# PROTO-ZAPOTEC CORONAL OBSTRUENTS IN SOUTHERN ZAPOTEC[1]

Abstract: Comparative and historical work on the Southern branch of Zapotec has been lacking. This paper follows the development of Proto-Zapotec coronal obstruents in seventeen Southern Zapotec languages. The reflexes of Proto-Zapotec coronals in these languages provide further evidence for the appropriate subgrouping of Southern Zapotec languages into smaller groups, building on the work of Smith Stark (2004). A chain shift with a common genesis in Miahuatec and Coatec indicates that these two subgroups of Southern Zapotec are more closely related to each other than to the Cisyautepecan and Transyautepecan languages, whose possible genetic status as Southern Zapotec languages is examined here. While certain early sound changes are indications of the proper genetic groupings, others, including changes which necessarily post-dated the Spanish conquest, must have diffused areally.

Key words: Zapotec, Historical Linguistics, Areal Linguistics, Coronal Obstruents, Mesoamerica, Oaxacan Languages

## 1. Introduction

The first internal classification of Southern (SZ) and other branches of Zapotec has recently been made by Smith Stark (2004). It divides SZ into four subgroups: Extended Coatec (EC), Miahuatec, Cisyautepecan and Tlacolulita. An earlier draft of the 2004 study also classified as SZ the group of languages termed Transyautepecan by Smith Stark. The present paper is a study of how coronal obstruents inherited from Proto-Zapotec (as reconstructed by Kaufman, 2003) developed in SZ languages. Although inconclusive with regards to the inclusion or exclusion of Transyautepecan in SZ, and with regards to the relationship of Tlacolulita to the rest, the set of sound changes affecting these consonants confirm Smith-Stark's division of EC, Miahuatec and Cisyautepecan. Furthermore, the changes discussed in this study help us to build on this initial division, suggesting a shared history for EC and Miahuatec. However, the relative chronology of some changes uncovered suggests that certain changes spread areally across languages which had already diverged genetically. Since the Southern Zapotec area, and indeed the Zapotec area overall, is geographically contiguous, it is difficult to distinguish changes spread areally from those which might be regarded as indicative of genetic groupings.

Some (incuding Roger Reeck, p.c.) have suggested that the Cisyautepecan languages are genetically southern Valley Zapotec languages, which migrated to their present location separately from Miahuatec and Coatec languages. This is

an important proposition to which I will also apply the findings of the present study. I will show that while innovative phonological sound changes establish a common node for Miahuatec and EC, the sound changes affecting coronal obstruents in Cisyautepecan are typical of non-Southern Zapotec languages such as those spoken in the Valley of Oaxaca. This being the case, one begins to question whether other similarities between Cisyautepcan on the one hand and EC-Miahuatec on the other, are really shared SZ (genetic) innovations or rather the result of diffusion, including both lexical and grammatical borrowing. This issue will not be firmly resolved with this study of coronal obstruents alone, but hopefully the present study will offer insight that will contribute to future, more definitive, work on the subject of Cisyautepecan's genetic status.

In what follows I describe what we know about Southern Zapotec languages, their history, where they are spoken, and what properties distinguish them from other varieties of Zapotec (§2). In §3 I review the Proto-Zapotec series of coronal obstruents reconstructed by Kaufman (2003) and give an account of all the sound changes which affected these consonants in SZ languages. I draw genetic and areal conclusions from these about the relationships between SZ languages in §4. In §5 I conclude the paper with a summary of the main issues that need to be resolved relating to the classification of SZ languages and apply the findings of this paper to some of these. An appendix provides the data used in this study of PZ coronal obstruents in SZ languages.

## 2. Southern Zapotec languages

Southern Zapotec is one of five to six branches commonly posited for Zapotec proper, which together with Chatino forms the Zapotecan family. The other branches of Zapotec are Central Zapotec (including Valley and Isthmus Zapotec languages), Northern Zapotec (Sierra Juárez, Cajonos, Rincón, and Choapan are commonly recognized subgroups), Western Zapotec (e.g. Lachixío Zapotec), Papabuco, and the extinct Soltec language. Smith-Stark (2003) is the only one to recognize Soltec as a separate branch, or to consider it at all. Ignoring also Papabuco and Western Zapotec, Angulo and Freeland (1926) and Fernández de Miranda (1965) only posited three branches. Rendón (1975), who did not consider Western Zapotec, grouped Central Zapotec with Northern Zapotec, and Papabuco with SZ, based on glottochronology. Smith Stark (2004) groups Papabuco together with Central and Southern Zapotec as sub-groups of a branch called Core Zapotec (zapoteco medular), which is parallel to Soltec, Western, and Northern Zapotec.

### 2.1 Geographical location and language contact

Southern Zapotec languages are spoken in the *Sierra Madre del Sur* region of the state of Oaxaca, Mexico. They are found in the districts of Ejutla in the north, Miahuatlán and then Pochutla to the south, and Yautepec to the east. They share

linguistic boundaries with Chatino to the west, extinct Pochutec Nahua to the south, Chontal (also called Tequistlatec, the isolate sometimes grouped with Hokan) to the southeast, Western and Papabuco Zapotec to the northwest, and Central Zapotec to the north and east. To the west, past Chatino and other branches of Zapotec lie Mixtec languages which have come into contact with Southern Zapotec historically through trade and conquest.

The archaeological and historical records establish that there was contact between Mixtecs and Southern Zapotecs going back to a time before the Aztec empire moved into southern Oaxaca. The city-state of Huitzo, to the north of the city of Oaxaca, had wars with Coatlán (Whitecotton, 1977). Tututepec, along the southwest coast, had conquered Miahuatlán and other SZ city-states, and even set up a military base at Miahuatlán from whence they launched attacks on Valley Zapotec sites such as Mitla (Brockington, 1973, citing a manuscript by Robert Barlow). In modern times there may have been Mixtec-speaking communities as near as Chila, (Rojas, 1962: 37) near the current Puerto Escondido airport.[2]

Though the linguistic evidence has yet to be uncovered, it is conceivable that Chontal may be a substrate language that has influenced certain SZ languages. According to Gutiérrez (1609), the town of Ozolotepec was a previously occupied Chontal-speaking town which was violently taken over by Zapotecs from Miahuatlán. Though many Chontals were killed and/or fled during this

invasion it is reported that many remained in Ozolotepec, which since then has been Zapotec-speaking. Since colonial times Chontal and Zapotec speakers have in some places belonged to the same local political unit. In the sixteenth century Xadani, itself Zapotec-speaking, had four Chontal-speaking *estancias* subject to it (Gerhard, 1993:126). Residents of this town in 2002 told me that there were only ca. 25 remaining Zapotec speakers but more Chontal speakers there now.

Thus, SZ languages have been in contact with, and remain in proximity to, a number of other languages which we should expect to have had some effect on shaping the differences both among them, and between them and the languages belonging to other branches of Zapotec. Since the sixteenth century Spanish has also been an obvious influence, although to varying degrees. Figure 1 shows the location of Southern Zapotec in the state of Oaxaca, and its proximity to other indigenous language groups.

### 2.2 Affiliation of the languages considered here in prior classifications

Smith Stark (2004) is the first published classification that posits internal branching for Southern Zapotec. Earlier, Smith Stark's former student, Michael Piper, (1995) had hinted at his own classification of SZ, saying that Quioquitani, Xanica and Xanaguía Zapotec belonged to "the Macro-Yautepec subgroup of the Southern Sierra area" while Amatlán Zapotec belonged to "the Miahuatlán subgroup of the Southern Sierra area of languages." Noting a purported syntactic

similarity (the existence of a construction in which a verb phrase is marked with a pre-posed focus marker *laa*) between Albarradas and Quiatoni (both Valley Zapotec languages) and Quioquitani, Xanica, and Xanaguía, Piper speculated on a Valley-Yautepec connection that other linguists working in this area (e.g. Roger Reeck and David Riggs, both p.c.) have also suggested to me verbally:

> This may prove to be an example of a higher-level shared innovation that could support claims to the genetic link (or diffusion) between some Valley languages and the Macro-Yautepec languages, and to the differentiation between Macro-Yautepec languages and Miahuatlán (Piper, 1995: 75).

Smith Stark (2004) divided SZ into four top-level branches: Extended Coatec, Miahuatec, Cisyautepecan, and Tlacolulita. Here what Piper referred to as the Miahuatlán group would include both Extended Coatec and Miahuatec proper. The three languages Piper mentioned as falling into a Macro-Yautepec group all fall into Smith Stark's Cisyautepecan group. Tlacolulita is a nearly extinct language which Smith-Stark has put in a subgroup all by itself. In an earlier draft of the same paper Smith Stark had included another branch, Transyautepecan, under SZ, but by the final draft he had grouped this with Central Zapotec (CZ). Questions linger about the genetic affiliation of Transyautepecan because it

seems to share affinities with both SZ and CZ. I include Transyautepecan data in this study since the possibility of a closer genetic relationship cannot yet be ruled out. However, the variables I focus on in this paper do not resolve the issue of where Transyautepecan belongs in a Zapotec family tree.

The location of each Southern Zapotec and Transyautepecan language is shown in Figure 2. In this paper I consider data from seventeen languages and from multiple varieties of some of these. For the purposes of the present study I created a lexical database with ca. 200 items, mostly nouns but also a few adjectives and verbs. For several languages I had my own fieldnotes to rely on, though my understanding of individual languages varies so that while in one language I have years' worth of knowledge and a complete phonological analysis, for another I have simply spent a few hours and have only rough phonetic transcriptions. I have also combed published works on other SZ languages and benefitted from the unpublished data shared with me by several SIL linguists working in this region. I note the source and quality of the data for each language in the following paragraphs.

The westernmost branch of SZ, in Smith Stark's (2004) classification, is Extended Coatec (EC). I consider data from all four EC languages in this study. Amatlán Zapotec (AZ) data has been kindly provided by David Riggs. Another dialect of AZ, Logueche or "Lagueche", was documented by Jaime de Angulo. I have made note of the few words from this dialect provided in Angulo &

Freeland (1935) and have extracted many words appropriate to this study from the texts archived with the American Philosophical Society (Angulo, 1922-30), though interpreting the orthography used in the latter provided some challenges[3]. Coatecas Altas Zapotec (CAZ) data comes from the work of Joe Benton (1997, 2002 and p.c.).

San Vicente Coatlán Zapotec (SVCZ) and Coatlán-Loxicha Zapotec (CLZ) form a subgroup of EC, Coatec proper, and I have used my own data from each of these languages. I have only worked with SVCZ speakers on two occasions and I have not made a complete phonemic analysis of that language. I am very familiar with CLZ, having worked on it continuously since 1996, and I have used data from three dialects in this study. These three dialects differ in their reflexes of Proto-Zapotec **ty*. One is spoken in San Baltazar (SBL) and Santa Catarina Loxicha (with barely any noticeable differences, most of which are lexical). The most conservative dialect is that of Santa María Coatlán (SMaC). An intermediate dialect is spoken in San Miguel Coatlán (SMigC). I have worked with a few speakers from SMigC itself but most of my data comes from the Campo Nuevo ranch, which basically speaks the SMigC dialect, though there may be slight differences. CLZ is also spoken in San Sebastián, Santo Domingo and San Jerónimo Coatlán, from whence I have very little data, though what I do have resembles the other Coatlán dialects more than the Loxicha dialect.

Moving eastward the next branch of SZ is Miahuatec. This group of languages lies in the heart of the SZ area. Miahuatec appears to have gained ground since the Spanish conquest, with Miahuatec speakers moving into coastal areas they did not previously inhabit (for example, the toponym for Santa María Colotepec, a town adjacent to the Miahuatec-speaking Loxichas, seems to be a loan from CLZ[4]). Cozoaltepec was repopulated with Zapotec speakers sometime before 1743 (see Gerhard, 1993:73) while in other previously Pochutec Nahua-speaking areas near the coast Miahuatec and/or Cisyautepecan speakers descended between 1786 and 1789 (Gerhard, 1993:125). In pre-Spanish times Miahuatec expanded eastward into Chontal territory, including the Ozolotepecs, through military conquest (Gutiérrez, 1609). This subgroup of SZ is geographically discontinuous. The easternmost Miahuatec language, that of San Bartolo Yautepec, is separated from the rest by the Cisyautepecan languages. It would appear that some of the land seized in the eastward push of Miahuatecs was then lost or given to Cisyautepecan speakers. I have personally gathered data from all of the Miahuatec languages, though for at least one there is also data available from SIL linguists who are more familiar with these languages.

The language sometimes known as Miahuatlán Zapotec is spoken, according to speakers I have consulted, in three towns: Santa Catarina Cuixtla, San Miguel Yogovana, and Santa Cruz Xitla. I have worked briefly with speakers from Cuixtla and Xitla and have also consulted the work of Jane and Manis

Ruegsegger (1956), who worked with the Cuixtla variety. Smith Stark (2004) lists a few other towns as likely speaking this same language, including San Andrés Paxtlán and Santo Tomás Tamazulapan.

I worked with two speakers from San Sebastián Río Hondo (SSRH) in 1997 for less than two hours. The two middle-aged women I worked with named San Andrés Paxtlán and Miahuatlán as towns whose varieties they could understand. This suggests that they speak the same language as Cuixtla, based on Smith Stark's inclusion of San Andrés Paxtlán with that language, however, he lists SSRH separately as a dialect of Ozolotepec Zapotec. In 2005 I have worked briefly with four men from San Marcial Ozolotepec, who agreed that their language was mutually intelligible with the variety spoken in SSRH. The data I obtained from the SSRH variety are of lesser quality than those from the Ozolotepec variety for several reasons including the depth of my experience and a noisy working environment in 1997, and the fact that I tape recorded the 1997 interview, without taking notes until later whilst listening to the recording. At the time I hoped I could obtain a larger amount of data this way, but without the benefit of being able to see the articulators and ask for words to be repeated, the quality of the transcription suffers. My 2005 data from Ozolotepec clarify areas of doubt from the SSRH data, though one should always keep in mind the possibility of dialectical differences.

