, and it is not cognate with the replative /d/ consonant in the Zapotec forms given.

Another key element of Kaufman's verb classification is what he calls the *vowel hierarchy*. There are many Zapotecan verb stems that begin with vowels, and most of the aspect markers end in vowels. However, most Zapotecan languages do not tolerate vowel hiatus within words. Therefore, when two vowels come into contact, one is deleted, and the one that goes is determined by a vowel hierarchy. Smith Stark (2002: 172) cites Kaufman's (1987) vowel hierarchy, which is shown below in (6) ("»" = 'dominates'):

(6) e » u/o » a » i

When two vowels come into contact, the leftmost and strongest on the hierarchy will delete a weaker vowel, where /i/ is the weakest. In order to make sense of aspect morphology in Chatino, it is necessary to first establish a similar vowel hierarchy (see (10)).

A crucial distinction between Chatino and Zapotec languages is that the latter have a contrast between *lenis* and *fortis* consonants, whereas the former

do not. Fortis consonants are almost always voiceless and pronounced with more force than lenis consonants, which are usually voiced but sometimes realized as voiceless. Swadesh (1947) reconstructed these pairs as geminate versus simple consonants, and Kaufman (1993) does the same. A salient feature we see in verb inflection from all branches of Zapotec is *fortition* of an initial lenis consonant of a verb stem as a marker of potential aspect. Smith Stark (2002) shows that this occurs in class C and D verbs in Chichicapan Zapotec, and Beam de Azcona (2004: 292) points out that fortition in Southern Zapotec (which occurs in class D only there) is the result of the historically present potential marker **k-* fusing with the initial lenis consonant to produce its fortis counterpart. In Chatino, however, the Proto-Zapotecan geminate consonants merged with their simple counterparts.¹³ This lack of distinction between lenis and fortis (or simple and geminate) consonants in Chatino means that we should not expect to see fortition mark potential aspect as it does in class C and/or D verbs in Zapotec, and in fact we see no correlate.

The details of Zapotec verb morpho(phono)logy are enlightening for similar work in Chatino for several reasons. First of all, strong parallels between Zapotec and Chatino verbal morphology emerge, especially when comparing syllabically conservative varieties of both. Secondly, since it largely holds for Chatino, the verb class system by Kaufman can be extended further back in time to the Proto-Zapotecan stage. Next, comparison across the families will allow each to shed light on the other, not only historically, but also in some of the

¹³ Chatino preserves the labialized velar /kw/ as the reflex of both the simple and geminate labiovelars **kw* and **kkw* of Proto-Zapotecan. In most varieties of Zapotec, the former becomes /b/, and the latter becomes /kw/ word-initially and /p/ elsewhere.

synchronic details. Therefore, throughout the description of the classification of ZEN verbs, reference will be made to Zapotec verb classifications which shed light on particular details of the ZEN data and vice versa. And finally, one must take advantage of the (relatively) extensive work on verbal aspect marking that exists in Zapotec, because so little is yet available for Chatino.

5. Aspect marking in Chatino languages

In spite of the lack of a class D and the lack of fortition as an allomorph of potential aspect, the classification of Chatino verbs has so far proved to be quite complicated, and in fact has not previously been done. The only published, in-depth grammatical descriptions of Chatino languages are Rasch's (2002) description of the morpho-syntax of Yaitepec Chatino (YAI) and K. Pride's (2004) short grammar in the Panixtlahuaca Chatino (PAN) dictionary (Pride and Pride, 2004). Rasch (2002: 113) says of Yaitepec Chatino,

A given verb root selects an allomorph of each aspectual prefix from among several possibilities. This selection appears to be largely arbitrary, but is partially restricted by the phonological shape of the root.

The number of verb entries in Pride and Pride's dictionary is extensive, but K. Pride (2004) says that the aspect markers are only partly identifiable in PAN, and the morphophonology of aspect marking is so abstract that it is necessary to list the four basic forms for each verb in its lexical entry. In addition to the segmental abstractness of aspect markers, these two varieties also have relatively complex tonal differences between aspects, although the tone is always the same between the potential and habitual. In ZEN, tone in

aspect is less complicated than in Yaitepec and Panixtlahuaca, but more complicated than in Zapotec.¹⁴

Why should aspect marking in Chatino be so complicated? A few observations may be stated at this point. YAI and PAN Chatino are described as largely, if not completely, monosyllabified. As mentioned above, where in Zapotec it is vowels of root-final syllables that are lost when monosyllabification occurs, in Chatino it is the vowels of root-initial syllables that go, leaving initial consonant clusters in roots. Furthermore, neither YAI nor PAN preserves any aspect marker vowels. As a consequence of this, further consonant clusters are created which then simplify, leaving at best only traces of the aspect prefix's consonants.

The result of monosyllabification is that in some varieties of Chatino, the systematicity to aspect marking has been eroded and obscured. In these varieties, tone ends up carrying a higher functional load, and it is often the only distinction between two aspects, something we never see in ZEN. As already noted, ZEN has lost penultimate root vowels in only a few cases, and it has no restriction on antepenultimate (aspect) vowels, and ZAC (Eastern) is similarly syllabically conservative. Therefore, a disyllabic verb root inflected for aspect may be trisyllabic in ZEN and ZAC. Since the aspect markers are intact, they show clearer relationships with conservative varieties of Zapotec, and offer hope for uncovering the origins of the system, which may help shed light on the monosyllabic varieties. With this, we now turn to aspect marking on ZEN verbs.

¹⁴ The only association so far made between aspect markers and tone in Zapotec is that often the potential aspect marker carries a high tone (Beam de Azcona, 2004; Smith Stark, 2002, M. Sicoli, 2008).

6. Zenzontepec Chatino aspect marking

The surface forms of the aspect markers of Zenzontepec Chatino are listed below. Much of the allomorphy will be explained morphophonologically, and the rest will define the main verb classes.

Table 4. Zenzontepec aspect markers

Potential	<i>ki-</i> , <i>k-</i> , [lam]-, $\emptyset$
Progressive	<i>n-te-</i> , <i>n-tey-</i> , <i>nch-</i>
Habitual	<i>nti-</i> , <i>n+[lam]-</i> , <i>n-</i> , <i>nch-</i>
Completive	<i>nku-</i> , <i>nka-</i> , <i>nkwi-</i> , <i>nkay-</i> , <i>y-</i>

The notation [lam]- stands for *laminalization*, which is a pan-Chatino phenomenon whereby apical-alveolars /t, n, l/ became (or become) lamino-alveolars /ty, ny, ly/ when preceded by the vowel /i/. The laminals are now phonemicized in all varieties of modern Chatino. Furthermore, laminalization is still an active process in ZEN, because coronals that begin verb stems become laminalized when inflected with aspect markers that end in the vowel /i/.

As Table 4 shows, the aspect marker in ZEN with the most allomorphy is the completive. However, for several reasons, the ZEN verbs will be initially classified by their potential markers and then broken into subclasses based on their completive marking. First of all, the two most common potential markers in ZEN, *ki-* and *k-*, are identical to those reconstructed by Kaufman (1987) for Proto-Zapotec, and his classification of Zapotec verbs begins with the potential. This will facilitate comparative work between Chatino and Zapotec, representing

the current system in a way that makes it easier to trace its development. Secondly, when a dictionary is made for Zenzontepec, the citation form of verbs will be the potential because it often gives the most immediate view of which vowel a vowel-initial stem begins with. Another reason is that the potential form is the most widespread, because in addition to expressing potential mood, it is used in imperatives, many negated clauses, and as a dependent verb complement to an auxiliary of motion. Next, Pride and Pride (2004) list verbs principally by their potential form in their PAN dictionary. Finally, in cases where tone varies across the aspects of a verb, the potential and habitual are almost always more tonally basic than the completive and progressive in ZEN.

The Chatino completive markers *nkwi-* and *nku-* are the expected reflexes of the Proto-Zapotecan completive forms **kwe-* and **ko-* that Kaufman reconstructs for Zapotec. In Chatino, a nasal /n/ has fused to the beginning of all main aspect markers except for the potential markers and one allomorph of the completive, *ɣ-*.¹⁵ Kaufman (1993) posits that the prefixed nasal comes from an inherited Proto-Otomanguean adverb **na*, 'now'.

In addition to the potential (**k-*, **ki-*) and completive (**kwe-*, **ko-*) markers already discussed, Kaufman (1987) also reconstructs the following aspect markers for Proto-Zapotec (PZP) that are pertinent to Chatino aspect morphology:

(7)	a.	<i>*tyi-</i>	Habitual
	b.	<i>*kkay-</i>	Progressive

¹⁵ This nasal freezing is seen also in Southern Zapotec, and may be an areal phenomenon.

The ZEN habitual marker *nti-* is the expected reflex of proto-Zapotecan habitual **tyi-*, after nasal accretion. Of the basic aspect markers in ZEN, the habitual is the one with the least allomorphy. In fact, **tyi-* has very stable and predictable reflexes across Zapotec and Chatino languages.¹⁶ The habitual variants *n+[lam]-*, *n-*, and *nch-* will be explained morphophonologically.

Kaufman's reconstructed progressive marker **kkay-* has reflexes across only *Central* Zapotec languages. He traces it to a Proto-Otomanguean (POM) progressive marker **kai* followed by a POM 'indefinite' marker **i* (1987). Since **kkay* is not attested in other branches of Zapotec, Smith Stark (p.c.) has suggested that it is an innovation in Central Zapotec and not reconstructable to Proto-Zapotec, let alone Proto-Zapotecan. However, the Chatino data show a likely cognate progressive marker: ZEN *nch-*, ZAC *nky-*, and Tataltepec (TAT) *ndy-* (Pride and Pride 1970), that would place this morpheme firmly in Proto-Zapotecan.¹⁷ All that is required to derive this form from **kkay* is the loss of the vowel /a/ and the standard Chatino nasal freezing on the (non-potential) aspect marker. In (8) are some examples of this morpheme in ZEN, ZAC and TAT.

