

# CHITIMACHA: A MESOAMERICAN LANGUAGE IN THE LOWER MISSISSIPPI VALLEY<sup>1</sup>

CECIL H. BROWN

NORTHERN ILLINOIS UNIVERSITY

SØREN WICHMANN

MAX PLANCK INSTITUTE FOR  
EVOLUTIONARY ANTHROPOLOGY  
KAZAN FEDERAL UNIVERSITY

DAVID BECK

UNIVERSITY OF ALBERTA

The comparative method of historical linguistics is carefully applied to the hypothesis that Chitimacha, a language of southern Louisiana now without fully fluent speakers, and languages of the Totozoquean family of Mesoamerica are genealogically related. Ninety-one lexical sets comparing Chitimacha words collected by Swadesh (1939; 1946*a*; 1950) to words reconstructed for Proto-Totozoquean (Brown et al. 2011) show regular sound correspondences. Along with certain structural similarities, this evidence attests to the descent of these languages from a common ancestor, Proto-Chitimacha-Totozoquean. By identifying regular sound correspondences, the phonological inventory and some of the vocabulary of the proto-language are reconstructed. Reconstructed words relating to maize agriculture and the fabrication of paper indicate that prehistoric Chitimacha speakers migrated to the Lower Mississippi Valley from Mesoamerica. Some speculations on how and when Chitimacha speakers migrated are offered.

[KEYWORDS: Chitimacha, historical linguistics, Mesoamerican languages, Totozoquean, U.S. Southeast languages]

**1. Introduction.** Chitimacha is a language of the U.S. Southeast generally presumed to be an isolate (Campbell 1997:146 and Iannucci 2009). Its last fully fluent speakers, Benjamin Paul and Delphine Decloux, died in 1934 and 1940, respectively. They resided in the area of Charenton, Louisiana, the tribal center of modern Chitimacha people. Speakers of Chitimacha have lived along the bayous of southern Louisiana since before the earliest historical reports of Native Americans in the region. During the 1930s, Morris Swadesh consulted with Chief Paul and Mrs. Decloux, producing

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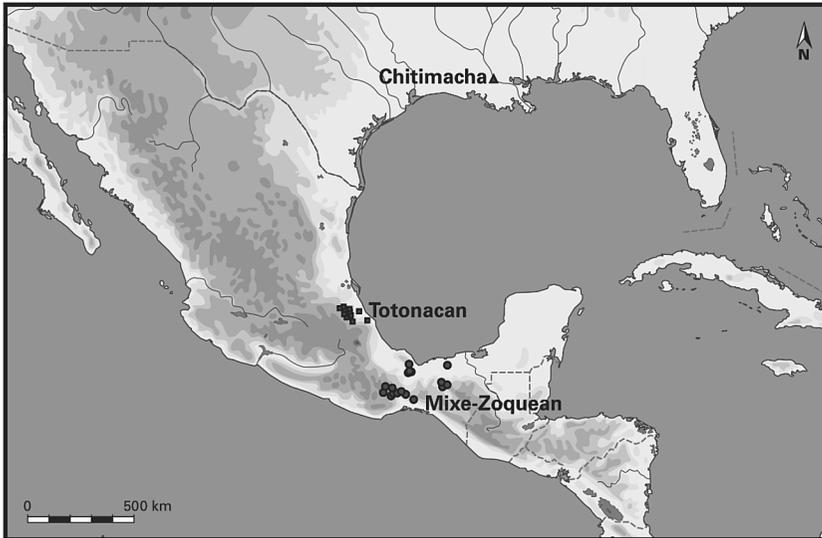


FIG. 1.—Location of Chitimacha and Totozoquean languages. Circle = Mixe-Zoquean; square = Totonacan; triangle = Chitimacha.

an assemblage of wax-cylinder recordings of the language, as well as a dictionary (1950), grammar (1939), and text collection (1934*a*), all of which remain unpublished.<sup>2</sup> These documents and one shorter published account (Swadesh 1946*a*) constitute the sources for data on the language used here.<sup>3</sup> We assemble comparative evidence, including 91 reconstructed forms based on regular sound correspondences, indicating that Chitimacha is genealogically related to the Totozoquean languages of Mesoamerica, a proposed family consisting of Totonacan and Mixe-Zoquean languages (Brown et al. 2011). The modern locations of Chitimacha and Totozoquean languages are shown in figure 1.

**2. Background studies.** Twentieth-century comparative investigations have attempted to link Chitimacha phylogenetically with other languages, all of which, save one, are found in North America north of Mexico, and most of which are or were spoken in the U.S. Southeast. Gursky (1969) provides an excellent summary of the most important of these studies

<sup>2</sup> A language revitalization program is now underway based on Swadesh's materials.

<sup>3</sup> There are other sources for Chitimacha, including Gatschet (1883) and Swanton (1919). With the exception of two words from Swanton (see comparative sets 30 and 47), Swadesh's (1939; 1946*a*; 1950) materials are used exclusively here, since these approach the standard of modern phonological analysis and transcription.

published before 1970. Languages linked to Chitimacha in these works include Atakapa, Coahuiltecan (northern Mexico), Natchez, Tonkawa, and Tunica, as well as the Muskogean and Siouan families. Gursky (1969) himself presents a lexical comparison of Chitimacha, Atakapa, and Tunica, drawing heavily on Swadesh's (1946*b*) study of a possible Chitimacha–Atakapa connection. Greenberg (1987:380) places Chitimacha in Yuki-Gulf, which includes Yuki and extends to all of the above-mentioned languages except Coahuiltecan, Tonkawa, and the Siouan family. Campbell (1997:146) regards Chitimacha as an isolate, noting that most scholars have abandoned possible connections of Chitimacha with other languages.<sup>4</sup>

**3. The comparative corpus.** This study compares Chitimacha (Ch) words with words reconstructed for Proto-Totozoquean (PTz). Two sources for PTz words are used: (1) 188 reconstructions provided by Brown et al. (2011) and (2) some reconstructions made for this study. Also included in the comparison are terms reconstructed for Proto-Totonacan (PTn) and for Proto-Mixe-Zoquean (PMZ). PTn words—along with supporting comparative sets—come from Brown et al. (2011) and from reconstructions based on comparative sets found in section A of Appendix B, which appears online only and provides supplementary materials. For PMZ, we rely on Wichmann (1995), who gives reconstructed words and their meanings—along with supporting comparative sets—not only for PMZ but also for ancestral languages descended from PMZ, including Proto-Mixean (PM), Proto-Oaxaca Mixean (POM), Proto-Zoquean (PZ), and Proto-Gulf Zoquean (PGZ) (see Appendix A at the end of the text for a full list of abbreviations).

**4. Phonological inventories.** In this section we present the phonological inventory for Ch, as described by Swadesh (1939),<sup>5</sup> and inventories for

<sup>4</sup> We have investigated the possibility that several languages geographically neighboring Chitimacha might also be connected to Totozoquean. These include Atakapa, Natchez, Tonkawa, and Tunica, all languages that have been proposed as genealogically related to Chitimacha. We systematically compared the 188 Proto-Totozoquean forms assembled by Brown et al. (2011) with vocabularies for each of these four languages (respectively, Gatschet and Swanton 1932, Van Tuyl 1979, Hoijer 1949, and Haas 1953, all of which are reasonably large lexicons). This was also the approach used in our initial Chitimacha–Totozoquean comparison. Through these comparisons a number of lexical look-alikes emerged, but in each case the quantity and quality of comparisons were substantially less than what we found for the initial Chitimacha–Totozoquean comparison. Our sense of these findings is that the similarities uncovered are more likely to be explained by a combination of chance and diffusion rather than by a phylogenetic connection of any of the languages with Totozoquean. In a number of instances, borrowing of Chitimacha forms inherited from Proto-Chitimacha-Totozoquean by speakers of neighboring languages may have taken place.

<sup>5</sup> Swadesh's (1939) treatment of Ch phonology is a modification and improvement of that found in his earlier (1934*b*) published account.

	Bilabial	Alveolar	Palato- alveolar	Palatal	Velar	Glottal	Labio- velar
Plosive	p p'	t t'			k k'	ʔ	
Nasal	m	n					
Fricative		s	ʃ			h	
Affricate		ɕ ɕ'	č č'				
Approximant				y			w

FIG. 2.—Consonant inventory of Chitimacha.

i(:)		u(:)
e(:)	ə	o(:)
	a(:)	

FIG. 3.—Vowel inventory of Chitimacha.