Data from the language of San Agustín Mixtepec Zapotec (SAMZ) comes from my own fieldnotes, made during my on-going work with the last fluent speaker. The only other information available on this language is Peñafiel's nineteenth century questionaire.

Data from the language of San Agustín Loxicha (SALZ) comes from my own fieldnotes as well. I have made a preliminary phonemic analysis of this language but the data should still be regarded as phonetic, especially with regard to any suprasegmental contrasts. I have worked with several dialects of this language including briefly with San Agustín Loxicha proper, Quelové Loxicha (a smaller subsidiary of SAL), and Cozoaltepec, and somewhat more extensively with the dialect of Santo Domingo de Morelos. I roughly regard the Zapotec spoken in San Bartolomé Loxicha (SBarLZ) as a separate language, though in fact it may simply be a dialect of SALZ. Speakers from SBarL can in fact understand speakers of SALZ but speakers I have consulted from every other SALZ-speaking town all deny being able to understand speakers of SBarLZ, saying they regard it as an incomprehensible separate language. SBarLZ is conservative in its reflex of PZ **tt* compared to its nearest relative.

Data from San Bartolo Yautepec Zapotec come from recent 2005 fieldwork with a family from this town. My work on this language is in the beginning stages of a long-term project.

I have only brief experience with Cisyautepecan languages. Most of the data I have comes from phonological sketches and other work by SIL linguists. Other than data I collected myself, data used in this paper for Cisyautepecan languages come from the following sources: San Juan Mixtepec Zapotec (Nelson, 2004 and other data from Roger Reeck, p.c. or as cited by Benton, 1998), Quioquitani Zapotec (Ward, 1987; Marlett & Ward, n.d.), Quiegolani Zapotec (Regnier, 1993; Black, 1994), Xanaguía (Hopkins, 1995; Olive, 1995), and Xanica Zapotec (Piper, 1995). In 2005 I have worked briefly with speakers from Santa Catalina Quierí (SCQ), who speak a dialect of the same language as Quioquitani, and with a speaker from San José Lachiguirrí (SJL). SJL is listed by Smith Stark (2004) as a dialect of the same language as San Juan Mixtepec (SJM), and my consultant confirmed that speakers from SJL understand SJM speakers with little difficulty. However, according to Menardo Hernández, a speaker of the SJM dialect, the variety spoken in SJL is the most different of the mutually intelligible varieties of this language, with SJM speakers only able to understand about 60 percent of what SJL speakers say. According to Smith Stark (2004) there are seven Cisyautepecan languages. I have thus far not obtained any data for two of these: Lapaguía Zapotec and Xadani Zapotec.

Tlacolulita is classified by Smith Stark (2004) as an SZ subgroup all on its own. He cites the existence of nasal-initial animal words, exemplified by *mba'ako'* 'dog,' as an indication that this language belongs with SZ but not with

Cisyautepecan, and an /s/ reflex of **ss* as in *nis* ‘water,’ as evidence that it is neither Miahuatec nor Coatec (see §3.3). Unfortunately, the latter word cited by Smith Stark is the only Tlacolulita word with a coronal obstruent that is known to me. This language has no documentation and is nearly extinct. All that is known about it, according to Smith Stark, was learned by his student, Oscar Méndez, who made a short trip there and found only 8 remaining speakers.

According to Smith Stark (2004) there are four Transyautepecan languages: Northeastern Yautepec Zapotec (Quiavicuzas), Northwestern Tehuantepec Zapotec (Lachiguiri), Petapa Zapotec, and Guevea de Humboldt. I know nothing of the first three languages listed here. In 2004 I collected a few words from a Zapotec semi-speaker[5] from Guigovelaga, a town which speaks a mutually intelligible dialect of the language of Guevea de Humboldt (GH). I do consider those data here as well as higher quality data from GH proper as recorded by Marks (1980). Smith Stark had previously considered Transyautepecan to be another type of Southern Zapotec but in 2004 classified it with Central Zapotec[6]. This may turn out to be correct, especially in light of the fact that even the closer Cisyautepecan languages may only be Southern Zapotec areally rather than genetically (or not). However, since one of Smith Stark’s (2004) defining features of SZ is the existence of nasal-initial animal words, it should be noted that these are also found in Transyautepecan, e.g. Guigovelaga [mbahkw] ‘dog.’ Since there are lingering doubts about the classificatory status of

Transyautepecan languages I will include the data from GH (and Guigovelaga) in this study of SZ coronal obstruents.

## 2.3 Linguistic properties of SZ

Other than the reflexes of Proto-Zapotec coronal obstruents discussed in this paper, Southern Zapotec languages have some common features which distinguish them from other branches of Zapotec. These include nasal-initial animal words, inclusory constructions, a lack of number marking, and certain lexical isoglosses. In some cases the specific realization of these features coincides with Smith Stark's subgrouping, while in other cases these boundaries are frequently crossed. All of these characteristics are diffusable and may indicate either an areal relationship or a genetic one. These defining characteristics of SZ (the area and/or the genetic group) will not be the main focus of this paper, but I give brief summaries of them here.

### 2.3.1 Nasal(-initial) animacy prefix

All SZ languages have nasal-initial animal words, a feature used by Smith Stark (2004) both to define SZ as a group and to distinguish the subgroups he posited for SZ. Animal (and some higher animate) words begin in nasal-obstruent clusters in Miahuatec, Extended Coatec, Tlacolulita (based on the one example cited, *mba'ako'* 'dog'), and Transyautepecan. In Cisyautepecan these

clusters have been reduced to simple nasals, e.g. San Juan Mixtepec *mæ`kw* ‘dog’ (Nelson, 2004: 14). Beam de Azcona (2004: 264-271) described how these nasal-initial animal and higher animate words may have come into existence by the reduction of the classifiers *mĕ* ‘human’ and *má* ‘animal’ and their resulting fusion with the existing animacy prefixes cognate with Colonial Valley Zapotec *pe-* and *ko-*, as in *pèco* ‘dog’ and *Cocijo* ‘Lightning’ (Córdova, 1578). (Cf. the CLZ cognates *mbèk* and *ngwzi$^{?}$).* A similar conclusion was reached in Regnier (1993).

### 2.3.2 Inclusory constructions

At least some Southern Zapotec languages differ from other kinds of Zapotec in having an inclusory construction (see Lichtenberk, 2000 and Singer, 1999 & 2001 on the typology of inclusory constructions). Black (1994 & 2000) was the first to identify this type of construction in Southern Zapotec, in her work on Quiegolani. In SZ languages these constructions consist of an inclusory quantifier which enumerates the total number of the followed two included NP’s. As described in Beam de Azcona (forthcoming) there are two basic syntactic types of inclusory construction in SZ languages. The quanitifier may be preceded by an inclusory pronoun as in (1) or it may not, as in (2). Number is only marked through quantifiers in most SZ languages, so the same pronoun *de* in (1) can

have either singular or plural reference. Here the construction means ‘the two of you (pl.), you (sg.) and Susan.’ In the type of construction shown in (2) the two nouns following the quantifier usually constitute a possessed noun phrase, although the possessor also counts towards the total number expressed by the quantifier.

(1) *Ts-a [de y-rup de Susan]*. **Quiegolani Zapotec** (Black, 2000)

P-go [2 P-two 2 Susan]

‘You can go with Susan.’

(2) *Mbi$^{ʔ}$d [chŏn xìn mĕ] ti$^{ʔ}$n* **Coatlán-Loxicha Zapotec**

C-come [three offspring 3hr] job

He and his two sons came to work.

Inclusory constructions are found in at least the following SZ languages: Quiegolani (Black, 1994 & 2000), Coatlán-Loxicha Zapotec (Beam de Azcona, 2004), Coatecas Altas Zapotec (Benton, p.c.), San Agustín Mixtepec Zapotec (Beam de Azcona, forthcoming), and the Logueche dialect of Amatlán Zapotec (Angulo,1922-1930) as well as Amatlán proper (as seen in data given to me by David Riggs). This sample attests to such a construction’s existence in Extended

Coatec, Miahuatec, and Cisyautepecan. It remains to be seen whether the construction also exists in Tlacolulita and Transyautepecan. This type of syntactic construction would be easily diffusable, and therefore its existence alone should not be taken as diagnostic for a genetic grouping, but if such a construction were found in Tlacolulita and/or Transyautepecan it could be taken as further evidence of those language's areal, if not genetic, relationship to the rest of SZ.

In the data provided by Black (1994 & 2000) only the type of inclusory construction shown in (1) is found. In CLZ only the type shown in (2) is found. In other individual SZ languages there are both types, or variations on these. I analyze the Quiegolani type of inclusory construction as conservative and the CLZ type as having developed from the Quiegolani type via the deletion of the preceding inclusory pronoun. Since geographically intermediate languages like SAMZ have both types, the conservativeness of the Quiegolani construction neither proves a genetic relationship to the SZ languages in whose common ancestor this construction may have been innovated, nor does it prove or disprove the notion of a late Cisyautepecan arrival, since Quiegolani could have borrowed the conservative form from Miahuatec languages like SAMZ which have both types of construction today and may have only had the conservative type when the Cisyautepecans arrived in the region.

### 2.3.3 Lack of number-marking

Marlett and Pickett (2001) found that Southern Zapotec languages were extreme in having no plual marking. In their sample of twenty-three languages from every branch of Zapotec some had a plural proclitic placed before nouns and pronouns, a verbal prefix to mark a plural subject, a floating plural clitic ocurring in post-verbal position, or combinations of these. The languages from the Southern Sierra region that were included in their study were Miahuatlán (i.e. Cuixtla/Xitla), San Juan Mixtepec, and Quioquitani, which come from Smith Stark's Miahuatec and Cisyautepecan groups. These three agreed with each other (and nearby Chatino) and differed from all the rest by lacking any type of plural marking. A Transyautepecan language, Guevea de Humboldt, was also included in the study and agreed with its neighbor, Isthmus Zapotec, in having a plural proclitic to mark nominals. One SZ language not included by Marlett and Pickett, that of Coatecas Altas, which borders the Valley Zapotec region, does have a plural prefix *bi-* (Benton, 2005).

Besides the lack of bound number markers, Southern Zapotec languages essentially have no number contrast in their pronominal categories. While the first person inclusive necessarily has plural reference, number is not what is being marked by selecting that pronoun. The exclusive pronoun can have singular or plural reference in both Quiegolani (Black, 1994) and CLZ (Beam de A., 2004). In CLZ the second person respectful pronoun is coming to be used

more for plural reference based on the Mexican Spanish *tú:usted(es)* pattern of singular and familiar for the one pronoun and formal and/or plural for the *usted* and *ustedes* pronouns. Also in CLZ the third person human respectful pronoun *mĕ*, is coming to be used more for singular and the third person human stranger pronoun *xaˀ* is coming to be used more for plural reference. Yet, at this time even though these tendencies are developing both *mĕ* and *xaˀ* can be used for both singular and plural referents. Thus, Southern Zapotec (not including Transyautepecan) languages differ from other Zapotec languages by their absolute lack of number marking.

### 2.3.4 Reduction in verb classes

Most Zapotec languages (e.g. Mitla: Stubblefield & Hollenbach, 1991; Yatzachi: Butler, 1980; Sierra de Juárez: Bartholomew, 1983; Yalálag: López & Newberg, 1990; Coatlán-Loxicha: Beam de A., 2004; Guevea de Humboldt: Marks, 1980) have two types of completive allomorphs. One consists of a bilabial consonant or cluster, *p, b, mb,* or *m* often followed by a non-low[7] front vowel *i* or *e*. The other allomorph is labiovelar *ko, ku, go, gu,* $g^w$, $ŋg^w$, *ŋgu, ŋgo,* or is sometimes reduced to *w*.

In the Southern Sierra there seems to be a simplification underway which, if ever completed, will end with there only being one completive marker. In

Quiegolani (Black, 1994) it seems that this has already happened, with the lone marker being *w*-. In CLZ (Beam de A., 2004) and in Miahuatec languages (e.g. SAMZ, SALZ) many verbs which historically belonged to verb classes that mark the completive with a *ko*-type marker, are now taking the bilabial completive marker. This bilabial marker is now becoming the most regular and productive completive marker in these languages.

### 2.3.5 Non-tonic vowel deletion

One feature of SZ languages that is not unique to SZ within modern Zapotec is the trend towards monosyllabicity. This is also common in many other Oaxacan languages (e.g. Yaitepec Chatino, Trique languages, many varieties of Valley Zapotec) and we can regard it as an areal feature, though notably there are other nearby languages which have thus far resisted the monosyllabic trend (e.g. Isthmus Zapotec, Chontal, Zenzontepec Chatino, and many Mixtec languages). In SZ, unstressed vowels have been lost historically, though new ones are gained through compounding and borrowing from Spanish. In CLZ most lexical items are monosyllables and the only exceptions are onomatopoeia, borrowings from Spanish, and compounds (Beam de A., 2004). The same appears to be true for other Coatec, Miahuatec, and Cisyautepecan languages. Of the two words given by Smith Stark (2004) for Tlacolulita, *nis* 'water' follows this monosyllabic pattern but *mba$^{ʔ}$ako$^{ʔ}$* 'dog' does not. While monosyllabicity is very characteristic

of SZ languages (other than ‘dog’ in Tlacolulita), it is also common in many other modern Zapotec languages.

### 2.3.6 Lexical isoglosses

Some lexical innovations appear in SZ languages. There are also isoglosses within SZ which reflect phonological innovations, or different lexical forms that are reconstructed for PZ. Such isoglosses may either cut across or delimit the proposed subgroupings of SZ.