¹⁶ The reflexes of PZP habitual **tyi-* are predictable to the extent that they nearly always reflect the reflex of the palatalized stop **ty* before the vowel [i] in a given language – with or without the vowel, depending on whether or not that variety preserves unemphasized pre-stem vowels. So, in Western Zapotec it is *r-*, Papabuco *r-/ri-*, Isthmus *ri-*, Chichicapan (Central) *r-*, Atepec (Northern) *ri-*, Coateco (Southern) *nd-*, and Villa Alta (Northern) *dz-* or *dx-* (Campbell, 2008).

¹⁷ In this environment, the Tataltepec correspondence to ZEN *nch-* and ZAC *nky-*, pronounced [ɲɔʒ] and [ɲgʲ] respectively, used to be phonemically /nty/, but since TAT roots are monosyllabified in many cases and aspect vowels are almost always lost, voiced obstruents have phonemicized in TAT, whereas they have not in ZEN or ZAC. Therefore, the TAT form is written with the voiced obstruent *dy*.

	ZEN	ZAC ¹⁸	TAT	GLOSS
(8) a.	<i>nch-ūlá</i>	<i>nky-ola³¹</i>	<i>ndy-ula</i>	's/he is dancing'
b.	<i>nch-ūná</i>	<i>nky-ona³¹</i>	<i>ndy-unā</i>	's/he is crying'
c.	<i>nch-ata</i>	<i>nky-ata¹³</i>	<i>ndy-atá</i>	's/he is bathing'
d.	<i>nch-aku</i>	<i>nky-ako¹³</i>	<i>ndy-aku</i>	's/he is eating it'
e.	<i>nch-akwē</i>	<i>nky-akwē³²</i>	—	's/he is vomiting'

This particular progressive marker is found only on class C verbs in ZEN. The following cognate sets illustrate the correspondence of /ch/ in ZEN to /ky/ in ZAC (Villard p.c.) and the other Eastern Chatino varieties of Yaitepec (YAI) (Rasch, 2002) and San Juan Quiahije (SJQ) (E. Cruz, 2008), which in turn all correspond to /ty/ in TAT (Pride and Pride, 1970).

	ZEN	ZAC	YAI	SJQ	TAT	GLOSS
(9) a.	<i>choō⁷</i>	<i>kyo⁷³²</i>	<i>kyo:7²³</i>	<i>kyo⁷²</i>	<i>tyoo⁷</i>	'century plant'
b.	<i>chaja</i>	<i>kyaja³</i>	<i>kyja³</i>	<i>kyja^{4D}</i>	<i>tyija</i>	'tortilla'
c.	<i>choo</i>	<i>kyo³</i>	<i>kyo:7³</i>	<i>kyo^{4F}</i>	<i>tyoo</i>	'rain'
d.	<i>chojo</i>	<i>kyojo²</i>	<i>kyjo¹²</i>	<i>kyjo⁴²</i>	<i>tyojo</i>	'squash'

These data support the cognate status of the progressive aspect markers in (8), and the *ky* found in the Eastern Chatino varieties is the most conservative.

The *y*- allomorph of the ZEN completive has no clear correlate in Zapotec but reconstructs to Proto-Chatino because it is found in at least ZEN and Eastern Chatino, although it must have emerged after the nasal freezing happened, because nasal freezing happened to all non-potential aspect markers. It may have arisen based on analogy with the /y/, which ultimately came from the POM **i* 'indefinite' marker (Kaufman 1987), that is part of in the **nky* progressive marker. The *nka*- completive marker of ZEN class A verbs is

¹⁸ The superscript numbers in the ZAC forms represent levels of tone, where 0 is the highest and 3 is the lowest (Villard, 2008).

also of Proto-Chatino vintage, as well as the class C completive *nkay-*. The latter freely alternates with *y-* in ZEN, and is likely a case of double marking of the two, as suggested by Tony Woodbury (p.c.).

The etymology of the principal ZEN progressive marker, *n-te-*, is not yet established, and the cognate progressive marker in ZAC is *nta-*. Since the vowel /e/ only occurs in prominent root syllables in ZAC, it is possible that the ZAC form *nta-* came from an earlier **nte-*. The third allomorph of the progressive aspect marker is *nte-y-*, which is in morpho-lexical alternation with *nch-*. It is not found in ZAC as far as we know, so is probably a ZEN innovation. It is likely based on the broader *n-te-* form.¹⁹

The ZEN vowel hierarchy that determines which vowel will surface when an aspect-final vowel and a stem-initial vowel are in hiatus is slightly different than that for Zapotec proposed by Kaufman (1987). One difference is that the vowel /i/ dominates the vowel /a/ in ZEN, whereas it is the reverse in Zapotec. This can be seen in almost all of the habitual forms of /a/ initial verbs and the potential forms of /a/ initial verbs that have the *ki-* allomorph. Another difference is that /o/ is separated from /u/ on the ZEN hierarchy and ranked beneath /i/.²⁰ The bottom rung is therefore shared by /a/ and /o/ in ZEN, which cannot be ranked with respect to one another because they happen to never occur in hiatus underlyingly. The hierarchy is as follows:

¹⁹ The *y* in the *nte-y-* progressive marker may derive from analogy on the *nkay-* completive marker. These markers (*nte-y-*, *nkay-*) only occur on vowel-initial verbs in class C, sub-class C2.

²⁰ Kaufman reconstructs both **o* and **u* for Proto-Zapotec, but they have merged in many varieties and in others their reflexes overlap and are not altogether clear.

(10) ZEN Vowel Hierarchy

e » u » i » a,o

There are, however, a few exceptions to the vowel hierarchy which will be pointed out as they come up along the way in this ZEN verb classification. The final classification of ZEN verbs based on aspect marking is shown in Table 5, and now each class and sub-class will be described in turn.

Table 5. Zenzontepec Chatino verb classes

Class	Class A		Class B			Class C	
sub-Class	Au, Ac	A2	Bc	Bt	By	C	C2
POT	<i>ki-</i>		<i>ki-</i>	[lam]	(<i>y -> ch</i>)	<i>k-</i>	
PROG	<i>n-te-</i>		<i>n-te-</i>		<i>n-te-</i>	<i>nch-</i>	<i>nte-y- ~ nch-</i>
HAB	<i>nti-</i>		<i>nti-</i>	<i>n-+[lam]</i>	<i>n+ (y -> ch)</i>	<i>nti-</i>	
COMP	<i>nka-</i>	<i>nkwi-</i>	<i>nku-</i>		<i>nk-</i>	<i>nku-</i>	<i>nkay- ~ y-</i>

6.1 Class A

There are three sub-classes of class A verbs. The first two, sub-classes Au and Ac are identical with respect to aspect marking, and they only appear different on the surface because the former includes verbs that begin in vowels that interact with the vowels of aspect markers. The third sub-class, the A2 verbs, differs from subclasses Au and Ac by having the completive *nkwi-*.

Table 6. Aspect markers of class A verbs by sub-class

	Au/Ac	A2
POT	<i>ki-</i>	<i>ki-</i>
PROG	<i>nte-</i>	<i>nte</i>
HAB	<i>nti-</i>	<i>nti-</i>
COMP	<i>nka-</i>	<i>nkwi-</i>

6.1.1 Sub-class Au

As in Kaufman's Zapotec system, the class A potential marker in ZEN is *ki-*, Verb *roots* in class A are both transitive and intransitive, but there are many more transitive *stems* in this class. This is due to the fact that a large set of *intransitive* verb *roots* that are consonant-initial (and belong to class B) are made transitive by prefixing *u-* to them. These derived stems usually have a causative meaning, so will be referred to as the *u-causatives*, and they make up sub-class Au. In (11) and (12) are two intransitive/transitive verb pairs, whose transitive members are *u-causatives*.

- (11) *-lōó* 'to come out', 'to be removed' (sub-class Bc)
 -u-lōó 'to take (it) out', 'to remove (it)' (sub-class Au)
- (12) *-xé* 'to be squeezed out' (sub-class Bc)
 -ū-xé 'to squeeze (it) out' (sub-class Au)

This *u-causative* derivational pattern is just one of several formal manifestations of a system of verb pairs found throughout Zapotecan languages. Although many verb pairs consist of a syntactically transitive causative verb derived from a syntactically intransitive inchoative verb, some pairs consist of two syntactically transitive verbs where one is more active than the other. Therefore, I continue to use the terminology *transitive* and

intransitive, but in a sense following Hopper and Thompson (1980) that aligns features such as higher volitionality with higher transitivity, and not solely the number of core arguments.

This *u*-causative morpheme is cognate with what Kaufman (1987) reconstructs for proto-Zapotec as **o*- or **ok*- (Kaufman, 1987) which has reflexes in Zapotec languages such as Atepec from the Sierra Juarez (Northern) and Juchitan from the Isthmus of Tehuantepec (Central) (Marlett and Pickett, 1987). Smith Stark (2002) also includes the basic *u-causatives* of Chichicapan Zapotec (Central) in his class A. The presence of the *u*-causative in ZEN along with cognates in Zapotec is sufficient to reconstruct it for Proto-Zapotecan.

There is a glitch regarding the /a/ vowel found in the completive marker of the *u*-causatives: /u/ is higher than /a/ on the vowel hierarchy, so the /u/ of the stem should replace the /a/ of the aspect marker. However, we see the opposite. This is the only environment in which an /a/ surfaces when in contact with an /u/, and this is one of only a couple of exceptions to the vowel hierarchy presented in (10).²¹

In (13), the four *principal parts*: potential, progressive, habitual and completive of an *u*-causative verb *-u-jnyā* 'to build it' are listed.

(13) The four principal parts of an *u-causative* verb

-u-jnyā 'to build it' (tr.)