PTz, PTh, PMZ, and Proto-Chitimacha-Totozoquean (PCh-Tz). The inventories of PTz, PTh, and PMZ are from Brown et al. (2011). The inventory for PCh-Tz is developed here on the basis of the analyses in 5.

**4.1. Chitimacha phonological inventory.** The phonological inventory for Ch is found in figures 2 and 3, treating, respectively, consonants and vowels. In figure 2, segments *p'*, *t'*, *k'*, *ɕ'*, and *č'* are ejective versions of *p*, *t*, *k*, *ɕ*, and *č*. There are other consonants mentioned by Swadesh (1939) that are not represented on the chart in figure 2. He writes of uncertainty regarding the status of *ŋ*. He mentions *v* as occurring only in the dialect of one of his two consultants, Mrs. Decloux. Finally, he informs us that *l* and *r* are found only in a few onomatopoeic forms. Five of the six vowels recognized by Swadesh in figure 3 have both short (V) and long (V:) forms. The schwa, *ə*, apparently does not have a long version and Swadesh (1939) writes of his general uncertainty regarding its status. This vowel does not occur among the Ch words for which we find possible cognates in Tz languages. Swadesh mentions that *a* and *i* also show “overlong” versions, but these occur only in some onomatopoeic forms.

**4.2. Totozoquean phonological inventories.** Figures 4 and 5 report consonant and vowel inventories for PTz, PTh, and PMZ. These are all described in Brown et al. (2011). The PMZ inventory was originally described in Wichmann (1995).

	Bilabial	Alveolar	Palato-alveolar	Palatal	Velar	Uvular	Glottal	Labio-velar
Plosive	p	t tʰ			k kʰ	q	ʔ	
Nasal	m	n nʰ						
Fricative		s	ʃ		x		h	
Affricate		ç	ç					
Approximant				y				w
Lateral Affricate		ʎ						
Lateral Fricative		ɬ						
Lateral Approximant		ɭ						

FIG. 4.—Consonant inventory of Proto-Totozoquean.

i(:)	i(:)	u(:)
e(:)	ə(:)	o(:)
	a(:)	ɔ(:)

FIG. 5.—Vowel inventory of Proto-Totozoquean.

**4.2.1. Proto-Totozoquean phonological inventory.** The consonant inventory of PTz (fig. 4) shows all the segments found in Ch (fig. 2), with the exception of the ejectives. Occurring in PTz, but not found in Ch, are three lateral segments, \*ʎ, \*l, and \*l̥, a velar fricative (\*x), and a uvular stop (\*q). There are also palatalized versions of \*t, \*k, and \*n (\*tʲ, \*kʲ, and \*nʲ) not found in Ch. The vowel inventory of PTz shows all the vowel qualities of Ch (fig. 3), plus a high-central vowel (\*i) and a low-back vowel (\*ɔ). Like five of the six Ch vowels, all vowels of PTz have short (V) and long (V:) varieties.

Brown et al. (2011) use uppercase versions of the eight vowels, I, E, I, Ə, A, U, O, and ɔ, to indicate that the PTz segment's reflex in PTh shows a laryngealized or creaky vowel (see 4.2.2). This convention is used to indicate ambiguity with respect to which phonological feature or complex gave rise to laryngealized vowels in PTh, while nevertheless recognizing that the PTh laryngealized or creaky vowels continue a phonetically related feature or complex. We are now reasonably confident that laryngealized vowels are an appropriate reconstruction for PTz. Consequently, uppercase vowels used in PTz reconstructed words from Brown et al. (2011) are replaced with laryngealized vowels, symbolized as a vowel followed by ' , when these reconstructions are cited in this paper. For example, original PTz \*kʲIs of Brown et al. (2011:359) is represented here as \*kʲi's.

**4.2.2. Phonological inventory of Proto-Totonacan.** The phonological inventory of PTh (Brown et al. 2011) is descended from that of PTz (4.2.1). Consonant and vowel inventories of PTh are found in figures 6 and 7, respectively.

The consonant inventory of PTh is identical to that of PTz (fig. 4) except that it lacks \*tʲ, \*kʲ, and \*nʲ (palatalized versions of t, k, and n). The glottal stop (\*ʔ) is in parentheses in figure 6 to indicate uncertainty concerning its reconstruction (see Brown et al. 2011 for discussion). Development of the vowel inventory of PTh from that of PTz (fig. 5) involved extreme simplification, with a reduction from eight to only three vowels. In addition to being either short or long, PTh vowels come in both plain (V) and laryngealized (V') versions. The PTh laryngealized vowels developed from the laryngealized vowels reconstructed for PTz (4.2.1).

**4.2.3. Phonological inventory of Proto-Mixe-Zoquean.** The phonological inventory of PMZ is descended from that of PTz (4.2.1). It was first described in Wichmann (1995) and reproduced in Brown et al. (2011). Consonant and vowel inventories are found in figures 8 and 9.

The PMZ consonant inventory (fig. 8) became simplified in its development from PTz (fig. 4). It lost the three laterals (which merged as PMZ \*y), the three palatalized consonants, and the uvular stop found in PTz. Interestingly, except for lacking ejectives, and the palatal-alveolars \*ʃ and \*č, the PMZ consonant inventory is identical to that of Ch (fig. 2), suggesting that PMZ and Ch phonologies changed in much the same manner in their respective

	Bilabial	Alveolar	Palato-alveolar	Palatal	Velar	Uvular	Glottal	Labio-velar
Plosive	p	t			k	q	(?)	
Nasal	m	n						
Fricative		s	ʃ		x		h	
Affricate		ç	č					
Approximant				y				w
Lateral Fricative		ɬ						
Lateral Affricate		ɮ						
Lateral Approximant		ɭ						

FIG. 6.—Consonant inventory of Proto-Totonacan.

Plain Vowels	
i(:)	u(:)
	a(:)
Laryngealized Vowels	
i(:)ʼ	u(:)ʼ
	a(:)ʼ

FIG. 7.—Vowel inventory of Proto-Totonacan.

	Bilabial	Alveolar	Palatal	Velar	Glottal	Labio- velar
Plosive	p	t		k	ʔ	
Nasal	m	n				
Fricative		s			h	
Affricate		ç				
Approximant			y			w

FIG. 8.—Consonant inventory of Proto-Mixe-Zoquean.

i(:)		u(:)
e(:)	ə(:)	o(:)
	a(:)	

FIG. 9.—Vowel inventory of Proto-Mixe-Zoquean.

developments from Proto-Chitimacha-Totozoquean (PCh-Tz). When PMZ's vowel inventory (fig. 9) developed from PTz, the high-central vowel (\*i) and the low-back vowel (\*ɔ) were lost. Also, PTz laryngealized vowels changed to plain vowels. Like Ch, PTz, and PTh vowels, those of PMZ show both short and long varieties.

**4.3. Proto-Chitimacha-Totozoquean phonological inventory.** The reconstruction of the PCh-Tz phonological inventory is based on the analyses in 5.

The PCh-Tz consonant inventory (fig. 10) is identical to those of Ch, PTz, PTh, and PMZ in showing no voiced obstruents. It manifests all segments pertaining to PMZ (fig. 8) and all segments pertaining to Ch (fig. 2), with the exception of the ejectives. (We discuss in 5.4 how Ch ejectives developed from PCh-Tz.) And it shows all the segments pertaining to PTz (fig. 4) and PTh (fig. 6), with the exception of the laterals and the uvular stop (and PCh-Tz lacks the \*nʷ of PTz). Lack of precursors of PTz/PTh laterals and the uvular stop may be explained as loss, although these segments could alternatively be PTz innovations.

Four segments not found for either Ch or PTz are reconstructed for PCh-Tz—\*n̄t, \*n̄k, \*sʷ, and \*ʃʷ. The segments \*n̄t and \*n̄k are pre-nasalized versions of \*t and \*k, respectively. Reflexes of both \*n̄t and \*n̄k are *n* in Ch and posterior plosives in PTz, PTh, and PMZ. Segments \*sʷ and \*ʃʷ are palatalized versions of \*s and \*ʃ. Along with \*tʷ and \*kʷ, these four segments constitute a set of PCh-Tz palatalized consonants, only the latter two of which were retained by PTz (fig. 4). With the developments of PTh and PMZ from PTz, all palatalized consonants were lost. Ch also lost all palatalized consonants.

In figure 10, one of the symbols, tʷ, is used twice, once with a subscripted number (tʷ<sub>1</sub>) and once with no subscripted number. Different correspondences support these two segments (5.1). Use of the same symbol for the segment supported by different correspondences (\*tʷ and \*tʷ<sub>1</sub>) is meant to suggest that only a single proto-segment may actually be involved, and that the apparent difference relating to correspondences may be the result of some context-conditioned change that cannot now be recovered through use of the comparative method (a similar convention is used for some vowels in figure 11).