Miahuatec languages have an innovatory word for ‘butterfly’ or ‘moth’ which is not found in any NZ or CZ dictionary, including Córdova (1576). Kaufman reconstructs **kw+e(ʔ)* which is the ancestor of the CLZ form *mbeʔ* ‘butterfly.’ Miahuatec languages instead have a word which is based on **s̱š̱ilaʔ* ‘wing’ plus the animacy prefix, e.g. SBarLZ *mpš̱il*. This lexical item is also found in Amatlán *mxil*, perhaps borrowed from Miahuatec. While CLZ conserves the older form for ‘butterfly’ *mbeʔ*, the word for ‘moth’ in CLZ is *mše̱ʔ* and the same word is ‘butterfly’ in SVCZ *mše̱ʔe*. This form is perhaps a blend based on *mbeʔ* plus the *š̱* from ‘wing’ or from contact with the Miahuatec-Amatec word. Two Cisyautepecan varieties, SJL and SCQ, have reflexes of Kaufman’s **kw+e(ʔ)(+)ketiʔ*, which he reconstructs based on forms for ‘butterfly’ in Central and Western Zapotec and forms for ‘bat’ in Northern, Eastern, and

Western Zapotec. These are thus the first attestations of this form in SZ, though they may also be taken as a sign of these languages' affinity with Central Zapotec. Another Cisyautepecan language, Quiegolani, has *mlag* [mblak] which is not cognate with either of the other forms discussed here and may be an innovation based on the word 'leaf.'

The term for 'eye' is reconstructed in PZ by Kaufman as **keyek lawo* 'stone of face.' In the Cisyautepecan language of SJL a form *gyɛ̀ló* was translated by the consultant as 'flor de la cara; flower of the face' but since 'stone' and 'flower' are very similar words in Zapotec languages, this form is clearly another reflex of the metaphor reconstructed by Kaufman, even if phonological similarities and possibly other sound changes may have brought about a different folk etymology in this one case. In other SZ languages a similar but different metaphor is found meaning literally 'fruit of face.' I have found this metaphor in one language in each of the three main subgroups considered here, EC, Miahuatec, and Cisyautepecan. The CLZ word is *ngùz ndô.* The Cisyautepecan form found in Xanaguía *ngud lo* appears to be a borrowing from Miahuatec (cf. SAMZ *ngùt lò*) based on the non-sibilant reflex of **s* which is typical of Miahuatec but no other SZ group. This unexpected reflex is found in the Xanaguía word for 'fruit' outside of this compound as well. In CAZ the word for eye, *zalo,* is the word for 'face' preceded by an unanalyzeable morpheme (Benton, 2005 & p.c.). One possibility is that there was a stress shift causing the

first syllable of fruit to be lost and the last syllable retained. The initial *z* of *zalo* would thus be cognate with the *z* in CLZ *ngùz*.

The word for 'hummingbird' found in CLZ *nẓo ʔẓ* is a form borrowed into Zapotec from Mixtec[8] or the other way around. This form is also found in Northern Zapotec languages and in Coatecas Altas, Cuixtla, SALZ and SBarLZ. In SBYZ the word for 'butterfly' [mdǒṣ] may be cognate with this Zapotec-Mixtec word for 'hummingbird' (note that both animals were traditionally associated with warriors in Mesoamerica). SAMZ shares a different word for 'hummingbird', not found in non-southern Zapotec languages, with Cisyautepecan: SAMZ *sĭnk*, SJMZ *dzing*, Quioquitani *¢ĭnk*. Quiegolani has a similar form in the word for 'cricket' *ṣ̌kilǰink*. This form violates normal SZ syllable structure, which led Nelson (2004) to regard this word as onomatopoetic and Marlett & Ward (n.d.) to suggest it was a loan from Spanish. I do not know of a Spanish word with phonological and semantic similarities to this one, but Loretta O'Connor (p.c.) informs me that one Lowland Chontal word for 'hummingbird' is /kanˈ¢ini/, and that the Highland Chontal cognate is *jlantsini* (Turner & Turner, 1971). The SAMZ and Cisyautepecan forms thus appear to be borrowed from Chontal.

There are at least three morphemes for 'scorpion' that are found in SZ languages. Miahuatec languages including SAMZ & SALZ have a term using the

morpheme *ṣûβ*. In SALZ this morpheme is preceded by a non-nasal animacy prefix but the morpheme is part of a compound in Cuixtla and SAMZ, where it follows the word for ‘dog.’ SJL and SCQ both have another ‘dog’ metaphor which I think means ‘dog of the house’ although the ‘house’ morpheme is not identical to the modern ‘house’ morpheme in either language. I transcribed [mægwio$^{ʔ}$o] in SJL and [m$^{e}$æ`kwyu$^{ʔ}$u] in SCQ for ‘scorpion’ but in both varieties I recorded ‘house’ as [yû]. However this word does have a glottalized *o* in many other Zapotec languages, and would be a reasonable part of the metaphor since scorpions are often found in and around one’s home. CLZ instead has a compound *mbéwnè*. Both morphemes are reconstructed by Kaufman. Though, to my knowledge, Miahuatec languages do not make use of the latter to refer to scorpions, they do have this morpheme in the toponym for Sta. Ma. Colotepec, which appears to be borrowed from CLZ. The *mbé* morpheme is a classifier for shellfish in CLZ and is also found in the Ozolotepec term for ‘scorpion’ though followed by the Miahuatec morpheme for ‘scorpion.’ The third ‘scorpion’ morpheme I’ve found in SZ languages is the form *nix* which occurs in AZ and CAZ.

Multiple morphemes have also been reconstructed for ‘house.’ Miahuatec languages, AZ and CAZ, and the Cisyautepecan languages for which I have found a word, all have a form like *yoˀ* but the two languages of Coatec proper

have lost this form in favor of *nì*. Kaufman's reconstruction indicates that **yoʔo* is found in Northern, Central, and Southern Zapotec, while **niʔi* is found in Western and Southern Zapotec and Chatino. Since the Southern attestation in Kaufman's sample most likely comes from CLZ, the westernmost SZ language, it is likely that this is a Chatino or WZ loan into CLZ, displacing native **yoʔo*.

The herb *epazote* is reconstructed by Kaufman as **kwette(-yʔ)*.The first syllable seems to have lost stress (and subsequently undergone vowel deletion) in the bimorphemic version which is ancestor to the forms found in AZ, SJMZ and most Miahuatec languages (e.g. SAMZ *βθyæˋˀ*), while in Coatecas Altas and SCQ both morphemes preserve their vowels (e.g. CAZ *bityeːʔ*), and in CLZ and Ozolotepec there is no evidence of the second morpheme (e.g. CLZ *βɛ̂θ*). Though Amatec is classified as an EC language by Smith Stark and does share certain sound changes discussed below with EC languages, this isogloss as well as the 'butterfly' isogloss and others to follow are evidence of the increased contact Amatec has had with adjacent Miahuatec languages over the centuries.

Kaufman reconstructs two forms for 'night' with different initial consonants: **ty_eːʔla* and **k_eːʔla*. The first form is reflected in Coatec proper (e.g. CLZ *tæˀl̤)* while the second is seen in other SZ languages, (e.g. Logueche *yalh*, SAMZ *yæˊˀæl*, Xitla *[ɣʸɛlˀ]*, Chilapa Loxicha *yaˀlaˀ*, SCQ *kyoˀol)*.

A word for ‘thing,’ not reconstructed for PZ, seems to have had initial **tty* in the ancestor of CLZ *ṯa$^{ʔ}$n̈* and Xitla *ča$^{ʔ}$n*, but an initial labiovelar in the ancestor of CAZ *kwa$^{ʔ}$n*, Logueche *kwan*, SALZ & SBarLZ *hwa$^{ʔ}$n*, and Xanaguía *kwa$^{ʔ}$an*.

Also showing different initial consonants are two forms meaning ‘mountain, hill’ or perhaps a better gloss for the modern languages is ‘wilderness.’ Kaufman reconstructs **tani* which is the ancestor of Coatecas Altas *tan*, SJMZ *dán*, Quioquitani *tañ* and Quiegolani *den* ‘ranch.’ A similar form likely had a labiovelar as the ancestor of SALZ *wăn*, SSRH *wan*, Cuixtla [g$^{ɣ}$àn], and a *wàn* form found in some CLZ compounds referring to certain plants and animals.

Kaufman reconstructs two forms for ‘white’: **na-kattye* and **(na-)kki¢¢i*. The latter form is the basis for Logueche *kich*, SAMZ *nàkì¢*, SALZ *nakis*, SBYZ *nakǐč*, SCQ ŋgìtz, Quiegolani *ŋgič*, and Ozolotepec ‘clear’ *nakì¢*. The former is the ancestor of another form found in SZ languages but with a different tonic vowel. I would reconstruct the ancestor of this form as **na-kotyi*: CAZ *naguž*, San Baltazar Loxicha (dialect of CLZ) *n̈ɣŭð*, SDM *wuð* (perhaps borrowed from CLZ based on the *ð*), Cuixtla *nagús*, SSRH *naɣuz*, SBarLZ *naguz*. Probably related to **na-kotyi* is a **ty*-initial form found in SJL and SCQ r̃ŭs.

Figures 3-11 show the isoglosses for the lexical and phonological innovations discussed in this section, with the exception the term for ‘eye’ discussed above.

Languages that remain blank are ones for which I have no appropriate datum recorded, not towns which have a separate lexical item.

## 3. Proto-Zapotec coronal obstruents

Zapotec languages have a so-called fortis:lenis contrast in their consonant inventories. The nature of this contrast has been reconstructed as geminate:single by Swadesh (1945), Suárez (1973), Benton (1988), and Kaufman (2003) and as voiced:voiceless by Fernández de Miranda (1965). In this paper I follow the reconstruction of Kaufman (2003), who reconstructs the coronal obstruents shown in Figure 12.

A word about the values of the phonetic symbols used below is in order before proceding. I generally use a variant of Americanist transcription favored by many Mesoamericanists, except that I employ *dz* instead of *ʒ* to avoid confusion with the IPA value of the latter character. Otherwise, *¢* is a voiceless alveolar affricate and so on. Here I am using the symbols *š* and *ž* in two different ways. When I add an underdot to these, *ṣ̌* and *ẓ̌*, I am indicating that a sound is necessarily retroflex. However, when I do not use the underdot the sound in question is not necessarily non-retroflex. Where some languages have a retroflex and others an alveopalatal reflex I may use one symbol *š* or *ž* to refer to all the reflexes. In other cases it is not clear to me from the literature whether a sound

(usually represented orthographically as *x* or *zh*) is truly retroflex or alveopalatal. Most SZ languages do not have a contrast between the two places of articulation, though Quiegolani and Guevea de Humboldt do. I make it clear, through use of the underdot, and in prose, that there is a distinction in those languages, but elsewhere it should not be assumed that the lack of the underdot means that a segment is alveopalatal.

In what follows I consider each PZ coronal obstruent, one by one. The sound changes that affected these sounds are presented as the proto-segments they affected come up in the discussion, not in the chronological order they occurred in. Such discussion of rule ordering is found in §4. For reference, Figure 13 shows all the main SZ reflexes of PZ coronal obstruents discussed in the remainder of this section.

### 3.1 *šš

The PZ geminate retroflex sibilant, **šš̌*, has a single but otherwise unchanged reflex *š̌* in every language for which I have relevant data (CLZ, SVCZ, CAZ, AZ, SAMZ, SALZ, Ozolotepec, SJMZ & SJL, Quioquitani & SCQ, Xanaguía, and Quiegolani). Though Piper (1995) doesn't provide any of the lexical items containing **ṣ̌ṣ̌* used in this study, *š̌* is listed as a Xanica phoneme there and it is not a reflex of any other PZ coronal obstruent since there is enough data given to

establish correspondence sets for those. Therefore it is reasonable to assume that Xanica has the same uncomplicated reflex as the other languages studied.

(a) **šš̌* > *š* in Southern Zapotec (and elsewhere)

### 3.2 **š̌*

The PZ single retroflex sibilant has undergone voicing in some SZ languages but in others it has remained voiceless, merging with its fortis counterpart, **šš̌*. The merger of **šš̌* and **š̌* seems to take place in all the Extended Coatec and Miahuatec languages examined, though there is one SVCZ word with word-final (earlier intervocalic) *ẓ̌*. The voicing of **š̌* is fairly regular in Cisyautepecan, and what I have seen of Transyautepecan, though in Xanaguía there is word-final devoicing. The reflex is analyzed as a voiceless phoneme /s̆/ in Quioquitani by Marlett and Ward (no date), though by their own rules the phonetic realization is voiced [ž]. In Quiegolani nearly all the examples I have are words in which PZ **š̌* preceded a front vowel. I have one example of **š̌* preceding **a* and it happens to have a voiceless reflex /ṣ̆/. Though it is possible that the voiced reflex is conditioned in this language and only occurs when it preceded front vowels,

based on what happened in other Cisyautepecan languages it seems more likely that this is a simple exception.

The voicing of lenis **š̱* in Cisyautepecan and Transyautepecan is not a single sound change but part of a larger trend for formerly single, i.e. lenis, obstruents to undergo voicing. Miahuatec and EC languages undergo this same type of voicing of lenis obstruents, but **š̱* does not participate in this change in those languages, having merged with **šš̌*.

There is one exception to the generalization that **š̌* and **šš̌* have merged in Miahuatec languages. I recently worked simultaneously with four men from San Marcial Ozolotepec. Two men stood out as good consultants with clear voices, interest in the work, and a good knowledge of the lexicon. One seemed to be around fifty years old and the other in his early thirties. They differed in their pronunciations of several words. The word for ‘grass,’ which is reconstructed with the lenis fricative, was voiced in the speech of the older man but not that of the younger man. There are several possible explanations for this. Since the older man was the only one in this group who represented his generation, it may not be that all older people have this pronunciation and that something about his life circumstances explains the difference. Ozolotepec Zapotec is surrounded by Cisyautepecan languages all around its eastern border. It may be that this man has had more contact with Cisyautepecan languages and that his speech has been

influenced. Another possibility is that this man is representative of his generation and that Ozolotepec Zapotec earlier had a regular voiced reflex of the lenis fricative, perhaps a result of diffusion from Cisyautepecan, but that the younger generations have reverted to a more traditional Miahuatec voiceless reflex, perhaps diffusion from Miahuatec retransplanting the original reflex.