²¹ Smith Stark (2002) documents a *ba*- completive marker of CHI class A (*u*-causative) verbs, which is not found in Kaufman's reconstructed completive markers. He suggests that the /a/ there arose from the /i/ vowel of the *bi*- completive marker (< **kwe*) having fused with the *u* of the verb resulting in a unique vowel at some stage of the language whose reflex is now /a/.

POT	<i>k-u-jnyā</i>	's/he is going to build it'
PROG	<i>nte-jnyā</i>	's/he is building it'
HAB	<i>nt-u-jnyā</i>	's/he builds it'
COMP	<i>nka-jnyā</i>	's/he built it'

In the potential and habitual forms, the causative /u/ deletes the /i/ of the aspect markers *ki-* and *nti-* respectively, as predicted by the vowel hierarchy. In the progressive form, the aspect marker *nte-* has the strongest vowel in the hierarchy /e/, which deletes the /u/ of the stem, and the completive form shows the exception to the vowel hierarchy already explained. Table 7 contains 20 sub-class Au ZEN verbs in their four principal parts.

Table 7. Sub-class Au verbs

Gloss	POT	PROG	HAB	COMP
a. 'to untie it'	<i>k-u-sati7</i>	<i>nte-sati7</i>	<i>nt-u-sati7</i>	<i>nka-sati7</i>
b. 'to smooth it out'	<i>k-u-suwe7</i>	<i>nte-suwe7</i>	<i>nt-u-suwe7</i>	<i>nka-suwe7</i>
c. 'to weave it'	<i>k-u-tala7</i>	<i>nte-tala7</i>	<i>nt-u-tala7</i>	<i>nka-tala7</i>
d. 'to lose it'	<i>k-u-lījī</i>	<i>nte-lījī</i>	<i>nt-u-lījī</i>	<i>nka-lījī</i>
e. 'to take it out'	<i>k-u-lōó</i>	<i>nte-lōó</i>	<i>nt-u-lōó</i>	<i>nka-lōó</i>
f. 'to write it'	<i>k-u-sā7á</i>	<i>nte-sā7á</i>	<i>nt-u-sā7á</i>	<i>nka-sā7á</i>
g. 'to split it'	<i>k-u-sā7wé</i>	<i>nte-sā7wé</i>	<i>nt-u-sā7wé</i>	<i>nka-sā7wé</i>
h. 'to squeeze it out'	<i>k-ū-xé</i>	<i>ntē-xé</i>	<i>nt-ū-xé</i>	<i>nkā-xé</i>
i. 'to cut it'	<i>k-u-xū7ú</i>	<i>nte-xū7ú</i>	<i>nt-u-xū7ú</i>	<i>nka-xū7ú</i>
j. 'to yank it'	<i>k-u-tyele</i>	<i>nte-tyélē</i>	<i>nt-u-tyele</i>	<i>nka-tyélē</i>
k. 'to clean it out'	<i>k-u-wī</i>	<i>nte-wī</i>	<i>nt-u-wī</i>	<i>nka-wī</i>
l. 'to build it'	<i>k-u-jnyā</i>	<i>nte-jnyā</i>	<i>nt-u-jnyā</i>	<i>nka-jnyā</i>
m. 'to bury it'	<i>k-u-kachī7</i>	<i>nte-kachī7</i>	<i>nt-u-kachī7</i>	<i>n-kachī7</i>
n. 'to count it'	<i>k-u-lakwā</i>	<i>nte-lakwā</i>	<i>nt-u-lakwā</i>	<i>nka-lakwā</i>
o. 'to show it'	<i>k-u-lu7ū</i>	<i>nte-lu7ū</i>	<i>nt-u-lu7ū</i>	<i>nka-lu7ū</i>
p. 'to snap it'	<i>k-u-kitē7</i>	<i>nte-kītē7</i>	<i>nt-u-kitē7</i>	<i>nka-kītē7</i>
q. 'to play it'	<i>k-u-la7ā</i>	<i>nte-lā7á</i>	<i>nt-u-la7ā</i>	<i>nka-lā7á</i>
r. 'to grab hold of it'	<i>k-u-rusū7</i>	<i>nte-rūsú7</i>	<i>n-tusū7</i>	<i>nka-rūsú7</i>
s. 'to burn it'	<i>k-u-takē</i>	<i>nte-tākē</i>	<i>nt-u-takē</i>	<i>nka-tākē</i>

t. 'to buy it' *k-uʔyā* *ntē-ʔyá* *nt-uʔyā* *nkā-ʔyá*

There are a few sub-class Au verbs that appear irregular, but their irregularity is explainable. Zenzontepec has some haplology, and this can be seen in the Spanish speech of native Chatino speakers for whom Spanish is a second language. For example, the town of Tututepec is pronounced in Spanish as *tutepek* with loss of one of the *tu* syllables. The Chatino word for Tututepec is *ke kinī* (literally, 'bird' + 'rock'). The Spanish *Tututepec*, is from Nawa *to:to:-tl* + *tepe:-k* ('bird' + 'hill' + 'on'), which in turn is a calque of the Chatino name.²² The expected COMP form for the verb *-u-kachīʔ*, 'to bury it', is **nka-kachīʔ*, but one of the sequences of *ka* is deleted due to haplology, yielding *n-kachīʔ* (Table 7, line (m)).

Haplology in the habitual occurs in u-causative verbs whose roots begin with *tu*, and therefore have stems that begin with *-u-tu*. In (14), the principal parts for the verb *-u-tūkwá=ke*, 'to pierce or stick with horns' (as a bull) are given.²³ The expected habitual form for this verb is **ntu-tūkwá=ke*.

(14) Haplology in the habitual of an u-causative verb

-u-tūkwá=ke 'to pierce or stick with horns' (as a bull)
 -CAUS-go_in=head

POT *k-u-tūkwá=ke*

PROG *nte-tūkwá=ke*

HAB *n-tūkwá=ke*

COMP *nka-tukwá=kyé*

²² I thank Terrence Kaufman for providing the transcription and segmentation of the Nawa form.

²³ This compound verb has the noun *ke*, 'head' as a postpound, and the 'equals' sign (=) is used to show that this is a compound.

Following the rules of the vowel hierarchy and haplology, the habitual form *n-tūkwá=ke* is derived as follows:

- (15) /nti-u-tūkwá=ke/
 /nt-u-tūkwá=ke/ /i/ is deleted in contact with /u/
 /n-tūkwá=ke/ /tu/ is deleted before /tū/
 n-tūkwá=ke
 'it pierces with its horns'

6.1.2 Sub-class Ac

There is another sub-class of class A that has the same aspect markers as the u-causatives. Since they are consonant initial, they are labeled sub-class Ac. Many of these verbs are semantically *unergative*, either syntactically intransitive or ambi-transitive, and lack a derivationally related companion of greater or lesser transitivity. Many verbs of bodily function, such as 'to laugh', 'to play', and 'to smell' fall into this sub-class. The verb *-xiti*, 'to laugh' exemplifies sub-class Ac.

- (16) Four aspects of an Ac verb, *-xiti*, 'to laugh'
POT	<i>ki-xiti</i>	's/he will laugh'
PROG	<i>n-te-xiti</i>	's/he is laughing'
HAB	<i>nti-xiti</i>	's/he laughs'
COMP	<i>nka-xiti</i>	's/he laughed'

Since the sub-class Ac verbs are consonant initial, there is no clash of vowels upon inflection, and the unaltered aspect markers surface. Some Ac verbs in their four principal parts are listed below in Table 8.

Table 8. Sub-class Ac verbs

Gloss	POT	PROG	HAB	COMP
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a. 'to command/plead'	<i>ki-neę</i>	<i>nte-neę</i>	<i>nti-neę</i>	<i>nka-neę</i>
b. 'to turn over/around'	<i>ki-sesu</i>	<i>nte-sesu</i>	<i>nti-sesu</i>	<i>nka-sesu</i>
c. 'to laugh'	<i>ki-xiti</i>	<i>nte-xiti</i>	<i>nti-xiti</i>	<i>nka-xiti</i>
d. 'to fight'	<i>kī-só</i>	<i>ntē-só</i>	<i>ntī-só</i>	<i>nkā-só</i>
e. 'to play'	<i>ki-jya</i>	<i>nte-jyā</i>	<i>nti-jya</i>	<i>nka-jyā</i>
f. 'to spin thread'	<i>ki-juu</i>	<i>nte-juū</i>	<i>nti-juu</i>	<i>nka-juū</i>
g. 'to smell'	<i>ki-lyā7ā</i>	<i>nte-lyā7ā</i>	<i>nti-lyā7ā</i>	<i>nka-lyā7ā</i>
h. 'to be embarrassed'	<i>ki-ju7u</i>	<i>nte-ju7u</i>	<i>ta la nte-ju7u</i>	<i>nka-ju7u</i>
i. 'to water it'	<i>ki-lyā</i>	<i>nte-lyā</i>	<i>nti-lyā</i>	<i>nkwi-lyā</i>

The verb *-ju7u*, 'to be embarrassed' in Table 8 line (h), is irregular in the habitual:

(17) HAB *ta la nte-ju7u* 's/he gets embarrassed'

The habitual of this verb is formed by adding *ta la* before the progressive form. The Spanish translation of *ta la* is often given as *de por sí*, which in English translates as 'just because', 'just naturally' or 'indeed'. This type of *periphrastic habitual* is found elsewhere, and it is not yet evident why some verbs have this periphrastic habitual instead of the more common prefix *nti-*.

6.1.3 Sub-class A2

The final sub-class of class A verbs, sub-class A2, is defined by having the completive marker *nkwi-*. Because of the labialized velar in the completive, this is the group that initially most resembles Kaufman's class A for Proto-Zapotec, which has the completive marker **kwe-*. After nasal freezing, *nkwi-* is the expected Chatino cognate of Kaufman's completive **kwe-*. The ZEN verbs in this group begin either with consonants or one of the vowels: /e/ or /i/. It is a small group of roots, but several of them function as incorporated auxiliaries or

are common prepounds of compound verbs, so in the end a larger number of verbal lexemes fall into this sub-class.