The PCh-Tz vowel inventory has all the vowels pertaining to PTz (fig. 5). It also shows all the segments of Ch (fig. 3) plus \*i and \*ɔ. All PCh-Tz vowels have short and long versions. In addition, PCh-Tz has laryngealized versions of the plain vowels.

**5. Chitimacha-Totozoquean correspondences.** Figures 12–14 give regular sound correspondences holding between Ch and PTz, the reconstructed segments of PCh-Tz from which these have developed, and identification numbers of the 91 comparative sets (6) supporting correspondences.

	Bilabial	Alveolar	Palato-alveolar	Palatal	Velar	Glottal	Labio-velar
Plosive	p	t tʰ, tʰ <sub>l</sub> nt			k kʰ nk	ʔ	
Nasal	m	n					
Fricative		s sʰ	ʃ ʃʰ		x	h	
Affricate		ʧ	ʧ				
Approximant				y			w

FIG. 10.—Consonant inventory of Proto-Chitimacha-Totozoquean.

Plain Vowels	
i(ː)	i(ː), u <sub>i</sub> (ː)
e(ː), e <sub>l</sub> (ː)	ə(ː), ə <sub>l</sub> (ː)
	a(ː), a <sub>l</sub> (ː)
Laryngealized Vowels	
i(ː)ʰ	u(ː)ʰ, u <sub>i</sub> (ː)ʰ
e(ː)ʰ, e <sub>l</sub> (ː)ʰ	ə(ː)ʰ, ə <sub>l</sub> (ː)ʰ
	a(ː)ʰ, a <sub>l</sub> (ː)ʰ

FIG. 11.—Vowel inventory of Proto-Chitimacha-Totozoquean.

Ch-Tz	Ch	Tz	Tn	MZ	Comparative Set Number
*č	č	č	č	č	1, 2, 3, 4, 5, 6
-*h-					(See fig. 16)
*k	k	k	q	k	2, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 32, 33, 35, 37, 38, 39, 49, 57, 66, 67, 72, 77, 88
*kʸ	k	kʸ	k	k	7, 8, 10, 12, 13, 15, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 33, 35, 38, 49, 57, 66, 67, 70, 72, 77, 83, 88, 89
* <sup>n</sup> k	n	k	q	k	31, 32, 40, 60, 90
*m	m	m	m	m	3, 7, 12, 33, 34, 35, 36, 53, 58, 84
*n	n	n	n	n	19, 34, 37, 38, 41, 43, 45, 46, 66, 68, 75
*p	p	p	p	p	8, 11, 39, 40, 41, 42, 44, 45, 46, 47, 48, 49, 50, 51, 64
*s	s	s	s	s	20, 22, 29, 52, 73
*sʸ	s	š	š	s	26, 73, 76, 80
*š	š	š	š	s	5, 9, 17, 33, 37, 53, 54, 85
*šʸ	č	š	š	s	13, 55, 56, 57, 58
*t	t	t	t	t	21, 30, 52, 59, 60, 61, 62, 63, 64, 65, 72
*tʸ	č	t	t	t	18, 47, 66, 78
*tʲ <sub>l</sub>	č	t	t	t	24, 27, 74
* <sup>n</sup> t	n	t	t	t	67, 68, 69, 70
*ć	ć	ć	ć	ć	15, 36, 71, 72, 87
*w	w	w	w	w	31, 73, 74, 75, 76, 77, 78
*x	h	x	x	h	56, 79, 80, 81
*y	y	y	t	y	48, 82, 83, 86, 91
*ʔ	∅	ʔ	∅	ʔ	6, 10, 12, 15, 17, 24, 28, 50, 60, 61, 63, 77, 82, 83, 84, 85, 86, 87, 88

FIG. 12.—Consonant correspondences and PCh-Tz reconstructions.

Ch-Tz	Ch	Tz	Tn	MZ	Comparative Set Number
*kʲw	ć	kʲw	k	w	30, 44

FIG. 13.—Correspondence developed from a PCh-Tz consonant cluster.

Ch-Tz	Ch	Tz	Tn	MZ	Comparative Set Number
*i	i	i	i	i	6, 13, 23, 24, 27, 29, 66, 70, 72, 85
*i'	i	i'	i'	i	4, 5, 46, 47, 52, 69, 85
*e	e	a	a	a	75, 77
*e'	e	a'	a'	a	11, 43, 61, 77, 78, 82
*e <sub>1</sub>	a	i	i	i	20, 21
*e' <sub>1</sub>	a	i'	i'	i	44, 76
*i	i	i	i	ə	24, 48, 64, 80
*i'	i	i'	i'	ə	48, 71, 80
*ə	a	ə	a	ə	45, 62, 90
*ə'	a	ə'	a'	ə	22, 55
*ə <sub>1</sub>	a	i	i	ə	12, 63, 67
*ə' <sub>1</sub>	a	i'	i'	ə	55, 67, 68
*a	a	a	a	a	7, 8, 10, 13, 19, 30, 31, 33, 37, 40, 41, 42, 60, 73, 74, 79, 84, 89, 90
*a'	a	a'	a'	a	2, 3, 18, 33, 34, 42, 48, 53, 59, 60, 74, 79, 84
*a <sub>1</sub>	u	a	a	a	7, 9, 53, 89
*a' <sub>1</sub>	u	a'	a'	a	1, 2, 39, 78
*u	u	u	u	u	16, 26, 28, 32, 36
*u'	u	u'	u'	u	36, 72
*u <sub>1</sub>	a	u	u	u	27
*u' <sub>1</sub>	a	u'	u'	u	57, 58
*o	u	o	u	o	14, 25, 54, 56, 81, 86, 87, 90
*o'	u	o'	u'	o	54, 86, 87, 91
*o <sub>1</sub>	o	o	u	o	49, 50, 65
*o' <sub>1</sub>	o	o'	u'	o	31, 50
*ɔ	a	ɔ	a	o	35, 38, 51, 88
*ɔ'	a	ɔ'	a'	o	15, 35, 38, 88

FIG. 14.—Vowel correspondences and PCh-Tz reconstructions.

Figure 15 presents Ch/PTz canon correspondences involving Ch ejectives and PTh laryngealized vowels, and figure 16 gives syllable-nucleus correspondences.

**5.1. Consonant correspondences.** Figure 12 presents consonant correspondences found across four languages—Ch, PTz, PTh, and PMZ—and the reconstructed PCh-Tz forms that possibly yield them. Also given for each

Ch/PTn Correspondence		Comparative Set Number
Ch Canon	PTn Canon	
(-)C'V(-)	(-)CV(-)	1, 2, 3, 4, 5, 11, 18, 20, 22, 29, 58, 59, 60, 61, 71
(-)CV(-)	(-)CV(-)	9, 14, 16, 19, 21, 23, 24, 25, 26, 27, 28, 30, 62, 63, 64, 65, 89
(-)CV	(-)CV'	78

FIG. 15.—Canon correspondences involving Ch ejectives vs. plain consonants and PTn laryngealized vs. plain vowels. Ch C = plain *t*, *k*, *ɕ*, or *č*; Ch C' = *t'*, *k'*, *ɕ'*, or *č'*; PTn C = any consonant corresponding with Ch C or Ch C'; V = any plain vowel; V' = any laryngealized vowel; (-) = phonological material may precede or follow.

Ch-Tz	Ch	Tz	Comparative Set Number
V	V	V	1, 2, 4, 6, 7, 9, 11, 12, 13, 14, 15, 16, 17, 20, 21, 23, 24, 25, 27, 29, 31, 32, 33, 34, 36, 37, 44, 45, 46, 47, 48, 49, 51, 52, 53, 55, 56, 57, 59, 60, 61, 62, 64, 65, 66, 67, 68, 69, 71, 72, 75, 76, 78, 80, 82, 84, 85, 86, 87, 89, 90, 91
V:	V:	V:	3, 5, 73, 79, 89
V: <sup>1</sup>	V:	V	7, 8, 10, 22, 26, 28, 29, 38, 40, 42, 53, 74, 77
V: <sup>2</sup>	V	V:	4, 19, 23, 30, 31, 35, 41, 43, 48, 50, 54, 58, 70, 81, 87, 88, 90
-Vh-	-Vh-	-Vh-	18, 24, 63
-V:h-	-V:-	-Vh-	22, 29, 39, 60, 83

FIG. 16.—Syllable–nucleus correspondences and reconstructions for PCh-Tz.

correspondence series are identification numbers for supporting comparative sets.