(b) **š* > *ž* in Cisyautepecan & Transyautepecan (and in Ozolotepec)

### 3.3 *ss

**ss* has three different reflexes in the three main branches of SZ. It mostly has a /¢/ reflex in Extended Coatec. Every Miahuatec language studied has a /t/ reflex and in every Cisyautepecan and Transyautepecan language included here there is a single /s/ reflex. Tlacolulita also has /s/ in 'water' *nis* (Smith Stark, 2004). While the thought occurs that the EC reflex /¢/ could be an intermediate step on the way to Miahuatec /t/, this was probably not the case. As discussed below, **ss* merged with **s* in some environments in Miahuatec.

The only exception to the sound changes stated here is Amatlán Zapotec. In Amatlán the reflex of **ss* is single /s/, as in Cisyautepecan. However, considering Jaime Angulo's data from Logueche, a mutually intelligible dialect of AZ, we find that [s] appears in free variation with [¢]. The word for 'water,' reconstructed by Kaufman (2003) as **nissa*. Angulo & Freeland (1935) report

the Logueche cognate as *ni¢*, but in Angulo's unpublished Logueche texts the word occurs as both *ni¢* and *nis*. A reasonable hypothesis is that AZ underwent the sound change with the other EC languages and subsequently underwent deaffrication to a fricative *s*, perhaps aided by contact with *s* languages such as Cisyautepecan and Valley Zapotec languages. This subsequent change is apparently more complete in Amatlán today than it was in Logueche in the 1920's.

(c) **ss* > *¢* in Extended Coatec

(d) **ss* > *t* in Miahuatec

(e) **ss* > *s* in Cisyautepecan, Tlacolulita and Transyautepecan

(f) Extended Coatec *¢* > *s* in Amatlán Zapotec

Returning to an idea mentioned above, if there was a sequence of events **ss* >*¢* > *s* in Amatlán, one could possibly argue that the same chain of events happened in Miahuatec, allowing for the subsequent merger of PZ **ss* and **s* in some environments. However, this would mean arguing for a shared sound change between Amatlán and Miahuatec. While Amatlán does share several lexical isoglosses with Miahuatec as outlined in §2.3.6 above, I regard such similarities as the result of diffusion rather than a closer genetic relationship. The idea of a closer genetic relationship between Miahuatec and Amatlán is refuted

when one considers the fate of PZ *¢¢ and *¢. Sound changes affecting those consonants indicate a still-united EC group, including Amatlán, separate from Miahuatec. Furthermore, the changes affecting PZ geminate and single ¢ must have pre-dated *ss > ¢ in a chain shift, discussed in §4 below.

### 3.4 *s

Proto-Zapotec single *s follows the expected pattern for lenis obstruents, becoming voiced /z/ in Extended Coatec, Cisyautepecan and Transyautepecan. In Miahuatec, though, it becomes /t/ or /ð/.

In SAMZ *s becomes /t/, though it is [d] following /n/ in 'ear of corn (*elote*)' *ndæ`ʔ*. In the phonetic transcriptions I made of words from SSRH, I recorded [t], [ð], and [θ] reflexes of *s*. In order of frequency: I recorded [t] in both word-initial and word-final environments, [ð] only word-finally, and [θ] in one instance, in which it was root- but not word-initial. Word-finally it tended to be the case that [ð] was followed by a glottal stop and [t] not so, but in neither case was this true all of the time. At the present time I suspect that these are allophonic variants in SSRH, though more and better data would certainly clarify this. I do have more and better data for the mutually intelligible variety of Ozolotepec. There, the reflex is /t/ both initially and finally but [d] (an allophone of /ð/?) following a nasal prefix. In the language spoken in Cuixtla and Xitla the

main reflexes are word-initial *t, d* after *n* and ╖ or *d* elsewhere, with a number of exceptions. It is difficult to know whether Ruegsegger's <d> is /d/ or /ð/. While I transcribed [d] for the Xitla word *mbed* 'nene,' I transcribed mostly [ð] for other words, not included in the cognate sets used for this study, from the same speakers. The Cuixtla word for 'possum,' *ndes*, preserves /s/, possibly indicating a borrowing from a non-Miahuatec language. San Agustín Loxicha Zapotec, as represented by the three dialects spoken in Chilapa Loxicha, Santo Domingo de Morelos, and Cozoaltepec, presents a familiar set of reflexes: *t, ð, d,* $t^{\theta}$. [t] occurs root- and word-initially, except after a nasal where we find voiced [d]. Word-finally the reflex is typically [d] or [ð], with possible free variation between the two. However, in some words we find either [t] (which is often aspirated word-finally) or [$t^{\theta}$], an apparent devoicing of *d* and *ð*, with which they may vary. In San Bartolomé Loxicha voiceless *t* is the reflex in all positions.

While the data for **s* in Miahuatec are a bit messy, I propose the following. PZ **s* underwent voicing intervocalically, perhaps as an earlier allophonic rule that became phonemic at some point. This change did not happen in all dialects, for example it did not take place in the ancestor of San Bartolomé Loxicha. Modern final consonants in SZ languages were intervocalic in PZ and probably into colonial times, as indicated by the vowel-final words one finds in the SZ *relaciones* (Espíndola, 1580; Gutiérrez, 1609), the *lienzo de San Jerónimo*

*Coatlán* (Welte, 1966; de Cicco, 1963), and at least one other colonial document (López, 1618). Words which now have nasal prefixes may have been an additional intervocalic environment, one in which root-initial consonants were inter-vocalic, following *NV-* prefixes. Alternatively, a separate voicing assimilation may have taken place after the creation of these nasal prefixes. In Ozolotepec the word-final reflex of *s is *t* but following a nasal it is *d*. There are two possibilities to explain this set of reflexes. Either the intervocalic voicing rule was floating around the Miahuatec languages for a while, taking place later in some than in others, and in Ozolotepec it did not take place until after post-tonic vowel loss so that the modern word-final sounds were no longer intervocalic when this rule took place although the sounds following prefixes still were, or else the intervocalic voicing of *s* never took place in this dialect but *t* did undergo voicing, either in an earlier intervocalic environment or more recently following nasals. I favor the former solution over the latter. Subsequent to the intervocalic voicing of **s* in some varieties of Miahuatec, PZ **ss* merged with **s* to become single *s*. Following this merger *s* became *t* and in a parallel sound change *z* became *d*, which came to alternate with *ð* in free variation, as today. The merger of **ss* and **s* must have followed any voicing assimilation affecting **s* because while we find both voiced and voiceless reflexes of **s* in several languages, we find only voiceless reflexes of **ss*.

(g) *s > z intervocalically in some dialects of Miahuatec

everywhere in non-Miahuatec SZ languages

(h) *s* > *t, z* > *d* ~ *ð* in Miahuatec

### 3.5 *¢¢

PZ geminate **¢¢* becomes *č* in Extended Coatec, and in some environments in Quioquitani, Quiegolani, and Guevea de Humboldt. Otherwise, the SZ reflex is predictably *¢*, though this has deaffricated to *s* in some Miahuatec varieties.

I have not found a reflex of **¢¢* in the Xanica data available but I presume that the reflex is *¢* based on the correspondence in other Cisyautepcan languages and based on the fact that a phoneme *¢* is listed in the Xanica phoneme inventory.

The alveopalatal *č* reflex of **¢¢* in Quiegolani occurs when the segment precedes *i* or when it preceded **i* historically. A similar situation is found in one word, 'iguana' *wàč* < PZ *(ko+)wa¢¢iʔ* in Cuixtla and San Agustín and San Bartolomé Loxicha, where this reflex is not regular even in this environment, e.g. PZ **ku-¢¢i* > *guʔs* 'yellow.' Therefore 'iguana' may be a loan from an Extended Coatec language, though a loan not found in other Miahuatec languages where the expected reflex is found (SAMZ *wě¢*, SSRH *wɪ¢*). If the word is a loan,

Quiegolani could also be the source, at least from a phonological standpoint, though from at least a modern geographical standpoint this seems less likely.

In Quioquitani I have not found enough examples to make firm conclusions but in the few available Quioquitani words reconstructed with *¢¢* several reflexes are seen. The basic reflex must be the expected *¢* as in *ki¢* 'hair.' We see palatalization of word-final *¢* where it used to precede **i* in 'iguana' */nkwčě¢y/*. However, we find a *č* reflex in this same environment in 'buzzard' *pěč*, though the SCQ dialect has the expected *¢* reflex in this word. We already saw that 'iguana' was exceptional and possibly a loan in some Miahuatec languages. It turns out that the same can be said for 'buzzard' which is *pé ʔč* in SAMZ. Quioquitani and SAMZ are the only two SZ languages I know of that share this morpheme for 'buzzard,' all the others (for which I have data) having dropped this morpheme from an earlier compound (PZ **ko꞉la kw+e¢¢i* 'old.person buzzard') and now only using the 'elder' morpheme *ŋgòl*. Thus, both these words with **¢¢i* sequences in PZ have turned out to be exceptional in SZ and there may be borrowing involved in both cases. It is therefore unclear whether one phone, either $¢^{y}$ or *č*, is the regular pre-**i* reflex of **¢¢* in Quioquitani, and the other a result of borrowing. From the mutually intelligible dialect of SCQ, the reflex is usually *¢*, but this reflex is palatalized in $kyè¢^{y}$ 'metate' though not in other words where **¢¢* also preceded **i*. I did not note palatalization in the

SCQ word for ‘iguana’ although it is reportedly present in the Quioquitani cognate. It may be that being new to this language I missed palatalization in some words where it was present, or it may also be that this is an allophonic feature that is sometimes left out.

In the Guigovelaga dialect of Guevea de Humboldt I only found the *č* reflex in one word, ‘three’ *čŏna*, which was also the only word-initial reflex I found in the data available to me for that language.

In the language of San Agustín Loxicha the ¢ reflex of **¢¢* appears to have deaffricated to *s* only recently. The reflex is ¢ in San Bartolomé Loxicha which is either a barely separate language from or an especially conservative dialect of SALZ. In the Chilapa Loxicha dialect of SALZ the two phones [¢] and [s] are still in free variation. However, the same deaffrication to *s* has already been completed in Cuixtla, a northern Miahuatec language, and in SBYZ which is the farthest removed geographically of all Miahuatec languages.

| | |
|---|---|
| (i) **¢¢ > č* | preceding **i* in Quiegolani |
| | word-initially(?) in Guigovelaga (dialect of GH) |
| | everywhere in Extended Coatec |
| (j) **¢¢ > ¢* | in non-EC languages, but with the exceptions given in (i) & (k) |
| (k) *¢ > s* | in Cuixtla, SBYZ and in most SALZ dialects |

### 3.6 *¢

*¢ remains an affricate and becomes predictably voiced in most Cisyautepecan languages. In Miahuatec and Extended Coatec languages there is a tendency for geminate:single obstruent pairs from PZ to transform themselves into voiceless plosive:voiced fricative pairs. Other than the recent deaffrication of *¢¢ in certain Miahuatec varieties discussed above, EC and Miahuatec reflexes of the geminate affricate have remained affricates. Accordingly the EC and Miahuatec reflexes of single *¢ are fricatives which correspond to the fortis reflex according to place of articulation: retroflex for EC languages and alveolar for Miahuatec languages. The Transyautepecan data are contradictory, data from one variety resembling the EC reflex and data from another resembling the Cisyautepecan reflex of *¢.

The most common Cisyautepecan reflex of *¢ is *dz*. This is found regularly in SJMZ, Quioquitani and Xanaguía. In Quioquitani this phoneme devoices word-finally but is still apparent by the lengthening seen on the preceding vowel, according to Marlett & Ward (n.d.). Two words reconstructed with *¢ are listed by them with a word-final voiceless ¢ in phonemic transcription, seemingly indicating a lack of the vowel-lengthening preceding the devoiced /dz/ phoneme. Both of these words have rearticulated vowels ([$V^{?V}$]), which perhaps causes a neutralization of /¢/ and /dz/ by disturbing the generalization about vowel

lengthening, though one word given by Marlett & Ward with the /dz/ reflex word-finally also has a rearticulated vowel. In SCQ and SJL I was only able to obtain words with word-final reflexes of *¢, and these were voiceless ¢, sometimes with palatalization in SCQ. Perhaps there is word-final devoicing in these varieties as well.

In Quiegolani there is a conditioned alveopalatal affricate ǰ reflex when *¢ preceded *i. This mirrors what happened to the fortis counterpart of *¢. The unconditioned reflex we would expect to be *dz* as in other Cisyautepecan languages but here there has been deaffrication to *z*. A voiceless *s* is found in one word ‘supper’ where there was a *ṣ̌ prefix which likely caused devoicing.

In Xanica the reflex of *¢ is ¢. It is likely that PZ *¢¢ and *¢ have merged into this one phone, though there is insufficient data to clearly establish ¢ as the reflex of *¢¢ in Xanica. If this merger did take place, it probably happened with the devoicing of *dz*, the expected reflex of *¢. The alternative, that *¢ underwent no sound change and that the merger happened with the degemination of *¢¢, would mean the lack of a sound change, voicing, that occurred in all other Cisyautepecan, even all other SZ languages, and would further mean different ordering, with degemination occurring earlier in Xanica than in related languages.

The defining feature used by Smith-Stark (2004) in grouping together the languages he names Extended Coatec was the affricate reflex ¢ of PZ *ss. An

equally strong and related feature of this group is having a *ž* reflex of PZ **¢*. These two sound changes are part of a chain shift to be discussed in §4. A voiceless reflex [š] is found in Angulo's data from the Logueche dialect of Amatlán but the voiced [ž] form is what occurs in Riggs' data from Amatlán proper.

In Miahuatec languages **¢* usually deaffricates but varies between voiced *z* and voiceless *s*. In SAMZ the reflex is *s*. In Cuixtla the reflex is *z* but appears to devoice word-finally if following a glottal stop. The mutually intelligible variety of Xitla has *s* as the general reflex. In SSRH *s*, *z*, and *¢* all occur at least phonetically. *¢* occurs word-initially. *z* occurs following *n* and word-finally where there is probably no glottalization. I also recorded *s* word-finally but with a following glottal stop, and in one case this varied freely with *¢*. In the mutually intelligible dialect of SMO my older consultant had an affricate *¢* while the younger speakers had s. In SALZ and SBarLZ the reflex is *z* but in the dialect of Santo Domingo de Morelos the word-initial reflex is *s*. In one case there appears to be an exceptional *š* reflex before *i* in Chilapa Loxicha *mši:ˀ*, a type of spider.