Most of the consonant-initial verbs of the A2 sub-class are also listed in sub-class Ac, as shown in (18) and (19).

- (18) a. *nka-sesu* Ac 'it/she/he turned over'
 b. *nkwi-sesu* A2 'it/she/he turned over'
- (19) a. *nka-lyā* Ac 's/he watered it'
 b. *nkwi-lyā* A2 's/he watered it'

The variation between completive forms in *nkwi-* and *nka-* is a case of morpholexical alternation that is likely due to analogical leveling that has not yet completely run its course. The largest subclass of verbs in ZEN is by far the Au sub-class, the u-causatives, which is perhaps due to a current semi-productivity of deriving causative verbs by the prefix *u-*. Au verbs take the innovative completive marker *nka-*, which appears to be gaining ground at the expense of the historically conservative *nkwi-* completive marker, causing verbs to migrate from sub-class A2 to Ac. Table 9 below presents some verbs of subclass A2 in their four principal parts.

Table 9. Sub-class A2 verbs

Gloss	POT	PROG	HAB	COMP
a. 'to wait for'	<i>k-eta</i>	<i>n-te-k-eta</i>	<i>nt-eta</i>	<i>nk-w-eta</i>
b. 'to turn over/around'	<i>ki-sesu</i>	<i>n-te-sesu</i>	<i>nti-sesu</i>	<i>nkwi-sesu</i>
c. 'to sew'	<i>k-ikwā</i>	<i>n-te-k-ikwā</i>	<i>nt-ikwā</i>	<i>nk-w-ikwā</i>
d. 'to pay him/her'	<i>k-isu</i>	<i>n-te-k-isu</i>	<i>nt-isu</i>	<i>nk-w-isū</i>
e. 'to water it'	<i>ki-lyā</i>	<i>n-te-lyā</i>	<i>nti-lyā</i>	<i>nkwi-lyā</i>
f. 'to wash it'	<i>cha7q</i>	<i>n-te-cha7q</i>	<i>n-cha7q</i>	<i>nkwi-chá7q</i>
g. 'to go down'	<i>k-e7e</i>	<i>n-te-k-e7e</i>	<i>nti-7e</i>	<i>nkwi-7e</i>

In the vowel-initial sub-class A2 verbs, the progressive form is surprising in that there is an extra consonant *k*- that appears between the aspect marker *nte*- and the verb stem (Table 9, lines (a, c, d, f, and g)). Additionally, a subset of these verbs (c, d and f) present some of the only counter-examples to the rule that a verb's tone pattern is always the same in the progressive and completive.²⁴ In fact, in these cases the tone in the progressive is the same as in the potential and habitual. This is because the progressive of these verbs is formed by prefixing the progressive marker onto a verb in the potential form, which explains why the tone is that of the potential and also explains the intrusive *k* (potential marker) caught in the progressives.²⁵

The verb in Table 9 line (f), *cha7a*, 'to wash it' comes from what was originally a *y*-initial root, *-ya7a* (from subclass By), as seen in the forms from ZAC Chatino below in (20) where the [y] is still present. Note that in the ZAC progressive form, as in the ZEN cognate, the potential *k* appears.

(20) ZAC 'lavar', *-ya7a*²

POT	PROG	HAB	COMP
<i>k-ya7a</i> ²	<i>nti-k-ya7a</i> ²	<i>nti-ya7a</i> ²	<i>nk-ya7a</i> ²

²⁴ The ones that are not counterexamples are the ones in which the tone is the same in all four aspects anyway.

²⁵ These verbs may provide a clue into the still unclear origin of the *nte*- progressive marker, which may be a grammaticalized form of the demonstrative *nteē* 'here', 'this'. It is possible that a periphrastic progressive aspect existed of the form 'here' + POT-verb. Then, the demonstrative may have been further grammaticalized as an aspect prefix replacing the potential marker in all but these cases in sub-class A2 (and a few that we will see in sub-class By).

In the Zen cognate paradigm, repeated in (21) below, the /y/ is not present in any of the four principal parts, so it is one of the rare verb stems that synchronically begins with the consonant /ch/.

(21) ZEN 'lavar', *-cha7a*

POT	PROG	HAB	COMP
<i>cha7a</i>	<i>nte-cha7a</i>	<i>n-cha7a</i>	<i>nkwi-chá7ā</i>

The alveo-palatal affricate /ch/ is now a phoneme in ZEN, but it is not inherited from Proto-Chatino. Those that exist now derive from Spanish loans and two sound changes that happened in the language, that of **ky* > *ch* as exemplified earlier in (9) and another sound change whereby **tz* > *ch* / __ [i]. There are also morphophonemic processes in the potential and habitual forms of sub-class By in which a stem-initial /y/ becomes [ch].

The verb *-e7e*, 'to go down', in line (g) of Table 9 is irregular in the Habitual and Completive aspects, because the aspect vowel /i/ deletes the stem vowel /e/ in violation of the vowel hierarchy.

6.2 Class B

The class B verbs fall into three sub-classes: Bc, Bt, and By. The POT, PROG, and HAB aspect markers for class B are the same as for class A: *ki-*, *nte-* and *nti-* respectively. The difference is that class B verbs take the completive marker *nku-* rather than the *nka-* or *nkwi-* of class A. If we push Kaufman's Proto-Zapotec completive marker **ko-* back to proto-Zapotecan, the expected reflex in ZEN Chatino would be *nku-*, exactly as we find. In most cases Proto-Zapotec **o* corresponds to ZEN /u/, and the completive marker underwent nasal

freezing on its front end as did the other markers of the completive, progressive, and habitual. Therefore, ZEN class B strongly resembles Kaufman's Zapotec class B.

- (22) Class B cognates between ZEN and Isthmus Zapotec (IZ) (Central)
(Pickett, 2007)

GLOSS	ZEN	IZ	PZN
'to boil'	<i>-lákwī</i>	<i>-ndaabiʔ</i>	<i>*lla:ʔkwi</i> (class B)
'to be swept'	<i>-lukwa</i>	<i>-luubaʔ</i>	<i>*l-o:ʔkwa</i> (class B)

Class B is a large class of verbs in ZEN that are all consonant-initial and mostly intransitive, just as in Kaufman's Zapotec system. The intransitive roots from which the u-causatives are derived reside in this class, and they show no irregularity in their aspect marking. They will be called sub-class Bc (c for consonant). The next group, the sub-class Bt verbs, mark the potential purely by laminalization of the stem-initial /t/, and the habitual form undergoes haplology in addition to laminalization of the stem-initial /t/. The sub-class By verbs are all y-initial, and the *y* of the stem interacts with the aspect markers giving these verbs a unique inflectional pattern. With a certain degree of abstraction, however, all class B verbs can be seen as originally sharing the same set of aspect markers, namely those seen in sub-class Bc in Table 10 below. However, the morphophonemic rules needed to account for all of the data would suffer from too many details and exceptions to posit just the sub-class Bc markers as the basis of all of class B. Therefore, it is appropriate to list the aspect marking for each of the three sub-classes.

Table 10. Aspect markers of class B verbs by sub-class

	Bc	Bt	By
POT	<i>ki-</i>	[lam]-	stem ($\gamma \rightarrow \text{ch}$)
PROG	<i>n-te-</i>	<i>n-te-</i>	<i>n-te-</i>
HAB	<i>nti-</i>	<i>n+ [lam]-</i>	<i>n+ stem ($\gamma \rightarrow \text{ch}$)</i>
COMP	<i>nku-</i>	<i>nku-</i>	<i>nk-</i>

6.2.1 Sub-class Bc

The first sub-class of class B is the very regular, consonant-initial, sub-class Bc verbs. Many of them are the less-transitive partners of the u-causatives discussed earlier. Bc verbs are mostly inchoative, and in many cases can be translated to English as passives where the agent is not expressed. However, the semantics of some of the verb pairs is not always predictable. For example, the first verb below in Table 11, *kaʒa*, 'to be kept out' is used primarily in a narrowed sense of 'to not allow water to enter' (by having one's house and things mended so that they withstand rain). The derivationally related Au verb is *-u-kaʒā*, which means 'to deny someone something'. The transitive verb applies to a wider range of objects that are "denied" and also conveys an element of selfishness on the part of the agent. Table 11 lists a sample of Bc verbs in their four principal parts. The aspect markers appear in their full forms due to the lack of vowel hiatus.

Table 11. Sub-class Bc verbs

Gloss	POT	PROG	HAB	COMP
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a. 'to be kept out'	<i>ki-ka7a</i>	<i>nte-ka7a</i>	<i>nti-ka7a</i>	<i>nku-ka7a</i>
b. 'to clean up'	<i>ki-laja</i>	<i>nte-laja</i>	<i>nti-laja</i>	<i>nku-laja</i>
c. 'to drain or run off'	<i>ki-lakwi</i>	<i>nte-lakwi</i>	<i>nti-lakwi</i>	<i>nku-lakwi</i>
d. 'to shatter'	<i>ki-la7a</i>	<i>nte-la7a</i>	<i>nti-la7a</i>	<i>nku-la7a</i>
e. 'to be set down'	<i>ki-sa7a</i>	<i>nte-sa7a</i>	<i>nti-sa7a</i>	<i>nku-sa7a</i>
f. 'to fasten a belt'	<i>ki-sti</i>	<i>nte-sti</i>	<i>nti-sti</i>	<i>nku-sti</i>
g. 'to stretch out'	<i>ki-wini</i>	<i>nte-wini</i>	<i>nti-wini</i>	<i>nku-wini</i>
h. 'to dry up'	<i>ki-witi</i>	<i>nte-witi</i>	<i>nti-witi</i>	<i>nku-witi</i>
i. 'to get late'	<i>ki-xe</i>	<i>nte-xe</i>	<i>nti-xe</i>	<i>nku-xe</i>
j. 'to be cut'	<i>ki-xū7ú</i>	<i>nte-xū7ú</i>	<i>nti-xū7ú</i>	<i>nku-xū7ú</i>
k. 'to be opened'	<i>ki-kī</i>	<i>nte-kī</i>	<i>nti-kī</i>	<i>nku-kī</i>
l. 'to get lost'	<i>ki-lī</i>	<i>nte-lī</i>	<i>nti-lī</i>	<i>nku-lī</i>
m. 'to come loose'	<i>ki-su</i>	<i>nte-sū</i>	<i>nti-su</i>	<i>nku-sū</i>
n. 'to slip', 'get muddy'	<i>ki-jlyā</i>	<i>nte-jlyā</i>	<i>nti-jlyā</i>	<i>nku-jlyā</i>
o. 'to tire out'	<i>ki-xiyā7</i>	<i>nte-xiyā7</i>	<i>nti-xiyā7</i>	<i>nku-xiyā7</i>
p. 'to be snapped'	<i>ki-kitē7</i>	<i>nte-kitē7</i>	<i>nti-kitē7</i>	<i>nku-kitē7</i>

6.2.2 Sub-class Bt

The second subgroup of class B is the sub-class Bt verbs. As their name suggests, they begin with the consonant /t/. The distinguishing feature of these verbs is that they mark the potential solely by laminalization of the stem-initial /t/, and they mark the habitual by both the addition of an /n/ and laminalization of the stem-initial /t/, as exemplified in (23).