**5.2. Correspondences involving context-conditioning and a consonant cluster.** One consonant correspondence has developed from a PCh-Tz consonant cluster (fig. 13). Five context-conditioned changes involving PCh-Tz consonants are also detected:

PCh-Tz \*m → PTz ∅, PTn ∅, PMZ ∅ / #\_\_ (supporting sets: 33, 34, 35, 36)

PCh-Tz \*m → PTz \*n / CV\_\_, where C = voiceless palato-aveolar fricative (\*š, \*šy) (supporting sets: 53, 58)

PCh-Tz \*n → Ch y / a: \_\_# (supporting sets: 19, 41)

PCh-Tz \*ʔ → Ch ∅ / not #\_\_V (supporting sets: 84, 85, 86, 87, 88)

PCh-Tz \*C → Ch C<sub>1</sub>' / \_\_V', where C<sub>1</sub> = any obstruent but *p* (supporting sets: 1, 2, 3, 4, 5, 11, 15, 17, 18, 20, 22, 29, 55, 57, 58, 59, 60, 61, 71, 83)

**5.3. Vowel correspondences.** Figure 14 presents vowel-quality correspondences for Ch, PTz, PTh, and PMZ. Correspondences involving plain vowels and laryngealized vowels showing the same vowel qualities are enclosed in boldface borders. Because the proto-language is entirely symmetrical with respect to the presence of plain/laryngealized vowels of the same quality, correspondences are considered to meet our minimum threshold of at least two supporting comparative sets should they hold for at least two sets showing the same vowel quality, regardless of vocalic modality. Thus, the reconstruction of  $*u_1$  in figure 14 is considered to be supported by three sets, although there is only one set supporting the non-laryngealized vowel of this quality. A reconstructed PCh-Tz vowel yielding reflexes in Ch, PTz, PTh, and PMZ is given for each correspondence. A PCh-Tz laryngealized vowel yields a laryngealized vowel in PTz and PTh and a plain vowel in Ch and PMZ; a PCh-Tz plain vowel yields a plain vowel in Ch, PTz, PTh, and PMZ. The main basis for reconstructing a laryngealized vowel for PCh-Tz and PTz is the occurrence of a laryngealized vowel in PTh (5.4). One context-conditioned change involving PCh-Tz vowels is also detected:

PCh-Tz  $*i/*i'$  → Ch  $e / \#*nt\_$  (supporting sets: 69, 70)<sup>6</sup>

**5.4. Chitimacha ejectives and Proto-Totozoquean laryngealized vowels.** There is a strong correlation between four of the five Ch ejectives,  $\phi'$ ,  $\check{c}'$ ,  $t'$ , and  $k'$ , and the occurrence of laryngealized vowels in PTh stems: with no exceptions, when one of these ejectives occurs in a Ch word, its PTh counterpart, when there is one, shows a following laryngealized vowel, and with only one exception (set 78), when plain  $\phi$ ,  $\check{c}$ ,  $t$ , or  $k$  occurs in a Ch word, its PTh counterpart, when there is one, shows a plain vowel. A laryngealized vowel is reconstructed for a PTz stem when the PTh vowel in a word of a PTh/pMZ comparative set is laryngealized (Brown et al. 2011; see also 4.2.1 and 4.2.2 above). Thus, Ch ejectives occur in words corresponding with PTz forms showing a laryngealized vowel.

Ch unvoiced bilabial segments ( $p$  and  $p'$ ) apparently do not participate in this regularity. Only one comparative set (set 42) includes a Ch word having

<sup>6</sup> Our reconstruction of PCh-Tz segment  $*nt$  is motivated by the Ch  $n$ :PTz  $*t$  correspondence. This conditioned change suggests the possibility of accounting for  $n$ : $*t$  in a different manner. Cross-linguistically, high vowels tend to acquire a lower quality when becoming nasalized (Beddor, Krakow, and Goldstein 1986:199). Alternatively, it is tempting to see the  $*i(\cdot) \rightarrow e$  rule as indicative of the presence of a nasalized high front vowel in PCh-Tz. If such an element were present, a different context-conditioned change could be posited according to which a PCh-Tz  $*t$  went to Ch  $n$  before a nasal vowel and remained as  $*t$  in Tz, with subsequent loss of nasalization in both Ch and Tz. Similarly, the Ch  $n$ :PTz  $*k$  correspondence, which we account for by positing PCh-Tz  $*nk$  (fig. 12), might perhaps be similarly explained through the presence of a following nasalized vowel. We cannot, however, confidently posit for PCh-Tz a set of nasalized vowels based on this limited evidence, but we consider this to be a possibility worth bearing in mind.

*p'*, and there is no corresponding PTh word in that set. In addition, a number of sets (39, 43, 44, 46, 47) show a Ch word with *p* whose PTh counterpart has a laryngealized vowel.

The association involving Ch ejectives and PTh laryngealized vowels is always as follows: Ch C'V/PTh \*CV' (where C = plain *t*, *k*, *ç*, or *č*; C' = *t'*, *k'*, *ç'*, or *č'*; V = any plain vowel; V' = any laryngealized vowel). The association appears to apply only to syllable onsets, since no examples of Ch VC'/PTh V'C are found. Figure 15 gives the canons in which this regularity is manifested and the identification numbers of supporting sets (5). Figure 15 also identifies the single exception (set 78) to the pattern.

This regularity is similar to one reported in Brown et al. (2011:335–36) involving languages within the Totonacan group.<sup>7</sup> Languages of the Totonac subgroup have laryngealized vowels, which are lacking in languages of the Tepehua subgroup. Tepehua languages instead show ejective stops (*p'*, *t'*, *k'*, *q'*) and affricates (*ç'*, *č'*) where Totonac languages generally have a corresponding plain consonant + laryngealized vowel sequence. Brown et al. propose that Tepehua ejectives arose from the migration of the laryngeal constriction associated with a laryngealized vowel first to the left edge of the nucleus in the form of a glottal stop (as found in some Totonac languages) and then onto the preceding stop or affricate, a process that is well attested cross-linguistically (Fallon 2002). A similar process to that proposed for Tn might explain the origin of ejectives in Ch and, of course, their correspondence with PTh laryngealized vowels. If so, this is a process that has occurred in at least two different branches of Ch-Tz during its long phonological history.<sup>8</sup>

An alternative proposal is that laryngealized vowels have developed from immediately preceding ejectives. The distributions of ejectives in both Ch and Tepehua are not in accord with this competing proposal, since Ch ejectives are never found root- or stem-finally, and the same is true of Tepehua ejective stops (Watters 1988:488 and Smythe Kung 2007:39).<sup>9</sup> In addition, PTh laryngealized vowels are not restricted to environments following stops and affricates; they occur as well in syllables with nasals, laterals, and glides in the onset. Thus, the alternative scenario would require positing a consonantal

<sup>7</sup> A working classification of languages of the Tn family is given in Brown et al. (2011:332–35).

<sup>8</sup> The process has also been reported for at least one language of the Totonac subgroup as well, Tajín Totonac (García Ramos 1979). While the existence of ejective phonemes in Tajín is still a matter of dispute, at the very least the regular manifestation of laryngealization as post-glottalization of stops and affricates is well underway in this variety.

<sup>9</sup> MacKay and Trechsel (2013) list stem-final position as being open to ejectivized consonants in Pf, but the examples in this paper and in the lexicon in MacKay and Trechsel (2010) are limited to verb stems bearing the imperfective suffix, the same stems having plain consonants when followed by other suffixes. In other Tepehua languages, the ejectivization of the final consonant in such forms is attributed to morphophonemic interaction with the imperfective suffix. This process is subject to some free variation in T and H, but is across-the-board in Pf (J. Watters, personal communication).

inventory in which every plain consonant has an ejective counterpart—an inventory that, to our knowledge, is not attested in any language.

Ch *p/p'* is problematic for this analysis since it apparently does not participate in Ch/PTn canon correspondences involving ejectives and laryngealized vowels. In Swadesh's published treatment of Ch phonology (1934*b*), he recognizes four ejective consonants, *m'*, *w'*, *n'* and *y'*, in addition to *ç'*, *č'*, *t'*, *k'*, and *p'*. In a later treatment (1939), he abandons the first four segments, regarding them as plain *m*, *w*, *n*, and *y*. Apparently, what he first took for glottalized continuants in this case were later interpreted as segments immediately followed by glottal stops, i.e., *mʔ*, *wʔ*, *nʔ*, and *yʔ*.<sup>10</sup> The problematic nature of Ch *p/p'* suggests that *p'* might be reconsidered as well.