Looking at the pair of phonemes **¢* and **¢¢* together, we find that in Miahuatec languages there are two possible outcomes. **¢¢* always degeminates but it only deaffricates to *s* in some Miahuatec languages. Single **¢* always deaffricates (except for the older speaker from Ozolotepec) but it only voices in

certain languages and in some of them only in certain environments. In SAMZ, perhaps a conservative language, we find no deaffrication of *ȼȼ and no voicing of *ȼ so that the *ȼȼ:*ȼ contrast becomes *ȼ:s. In most dialects of SALZ we find both deaffrication of *ȼȼ and voicing of *ȼ so that the pair becomes *s:z*.

The waves of changes affecting these two phonemes have narrowly avoided a merger in each case except for finally in the dialect of Xitla, the only Miahuatec variety in my sample where there appears to have been a complete merger of the two segments into *s*. In the speech of the older man from SMO there also appears to have been a merger of the two segments into ȼ. In his case I suspect that there may be either free variation or some influence from a Cisyautepecan language because if there had been an earlier merger of *ȼȼ and *ȼ into modern ȼ by the time represented by his generation, it would be difficult to explain how the two proto-segments end up with separate reflexes ȼ and *s* in the speech of the younger generation in SMO. In all other Miahuatec varieties the deaffrication of *ȼ avoided a merger with *ȼȼ with the latter segment's degemination. Subsequently in some cases there has been voicing of the lenis segment which avoids another eminent merger with the deaffrication of the fortis segment. These two changes are part of a chain shift and the usual questions about directionality apply. Is the voicing of the lenis segment caused by pressure put on the system when the fortis segment begins to deaffricate or does the deaffrication

of the fortis segment only take place because a gap is created by the voicing of the lenis segment?

In San Bartolomé Loxicha, a dialect or language which in other respects is conservative compared to its nearest relative, SALZ, there is voicing of the lenis segment to *z* but there is not deaffrication of the fortis segment which remains ¢. In Chilapa Loxicha, another dialect of SALZ, the same is true except that fortis ¢ alternates freely with deaffricated *s,* the regular fortis segment in other dialects of SALZ. This would indicate that at least in the history of SALZ voicing preceded deaffrication, creating a gap.

In SSRH deaffrication of the fortis segment has not occurred and voicing is only now beginning to affect the lenis segment in certain environments, and in some cases both the voiced and voiceless reflex occur in the same environment. This dialect may also shed light on the ordering of an earlier wave of sound changes affecting these two segments. Without the deaffrication of *¢, there would have been a merger with *¢¢ when that segment degeminated in Miahuatec. This merger did in fact take place word-initially in SSRH and word-finally the lenis segment may vary freely between *s* and ¢ as I heard in one word. This suggests that degemination of the fortis segment put pressure on the system to distinguish the lenis segment through deaffrication, which is still in progress.

Returning to the language spoken in Cuixtla and Xitla we find a counter example to the notion that deaffrication of *¢¢ is initiated by a gap created by the

voicing of *¢. While the Cuixtla dialect mirrors SALZ with the *s:z* contrast, the Xitla dialect has a merger of the two segments, with deaffrication of the fortis segment taking place without the voicing of the lenis segment. Perhaps the former change spread from the Cuixtla dialect into Xitla without the same happening for the latter sound change.

In Transyautepecan, the data available from GH and Guigovelaga show different reflexes, which are perhaps conditioned rather than dialectal. 'Be afraid' is reconstructed with an initial *¢*e* sequence and in GH it is *-ẓ̌ièhby*. 'Large wild feline' such as a puma or jaguar is reconstructed by Kaufman as **kw+e:ʔ¢i(k)* and in Guigovelaga is *mbeʔe¢*. Unfortunately these are the only two words available in this language that are reconstructed with *¢. While the GH phone *ẓ̌* is before *ie* today, this diphthong is likely a more recent development from an earlier simple *e*, while the Guigovelaga phone ¢ in *mbeʔe¢* was originally before a high front vowel. With so little data it is impossible to conclude whether the difference is due the conditioning environment or the difference in dialect. If the difference were due to conditioning environment it would be surprising that the reflex in that conditioning environment remains unchanged while the reflex that didn't occur before **i* has undergone a change. In other languages, such as Quiegolani, we find a change before **i* and a

different or no change in all other environments. The *ẓ̌* reflex in the GH word is identical to the Extended Coatec reflex.

(l) **¢ > ž* in EC languages and GH proper

(m) **¢ > dz* in Cisyautepecan languages, except as in (n)-(p)

(n) **¢ > ǰ /_i* in Quiegolani

(o) *dz > z* in Quiegolani

(p) *dz > ¢* in Xanica

(q) **¢ > s* in Miahuatec

(r) *s > z* in Cuixtla (but not Xitla), SALZ, and SBarLZ
in SSRH after *n* and sometimes word-finally

### 3.7 *tty

**ty* and **tty* are the most controversial phonemes in historical Zapotec linguistics. Of these two, the lenis phoneme is the more controversial, as discussed in the next section. The reason for the difference of opinion is that most Zapotec languages today do not have a palatalized coronal stop in their phoneme inventory and instead have a fortis lenis pair something like *č:ɾ* as a reflex of **tty:*ty*. In what follows I first review how previous reconstructors

have dealt with **tty* and then lay out the facts of how this phoneme developed in my sample of SZ languages.

### 3.7.1 **tty* in Proto-Zapotec reconstructions

For the moment limiting the discussion to what Kaufman (2003) reconstructs as **tty*, the first reconstructor of PZ, Swadesh (1947), reconstructed two proto-segments, **tč* and **tty*. The latter was only reconstructed for one word, 'two,' which had a more uniform correspondence set than **tč*. A palatalized stop was chosen for 'two' based on the *tyùp* form recorded by Angulo & Freeland for Teotitlán del Valle. Swadesh reconstructed the fortis:lenis contrast as geminate:single, resulting from earlier and sometimes still underlying consonant clusters.

Fernández de Miranda (1965) posited a voiceless:voiced contrast for fortis:lenis in PZ. She reconstructed **č* for both of Swadesh's fortis segments **tč* and **tty*. She explained the difference in correspondence sets that led Swadesh to posit two phonemes, based on whether or not her **č* occurred in a stressed syllable. However, while FM reduced Swadesh's **tč* and **tty* to one **č,* for some words she posited doublets, with **č* as the ancestor of the form in Santa María Coatlán (using data from Robinson, 1963) and another segment, **dz*, in the ancestor of the form in other Zapotec languages, e.g. 'house (casa)' ** ɬidzi* (for

Atepec, Rincón, Villa Alta, Isthmus, and Cuixtla), **liči* (for Coatlán), (and **ɬizi* for Mitla).

Suárez (1973) recognized that in cases where FM posited **dz* and/or **z* for some languages and **č* for Coatlán (i.e. the language I refer to as CLZ) the following vowel was always **i*. With reference to Upson & Longacre's (1965) Proto-Chatino (PCh) **t* and **ty*, which each corresponded to Isthmus Zapotec (IZ) words with *r* and *s*, and with PCh **ty* also corresponding to IZ *č*, Suárez reconstructed a single phone **t* with allophones *[t] and *[ty] for the fortis:lenis pair reconstructed later by Kaufman as **tty:*ty*. Suárez had returned to the geminate:single analysis of fortis:lenis and so his **t* ocurred as both geminate and single.

Benton (1988) was the first to propose a **tty:*ty* pair for the segments we are concerned with in this and the following section. He was also the first to consider Western Zapotec data in his reconstruction. Kaufman also reconstructs **tty:*ty* but a difference between the two is that Benton's **tty* and **ty* include a subset of the instances of Kaufman's **¢* and **¢¢*. Data from CLZ support Kaufman in this instance because there are four different word-final reflexes for Kaufman's **ty*, **¢*, **tty*, and **t¢*. As I discuss below, in some languages PZ **tty* merged with **¢¢* before **i* and this is even more true of **ty* and **¢*.

### 3.7.2 **tty* in Southern Zapotec

Among SZ languages, even Zapotec languages at large, EC languages are conservative in lacking a conditioned reflex of **tty* before reconstructed front vowels. In Miahuatec and Cisyautepecan, as well as in Transyautepecan and non-Southern Zapotec languages, **tty* has merged with **¢¢* in this environment. The unconditioned reflex of **tty* is *č* in most SZ languages, as in the majority of Zapotec languages from other branches.

Among EC languages, the languages of Coatec proper, CLZ and SVCZ, are the most conservative, with /t̪/ as the main reflex but preserving /ty/ in a limited environment. Coatecas Altas and both documented varieties of AZ have *č* in all environments. The fact that this reflex is so widespread throughout many Zapotec languages, perhaps suggests that there was some allophony between [č] and [$t^{y}$ː] at an earlier stage. There may also have been diffusion of this sound change across multiple languages and even branches of Zapotec, at a time when there was not only more intelligibility among these but also more Zapotec multilingualism. Contact with Spanish, a language with a /č/ phoneme, may have helped to cement this change.

In CLZ **tty* reflects as /t̪/ both initially and finally, before all vowels. The same is true of CLZ's closest sister, SVCZ, except that [t̪] varies freely with [θ]

word-finally in the speech of some speakers[9]. In CLZ the reflex of **tty* is /ty/ when following a prefix. Reconstructed examples of **tty* in this environment are rare and there is really only one example I have found in Coatec: 'louse' CLZ *mtyæˆ* and SVCZ *mityæˆ*, a word which is also exceptional for having a conditioned reflex in other languages even though the vowel following **ty* is reconstructed as **e* rather than **i.* There are many more examples of **ty* following prefixes in Coatec where the same *ty* reflex is found. Interestingly this is nearly the same environment where Fernández de Miranda posited a change **č > ty* in Mitla. She said this change occurred when in the tonic syllable. Final consonants in SZ were in the onset of post-tonic syllables in PZ. Root- or stem-initial consonants were in the tonic syllable in PZ, meaning that consonants which follow prefixes in CLZ were the onsets of tonic syllables historically. The difference between the environment FM gives for the Mitla sound change, what we might regard as a retention rather than a change if reconstructing **tty* rather than **č,* only differs from the environment of the retention in CLZ in that unprefixed words do show a *t̰* reflex of initial **tty*, which was also in the tonic syllable historically.

Miahuatec languages typically have a *¢* or *s* reflex for **tty* before **i,* and before **e* in the lone example I have found, 'louse,' depending on what reflex a language has for **¢¢*. In other environments the reflex is *č*. For example, I have

found the word ‘who?’ **ttyo* as *čǒ* in every Miahuatec variety in my sample except for SSRH, which we know has a *č* reflex based on the word for ‘frog’ *mbi$^{ʔ}$č*, and SBY, which also has this reflex in other words. SBY differs from all other Miahuatec languages in lacking the conditioned reflex preceding **i*. SBY has a *č* reflex for **tty* in all environments.

Preceding **i* Miahuatec languages have the following reflexes: Cuixtla and Xitla have *s* before **i*, the same as their reflex for **¢¢*. SAMZ, SSRH, and San Bartolomé Loxicha have *¢* as a reflex of **¢¢* and of **tty* preceding **i*. These three languages also have this reflex in the word ‘louse’ where **tty* precedes **e* and follows a bilabial prefix. In this same word there is also a *¢* reflex in the closely related varieties of Santo Domingo de Morelos and Cozoaltepec, even though the former (and possibly the latter?) of these has *s* and not *¢* as a reflex of **¢¢* and of **tty* before **i*: ‘louse’ SBarL [m¢æ̀ːʔ], SDM [m¢eːʔ], Cozoaltepec [p¢e], SAMZ (with different stress leading to a different position of **tty*) *mbě¢*, and SSRH (with an unexplained final consonant) [n¢ɪːθ]. It is not clear whether this change generally took place before front vowels or whether ‘louse’ is exceptional (perhaps having an **i* at some point rather than the reconstructed **e*), because it is the only word reconstructed with a **ttye* sequence that I have found cognates for in SZ. Perhaps the vowel changed to **i* in SZ. Before **i* Chilapa Loxicha has *¢* and SDM has *s*, in both cases matching the reflex of **¢¢*.

In Cisyautepecan the basic pattern for **tty* reflexes is ¢ before **i* (the same as the reflex of **¢¢*) and *č* elsewhere. This is the case in SJMZ, and the varieties of SCQ and SJL. In Xanica I only found one word reconstructed with **tty*, which happened to be preceding **i*, which had the reflex ¢. In Quioquitani the only reflexes I found of **tty* were also before **i* and before **e* in 'louse', which had the reflex $¢^{y}$. This reflex was always word-final in the words found and this reflex is the same as the word-final reflex of **¢¢* before **i*. I found no examples of word-final **¢¢* before **e* but before **a* the reflex is unpalatalized ¢. In Xanaguía I found no examples before front vowels but I did find the *č* reflex in 'tomato.' It is not always clear from the orthographies used for different languages whether *č* is meant to be retroflex or alveopalatal, but the literature on two Cisyautepecan languages does make the distinction clear. For Cisyautepecan Nelson (2004) uses alveopalatal symbols for the unconditioned reflex described here. In Quiegolani Regnier (1993) describes a contrast between retroflex and alveopalatal *č.* In Quiegolani retroflex *ç̌* is the basic reflex of **tty* and alveopalatal *č* is the conditioned reflex before **i*, which is also the conditioned reflex of **¢¢* in the same environment.

In Transyautepecan the reflexes of **tty* are most similar to those found in Cisyautepecan. The basic reflex of *č* is found in both GH proper and the dialect of Guigovelaga. I lack data from GH in the conditioning environment but in

Guigovelaga the reflex is ¢ before both **i* and **e* in 'louse,' where I thought I heard an offglide as in Quioquitani $¢^{y}$.