(23) Four aspects of a Bt verb

	<i>-taja/-tajā</i>	'to get holes'
POT	<i>tyaja</i>	'it will get holes'
PROG	<i>nte-tajā</i>	'it is getting holes in it'
HAB	<i>n-tyaja</i>	'it gets holes'
COMP	<i>nku-tajā</i>	'it got holes in it'

Even though the *ki-* aspect marker does not appear, the verb stem's initial /t/ is laminalized as if the /i/ of the aspect marker were there at some

abstract level or at some historical stage of the language. To reiterate, laminalized coronal consonants only occur after [i], after where there was once an [i], or in loan words.²⁶ Not all verbs that begin with /t/ follow this pattern, so it can not be stated as an absolute rule, but the majority of them do. Stems that begin with /t/ that have the *u-* causative morpheme attached do not undergo laminalization, and they take the full potential marker *ki-* of sub-class Au.

The underlying form of the habitual aspect marker may be the standard *nti-*. However, the *ti-* sequence of the habitual marker before the sequence of *t+Vowel* of the stem is deleted by haplology, as we have already seen in the language, but only after the /i/ has laminalized the /t/.

Table 12. Sub-class Bt verbs

	Gloss	POT	PROG	HAB	COMP
a.	'to walk or go around'	<i>tya7a</i>	<i>n-te-ta7a</i>	<i>n-tya7a</i>	<i>nku-ta7a</i>
b.	'to bear crops'	<i>tyu7u</i>	<i>n-te-tu7u</i>	<i>n-tyu7u</i>	<i>nku-tu7u</i>
c.	'to be seen'	<i>tyāká7</i>	<i>n-te-tāká7</i>	<i>n-tyāká7</i>	<i>nku-tāká7</i>
d.	'to go out'	<i>tyūkwá</i>	<i>n-te-tyūkwá</i>	<i>n-tyūkwá</i>	<i>nku-tyūkwá</i>
e.	'to get holes'	<i>tyaja</i>	<i>n-te-tajā</i>	<i>n-tyaja</i>	<i>nku-tajā</i>
f.	'to pass'	<i>tyejē</i>	<i>n-te-tejē</i>	<i>n-tyejē</i>	<i>nku-tejē</i>
g.	'to start'	<i>tyejnā</i>	<i>n-te-tyejnā</i>	<i>n-tyejnā</i>	<i>nku-tyejnā</i>

There is a parallel between the class B verbs of ZEN with the class B verbs of Coateco Southern Zapotec (COA). COA class B verbs begin in coronal consonants, and Beam de Azcona states that they:

²⁶ Zen borrows the *ñ* of Spanish as a laminal nasal: *panyō*, 'shawl' from Spanish *pañó*.

...undergo palatalization of their root-initial consonants to mark the potential and habitual aspects. The only verbs in this class that don't have root-initial coronal consonants are those that are already *y*-initial and therefore do not use palatalization as a strategy for marking morphological categories. (2004: 265)

Laminalization in ZEN and palatalization in COA are likely the same phenomenon, affecting the potential and habitual forms of coronal-initial class B verbs in both. Although this phenomenon is not documented in all branches of Zapotec, it has a probable correlate in the Northern Zapotec of Atepec (ATP). Some cognate verbs that show the parallel appear in Table 13, all of which are class B verbs in both ZEN and COA. The ATP data is from Nellis and Nellis (1983).²⁷

Table 13. ZEN sub-class Bt verbs and Zapotec correspondences

	COA ²⁸		ZEN		ATP	
	stem	POT	stem	POT	stem	POT
a. 'to pass'	-tìd	tyĩd	-tejē	tyejē	—	—
b. 'to stand'	-zô	zyó	-tɔ	tyɔ	-dú	thú
c. 'walk'	-zë`	zyë´	-ta7a	tya7a	-da7	thá7
d. 'to fly'	-za7b	zya7b	-tákwi	tyákwi	—	—

Since this pattern is found definitively in Chatino and in COA (a variety of Southern Zapotec), and likely in Atepec (Northern Zapotec), it is probably reconstructable to Proto-Zapotecan. If so, it has been leveled out in many

²⁷ In the ATP data, *th* represents an interdental fricative.

²⁸ In Beam de Azcona's COA orthography, tones are written as follows: *˘* is low tone, *ˆ* is falling tone, *ˇ* is rising tone, and *ˊ* is high tone; *ë* is a low-mid front vowel.

varieties, for example, most of these verbs are found in class C in Chichicapan Zapotec and undergo fortition of the stem-initial consonant, rather than a change in place of articulation, in the potential. The verbs that make up this group are largely verbs of motion and position.

6.2.3 Sub-class By

All *y*-initial verbs in ZEN belong to sub-class By. The stem-initial /y/ interacts with the aspect markers, as can be seen in the following paradigm.

(24) Four aspects of a ZEN sub-class By verb

	<i>-y-ano/-y-ánō</i>	'to stay', 'to be left'	
POT	<i>ch-ano</i>	'it will stay'	(c.f. ZAC <i>k-yanq</i> ²¹)
PROG	<i>n-te-y-ánō</i>	'it is staying'	
HAB	<i>n-ch-ano</i>	'it stays'	
COMP	<i>nk-y-ánō</i>	'it stayed'	

The *ki-* of the potential combines with the /y/ of the stems of class By verbs to yield [ch]. This resembles the sound change in ZEN, discussed earlier in (9), whereby the sequence **ky* > *ch*. Zacatepec did not undergo this change, and the potential form of 'to stay' in ZAC is *k-yanq*, preserving the /k/ as expected. This proposal rests on the requirement that a morphophonemic process specific to aspect/stem boundaries is still in effect whereby the sequence /iy/ is reduced to /y/ and then the /ky/ > [ch] rule is still in effect. It is not the case that this rule is still active across the board as a phonological process in the language, because there are a few lexemes which have the sequence /kiy/ or the palatalized velar stop /ky/ that do not affricate, for example *kiyaʔ*, 'his foot', and *kyā/á*, 'dream'.

In the habitual, the /y/ of the stem combines with the aspect marker /nti-/ to yield [nch-]. Again, it is possible that the /i/ and /y/ conflate when adjacent, and then the /t+y/ sequence in this case also becomes [ch], or perhaps the habitual stem is reformed on analogy to the potential. This process only occurs in the aspect/stem environment, as there are lexemes with the sequence /tiy/ that do not turn into [ch], for example *tiyeʒ*, 'sour' and *tīyú*, 'smell of urine or of squashed bedbug'. In the completive, the aspect vowel is not present, and the marker /nk-/ affixes right to the y-initial stem.²⁹

Many of the sub-class By verbs are the intransitive verbs of another type of derivationally related verb pairs. These verb pairs are *equipollent*³⁰ whose transitive and intransitive verbs are both derived by adding prefixes to a neutral, uninflectable root. In these pairs, the transitive verb is derived by adding either *t-* or *s-* to the root, and that consonant is in turn usually preceded by the causative *u-*. Like other u-causatives, the transitive verbs derived in these pairs fall into sub-class Au. The sub-class By, intransitive verb stems of these pairs are formed by adding an intransitivizing prefix *y-* to the root. The bare roots begin in /a/ or /u/. In (25)–(27) are three of these equipollent pairs representing the *y/ut* and *y/us* derivations.

(25)	a.	'to be burned'	–y–akē
	b.	to burn it'	–u–t–akē

²⁹ It is not yet clear why the /u/ vowel of the completive is missing in the By verbs. However, the sequence /uy/ is very rare in the native lexicon. It does exist, as in *ya ntuyāʒ*, 'ladder'. If that word turns out to be a now unidentified loan, the restriction on *uy* sequences begins to look more plausible.

³⁰ I adopt the terminology as laid out in Haspelmath (1993).

- (26) a. 'to be untied' *-y-ati7*
 b. 'to untie it' *-u-s-ati7*
- (27) a. 'to be smoothed out' *-y-uwe7*
 b. 'to smooth it out' *-u-s-uwe7*

Kaufman (1987) reconstructs a Proto-Zapotec causative marker **o(s)se+*. Since /t/ is the normal reflex of both Proto-Zapotecan **s* and **ss*, it is likely that the *t-* transitivizing prefix is cognate with this Zapotec morpheme. The source of the *s-* transitivizer in ZEN is not yet identified, but it is likely ultimately the same. Kaufman also reconstructs a Proto-Zapotec intransitivizer **i-* that is cognate with the ZEN *y-* found on the intransitive verbs in class By. The ZEN Chatino data place these derivational morphemes of Kaufman's firmly at the earlier level of Proto-Zapotecan.