**5.5. Syllable-nucleus correspondences.** Figure 16 presents the syllable-nucleus correspondences for Ch/PTz and for each gives the PCh-Tz nucleus from which it developed, as well as supporting set numbers. Two factors define syllable nuclei types: the presence or absence of a postvocalic \*h (\*Vh-) in PTz and vowel length (V and V:). These two factors may combine. PCh-Tz \*Vh- yields Vh- in Ch and \*Vh- in PTz; and PCh-Tz \*V:h- yields V: in Ch and \*Vh- in PTz. All logically possible correspondence combinations of short (V) and long vowels (V:) occur among the comparative sets (including Ch V:/PTz \*V:, Ch V:/PTz \*V, Ch V/PTz \*V:, and Ch V/PTz V), no one of which is especially prominent in terms of number of supporting sets, except for the last. For reconstructive purposes, we assume that the occurrence of a long vowel in Ch or in PTz, or in both, is indicative of a long vowel for PCh-Tz. We distinguish in PCh-Tz the three correspondences involving a long vowel by using V:, V:<sup>1</sup>, and V:<sup>2</sup> (fig. 16). Presumably, some factor or factors yet to be discovered account for these differences. One possibility is shifting stress patterns.

**6. Chitimacha–Totozoquean comparative sets and PCh-Tz reconstructions.** Below we present 91 comparative sets found for words from Chitimacha and Proto-Totozoquean, giving for each an identification number followed by a Proto-Chitimacha-Totozoquean reconstruction. PCh-Tz reconstructions are based on observed correspondences (figs. 12–16) and on the hypothesized phonological inventory for PCh-Tz (4.3). Immediately following reconstructed PCh-Tz forms are Ch reflexes and, following these, corresponding words reconstructed for PTz. The presentation of sets is roughly alphabetical, based on reconstructed PCh-Tz words.

In sets, only those parts of words given in boldface type feed into PCh-Tz reconstructions. All PCh-Tz reconstructions are based on compared forms that

<sup>10</sup> According to Iannucci (2009), the glottal stops following *m*, *w*, *n*, and *y* are possibly epenthetic.

show at least two segments pertaining to regular sound correspondences. A regular sound correspondence itself is considered valid only when there are at least two examples of the correspondence across compared languages (figs. 12–14).<sup>11</sup> Typically, the sound correspondences presented above are supported by more than two examples.

Certain symbols are used in reconstructions to indicate uncertainty. The symbols V and V' stand respectively for plain and laryngealized vowels whose qualities cannot be determined, and the symbol C indicates a similarly ambiguous consonant. In a couple of instances, a segment of a reconstruction is parenthesized, indicating that it is not supported by a regular correspondence but is, nonetheless, suggestive of plausible segment reconstruction.

All Ch words are from Swadesh (1939; 1950), with the exception of forms given in sets 30 and 47. Ch forms and meanings are rendered precisely as presented by Swadesh, with the exception that we have analyzed Ch vocabulary for suffixation, removing suffixes recognized by Swadesh (indicated with a hyphen following the Ch form) and, in addition, signaling some, using a preceding plus sign (+), which he does not explicitly identify.<sup>12</sup> Thus, while Swadesh gives, for example, the term *kamte* 'to bend down. . .' (set 12), we present it as *kam+te*, recognizing *-te* as a recurring verbal suffix.

Included in each set as well, when available, are words from Proto-Totonacan (PTn) and/or Proto-Mixe-Zoquean (PMZ). PTz words preceded by "PTz" with a suffixed number—e.g., "PTz109"—are from Brown et al. (2011). The suffixed number identifies the comparative set of Brown et al. from which the PTz item is extracted. Unless explicitly noted, PTz phonological reconstructions from Brown et al. (2011) have not been changed, but while Brown et al. (2011) did not offer reconstructed meanings for PTz items, we provide such meanings here. PTz words reconstructed and presented for the first time in this work are preceded by non-suffixed "PTz." PTh words found in sets containing numerically suffixed "PTz" are also from Brown et al. (2011), where supporting evidence for them is presented as well. Some words for PTh are reconstructed here for the first time. These are found in sets with non-suffixed "PTz," and supporting evidence for them is found in section A of online Appendix B. All non-bracketed PMZ words are from Brown et al. (2011) and/or Wichmann (1995). Also given in some sets are words from parent languages of subgroups of Mixe-Zoquean (PM, POM, PZ, PGZ), which are from Wichmann (1995). PMZ words enclosed in brackets ([. . .]) have been reconstructed for this paper.

<sup>11</sup> For vowels, this involves interpreting as belonging to the same correspondence set both plain and laryngealized vowels showing the same qualities (i.e., vowel correspondences enclosed by the same solid borders in figure 14).

<sup>12</sup> A discussion of Chitimacha suffixes is found in section C of Appendix B, the online supplementary materials.

We are able to provide reconstructions for PTz, PTh, and PMZ not given in Brown et al. (2011) because of new information made available with the inclusion of Ch words in the comparisons. For example, Ch *č'ak'umt* 'chew' (set 2) corresponds with PTh *\*čaqá* 'chew', but a possible cognate from PMZ is not forthcoming. Consequently, a form for PTz cannot be reconstructed based on a direct comparison of the PTh word with a corresponding PMZ word. However, possible cognation between the Ch word and the PTh term allows reconstruction of an appropriate PTz word—i.e., *\*čaka*. Similarly, PTz words can be reconstructed when a PTh word is missing, but where possible cognates from Ch and PMZ are available. In a parallel manner, as noted above, when words for PMZ are not available from either Brown et al. (2011) or Wichmann (1995), these can be reconstructed if a word from PM or POM or PZ or PGZ corresponds to a PTh form.

As discussed in 5.4, a strong association holds between Ch ejectives (*č'*, *č'*, *t'*, *k'*) and laryngealized vowels in words reconstructed for PTh. This suggests that Ch ejectives have developed from consonants in PCh-Tz words immediately followed in stems by laryngealized vowels. However, ejectives occur in some Ch words of sets for which there are no PTh possible cognates. It is not possible in these cases to determine directly from a PTh form whether a plain or laryngealized vowel reconstructs for the PCh-Tz word. In the circumstance where a PTh word is not forthcoming, we adopt the strategy of reconstructing a laryngealized vowel for a PCh-Tz word when the Ch term developed from it shows an ejective.

For some items appearing in comparative sets, notes are given in parentheses. These provide additional information bearing on some feature(s) of a set.

#### Ninety-one Chitimacha–Totozoquean Comparative Sets

1. PCh-Tz *\*ča<sub>1</sub>* TO SEW | Ch *č'uš+i* 'to sew'; PTz *\*ča* 'to sew'; PTh *\*čapá* 'to sew'; (no PMZ).
2. PCh-Tz *\*čaka<sub>1</sub>* TO CHEW | Ch *č'ak'um+t* 'to chew'; PTz *\*čaka* 'to chew'; PTh *\*čaqá* 'to chew'; (no PMZ).
3. PCh-Tz *\*ča:m* TO TALK, SAY | Ch *č'a:m-* 'to talk (about. . .), converse'; PTz *\*ča:m* 'to say'; (no PTh); PZ *\*čam* 'to say', PMZ [*\*ča:m*].
4. PCh-Tz *\*či<sup>1</sup>*- or *\*či<sup>2</sup>*- NIGHT, DARK | Ch *č'ima* 'night' (note: Ch *napšč'in* 'black, dark-colored'); PTz *\*či<sup>1</sup>*'s or *\*či<sup>1</sup>*:s (note: revised from Tz161 of Brown et al. 2011) 'dark, night'; PTh *\*či<sup>1</sup>*:s 'dark, night'; PMZ *\*čis* 'dark'.
5. PCh-Tz *\*či:š* BUG | Ch *č'i:š* 'bug; worm'; PTz *\*či:š* 'bug species'; PTh *\*či:š* ~ *či:s* 'cricket'; PMZ *\*čisi(k)* 'bedbug' (note: *\*či:s-* is expected).
6. PCh-Tz *\*čiʔ* SQUASH | Ch *\*čiška* 'pumpkin'; PTz *\*čiʔ*- 'squash'; (no PTh); PM *\*čiʔwa* 'squash' PMZ [*\*čiʔwa*].