(s) **tty* > *s* / _**e* in SDM & Cozoaltepec

(t) **tty* > **¢¢* / _**i* in Miahuatec, Cisyautepecan and Transyautepecan

(u) **tty* > *t̪* / #__, __# in Coatec proper

(v) *t̪* ~ *θ* / __# in SVCZ for some speakers

(w) **tty* > *č* in AZ, CAZ, Miahuatec, Cisyautepecan and Transyautepecan, where

*č* is retroflex in Quiegolani and alveo-palatal in SJMZ

With respect to **tty* we have seen that EC is conservative compared to the rest of SZ in not having a conditioned merger with **¢¢*, and that the two Coatec proper languages are even more conservative in not undergoing the sound change **tty* > *č*. One wonders why these languages show this conservatism. This is probably an unanswerable question. However, in pondering this situation I imagine that there may have been some sociolinguistic factors as work during the time when these sound changes were taking place. The very name of CLZ in CLZ is *di$^{ʔ}$zhke$^{ʔ}$*, which has an etymology meaning 'language of the lords' (Beam de Azcona, 2004). The speakers of CLZ were a significant political power in pre-

Spanish times and resisted Spanish control more than most other Zapotec groups in colonial times (del Paso y Troncoso, 1905; Díaz, 1960). If there was a "CLZ identity" that caused its speakers to view themselves as a separate social entity from both the rest of the Southern Zapotec region as well as the larger Zapotec state headed by Monte Albán, this sense of self-importance may have led Coatec speakers to resist the **tty > č* change as a marker of independence. Similar social factors could be responsible for the lack of merger with **¢¢* before front vowels in the whole EC group. We'll never be able to know for sure.

### 3.8 *ty

**ty* underwent a sound change to an alveolar flap, sometimes changed to a trill, in most Zapotec languages, as well as in certain other Otomanguean languages of Oaxaca. This sound change is less natural or obvious than **tty > č* and is a reason why **ty* was not posited prior to Benton (1988), even though Swadesh (1947) had posited **tty*. Not even until Suárez (1973) was it made clear in a reconstruction that modern *r* was the lenis partner of *č*, and that therefore a phonologically similar (geminate:single or voiceless:voiced) fortis:lenis pair needed to be reconstructed for these two.

As with *č*, a linguist who favors the reconstruction of palatalized coronal stops for PZ needs to consider why *ɾ* is so widespread today. While I suggested

above that one explanation for *č* being so widespread was that there may have been some allophony between *tty* and *č* earlier in Zapotec, I would not propose such a situation for *ty* and *ɾ*. There is evidence from several distantly related Zapotec languages which today have *ɾ* that this phone did not exist in Zapotec at the time of Spanish contact. Early Spanish loanwords which contain /ɾ/ in the lending language do not have /ɾ/ in the borrowing Zapotec languages even when those languages have an /ɾ/ phoneme today. Examples of *r*-less early loanwords include Quiegolani *tlaz* 'peach' (Regnier, 1993) from Spanish *durazno*, Lachixío *lášo* 'orange tree' (Sicoli, 1999) from Spanish *naranjo,* and the word for 'compadre' in various languages including CLZ *mbál,* Xanica *mbyal* (Piper, 1995), Atepec (Northern) Zapotec *umpálí* (Nellis and Nellis, 1983), and San Lucas Quiaviní (Valley) Zapotec *mbaaly* (see Munro and Lopez et al., 1999).

Today and for the last 400 years all Zapotec languages have been in contact with Spanish, a language with a /ɾ/ phoneme. The place of articulation of /ɾ/ in Spanish is alveopalatal rather than strictly alveolar according to Barrutia & Schwegler (1994). Thus the place of articulation of Spanish /ɾ/ would have been very similar to that of a palatalized *t* in earlier Zapotec. The same can be said for the manner of articulation. A flap is characteristically short. According to Swadesh (1947), Suárez (1973), Benton (1988) and Kaufman (2003) the

fortis:lenis contrast in Zapotec was originally one of length. /ɾ/ is a loan phoneme from Spanish which has replaced the short **ty* of PZ in the majority of modern languages. In SZ the only two languages to have resisted this intrusion are the Coatec languages.

In the remainder of this section I briefly review the reconstructions that have been made corresponding to Kaufman's **ty* and then recount the reflexes of this segment in modern SZ languages.

### 3.8.1 **ty* in Proto-Zapotec reconstructions

**ty* experienced a similar dissimilatory change before **i* as described above for **tty*. In Swadesh's reconstruction this led to the positing of two proto-segments, **r* and **č*. Fernández de Miranda posits only **r* for the lenis phoneme. Words reconstructed by Swadesh with single **č* are reconstructed by FM with *dz* instead. Suárez pointed out that FM's **č* and **r* ought to be regarded as fotis:lenis partners because of the morphological behavior of their reflexes, as in the Mitla unpossessed/possessed forms for 'jug' *reʔ/štyeʔ*. As stated earlier, Suárez regarded modern *č* and *r* as coming from geminate and single PZ *t*, with *ty* allophones. Benton (1988) and Kaufman (2003) both posit lenis **ty* but Benton reconstructs this segment in some words for which Kaufman posits **¢* instead, e.g. 'deer' Benton **-tyina*, Kaufman **kwe+¢inaʔ*.

### 3.8.2 **ty* in Southern Zapotec

In the majority of SZ languages Kaufman's PZ **ty* has merged with **¢* preceding **i* and has become *r* in all other environments. This is true even of some EC languages which did not have a conditioned reflex of **tty*. Coatec languages are again the most conservative, lacking a *r* phoneme. The SMaC dialect of CLZ, today probably the most moribund of CLZ dialects, has a special reflex of this segment whose realization is conditioned by the tone of the preceding vowel.

The two languages which belong to Smith Stark's Extended Coatec group but not to Coatec proper, AZ and CAZ, have a *ž* reflex of **ty* before **i*, a merger with **¢*, and otherwise have a *r* reflex. In SVCZ one word 'breast' does have *ž* before **i* but this appears to be influence from other Zapotec languages and Spanish. This word, reconstructed as **šityi ʔ*, is *čǐž* in SVCZ. While the *ž* would be the appropriate reflex of **tyi* in nearby CAZ or AZ, or in SVCZ itself if the merger had ocurred there in other words (which it didn't), word-initial *č* is not a regular reflex of **š* and appears to be influence from Spanish *chiche*. It may be that the *č* of the second Spanish syllable is also somehow influencing the *ž* reflex in this word.

In all dialects of CLZ **ty* has merged with **tty* word-initially as /t̪/. Though there is scant data for **tty* in a word-medial environment it appears that there was a merger there as well, caused by the degemination of **tty* and the retention of **ty* in a medial (in CLZ not PZ) environment. This medial environment includes root-initial occurrences of **ty* both following a prefix and also as the initial segment in the second root of a compound, e.g.: 'ant' *mtyê*, 'twelve' *ti ʔβtyŏp*, 'heart, emotional center' *látyoʔ* (SBL) ~ *líðyoʔ* (SMaC). The reconstruction for the last word is a compound **la ʔtyi ʔ tawoʔ* and the *ð* seen in the SMaC form is perhaps akin to a palatalized version of the /ð/ found in SVCZ before **i*, though this is not a regular reflex of **ty* before **i* in SMaC.

**ty* has also merged with **tty* word-finally in the SMigC dialect. In SBL **ty* has instead merged with **t* word-finally. In SMaC there has been a partial merger of **tty* and **ty* depending on the tone of the word. If a word has a high (rare) or falling (common) tone then this merger takes place in SMaC and the word-final reflex of **ty* is /t̪/ just as it is for **tty*. Reflexes of all lenis obstruents other than **ty* in CLZ are voiced fricatives. A feature of CLZ phonology is that these lenis voiced fricatives are followed by a short glottal stop word-finally before a pause. In SMaC this rule is only realized in words with low, rising or glottal tone. For example, in SMaC the falling-toned word 'bee' lacks a pre-pausal glottal stop[mbɪ̰z] but the low-toned word 'fox' has one [mbæ̀z$^{ʔ}$]. In

SMaC the [t̪] reflex of **ty* is indistinguishable from the [t̪] reflex of *tty* when not word-final or when final in a word with high or falling tone, which is not eligible fore the pre-pausal glottal stop. However, in a word with low, rising, or glottal tone (see Beam de Azcona 1998 or 2004) there is a pre-pausal glottal stop following the *t̪* reflex of **ty* but not following the *t̪* reflex of **tty*. When the word is not pre-pausal there is no difference between the two reflexes. There is no other voiceless segment marked with the pre-pausal glottal stop in this language. The pre-pausal glottal stop is not phonemic itself because in every other environment it is completely predictable phonologically. It is not even very salient, disappearing when not in pre-pausal environment. However, its existence is enough to distinguish word-final reflexes of **ty* from those of **tty* in SMaC and I analyze the word-final reflex of **ty* in words with low, rising, and glottal tone as a separate phoneme /t̪$^{7}$/.

In SVCZ as in CLZ the word-initial reflex of **ty* is /t̪/, but *d* after /n̪/. Word-finally we just saw in CLZ that the northern Coatlán dialects have a voiceless stop reflex while the southern Loxicha dialects have a voiced fricative *ð* reflex. In SVCZ both word-final reflexes are found. In CLZ it was probably the case that **ty* depalatalized to *t̪* first and then went to *ð* in the Loxichas in the intervocalic environment that later became word-final with post-tonic vowel deletion. Although the Loxichas are not as close to SVCZ as the Coatlanes, it

appears that this intervocalic spirantization and voicing began to take place in SVCZ as well, spreading via lexical diffusion but being cut off before spreading throughout the lexicon.

It is pure speculation but one social environment that might have contributed to this set of facts has to do with colonial-era population movements (Gutiérrez, 1609). Many men from the Coatlanes were sent to work and often die in the Chichicapan mine, a punitive measure by the Spaniards after SZ uprisings. This only took place for a limited period of time. Men from different SZ towns would have come into contact under intense conditions, later returning to their respective towns. Even more significantly, it was the practice of the Spanish priests in the SZ area to force the Southern Zapotec to live in concentrated parrishes where they could be more easily controlled and prosletyzed to. Families which used to live far apart in rural and isolated settings as well as those who lived in whole communities that were rounded up, all went to live where the churches were being built, in places such as San Pablo Coatlán. This forced concentration was also temporary. As the churches were built and the people were converted, the priests gradually gave permission for people to return to their traditional homes. In some cases people ended up staying in the new SZ centers and in other cases they went back to live where they did before, escaping the epidemics that were more rampant in the centers. With this rounding up of different SZ groups, the SVCZ speakers could have been in temporarily closer

contact with the Loxicha dialects of CLZ than they are today. Through travel and trade these two groups still do come in contact with each other, but not as much as either group with the CLZ-speaking Coatlanes.

An alternative and non-socially motivated explanation for the SVCZ reflexes has to do with timing of sound changes, but still involving lexical diffusion. All dialects of CLZ as well as SVCZ, experienced both the sound changes **t* > *ð* and **ty* > *t*. In the Coatlanes **t* > *ð* was completed before **ty* > *t* began, preventing a merger of **ty* and **t*. In the Loxichas and in some words in SVCZ there has been a partial merger of **ty* and **t*. One might consider that **t* > *ð* was not complete when **ty* > *t* took place, causing the earliest SVCZ words to be affected by the latter sound change to go through the former sound change together with words that originally had **t*. However, since in the Loxicha dialect of CLZ and in SVCZ **ty* only has an *ð* reflex word-finally, it is better to consider that these **ty* words did not get /ð/ through a merger with **t*, which became *ð* in all environments, but through a separate change which was phonologically conditioned, i.e. intervocaling spirantization and voicing.

In all other SZ languages there is generally a *ɾ* reflex for **ty* except preceding **i* where the reflex is usually the same as that of **¢* before **i* or everywhere.

Most Miahuatec languages have *ɾ* as the basic reflex but SALZ and SBarLZ have a trill *r*–. Preceding **i* there are three different reflexes in SAMZ. Normally

in this environment there is an *s* reflex as for **¢*. In one word with a *n-* prefix the reflex is *dz*, however this may be voicing assimilation, *s* changing to *z* following *n*, and the epenthetic *d* here would not be surprising as it happens in other nasal-sibilant clusters. More exceptionally there is a *ǰ* reflex, also following initial *n* in function morphemes including the habitual aspect prefix *nǰ-* and the demonstratives *nǰeʔe* 'here' and *nǰĭ* 'there.' The habitual marker is reconstructed with a following **i* but the two demonstratives are reconstructed with a following **e*. In SSRH the reflexes of **ty* before **i* are the same as for **¢*, either *z* or *s* in free variation with ¢. In Xitla and Cuixtla there are both *s* and *z* for both **ty* before **i* and **¢*. In all the varieties of SALZ and SBarLZ, taken as a whole, there is variation between four phones *s~¢~z~dz* both when reflecting **ty* before **i* and when reflecting **¢* in any environment. In SBYZ the conditioned reflex is *ǰ*.

Among Cisyautepecan languages Xanaguía is conservative in lacking an *ɾ* reflex, having *ǰ* instead. Likewise, SCQ has *č* as the unconditioned reflex, and it is voiced *ǰ* following a nasal prefix *m-*. All other Cisyautepecan languages have *ɾ* as the unconditioned reflex of **ty*, though the variety of SJL has a trill in word-final and a flap in word-initial position. All Cisyautepecan languages including Xanaguía have a conditioned reflex of **ty* before **i*, usually an alveolar affricate.

In each language the reflex of **ty* before **i* is the same as the reflex of **¢* before **i*, though there are some exceptional morphemes.