Since the consonant-initial intransitive stems in sub-class Bc pair with the *u-*causatives of sub-class Au, and the transitive verbs of the equipollent verb pairs are also Au verbs, placing the *y-*initial verbs in class B provides cohesion to the overall system. As shown here, the apparent irregularities of the By verbs are largely explainable morphophonologically, and they can not be a part of class C since they do not take the progressive marker *nch-*. This is a case of phonologically based allomorphy because all of and only the *y-*initial stems fall into it. The following table presents sub-class By verbs in their four principal parts. The bare stems (root or derivation+root) are visible in the complete forms and include the /y/ and everything to the right of it.

Table 14. Sub-class By verbs

Gloss	POT	PROG	HAB	COMP
a. 'to weave it'	<i>chakwa</i>	<i>nte-chakwa</i>	<i>n-chakwa</i>	<i>nk-yakwa</i>
b. 'to plant (a plant)'	<i>chata</i>	<i>nte-chata</i>	<i>n-chata</i>	<i>nk-yata</i>
c. 'to sleep' irr	<i>k-yatē</i>	<i>nt-yatē</i>	<i>ta la nt-yatē</i>	<i>nk-yatē</i>
d. 'to wilt'	<i>ch-ana</i>	<i>nte-y-ánā</i>	<i>n-ch-ana</i>	<i>nk-y-ánā</i>
e. 'to stay'	<i>ch-ano</i>	<i>nte-y-ánō</i>	<i>n-ch-ano</i>	<i>nk-y-ánō</i>
f. 'to be burned'	<i>ch-akē</i>	<i>nte-y-akē</i>	<i>n-ch-akē</i>	<i>nk-y-akē</i>
g. 'to go in'	<i>ch-atē</i>	<i>nte-y-atē</i>	<i>n-ch-atē</i>	<i>nk-y-atē</i>
h. 'to receive it'	<i>ch-ukwā</i>	<i>nte-ch-ukwā</i>	<i>n-ch-ukwā</i>	<i>nk-y-ukwā</i>
i. 'to melt'	<i>chalā</i>	<i>nte-chalā</i>	<i>n-chalā</i>	<i>nk-yālā</i>
j. 'to be made'	<i>chaāʔ</i>	<i>nte-yāāʔ</i>	<i>n-chaāʔ</i>	<i>nk-yāāʔ</i>
k. 'to get tied up'	<i>ch-akāʔ</i>	<i>nte-y-ākāʔ</i>	<i>n-ch-akāʔ</i>	<i>nk-y-ākāʔ</i>

As seen in Table 14, the sub-class By verbs take the progressive marker *nte-* just as the rest of class B and class A. However, in the progressive form of some By verbs, there is a palatal affricate [ch] in place of the stem /y/. This is the same phenomenon as seen above in some sub-class A2 verbs which have progressives that are formed by prefixing the progressive marker onto the potential form instead of the bare stem. Line (i) 'to melt' in Table 14 is particularly revealing because the tone in the progressive matches the tone of the potential and habitual, instead of the completive as it would if it were not built on the potential.

6.3 Class C

The class C verbs of Zenzontepec, like Kaufman's Zapotec class C, have the potential marker *k-*, which differs from the class A and B potential marker by lacking the vowel /i/. The progressive marker for class C verbs is *nch-*,

which, as discussed earlier, is likely cognate to Proto-Zapotec **kkay-*. In Kaufman's Zapotec system, class C shares the **ko-* completive with class B and class D. However, *nku-*, the ZEN cognate of PZP **ko-*, only occurs on a subset of class C verbs that begin with the vowel /a/. These will be called sub-class Ca. The other class C verbs form the completive with the prefix *y-*, which has an allomorph in morpholexical alternation, *nkay-*, and those verbs are labelled sub-class C2. There is another progressive marker, *ntey-*, that is in morpholexical alternation with *nch-* and only found in sub-class C2. This marker is probably innovative in ZEN because it is not documented in other varieties of Chatino. It appears to be based on the more widespread progressive prefix *nte-* with a /y/ added by analogy to the completives of the C2 verbs. The following table summarizes, by sub-class, the aspect markers of class C.

Table 15. Aspect markers of class C verbs by sub-class

	Ca	C2
POT	<i>k-</i>	<i>k-</i>
PROG	<i>nch-</i>	<i>nch-</i> ~ <i>ntey-</i>
HAB	<i>nti-</i>	<i>nti-</i>
COMP	<i>nku-</i>	<i>y-</i> ~ <i>nkay-</i>

6.3.1 Sub-class Ca

The stem /a/ of the sub-class Ca verbs is deleted in contact with the /i/ of the habitual marker, and this is one of the reasons we know that /i/ dominates /a/ on the ZEN vowel hierarchy. These verbs show the stem-initial

/a/ in the potential due to lack of the vowel /i/ in the aspect marker that would have deleted it had it been there.

Table 16. Sub-class Ca verbs

	Gloss	POT	PROG	HAB	COMP
a.	'to get wet'	<i>k-atza7</i>	<i>nch-atza7</i>	<i>nti-tza7</i>	<i>nku-tza7</i>
b.	'to get cooked'	<i>k-āké7</i>	<i>nch-akē7</i>	<i>nti-ké7</i>	<i>nkū-ké7</i>
c.	'to be born'	<i>k-ala</i>	<i>nch-ala</i>	<i>nti-la</i>	<i>nku-la</i>
d.	'to drip'	<i>k-akwa7</i>	<i>nch-akwa7</i>	<i>nti-kwa7</i>	<i>nku-kwa7</i>
e.	'to be done/become'	<i>k-aka</i>	<i>nch-aka</i>	<i>nti-ka</i>	<i>nku-ka</i>
f.	'to compost'	<i>k-akwi</i>	<i>nch-akwi</i>	<i>nti-kwi</i>	<i>nku-kwi</i>
g.	'to thicken'	<i>k-anq7</i>	<i>nch-anq7</i>	<i>nti-nyq7</i>	<i>nku-nq7</i>
h.	'to burst'	<i>k-atzu</i>	<i>nch-atzu</i>	<i>nti-tzu</i>	<i>nku-tzu</i>
i.	'to get old'	<i>k-asu7</i>	<i>nch-asu7</i>	<i>nti-su7</i>	<i>nku-su7</i>
j.	'to die'	<i>k-aja</i>	<i>ntey-aja</i>	<i>nti-ji</i>	<i>nk-ujwī</i>

The sub-class Ca verbs are all intransitive verbs with inchoative semantics.³¹ Some of them have causative pairs that have the vowel /u/ in place of the /a/. However, only one, *-atzu*, 'to burst', has a pair that is an u-causative verb in sub-class Au morphologically, and the rest of the corresponding causatives of Ca verbs belong to sub-class C2. Sub-class Ca is small, and the table above represents the entire corpus of documented basic verbs of this pattern in ZEN.³² The verb *-āké7*, 'to be cooked' is irregular in

³¹ The tones in the four principal parts have not been verified in the verbs in lines (d)–(j) in Table 15, so this needs to be updated with further field work.

³² There are some compounds built upon these roots that are not included in the table that also fall into sub-class Ca.

having a tone pattern in the progressive (ØM) that does not match that of the completive (MH), and *-aja*, 'to die' shows vowel alternation in the stem.

The Ca sub-class of ZEN verbs corresponds to a very stable class of verbs in Zapotec. While in each language verbs have migrated from one class to another, which often leads to a given class expanding in a given language, cognates of the ZEN sub-class Ca verbs have remained in class C in varieties in several branches of Zapotecan. In Table 17 are six verbs that fall into ZEN sub-class Ca, several of which Kaufman (1993) reconstructs into class C in Proto-Zapotec, and all of which Beam de Azcona (2004) and Smith Stark (2002) have classified in class C in COA Southern and CHI Central Zapotec respectively.³³

Table 17. Comparative Zapotecan sub-class Ca verb stems

Gloss	ZEN	COA	CHI	PZP
a. 'to burst'	<i>-atzu</i>	<i>-âch</i>	<i>-atshí</i>	* <i>attzok</i>
b. 'to be born'	<i>-ala</i>	<i>-ăl</i>	<i>-alá</i>	* <i>alak</i>
c. 'to be cooked'	<i>-ākéʔ</i>	<i>-àʔ</i>	<i>-aa'yi</i>	* <i>a&7kiʔ</i>
d. 'to be done', 'to be'	<i>-aka</i>	<i>-ăk</i>	<i>-aka</i>	* <i>akka</i>
e. 'to get wet'	<i>-atzaʔ</i>	<i>-âzh</i>	<i>-adzhi</i>	* <i>atza(k)</i>
f. 'to die'	<i>-aja</i>	<i>-âth</i>	<i>-atxi</i>	* <i>atti</i>

It should be noted that in spite of the conservatism of some class C verbs in Zapotecan, in ZEN and COA class C includes only verbs that begin in vowels, whereas in CHI and Proto-Zapotec, it includes consonant-initial verbs as well.

³³ Due to other details of the CHI Zapotec verb class system, these cognates of Ca verbs could fit in either class B or class C in CHI (Smith Stark, 2002).

6.3.2 Sub-class C2

The last sub-class of ZEN verbs is sub-class C2. Like sub-class Ca, these verbs have the potential marker *k-*, the progressive *nch-* and the habitual *nti-*. However, they differ in that they have *y-* as the basic marker of the completive, instead of *nku-*. Furthermore, the completive *y-* has an alternant with which it is in morpholexical alternation: *nkay-*. This looks like the class A completive marker *nka-* tacked on to the C2 completive marker *y-*. Additionally, C2 verbs are all transitive, except perhaps for the verb *-ākwé&*, 'to vomit'.³⁴ Therefore, if any marker were to be added on in a case of double marking, we would expect it to be *nka-*, the completive marker of most of the transitive verbs of the language including the huge sub-class of u-causatives.