7. PCh-Tz \***ka:¹ma₁** or \***kʷa:¹ma₁** or \***ka:¹ma₁'** or \***kʷa:¹ma₁'** CORNFIELD, MAIZE STALKS, STEMS | Ch *ka:mu* 'sprout; stem'; PTz \***kama** or \***kʷama** 'cornfield'; (no PTh); PMZ \***kama** 'cornfield'.
8. PCh-Tz \***ka:¹p** or \***kʷa:¹p** STEM, STALK | Ch *ka:pti* 'stem of plant'; PTz \***kap** or \***kʷap** 'plant with salient stem'; (no PTh); PMZ \***kape** 'type of bamboo' (note: ChZ *kape* 'thin reed').
9. PCh-Tz \***ka₁(p)š** LIME (CALCIUM HYDROXIDE) | Ch *kupšeš* 'lime'; PTz36 \***kaš** 'lime'; PTh \***qaštax** 'lime (calcium hydroxide)'; PMZ \***?akas** 'lime'.
10. PCh-Tz \***ka:¹?k** or \***ka:¹?kʷ** or \***kʷa:¹?kʷ** or \***kʷa:¹?k** BASKET | Ch *ka:kt* 'double-weave basket of oblong shape' | PTz \***ka?k** or \***ka?kʷ** or \***kʷa?kʷ** or \***kʷa?k** 'basket'; (no PTh); pM \***ka?ka** 'basket', PMZ [\***ka?k**].
11. PCh-Tz \***kep** TO FOLD | Ch *k'epiki* 'fold'; PTz \***kap** 'to fold'; PTh \***qaps-** 'to fold'; (no PMZ).
12. PCh-Tz \***kə₁?m** or \***kʷə₁?m** DOWN, TO BEND DOWN | Ch *kam+te* 'to bend down, bend something down'; PTz \***ki?m** or \***kʷi?m-** 'down'; (no PTh); PMZ \***kə?mə** 'down'.
13. PCh-Tz \***kišʷa** or \***kʷišʷa** GIRL, WOMAN | Ch *kiča* 'woman'; PTz \***kiša** or \***kʷiša** 'girl'; (no PTh); PM *kišay* 'girl', PMZ [\***kisay**].
14. PCh-Tz \***ko-** KNEE | Ch *mokun* 'knee, lap'; PTz39 \***kos** 'knee'; PTz \***çuqus-** 'knee'; PMZ \***koso(k)** 'knee'.
15. PCh-Tz \***kə:ʔe** or \***kə:hʔe** or \***kyə:ʔe** or \***kyə:hʔe** TO CUT, BREAK | Ch *k'a:ɕ+ɕ* 'to cut around, trim something; to cut something off by cutting around'; PTz \***kəhʔe** or \***kə:ʔe** or \***kyə:hʔe** or \***kyə:ʔe** 'to break'; (no PTh); pMZ \***ko:ʔe** 'to break'.
16. PCh-Tz \***ku** COALS | Ch *kups* 'coal, fire coals'; PTz \*-**ku** 'to burn'; PTh \***šqu** 'fire, to burn' (note: several nominalized reflexes mean 'coal, soot'; see section A of Appendix B, the online supplementary materials); (no PMZ).
17. PCh-Tz \***kV:²ʔš** or \***kʷV:²ʔš** TO EAT | Ch *k'uš+ɕ* 'to eat something'; PTz \***kə:ʔš** or \***ki:ʔš** or \***kʷə:ʔš** or \***kʷi:ʔš** 'to eat, bite'; (no PTh); PMZ \***kə:ʔs** 'to bite into something hard' (note: SoZ *kəʔs* 'eat,' ChZ *C kəʔs* 'to bite it, to eat it').
18. PCh-Tz \***kʷahtʷ** OAK | Ch *k'ahčin* 'oak tree'; PTz \***kʷaht** 'oak'; PTh \***kuka't** 'oak'; (no PMZ).
19. PCh-Tz \***kʷa:²n** RAIN | Ch *kaya* 'rain'; PTz \*-**kʷa:n** 'rain, water'; PTh *ška:n* 'rain, water'; (no PMZ).
20. PCh-Tz \***kʷe₁'s** MAIZE | Ch *k'asma* 'corn'; PTz24 \***kʷi's** 'corn kernels'; PTh \***ki'spa** 'corn (kernels)'; PMZ \***?əks-i** 'corn nibs [kernels] (dry)'.
21. PCh-Tz \***kʷe₁t** BRAIN | Ch *katma* 'marrow; brain'; PTz \*-**kʷit** or \*-**kʷit** 'brain'; PTh \*(ak)skititi 'brain'; (no PMZ).

22. PCh-Tz \*kʷə:<sup>1</sup>s or \*kʷə:<sup>1</sup>hs TO BE COLD, SHIVER | Ch *k'a:s+te* 'to shiver'; PTz \*kʷə's or \*kʷə'hs 'to be cold'; PṬp \*k'asní 'to be cold', PṬn [\*ka'sní]; (no PMZ).
23. PCh-Tz \*kʷiCi:<sup>2</sup> MEAT | Ch *kipi* 'meat, flesh; body'; PTz \*kʷini: 'meat'; PṬn \*kiní:t 'meat'; (no PMZ).
24. PCh-Tz \*kʷihʔtʷi<sup>1</sup>i TO GRIND | Ch *kihçi-* 'to grind, mash something by beating'; PTz \*kʷihʔti (note: revised from Tz28 of Brown et al. 2011) 'to grind'; PṬn \*(S)kití 'to grind on metate'; PMZ \*kə:ʔt 'to grind pinole'.
25. PCh-Tz \*kʷo HEAD | Ch *kut* 'head; top end (e.g., of a tree); stem (of a boat); bud; mind, sense'; PTz \*kʷo 'head'; PṬn \*kuk- 'head (prefix)'; PMZ \*ko-pak 'head', \*ko- ~ ko?- 'head, reach'.
26. PCh-Tz \*kʷu:<sup>1</sup>sʷ TO SHELL CORN | Ch *ku:s+pa-* 'to shell (corn)'; PTz29 \*kʷuš 'to shell (corn)'; PṬn \*kúší 'corn (maize), corn kernels'; PMZ \*ʔiks 'to shell (corn)'.
27. PCh-Tz \*kʷu<sup>1</sup>tʷi<sup>1</sup>i BONE | Ch *kaçi* 'bone'; PTz \*kʷuti 'bone'; PṬn \*lukuti 'bone'; (no PMZ).
28. PCh-Tz \*kʷu:<sup>1</sup>ʔ SQUIRREL | Ch *ku.mit* 'squirrel'; PTz120 \*-kʷuʔy 'large squirrel'; PṬn \*škúti 'coatomundi'; PMZ \*kuʔy 'large, red squirrel'.
29. PCh-Tz \*kʷV:<sup>1</sup>si or \*kʷV:<sup>1</sup>hsi PRETTY, HANDSOME | Ch *k'e:si(k'i)* 'pretty, beautiful, handsome'; PTz \*kʷV'si or \*kʷV'his 'pretty, handsome'; PṬp \*k'usi 'pretty, handsome', PṬn [\*ku'si]; (no PMZ).
30. PCh-Tz \*kʷwa:<sup>2</sup>t LOUSE | Ch *çat* 'louse' (note: this is from Swanton 1919:45, where it is presented as [tsat]); PTz121 \*-kʷwa:t 'louse'; PṬn \*ská:ta 'louse'; PMZ \*ʔawat 'louse' (note: no PMZ disyllabic forms reconstruct with a second-syllable long vowel [Wichmann 1995]).
31. PCh-Tz \*<sup>n</sup>ko<sup>1</sup>wa:<sup>2</sup> LEACHED CORN (NIXTAMALIZED MAIZE) | Ch *nowa* 'Indian hominy'; PTz \*ka'wa: < \*ko'wa: (vocalic assimilation) 'nixtamal'; PṬn \*qa'wa: 'nixtamal'; (no PMZ).
32. PCh-Tz \*<sup>n</sup>kuk OUTSIDE, ROW, FURROW, MIDDLE | Ch *nuk* 'outside, to the outside'; PTz125 \*škuk 'row, furrow, middle'; PṬn \*šquq 'row (of plants), furrow'; PMZ \*kuk 'middle' (note: NHM *kuhk* 'vertical, straight').
33. PCh-Tz \*makš or \*makʷš or \*ma'kš or \*ma'kʷš FISH | Ch *makš* 'fish'; PTz \*-akš or \*-a'kš or \*-akʷš or \*-a'kʷš 'fish'; (no PṬn); PMZ \*ʔaksa 'fish'.
34. PCh-Tz \*ma'n- NON-PROXIMAL DEICTIC | Ch *manki* 'there, yonder, in a place that is distant but familiar to speaker'; PTz \*a'n- 'medial deictic'; PṬn \*a'n- 'medial deictic'; (no PMZ).
35. PCh-Tz \*mɔ:<sup>2</sup>kʷ or \*mɔ:<sup>2</sup>k or \*mɔ:<sup>2</sup>kʷ or \*mɔ:<sup>2</sup>k BOTTOM | Ch *makta* 'rear, stern, bottom'; PTz \*ɔ:<sup>2</sup>kʷ or \*ɔ:<sup>2</sup>k or \*ɔ:<sup>2</sup>kʷ or \*ɔ:<sup>2</sup>k 'bottom'; (no PṬn); PMZ \*ʔo:k 'bottom'.