The morpheme for ‘chest’ or ‘liver’ has exceptional reflexes in three Cisyautepecan languages. The word for ‘emotional center’ (sometimes the heart, sometimes the liver, or a generalized chest or abdominal area) is reconstructed by Kaufman as **la ʔtyi ʔ*. Before **i* we expect a *¢* reflex in Xanica and Quioguitani and a *ǰ* reflex in Quiegolani but instead we find that ‘chest’ is *la ʔas* in Xanica and *laz* in Quioquitani and that ‘liver’ is *lešto ʔo* in Quiegolani, where *to ʔo* is a separate morpheme in a compound. The *s* and *z* could be evidence of borrowing from Miahuatec where these are regular reflexes of the conditioned merger of **¢* and **ty*. This word is commonly used in compound verbs and idiomatic expressions in Mesoamerican languages. Borrowing from Miahuatec could have come through borrowed idioms. I have no explanation for the *š* in Quiegolani other to suppose that this is reduction to a fricative from an affricate when preceding a consonant, as in this compound. A similar rule exists in Quioquitani (Marlett & Ward, n.d.: 23). In Quiegolani the word ‘squirrel’ also has an irregular reflex *č*: *mčîz*. In SJMZ the word ‘breast’ has an unexpected *ǰ* in *ǰî ʔ*, which I presume to be influence from Spanish *chiche*. This influence may be influence of Spanish *č* in the phonologically and semantically similar word on

the native *dz*, or it may be that the influence or borrowing, if that's what it was, took place early on, when Spanish voiceless obstruents were still borrowed as lenis and underwent voicing, as happened in many languages[10].

The most significant exception to the merger of **¢* and **ty* before **i* concerns the habitual aspect, reconstructed as **tyi+* by Kaufman. In every Cisyautepecan language in my sample the reflex of **ty* in the habitual prefix is the same as when **ty* was not before **i*. There are two possible explanations for this. One is that the vowel **i* had changed to some other vowel in this morpheme in the ancestor of this group of languages. The other possibility is that the vowel was lost altogether from this morpheme, something we know happened at some point anyway since all SZ languages underwent pretonic vowel deletion, i.e. all prefixes lost their vowels when preceding consonant-initial stems. The habitual aspect is marked with *nǰ* in Miahuatec languages (at least in certain environments) and in AZ and CAZ, the only two EC languages to undergo the merger of **¢* and **ty*. In AZ and CAZ the reflex of merged **ty* and **¢* is *ž*. When *n-* is added to this an epenthetic *d* gives us *nǰ*. Thus, the form of the habitual marker is regular and not surprising in AZ and CAZ. In Miahuatec the marker varies between *nd* (identical to the marker in Coatec proper) and *nǰ* (identical to AZ and CAZ) in different environments although neither *d/ð* nor *ǰ/ž* (when we subtract the *n-*) is an expected reflex for **ty* in any environment, either preceding

**i* or elsewhere. It may be that this marker has been borrowed into Miahuatec from EC languages. In any case, the marker *nǰ* in Miahuatec shows some kind of difference from the regular reflex of **ty*. The implication of the reflexes seen in the habitual marker is that pre-tonic vowel deletion preceded the merger of **ty* and **¢* in Cisyautepecan but not in CAZ & AZ, and possibly not in Miahuatec, depending on whether the unusual reflexes there are homegrown or borrowed.

In Transyautepecan as elsewhere we find *ɾ* as the general reflex of **ty* and a merger with **¢* before **i*. This means a conditioned reflex of *ẓ̌* in GH proper and ¢ in the Guigovelaga dialect. Like Cisyautepecan, in GH the habitual marker is an unconditioned *r-*, suggesting earlier vowel loss relative to the merger.

(x) **ty* > **¢ / _*i* in AZ, CAZ, Miahuatec, Cisyautepecan, & Transyautepecan

(y) **ty* > *ɾ* in AZ, CAZ, Miahuatec, Cisyautepecan, & Transyautepecan

(z) *ɾ* > *r*– in SALZ & SBarLZ (and word-finally in SJL)

(aa) **ty* > *t̬* / #__ in all CLZ dialects

__# in SMigC and in SMaC words with high or falling tone

(bb) **ty* > *t̬ˀ* / __# in SMaC words with low, rising, or glottal tone

(cc) **ty* > *ð* / __# in SBL

(dd) **ty* > *č* in SCQ (with voicing assimilation after *m-*)

### 3.9 *tt

This phoneme generally degeminates but remains a stop in Cisyautepecan, Transyautepecan, and most EC languages. In Miahuatec and in CLZ it spirantizes.

**tt* has a reflex of *t* (alveolar or dental) in AZ including Logueche, SJMZ including SJL, Xanica, Quioquitani including SCQ (where it may be palatalized preceding **i*), Xanaguía, Quiegolani, and GH including Guigovelaga. In SVCZ and CAZ the reflex is definitely dental *t̪*. In GH, Xanaguía, and sometimes SCL this reflex is palatalized to *ty* before **i*, and elsewhere in one Guigovelaga word. There are also two instances of voiced *d* in GH. The voiceless reflexes in GH were preceded by *h* which may be an unrelated feature of the preceding vowel, though a preaspirated stop reflex should not be ruled out entirely considering some SVCZ data discussed below.

**tt* was rare word-initially in PZ and I have found no examples of Coatec examples in this environment. Kaufman reconstructs a **k-* marker for cardinal numbers, the ordinal numbers being unmarked. The numerical roots, which have initial lenis consonants, would thus have had fortis consonants in the cardinal forms, *k*-initial underlying consonant clusters yielding surface geminates. In AZ, Miahuatec, Cisyautepecan and Transyautepecan a reflex of fortis **tt*, the result of Kaufman's cardinal prefix is apparent, but not so in Coatec where there is a lenis

reflex. This may be due to different numeral morphology in Coatec, where today the completive aspect marker is used to form ordinal numbers and segmentally unmarked (possibly potential aspect) forms are used for cardinal numbers. The word-initial reflex of **tt* in most Miahuatec languages is *θ*. The reflex is *t* in Cozoaltepec, though my lone Cozoaltepec consultant was missing his front teeth and this is likely the reason for the stop rather than the fricative. In SBYZ, the most distantly spoken Miahuatec language, the word-initial reflex is *t* and word-finally the reflex is an affricate *t͡θ*.

The word-final reflex of **tt* is *θ* in CLZ, SAMZ, SSRH, SMO, Cuixtla/Xitla, and SBarLZ. In SVCZ the word-final reflex is aspirated *t̤* which varies freely with *θ* for some speakers. With my most recent SVCZ consultant I noted preaspiration, perhaps as strong as a fricative [x] preceding final *t* in some words. This is possibly significant in light of the fact that the word-final reflex of **tt* in SALZ is *x* which varies between *x* and *h*. However, given the fact that SALZ's closest relative, SBarLZ, has the reflex *θ*, the *x/h* reflex could just as likely be a recent weakening of *θ* rather than a reduction from pre-aspirated *ht̤*. There are a few words with a word-final *x* reflex of **tt* in CLZ, a phoneme which outside of these few words only exists in Spanish loanwords and onomatopoeia. I suspect that these few words (e.g.'grind' *–òx*) are loans from SALZ. The *x* reflex seen in SALZ and in a few CLZ words may be related to an interesting phonological rule

in Quioquitani. Quioquitani has a negative suffix *–t$^{y}$~-d$^{y}$*. When this suffix is added following a final coronal stop (examples of this process following final *t*, *t$^{y}$*, and *d$^{y}$* are given in Marlett & Ward, n.d.: 32-33) the stop preceding the suffix is rendered a velar fricative, e.g. 'grind' is *č-ot* when positive but *č-ox-t$^{y}$* when negative. Although this rule only takes place in a specific morphological environment it is an example of two adjacent coronal stops resulting in a *xt*($^{y}$) sequence, similar to what I transcribed in some SVCZ words with reflexes of geminate **tt*. It is possible that in some instances earlier geminate **tt* underwent the same process as the morphologically constructed *t-t($^{y}$)* cluster in modern Quioquitani. In addition to the idea of *θ>x* lenition, these facts provide us with an additional hypothesis regarding SALZ /x/, i.e. **tt>xt>x*. Furthermore, a fricative-stop sequence *xt* could be an intermediate phone which led to *θ* in languages with that reflex.

(ee) **tt* > *t* in Cisyautepecan, Transyautepecan, CAZ, AZ, word-initially in SBYZ, and in SVCZ for some speakers

(ff) **tt* > *xt* / __# in SVCZ for some speakers and synchronically in Quioquitani

(gg) **tt* > *θ* word-finally in CLZ and in SVCZ for some speakers, and in all Miahuatec languages except SALZ & SBYZ

in other environments in all Miahuatec languages except SBYZ

(hh) **tt* > *x* in SALZ (and not in SBarLZ)

(ii) **tt* > *t͡θ* word-finally in SBYZ

### 3.10 **t*

The final phoneme in our list of PZ coronal obstruents is **t*. This phoneme usually reflects as either *t, d,* or *ð* in SZ languages.

In a parallel sound change to what some of them experienced for **tt*, Miahuatec and EC languages all have a fricative reflex *ð* for **t* with a few minor exceptions: Angulo records <d> for "Lagueche" though this may be an orthographical difference, I am not sure. Also perhaps orthographical is Ruegsegger's <d> for Cuixtla. I heard *ð* in Xitla. My Cozoaltepec consultant, who had dental problems, also made a *d* here, for the same reason he made *t* for /θ/.

Cisyautepecan and Transyautepecan mostly have a simple /d/ reflex of **t*, as is the case in SJMZ, Xanaguía, Quiegolani, and GH. In the short article available on Xanica /d/ is listed as a phoneme but the only word given that has a reflex of **t* has /t/. In Quioquitani the morpheme-initial reflex is *t*. /d/ is listed as a phoneme by Marlett & Ward and is likely the word-final reflex when the deleted post-tonic vowel was other than **i*. There is one datum with word-final **t* in Quioquitani and it has *d*$^{y}$ preceding **i*. In my brief work with SCQ and SJL I

found voiceless *t* to be the reflex in both, at least phonetically, with palatalization before **i* word-finally in SCQ. I found one example of a **t* in Guigovelaga, which happened to be *t*$^{y}$ and occurred word-finally preceding deleted **i*.

(jj) **t* > d in GH, Quiegolani, Xanaguía, SJMZ, and probably in Xanica and word-finally in Quioguitani where my data-gathering is insufficient

(kk) **t* > *t*$^{y}$ /_**i#* in Guigovelaga and SCQ, where the word-final environment is modern and **i* has been deleted

(ll) **t* > *ð* in Miahuatec & EC

In this section we have seen the various SZ reflexes of all coronal obstruents reconstructed for PZ by Kaufman (2003). In the following section I examine how these changes are inter-related, both within single languages where they sometimes form chain shifts, and across languages where I take innovations as evidence of genetic relationships in certain cases and diffusion in others.

## 4 Shared patterns of change in SZ languages

The sound changes affecting coronal obstruents in Cisyautepecan languages and in the token Transyautepecan language considered, are not surprising given the types of sound changes that occurred in Zapotec languages at large. Lenis

obstruents become voiced. Geminate obstruents become single. In some languages final non-tonic **i* reduces to palatalization, a $^{y}$ offglide on the previous consonant, rather than delete altogether like non-high vowels do. The merger of **ty* with **¢* and of **tty* with **¢¢* is also seen in other Zapotec languages, e.g. 'town' **keːɾ¢e* and 'home' **lityi*, as reconstructed by Kaufman, show the same reflexes for **¢* and **ty* in Atepec (Northern) Zapotec *ye¢i* and *lli¢iʔ*, Villa Alta (Northern) Zapotec *yež* and *liže ʔ*, and Isthmus (Central) Zapotec *giǰi* and *liǰi* (data taken from Fernández de Miranda, [1965]). **ty* > *ɾ*, while not the most natural sound change, is also shared amongst the majority of modern Zapotec languages and is probably partially a contact phenomenon.

Degemination of fortis obstruents, voicing of lenis obstruents, the merger of **(¢)¢* and **(t)ty* before **i*, and the unconditioned, contact-induced changes to **(t)ty* are also found in most Miahuatec and EC languages. Indeed these changes seem to have spread areally among many Zapotec languages that had already undergone a good deal of genetic divergence. I expect that Proto-Southern-Zapotec, whether that language was the ancestor of all or only some of the language groups discussed here, was the same as Proto-Zapotec in these respects (having a geminate:single contrast, and separate phonemes /tty, ty, ¢¢, ¢), though certainly different in others. While these changes are common to many languages belonging to the Miahuatec, EC, and Cisyautepecan groups, additional changes

to the coronal obstruent inventory of Miahuatec and EC languages mark them as different from the rest of Zapotec and to a certain degree different from each other.

In all EC and Miahuatec languages we find the merger of **ṣ̌* and **ṣ̌ṣ̌*, and the fricativization of **t*. We see the parallel fricativization of **tt* in Miahuatec languages and in Coatec proper but not in Amatlán or Coatecas Altas, which instead undergo simple degemination **tt>t*, as in Cisyautepecan languages. This is problematic since Coatecas Altas and Amatlán share the changes **ss>¢*, **¢>ẓ̌*, **¢¢>ç̌* with the two languages of Coatec proper, CLZ and SVCZ. These three changes suggest that these four languages are more closely related to each other than to Miahuatec, as Smith Stark suggested in his grouping "Extended Coatec." The alternative would be to suggest a common node for Miahuatec and Coatec proper excluding AZ and CAZ, based on the spirantization of **tt*. In either scenario all the proposed EC languages and Miahuatec languages share the two aforementioned sound changes and share a higher node in a family tree model. The two possibilities are shown in Figures 14 and 15.

Several of the sound changes affecting coronal obstruents in Miahuatec and EC languages occur in chains. In EC languages there are two separate chains, one affecting dental and palatalized stops and the spirantization of **t*, and a separate chain **ss>*¢>ẓ̌*. In several, but not all, Miahuatec languages the two

chains are intertwined. They are connected because instead of *¢>ž Miahuatec has *¢>*s* and in turn **s* ends up as either *t* or *ð*, which is involved in the other chain. In Figures 16-21 I show the chain shifts which occurred in three Miahuatec and three Extended Coatec languages. Note that some of these are conditioned changes. Mergers are shown with double arrow following two earlier phones to the same final reflex.