The progressive marker also has two forms in morpholexical alternation: the historically based one *nch-*, and the innovative *ntey-*. The latter looks like a fusion of the most prevalent progressive marker in the language, the *n-te-* marker from classes A and B, fused onto a *y-*, which likely arose on analogy to the *y* in the completives. This would not be the only connection specific to the progressive and completive aspects, which we have seen always have the same basic tone pattern.

Sub-class C2 verbs are all vowel initial, beginning in /a/, /o/ or /u/, and Table 18 presents a dozen of them in their four principal parts.

³⁴ Even the verb *ākwé&*, 'to vomit' may be transitive and mean 'to vomit it'.

Table 18. Sub-class C2 verbs

	Gloss	POT	PROG	HAB	COMP
a.	'to eat it'	<i>k-aku</i>	<i>nch-aku</i>	<i>nt-aku</i>	<i>y-aku</i>
b.	'to hold it'	<i>k-ala7</i>	<i>nch-ala7</i>	<i>nti-la7</i>	<i>nkay-ala7</i>
c.	'to take a bath'	<i>k-ata</i>	<i>nch-ata</i>	<i>nti-ta</i>	<i>y-ata</i>
d.	'to kill it'	<i>k-ujwi</i>	<i>ntey-ujwi</i>	<i>nt-ujwi</i>	<i>nkay-ujwi</i>
e.	'to hear it'	<i>k-una</i>	<i>nch-una</i>	<i>nt-una</i>	<i>y-una</i>
f.	'to twist into rope'	<i>k-una</i>	<i>ntey-una</i>	<i>nt-una</i>	<i>nkay-una</i>
g.	'to sting him/her'	<i>k-ojo7</i>	<i>nch-ojo7</i>	<i>nti-jo7</i>	<i>nkay-ojo7</i>
h.	'to vomit'	<i>k-ākwē</i>	<i>nch-akwē</i>	<i>ntī-kwē</i>	<i>nkay-akwē</i>
i.	'to drink it'	<i>k-ō7ó</i>	<i>ntey-o7ō</i>	<i>ntī-7yó</i>	<i>nkay-o7ō</i>
j.	'venderlo'	<i>k-ujwi7</i>	<i>nch-ujwī7</i>	<i>nt-ujwi7</i>	<i>y-ujwī7</i>
k.	'to grab or pull it'	<i>k-ukwā</i>	<i>ntey-ukwā</i>	<i>nt-ukwā</i>	<i>nkay-ukwā</i>
l.	'to sing'	<i>k-ulā</i>	<i>nch-ūlá</i>	<i>nt-ulā</i>	<i>y-ūlá</i>

The verb *-aku*, 'to eat it' is irregular because in the habitual form the /a/ of the stem deletes the /i/ of the aspect marker, in violation of the vowel hierarchy. The *o*-initial verbs *-ojo7*, 'to sting him/her' and *-ō7ó*, 'to drink it', in lines (g) and (i) respectively, provide the evidence for the ranking of /o/ at the bottom of the vowel hierarchy along with /a/, as seen in the habitual forms, where the /o/ is deleted by the /i/. There are very few *o*-initial verbs in the language, because /o/ does not occur in penultimate root syllables unless mirrored up from the final syllable by a glottal consonant.

The verb *-akwi7*, 'to speak', which Kaufman (1993) reconstructs as a class A verb, is irregular in ZEN in that it has the *ki*- potential marker like class A and B while having the progressive *nch*- of class C. It has the completive *y*-, which places it in sub-class C2. We can say that it has migrated to class C, but its potential shows that it used to belong to Class A.

	POT	PROG	HAB	COMP
(28)	<i>ki-kwī7</i>	<i>nch-akwi7</i>	<i>nti-kwī7</i>	<i>y-akwi7</i>

Class C includes a few other irregular verbs, but they will not be treated here. ZEN, like many languages, has a limited set of irregular verbs which do not conform to the verb class system outlined here, most of which, as expected for irregular verbs, are frequent in their use, such as 'to do', 'to give', 'to want' and the deictic motion verbs.

7. Conclusions

This study has demonstrated a classification of Zenzontepec Chatino verbs based on the aspect markers that they occur with. The Zapotec and Proto-Zapotec verb classes proposed by Kaufman (1987) were used as a starting point. There have been several other classifications of verbs based on aspect morphology in Zapotec languages, but this represents the first exhaustive verb classification of its kind in any Chatino language.

Class A verbs in ZEN have the potential aspect marker *ki-*, progressive *nte-*, and habitual *nti-*. The class is subdivided into two sub-classes based on the completive, where the Au/Ac verbs have *nka-* and the A2 verbs have *nkwi-*. Class B has three subclasses: Bc, Bt and By. The Bc aspect markers are the same as class A except for having the *nku-* allomorph for the completive. Class B verbs that begin in /t/ belong to the Bt sub-class and they realize potential aspect purely by laminalization of the stem-initial /t/. In the habitual, the stem /t/ is laminalized and preceded by [n]. The reduced habitual marker is likely due to haplology. The By verbs are distinct in that the /y/ of the stem interacts

with the aspect markers considerably. The potential is formed by a change in the stem /y/ to [ch]. The habitual is a fusion of the *nti-* aspect marker with the /y/ of the stem, which yields *nch-*. Finally, the completive marker in Sub-class By does not have a vowel. Class C verbs are unique in having the potential marker *k-* and the progressive marker *nch-*, with its alternant *ntey-*. Sub-class Ca shares the completive marker *nku-* with class B, and sub-class C2 verbs take the *y-* completive marker that has the *nkay-* alternant. This is all summarized in Table 5.

The issue of tone is a pressing one for any study of Chatino, because tone carries such a high functional load in most varieties. However, in ZEN aspect is never marked solely by tone, and although tone varies across aspects, each pattern of variation is spread through many or all of the verbal sub-classes. This means that tone is contributed, at least synchronically, by the stem, and aspect markers do not independently carry lexical tone. The table below lists the tone across aspect patterns of all of the verbs in this study, by sub-class, except for those sub-class Ca verbs whose tone patterns still need verification in further field work.

Table 19. Tone in aspect by sub-class

TONE	Au	Ac	A2	Bc	Bt	By	Ca	C2	TOTAL
/Ø/ in all 4 aspects	3	4	3	9	2	3	2	7	30
/MH/ in all 4	6	1	-	2	2	-	-	-	11
/ØM/ in all 4	4	2	1	2	2	4	-	1	14
/Ø/ in P H, /ØM/ in G C	1	2	1	1	1	-	-	1	7
/Ø/ in P H, /HM/ in G C	1	-	2	1	-	2	-	-	7
/MH/ in P H, /ØM/ in G C	-	-	-	-	-	-	-	2	2
/ØM/ in P H, /MH/ in G C	5	-	-	1	-	2	-	1	10
/MH/ in P H C, /ØM/ in G	-	-	-	-	-	-	1	-	1
Totals	20	9	7	16	7	10	3	12	84

As the table shows, the issue of tone is orthogonal to the verb class system in ZEN.³⁵ Therefore, a more detailed description of the phenomenon will be saved for future work that deals more comprehensively with tone.

Just as Smith–Stark (2002) and Beam de Azcona (2004) have shown that Kaufman's (1987) Proto–Zapotec verb class system is still largely intact in Chichicapan and Coateco Zapotec respectively, this study has shown that it is applicable to Chatino as well. Although a robust characterization of the Proto–Zapotecan verb class system awaits further work, the comparison initiated here between Chatino and Zapotec allows for several generalizations.

Class A in Kaufman's Zapotec system and in ZEN contains mostly transitive verbs, including some unergative verbs like 'laugh'. Labialization in the completive marker is the hallmark of class A in Zapotec, and it is still seen in sub-class A2 in ZEN Chatino. In ZEN these A2 verbs exist in doublets with Ac verbs that take the non-labial *nka*- completive marker, which is found on the vast majority of transitive verbs in the language. This suggests that the use of

³⁵ In the left column of table, shorter abbreviations for the aspects are used: P = Potential, G = Progressive, H = Habitual, and C = Completive.

nka- is extending, perhaps towards a status as a general completive marker of transitive verbs in ZEN. This is reflected as pattern pressure in class C2, whose verbs are primarily transitive, where the completive marker *y-* exists in alternation with *nkay-* (from *nka-* + *y-*).

The only verbs which have the labialized completive marker *nkwi-* in ZEN without the *nka-* alternant are those that begin with /i/ or /e/, and all verbs that begin with those vowels take *nkwi-*. Therefore, for synchronic purposes, that allomorph is phonologically conditioned in ZEN. However, it does not represent a language-wide phonological pattern. Although /kw/ does not occur before the rounded vowels /u/ and /o/, it commonly precedes /a/, as in *kwaḁḁ*, 'sky'. In some varieties of Zapotec, like Betaza of Villa Alta (Northern), the labial completive marker *b-* is extending and is by far more common than the non-labial completive *go-* (< **ko-*). In Smith-Stark's study of Chichicapan (Central) Zapotec, 267 of the 387 verbs he classifies belong to class A, taking the labial completive marker. In contrast, in Lachixío (Western) Zapotec (LCH), completive forms are never marked with a labial. Therefore, class A has all but disappeared in LCH, and class B has expanded to be the largest verb class by a significant margin (Sicoli, 2008).

Class B in ZEN contains intransitive verbs that are consonant initial, which is the same as in Kaufman's Proto-Zapotec system. It is probably necessary to reconstruct a sub-class of class B that includes some verbs of motion and position that began in coronal consonants. The laminalization or palatalization that these coronals undergo in the potential and habitual forms in Chatino, Coateco Southern Zapotec, and perhaps the Atepec variety of Northern Zapotec

suggests that at some pre-Proto-Zapotecan stage the vowel /i/ of the class B potential and habitual markers was present, and later the aspect markers were segmentally reduced. In Zapotec varieties that do not show a pattern that correlates with the laminalization of By verbs in ZEN, such as Chichicapan of the Central branch and Villa Alta of the Northern, these verbs tend to belong to class C and undergo fortition of the stem-initial consonant in the potential due to fusion with the /k/ of the aspect marker.