36. PCh-Tz \***mu(h)ɕ** or \***mu'(h)ɕ** HERB, PLANT | Ch *muħɕ* ‘button bush (*Cephalanthus occidentalis*)’; PTz \***uɕ** or \***u'ɕ** ‘herb, plant’; (no PTh); POM ?**uhɕ** ‘herb, plant’, PMZ [**ʔuɕ**].
37. PCh-Tz \***nakš** TO WHIP (IN CONFLICT) | Ch *nakš* ‘war’; PTz \***nakš** ‘to beat’; PTh \***naq-** ~ \***nik-** ‘to, beat, hit’ (note: alternate PTh forms due to sound-symbolic alternation); PMZ \***naks** ‘to whip, beat’.
38. PCh-Tz \***nɔ:<sup>1</sup>k** or **nɔ:<sup>1</sup>k<sup>y</sup>** or \***nɔ:<sup>1</sup>k** or **nɔ:<sup>1</sup>k<sup>y</sup>** PAPER | Ch *na:kšt* ‘paper; letter’; PTz \***nɔk** or **nɔk<sup>y</sup>** or \***nɔ'k** or **nɔ'k<sup>y</sup>** ‘paper’; (no PTh); PMZ **noki** ‘paper’.
39. PCh-Tz \***pa<sub>1</sub>:hk** TO BREAK | Ch *pu:k+te-* ‘to break something up fine’; PTz \***pa'hk** ‘to break’; PTh \***pa'q(S)-** ‘to break (tr.)’; PZ \***pak** ‘to move horizontally against something’ PMZ [**\*pa:k**] (note: ChisZ-N *pahk* ‘to pound something’).
40. PCh-Tz \***pa:<sup>1</sup>nk** WING | Ch *pa:nt'in* ‘wing’; PTz76 \***pak** ‘wing’; PTh \***paqa-** ‘arm, wing, branch’; PMZ \***pak** ‘bone’.
41. PCh-Tz \***pa:<sup>2</sup>n** SIDE | Ch *pay+e* ‘side, on the side’; PTz \***pa:n** ‘side’; PTh \***pa:n** ‘belly, side’; (no PMZ).
42. PCh-Tz \***pa:<sup>1</sup>p** or \***pa:<sup>1</sup>p** TO SPLIT | Ch *p'a:p+te-* ‘to split . . . off’; PTz \***pa'p-** or \***pap-** ‘to split’; (no PTh); PMZ \***paps** ‘to split’.
43. PCh-Tz \***pe:<sup>2</sup>** TO BE LYING, BE IN A HORIZONTAL POSITION | Ch *pe(h)* ‘auxiliary verb of horizontal position ‘to be in horizontal position’, familiar, when applied to human in horizontal position’; PTz \***pa:** ‘to be lying’; PTh \***pa:** ‘to be lying (second person)’; (no PMZ).
44. PCh-Tz \***pe<sub>1</sub>'(n)k<sup>y</sup>w** TO PINCH | Ch *paɕ+/-* ‘to pinch someone’; PTz80 \***pi'nk<sup>y</sup>w** ‘to pinch’; PTh \***pi'nkš-** ‘to pinch’; PMZ \***piw** ‘to pick up’ (note: Cn *pi:w* ~ *piw* ‘pick up (with fingers, e.g., corn kernels)’).
45. PCh-Tz \***pən** PERSON | Ch *panš* ‘person, relative (person associated with one), friend; mankind; the world of living things; the earth, the universe’; PTz99 \***pən** ‘person’; PTh \***la:pana** ~ \***la:pani** ‘person’; PMZ \***pən** ‘man’.
46. PCh-Tz \***pi'n** RED | Ch *pin-* ‘red’ (note: Swadesh does not report this form as a stem, but this is apparent in three forms he does report, *pinun/piniwa-tpinika-* ‘red’); PTz79 \***pi'n** ‘red’; PTh \*(S)**pi'n-** ‘red’; PMZ \***nəʔpin** ‘blood’ (note: probably derived from PMZ \***nəʔ** ‘water’ + \***pin** ‘red’).
47. PCh-Tz \***pi't<sup>y</sup>** TO TURN AROUND, SPIN, ROLL | Ch (*kap*)**pič** ‘to turn all the way around’ (note: this is from Swanton 1919:44, where it is presented as [(kap)pitɕ]); PTz109 \***pi't** ‘to roll (up)’; PTh \***spi't-** ‘to roll, spin; return’; PMZ \***pit** ‘to roll up’.
48. PCh-Tz \***pi:<sup>2</sup>ya'** or \***pi:<sup>2</sup>ya'** CANE | Ch *piya* ‘cane-reed’; PTz \***pi:ya'** or \***pi:'ya'** ‘cane’; (no PTh); PM \***pə:yV(n)** ‘wild cane’; PMZ [**\*pə:ya**] (note: final vowel reconstruction based on SaP *pi:yan* ‘wild cane’).

49. PCh-Tz \***po<sub>1</sub>k** or \***po<sub>1</sub>k<sup>y</sup>** CLOUD | Ch: *pok+ta* ‘sky, cloud’ (note: *poku* ‘wind, air’ and *pokpa-* ‘to be cloudy’, both indicating that *-ta* is a suffix); PTz \***puk** or \***puk<sup>y</sup>** ‘cloud’; PTh \***puqł**(ni) ~ \***pukł**(ni) ‘cloud’; (no PMZ).
50. PCh-Tz \***po<sub>1</sub>:ʔ?**- or \* **po<sub>1</sub>:2’ʔ?**- TO CUT ROUGHLY | Ch *pokš+t-* ‘to cut something irregularly’; PTz \***po:ʔ-** or \***po:ʔ** ‘to cut roughly’; (no PTh); PMZ \***po:ʔt** ‘to cut with machete’.
51. PCh-Tz \***pə** MOON, MONTH | Ch *pan?* ‘moon, month’; PTz94 \***pə** ‘moon, month’; PTh \***papá** ‘moon, month’; PMZ \***poʔya** ‘moon, month’.
52. PCh-Tz \***si<sup>1</sup>t(i)** SHARP POINT, CUT WITH BLADE | Ch *sit<sup>1</sup>i(k’i)* ‘sharp pointed; sharp (eyes)’; PTz \***sit-** ‘to cut with blade’; PTh \***sit-** ‘cut with blade’; (no PMZ).
53. PCh-Tz \***ša:1ma<sub>1</sub>** or \***ša:hma<sub>1</sub>** FLOWER, TO FLOWER | Ch *ša:mu* ‘flower’; PTz \***ša’na** or \***ša’hna** ‘to flower’; PTh \***ša’ná** ‘to flower’; (no PMZ).
54. PCh-Tz \***šo:2š-** or \***šo:2’š-** TO COOK BY BOILING; Ch *šuš+t* ‘to boil, to boil something’; PTz \***šo:š** or \***šo:š** ‘to cook in water’; (no PTh); PMZ \***so:s** ‘to cook in water’.
55. PCh-Tz \***šyə’-** or \***šyə<sub>1</sub>’-** SUN | Ch *č’a?a* ‘sun’; PTz \***šə’-** or \***šī’-** ‘sun’; (no PTh); PMZ \***səw** ‘sun, feast, name’.
56. PCh-Tz \***šyox** OAK | Ch *čuhču* ‘wooden basket of a certain type made of soft oak or cypress’; PTz \***šox** ‘oak’; (no PTh); PMZ \***soho** ‘oak’.
57. PMZ \***šy<sub>1</sub>k** or \***šy<sub>1</sub>k<sup>y</sup>** COLD | Ch *č’ak+i* ‘cold’; PTz \***šu’k** or \***šu’k<sup>y</sup>** ‘to cool off, be cold’; (no PTh); PZ \***suk-ʔəy** ‘to cool off’ (note: SoZ *súksuk* ‘cold’), PMZ [\***suk**].
58. PCh-Tz \***šy<sub>1</sub>:2’m** SOUR | Ch *č’am+i* ‘sour’; PTz133 \***šu:n** ‘sour’; PTh \***šú:n** ‘bitter’; POM \***šun** ‘sour’, PMZ [\***su:n**].
59. PCh-Tz \***ta** THAT | Ch *t’a* ‘demonstrative’ (in *t’a:t(k)* ‘now, at the present time, nowadays’, *t’a:tenk* ‘only now, not before now’, *t’a:š* ‘that one, standing not far off but not forming part of the same group’, *t’anki* ‘yonder’ *t’a:kliš* ‘on the other side’); PTz \***ta** ‘that (distal)’; PTh **ta** ‘that (distal)’; (no PMZ).
60. PCh-Tz \***ta:h<sup>n</sup>ka?** MAT | Ch *t’a:na* ‘cane-reed mat’; PTz129 \***ta<sup>h</sup>k?** ~ \***-t<sup>h</sup>k?** ‘to weave (mat)’; PTh \***šta<sup>h</sup>qat-** ~ \***štī<sup>h</sup>qat-** ‘woven sleeping mat’; PMZ \***ta:k?** ‘to weave’.
61. PCh-Tz \***te?** TO BECOME WET | Ch *t’eyk+te-* ‘to get wet’; PTz110 \***-ta?** ‘to get wet’; PTh \*(S)**ta<sup>x</sup>-** ‘to drip, to get wet’; PMZ \***ta?ks** ‘to drip’.
62. PCh-Tz \***ta-** YOUNGER SIBLING | Ch *tat’in* ‘younger sibling; younger first cousin on the mother’s side’; PTz147 \***-tənk<sup>yw</sup>** ‘younger male sibling’; PTh \***stáunku** ‘younger sibling’; PMZ \***təwə** ‘brother’.
63. PCh-Tz \***tə<sub>1</sub>h?**- TO SWING | Ch *tahy+te-* ‘to swing’; PTz150 \***tih?** ‘to rock, swing’; PTh \*(S)**tiwí** ‘to rock (tr.), swing (tr.)’; PMZ \***tə:ʔy** ‘to rock’ (note: SaP *təʔy* ‘swing’).