If one posits a shared node for Miahuatec and Coatec proper one problem is explaining how AZ and CAZ ended up undergoing three sound changes which happened in Coatec proper but not in Miahuatec. One of these, **ss*>¢, could be explained by positing this sound change as an intermediate step on the way to the *t* reflex Miahuatec has for **ss*. One implication of this is that **ss*>¢ was an early change. If it was an early change then the chains this sound change is involved in are push chains. The affrication of **ss* puts pressure on the system to do something to *¢ and/or *¢¢ (degemination likely did not take place till later, probably after the Spanish conquest, so the original change may have been **ss*>¢¢, or perhaps an affricate is naturally long enough to replace a geminate).

Even if we posit the affrication of **ss* as a first step in the chain shift(s), we are left with two sound changes in common between the proposed EC languages but not Miahuatec and one change in common between Miahuatec and Coatec proper but not AZ or CAZ. It is easier to explain this situation if we say that the two changes were undergone by the four EC languages as a group. The change

common to Miahuatec and Coatec proper, the spirantization of **tt*, is a parallel sound change to one Miahuatec and EC languages all share in common, **t* > *ð*. The EC languages may have already been on their way to the parallel sound change **tt* > *θ* when EC broke off from Miahuatec, and the subsequent proximity of Miahuatec and Coatec proper encouraged this sound change to take place in Coatec. The fact that the geographically distant Miahuatec language spoken in SBY has a word-final *t͡θ* reflex of **tt* suggests that this may have been an intermediate step on the way to *θ* and that SBYZ left the core SZ area before this change was complete. This would have been a natural path for the sound change. Indeed, in CLZ today fortis stops are heavily aspirated word-finally, often to the point of affrication, so that a dental stop /t/ is often realized as [t͡θ] in that language. Since all EC and Miahuatec languages shared the sound change **t* > *ð*, if we posit this as the original step in the chain shift, we instead have a drag chain. A sequence of events is begun by the gap created for a single voiceless dental stop.

These chain shifts have more important implications for understanding how the languages classified as Southern Zapotec relate to each other. These implications are discussed in the final section.

## 5. Conclusion

From the very little published, somewhat more written but unpublished, and the slightly greater amount of oral speculation among Zapotecanist linguists regarding the classification of Southern Zapotec languages, there are several pending issues that have not been firmly resolved to date. These include the following questions: 1) What is Tlacolulita Zapotec like and how is it related to other Zapotec languages? 2) Are Transyautepecan languages more closely related to SZ languages or are they closer relatives of Central Zapotec languages? 3) Are Cisyautepecan languages most closely related to Southern Zapotec, namely Miahuatec and Extended Coatec, languages genetically or are they really Valley Zapotec languages which have migrated to the Southern region and come to resemble Southern Zapotec languages via diffusion? 4) Smith Stark (2004) identifies four subgroups of SZ: Extended Coatec, Miahuatec, Cisyautepecan and Tlacolulita (and in a previous draft Transyautepecan). Below these groupings the only internal branching he posits is that the Coatec languages of CLZ and SVCZ are more closely related to each other than they are to either AZ or CAZ. Can further connections be made, either above or below, building on Smith Stark's classification?

I will not be able to offer definitive answers to most of these questions here, but I address them in turn here.

**Tlacolulita**

It is important that we learn what we can about Tlacolulita immediately. This language will be dead very soon and we don't know enough about it. Even partial documentation of Tlacolulita would better our understanding of how Southern Zapotec languages relate to each other, ancient migration patterns, and this history of contact between Southern Zapotec, Central Zapotec, Chontal, and perhaps other languages of Southeastern Oaxaca---a region of extremely high linguistic diversity and therefore of great importance.

**Transyautepecan**

Since only partial data from a single Transyautepecan language was included in this study, not much definitive can be said about its place in or outside of the SZ genetic and/or areal(-genetic) group. It appears though that the sound changes affecting coronal obstruents in Transyautepecan are similar to those seen in Cisyautepecan, another group for which the genetic classification of Southern Zapotec is not strongly established. Future research should look at Transyautepecan to see which of the features outlined in §2.3 of this paper are found. Looking at these and other variables, Transyautepecan should be compared with Miahuatec-Coatec languages, Cisyautepecan, and Central Zapotec languages including both Valley and Isthmus Zapotec, to determine whether any other defining features exist to provide further clues.

**Cisyautepecan**

With respect to the reflexes of PZ coronal obstruents, there is nothing unique or special to distinguish Cisyautepecan, (or our token Transyautepecan language, or the one relevant word we know from Tlacolulita), from the rest of (non-Southern) Zapotec. The features of these languages which indicate that they may belong to a Southern Zapotec group, whether that grouping be a true genetic grouping or an areal one, are the features discussed in §2.3 and not the sound changes which are the focus of this paper. Since lexemes are easily borrowed, and syntactic features, like the inclusory construction or the lack of plural marking, may be diffused through bilingualism and calquing, the strongest evidence we currently have for Cisyautepecan, (and Transyautepecan and Tlacolulita) possibly being SZ languages genetically is the existence of the nasal animacy classifier prefix.

In cases of areal contact between genetically unrelated languages, structural changes are more likely to use native phonological material to approximate some grammatical structure of a contact language, than to borrow the actual form of a function morpheme. However, this rarer occurrence does happen. For example, Benue noun class prefixes were borrowed into Chadic (Hoffmann, 1970; Gerhardt & Wolff, 1977; Frajzyngier & Koops, 1989; Miehe, 1991). Since Cisyautepecan languages *are* genetically related to Miahuatec and EC languages,

whether they are part of the same SZ subgroup or not, it would be even easier for them to borrow a nasal animacy prefix. Already having a *b* reflex of the earlier *pe-* animacy prefix they could have nasalized this existing prefix to *m* based on contact with Miahuatec. If their migration into the SZ area were early enough they could have borrowed the earlier form of the classifier *má*, not much of a stretch since they would already have had the full noun *mani* 'animal,' and undergone the later reduction that turned this once-independent marker into a prefix. As mentioned by Aikhenvald (forthcoming) "what we take for purely contact-induced change may turn out to be an instance of multiple causation." This is even more true if the languages in contact are already genetically related to some degree.

Roger Reeck (p.c.) who lived for many years in San Juan Mixtepec and who made an unpublished study of the history of this region, reports that Cisyautepecan speakers from that town can understand distant varieties of Valley Zapotec with more ease than their Miahuatec neighbors, who they cannot understand. He said that in their oral tradition the Zapotecs of San Juan Mixtepec remember their ancestors having come from the Valley.

We do not know whether the area around the city of Miahuatlán, west to Cuixtla, Xitla, and the CLZ-speaking area, was previously inhabited when Zapotecs moved in. We do know that Southern Zapotecs displaced Nahua-speakers to the south in the eighteenth century, and Chontal speakers in

Ozolotepec to the southeast in pre-Spanish times. The *relaciones* suggest, citing toponymic evidence, that Amatlán was taken by the Zapotecs in battle. Sources also suggest that the Amatlán Zapotecs spoke Valley Zapotec, though this is certainly not the case today. The Cisyautepecan languages today are surrounded by Chontal-speaking areas. In some places like Xadani it was even the case that Zapotec speakers were governing Chontal speakers into colonial times. It is quite possible that the Cisyautepecans moved into the seized Chontal lands from the Valley after the Zapotecs already in the south, the Coatec-Miahuatecs, had seized land from the Chontales, pushing them eastward.

Linguistically, we have mostly negative evidence at present. In this paper I have not uncovered any special innovation shared by Cisyautepecan and Valley Zapotec languages but not by Southern Zapotec, nor have there been any sound changes covered by the scope of this paper which firmly establish shared innovations between Cisyautepecan and either Miahuatec or Extended Coatec. The lack of these sound changes does not prove that there aren't some other shared innovations, not looked at here, in these languages. If Cisyautepecan languages had participated in the coronal chain shift(s) this would be positive evidence for Cisyautepecan's inclusion in Southern Zapotec, but the lack of Cisyautepecan participation is perhaps not conclusive. If archaeological evidence could establish a Zapotec presence in the Cisyautepecan area at as early a time (Monte Albán II) as for Miahuatlán, this would give some indication that the

Cisyautepecans could have shared the migration from the Valley. However, the more likely scenario is that the ancestors of the Miahuatecs and Coatecs migrated together to the *Sierra Sur*, began undergoing sound changes at the same time as they were coming into contact with Chatinos, Nahuas, and Chontales, and pushing the latter out of their traditional territory. At a later time the Cisyautepecans moved in and did not experience the sound changes already undergone or in progress in Miahuatec and Coatec languages, but did begin to have increased contact with speakers of these languages and adopted some lexical and grammatical features from them, thereby becoming Southern Zapotecs. This theory needs further corroboration from linguistics, archaeology, oral tradition, and the historical sources. For the present though, the status of Cisyautepecan is that it *is* Southern Zapotec, but we don't know if it is Southern Zapotec in a genetic or an areal sense, or both.

**Miahuatec-Coatec**

EC languages and Miahuatec languages have undergone changes to their coronal obstruent inventories that are much more dramatic than those experienced by other proposed Southern Zapotec languages. These languages can be said to be genetically related more closely than to other Zapotec subgroups including Cisyautepecan. Building on Smith Stark's classification, and remembering the idea expressed without evidence by Piper (1995) and

mentioned to me by Roger Reeck based on his personal experience in the region, we can now say more definitively that Extended Coatec and Miahuatec are more closely related to each other than they are to any other Zapotec languages.

Within the Extended Coatec-Miahuatec subgroup Smith Stark's grouping is confirmed. The Coatec proper languages are most closely related to each other but are in turn related to Amatlán Zapotec and Coatecas Altas Zapotec more closely than to Miahuatec languages. Coatec proper speakers are geographically in close proximity to and have a good deal of contact with Miahuatec speakers, and there is some bilingualism. Similarities between Miahuatec and Coatec proper are due to this close and long-term contact. To Smith Stark's defining feature of Extended Coatec, the ¢ reflex of **ss*, we can now add the additional evidence of the shared reflexes for **¢¢* and **¢* That these three sound changes are shared is no accident, since they are involved in a chain shift and one change triggers the next.

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[1] ACKNOWLEDGEMENTS

[2] There are a few references in the literature (Brockington, 1975 and Paddock, 1970) to the existence of Mixtec speakers in twentieth century Miahuatlán. I believe these are in error. Paddock (p. 372) cites Parsons (1936) as stating that there was a contemporary Mixtec settlement in Miahuatlán.In a footnote (p. 382) he cites the Miahuatlán reference as coming from p. 541 in Parsons (1936). On p. 541 Parsons refers only to hispanicized Mixtecs at Mitla, and not to Miahuatlán at all. However, if one refers to p. 569, the page given immediately prior to Miahuatlán, in Paddock's list of references to Mixtec settlements in Parsons (1936), we do find Miahuatlán mentioned:

> From the Mixteca Mitla gets its water jars, the black ware of Coyotepec, its flower vases and many basins, jars, and pots, all in the green glazed pottery of Santa María Azompa, and its *tenates*, the pliable woven baskets of Miahuatlan in which the pretty design is sometimes overlaid with a stamp of aniline dyes.

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Parsons uses the term *Mixteca* to refer to the people, not just the geographical region, as many people do today. My reading of this paragraph is that the people of Mitla obtained goods from Miahuatlán, Atzompa, and Coyotepec from Mixtec people, but that the goods were not necessarily produced by Mixtecs in each of these places. Mixtec traders may have been go-betweens for goods from Miahuatlán, but Parsons does not make it clear that there was a Mixtec community living in Miahuatlán. I assume that this is the passage that Paddock is using to draw the conclusion that there was a Mixtec community there, and that Brockington is following Paddock.

[3] Angulo apparently (as I have been able to deduce by comparing his forms with forms from Amatlán and other SZ languages, and guessing that he may have been influenced by French orthography, given his personal history) used <c> for [š], <tc> for [č], and <j> for [ž].

[4] Colotepec is Nahua for 'scorpion hill.' The CLZ word for 'scorpion' is *mbéwnè* (SBL) or *mónè* (SMigC) and the toponym for Colotepec is *Béwnè* (SBL) or *Yêzh Bónè* (SMigC). Miahuatec languages have a different morpheme, *šùβ,* for 'scorpion,' but the toponym for Colotepec in the Miahuatec language(s) right next to Colotepec is cognate with the CLZ toponym, [βonè:ʔ] in San Bartolomé Loxicha and in Santo Domingo de Morelos. This form not only appears to be

borrowed from CLZ, but borrowed from a more northern dialect of CLZ, rather than the CLZ dialect spoken nearest to Colotepec. This suggests that Miahuatec speakers borrowed the toponym for a place that was presumably in CLZ-speaking territory from their nearest CLZ-speaking neighbors before migrating south into the region themselves.

[5] This was a woman in her thirties who had grown up speaking both Spanish and Zapotec but who had married a Mixe speaker from a nearby town at age fifteen. She moved to the Mixe town and became fluent in that language, before later moving to the city of Oaxaca with her spouse and children. At the time I met her she still spoke Mixe at home with her husband and children but had forgotten much of her Zapotec. She knew lots of random vocabulary and phrases but had trouble remembering even some basic lexical items and composing larger utterances.

[6] Interestingly, Smith Stark (2004) did not find any single innovation which defined Central Zapotec as a group.

[7] Stubblefield & Hollenbach (1991) list *ba-* in addition to the expected *bi-* for Mitla.

[8] This was first suggested to me by Joe Benton, who had already noticed that the word he knew in Coatecas Altas Zapotec was different than the word he knew in Chichicapan Zapotec. The possible Mixtec origin of the loan was suggested to

him by Barbara Hollenbach. Michael Swanton (p.c.) reports that the word in Nativitas Chochon is *ẕɨẕɨ̀uskí*, a form which is phonologically unusual in that language.

[9] I found this free variation in 2000 when I worked with a man, around 40 years old, and two of his friends at the Ejutla market for a few hours. In 2004 I worked for an equal amount of time in Miahuatlán with a woman around the same age and her young son. In her speech I never heard word-final [□] as a reflex of **tty*.

[10] For example Spanish [baka] ‘cow’ and [pan–o] ‘kerchief’ → Zaniza Zapotec *bag*, *bay* (Operstein, 2005).