Class C in ZEN, as in Kaufman's Zapotec system, includes both intransitive and transitive verbs. Sub-class Ca verb stems in ZEN are intransitive and begin with the vowel /a/. These are relatively stable across Zapotecan languages, because they tend to remain in class C in several branches of the family (Beam de Azcona 2004, Smith Stark 2002). The sub-class C2 verbs in ZEN are vowel-initial (/a/, /u/, /o/) and like ZEN class A are either transitive or unergative. Therefore, all class C verbs in ZEN are vowel-initial. In Zapotec, however, some are consonant-initial, and the initial consonants undergo fortition in the potential. Since Chatino does not have a reflex of the Proto-Zapotecan simple/geminate consonant distinction, no fortition is possible, and the cognate consonant initial verbs are found in classes A and B in Chatino.

The networks of Chatino cognates of Zapotec class D verbs are not all worked out yet, but they are distributed throughout the other classes in Chatino, largely in line with the phonological specifications for the ZEN verb classes outlined here.

The verb classes of ZEN correlate in part with the syntactic behavior of verbs (intransitive versus transitive), with derivational morphology (the *u*-causatives and the inchoative *By* verbs with the *y*-intransitivizer), and also with phonological factors (*/i/* and */e/* initial verbs in sub-class A2, other vowel initial verbs in class C, and all *y*-initial verbs in *By*). However, the system is not determined by any one of these factors alone, and the same is true for Zapotec according to Kaufman (1993).

Although some verbs have migrated between classes in different ways in individual Zapotecan languages and the modern systems are slightly more complicated than the proto-system, the main classes have remained largely intact through time in the daughter languages. This work has focused primarily on elaborating the ZEN verb class system. The first step in future work is to compare the ZEN data to a more comprehensive similar study in Zacatepec Chatino, the other very conservative variety, to reconstruct the Proto-Chatino verb class system. This in turn will then be compared in finer detail to the Zapotec data in order to reconstruct the Proto-Zapotecan system.

This study has also demonstrated that some of the derivational morphology reconstructed by Kaufman for Proto-Zapotec can be reconstructed back to Proto-Zapotecan since it is found in ZEN Chatino, including the **o(k)*-causative, the **o(s)se+* causativizer and the **i*-intransitivizer. Additionally, the progressive marker he reconstructs as **kkay-* is likewise reconstructable for Proto-Zapotecan, given the Chatino reflexes: ZEN *nch-*, ZAC *nky-*, and TAT *ndy-*.

This work advances our understanding of verb classes and aspect morphology in the broader Zapotecan language family and sheds light on the historical evolution of the system in the various daughter languages. This classification of ZEN verbs should offer insight into similar studies in other Chatino languages whose aspectual systems are more opaque due to the loss of aspect marker and/or stem vowels.

References

- Bartholomew, Doris A. 1983. Gramática Zapoteca. In Neil Nellis and Jane Goodner de Nellis. *Diccionario Zapoteco de Juarez*. México, D.F.: Instituto Lingüístico de Verano.
- Beam de Azcona, Rosemary. A Coatlan–Loxicha Zapotec Grammar. Ph.D. Dissertation, UC Berkeley, 2004.
- Boas, Franz. 1913. Notes on the Chatino Language of Mexico. *American Anthropologist*, New Series, Vol.15, No. 1 pp. 78–86.
- Campbell, Eric. 2008. Consonantes sibilantes en el zapoteco de Betaza y la diversificación en Villa Alta. Paper presented at the *X Encuentro de la Lingüística en el Noroeste*. ms.
- Carleton, Troi. 2000. Zenzontepec Chatino Shoebox Lexical Database.
- Carleton, Troi and Rachelle Waksler. 2000. Pronominal markers in Zenzontepec Chatino. *International Journal of American Linguistics*, Vol. 66, No. 3., pp. 383–397.
- de Córdova, Juan. 1578. *Arte en lengua zapoteca*. México, D. F.:Ediciones Toledo, 1987. Edición facsimilar de la edición de 1886.
- Cruz, Emiliana. 2008. San Juan Quiahije Chatino electronic lexical database.
- Cruz, Emiliana and Anthony C. Woodbury. 2006. El sandhi de los tonos en el Chatino de Quiahije. In *Las memorias del Congreso de Idiomas Indígenas de Latinoamérica-II*. Archive of the Indigenous Languages of Latin America, http://www.ailla.utexas.org/site/cilla2_toc.html.

- Cruz, Hilaria, and Anthony C. Woodbury. 2006. La fonología y tonología comparativa del Chatino: un informe de campo en Zacatepec. In Las memorias del Congreso de Idiomas Indígenas de Latinoamérica-II. Archive of the Indigenous Languages of Latin America, http://www.ailla.utexas.org/site/cilla2_toc.html.
- Daly, John P. and Larry M. Hyman. 2007. On the Representation of Tone in Peñoles Mixtec. *International Journal of American Linguistics*, Vol. 73, No. 2: pp. 165–207.
- Gordon, Raymond G., Jr. (ed.). 2005. *Ethnologue: Languages of the World*, Fifteenth edition. Dallas, Tex.: SIL International. Online version: <http://www.ethnologue.com/>.
- Haspelmath, Martin. 1993. More on the Typology of Inchoative/Causative Verb Alternations. In Comrie, Bernard and Maria Polinsky (eds.). *Causation and Transitivity*. Amsterdam: John Benjamins. pp. 87–111.
- Hopper, Paul J. and Sandra A. Thompson. 1980. Transitivity in Grammar and Discourse. *Language*, Vol. 56, No. 2., pp. 251–299.
- Kaufman, Terrence. 1987. Otomanguan Tense/Aspect/Mood, Voice, and Nominalization Markers. ms.
- _____. 1993. Proto-Zapotec(an) Reconstructions. ms.
- Long, Rebecca C. and Inez H. Butler. Gramática Zapoteca. In Long and Cruz, 2000. *Diccionario Zapoteco de San Baltolomé Zoogocho*. 2nd ed., electronic. Instituto Lingüístico de Verano, A. C.

- López, Filemón L. and Ronaldo Y. Newberg. 2005. La conjugación del verbo zapoteco: zapoteco de Yalálag, 2nd ed. México, D.F.: Instituto Lingüístico de Verano, A.C.
- Marlett, Stephen A. and Velma B. Pickett. 1987. The Syllable Structure and Aspect Morphology of Isthmus Zapotec. *International Journal of American Linguistics*, Vol. 53, No. 4., pp. 398–422.
- Nellis, Neil and Jane Goodner de Nellis. 1983. *Diccionario Zapoteco de Juarez*. México, D.F.: Instituto Lingüístico de Verano.
- Pickett, Velma, Cheryl Black and Vicente Marcial Cerqueda. 1998. *Gramática popular del zapoteco del Istmo*. Juchitán, Oaxaca, Mexico: Centro de Investigación y Desarrollo Binnizá A.C.
- Pickett, Velma. 2007. Vocabulario zapoteco del Istmo. (5th ed.) México, D.F.: Instituto Lingüístico de Verano, A.C.
- Pride, Kitty. 2004. Gramática chatina de la zona alta. In Pride, Kitty and Leslie Pride. *Diccionario chatino de la zona alta*. México, D.F.: Instituto Lingüístico de Verano, A.C. 2004.
- Pride, Leslie and Kitty Pride. 1970. *Vocabulario Chatino de Tataltepec*. México, D.F.: Instituto Lingüístico de Verano, A.C.
- Rasch, Jeffrey. The Basic Morpho-syntax of Yaitepec Chatino. Ph.D. Dissertation, Rice University. 2002.
- Sicoli, Mark. 2008. Verb Classes in Lachixío Zapotec. Work presented during the PDLMA 2008 field season workshop on verb classes. ms.
- Smith Stark, Thomas C. 2002. Las clases verbales del zapoteco de Chichicapan. In *Encuentro Internacional de Lingüística en el Noroeste* (6th: 2000:

- Hermosillo, Mexico) Hermosillo, Sonora : Editorial UniSon, 2002: pp 165–212.
- Smith Stark, Thomas C. 2007. Algunas isoglosas zapotecas. In the *Memorias del III Coloquio Internacional de Lingüística Mauricio Swadesh*. Buenrostro, C. et al. (eds.). Mexico City: UNAM and INALI.
- Sonnenshein, Aaron Huey. 2004. A Descriptive Grammar of San Bartolomé Zoogocho Zapotec. Ph.D. Diss, University of Southern California.
- Speck, Charles. 1984. The Phonology of the Texmelucan Zapotec Verb. *International Journal of American Linguistics*, Vol. 50, No. 2: pp. 139–164.
- Stubblefield, M. and Elena E. de Hollenbach. 1991. Gramática zapoteca: zapoteco de Mitla, Oaxaca. In Stubblefield, M. and C. M. Stubblefield. 1991. *Diccionario zapoteco de Mitla*, Oaxaca. México, D.F.: Instituto Lingüístico de Verano, A.C.
- Swadesh, Morris. 1947. The Phonemic Structure of Proto-Zapotec. *International Journal of American Linguistics*, Vol. 13, No. 4: pp. 220–230.
- Upton, B. W. and Robert E. Longacre. Proto-Chatino Phonology. *International Journal of American Linguistics*, Vol. 31, No. 4., pp. 312–322.
- Villard, Stéphanie. 2008. Grammatical sketch of Zacatepec Chatino. University of Texas at Austin. ms.
- Weiss, Janna. 1998. Diagnostic Concepts and Medicinal Plant Use of the Chatino with a Comparison of Chinese Medicine. Ph.D. Dissertation, The University of Texas at Austin.
- Woodbury, Anthony C. 2008. On the internal classification of Chatino. University of Texas at Austin ms. 4 pp.

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