64. PCh-Tz \***tip** PLUNGE IN, SHOOT WITH ARROW | Ch *tip+te-* ‘to plunge in’; PTz152 \***tip** ‘to shoot with arrow’; PTh \***tip-** ‘to shoot arrow’; PMZ \***təp** ‘to stab, to shoot with arrow’.
65. PCh-Tz \***to<sub>1</sub>-** TO BREAK | Ch *toh-* ‘to break’; PTz \***to-** ‘to break’; PTh \***tukša** ‘to break’; (no PMZ).
66. PCh-Tz \***tyikin** or \***tyik’in** TO TICKLE SOMEONE | Ch *čikine* ‘to tickle someone’; PTz \***tikin** or \***tik’in** ‘to touch, tickle’; (no PTh); pZ \***tikin** ‘to touch’ (note: SaP *tikin* ‘tickle someone’), PMZ [\***tikin**].
67. PCh-Tz \***ntə<sub>1</sub>k** or \***ntə<sub>1</sub>k<sup>y</sup>** or \***ntə<sub>1</sub>k** or \***ntə<sub>1</sub>k<sup>y</sup>** PLURAL, EVERYTHING | Ch *nak* ‘(postposition) . . . and everything else, everything including . . .’ (note: Swadesh 1946:328, “nak is used at the end of enumerations in the meaning ‘and so forth’”); PTz \***-tik** or \***-tik<sup>y</sup>** or \***-ti k** or \***-ti k<sup>y</sup>** ‘plural’; (no PTh); PMZ \***-tək(ay)** ‘(suffix) plural’.
68. PCh-Tz \***ntə<sub>1</sub>n** FRUIT | Ch *nanu* ‘persimmon’; PTz151 \***ti n** ‘seed, fruit’; PTh \***ti n** ‘seed’; PMZ \***təm** ‘fruit’ (note: \*tən is expected).
69. PCh-Tz \***nti-** EARTH, LAND | Ch *ney?* ‘earth, ground, land, country’; PTz \***ti-** ‘land, earth’; PTh \***ti** ‘ya’t ‘land, earth’; (no PMZ).
70. PCh-Tz \***nti:2k<sup>y</sup>-** SPIRIT OF ANIMAL GUARDIAN | Ch *nek+ma-* ‘to league (with someone), especially with an animal guardian in the initiation rites; to initiate someone’ (note: *zapš-nekman* ‘“confederate”’; especially, ‘animal guardian’; *zapš* = ‘reflexive, reciprocal’); PTz \***ti:k<sup>y</sup>-** ‘spirit’; PTh \***ti:kú:** ‘proprietary spirit’; (no PMZ).
71. PCh-Tz \***çi** HEAVY | Ch *naç’i(k’i)* ‘heavy’; PTz \***çi** ‘heavy’; pTh: **çi nk-** ‘heavy’; (no PMZ).
72. PCh-Tz \***çiku’t** or \***çik<sup>y</sup>u’t** ANTS | Ch *ç’i:sç’ik’ahçik’ut* ‘ants’; PTz \***çiku’t** or \***çik<sup>y</sup>u’t** ‘ant(s)’; (no PTh); PZ \***hahçuku** ‘ant’, POM \***çukn** ‘ant’, PM (Veracruz) \***çukut(ik)** ‘ant’, PMZ [\***çukut** < \***çikut** (vocalic assimilation)].
73. PCh-Tz \***wa:s-** or \***wa:s<sup>y</sup>-** CANE TYPE | Ch *wa:simiš* ‘young cane-reed (under a year old)’; PTz \***wa:s-** or \***wa:sš-** ‘cane’; (no PTh); PM \***wa:šuk** ‘sugarcane’ PMZ [\***wa:suk**] (note: sugarcane is a post-conquest introduction and, thus, this referent developed through semantic extension of a word originally denoting some wild cane type.)
74. PCh-Tz \***wa:1ty<sub>1</sub>** or \***wa:1ty<sub>1</sub>** TO BUNDLE, WRAP, BIND | Ch *wa:ç+t-* ‘to wrap, bundle something up (with, in something)’; PTz \***wat** or \***wat** ‘to bind together’; (no PTh); PMZ \***wat** ‘to bind together things that are placed on top of each other’.
75. PCh-Tz \***wen** TO SAY, TONGUE, SPEECH | Ch *wen?* ‘tongue’ (note: [wen] ‘the tongue, speech’ [Swanton 1919:48]); PTz171 \***wan** ‘to say’; PTh \***wan** ‘to say’; PMZ \***wan** ‘to say, to sing’.
76. PCh-Tz \***we<sub>1</sub>s<sup>y</sup>** YOU | Ch *was* ‘you (pl.)’; PTz \***wi**š (note: revised from Tz67 of Brown et al. 2011) ‘you (sg.)’; PTh \***wi**š ‘you (sg.)’; (no PMZ).

77. PCh-Tz \*we:<sup>1</sup>ʔk or \*we:<sup>1</sup>ʔk<sup>y</sup> or \*we:<sup>1</sup>ʔk or \*we:<sup>1</sup>ʔk<sup>y</sup> SPREAD APART, PARTED | Ch *we:k+te-* ‘to have the legs spread apart’; PTz \*waʔk or \*waʔk<sup>y</sup> or \*waʔk or \*waʔk<sup>y</sup> ‘to be parted’; (no PTh); PMZ \*waʔks ‘to be divided, parted’.
78. PCh-Tz \*wəʔ<sup>1</sup>a<sub>1</sub><sup>1</sup> TO HEW, SAW | Ch *wačujkš+t-* ‘to adze, hew something’; PTz \*wəʔa<sup>1</sup> (note: revised from PTz177) ‘to saw, break’; PTh \*waʔa<sup>1</sup> ‘to saw’; PZ \*wəʔ ‘to break’ (note: SoZ *wə:t* ‘chop down’).
79. PCh-Tz \*xa:- or \*xa:’- TO DRAW, WRITE | Ch *ha:kš+te* ‘to write to someone; to draw something’; PTz \*xa:- or \*xa:’- ‘to write’; (no PTh); PMZ \*ha:yʔ ‘to write’.<sup>13</sup>
80. PCh-Tz \*xis<sup>y</sup> or \*xi’s<sup>y</sup> UNDER, PART UNDER | Ch *his-* ‘under’; PTz \*xiš or \*xi’s ‘part under’; (no PTh); PMZ \*həs. . . ‘back’ (note: TxZ *hə:sə* ‘(n-pos) back of, part under, down’).
81. PCh-Tz \*xo:<sup>2</sup>x INSIDE, INDOORS | Ch *huh-* ‘going indoors’; PTz180 \*xo:x ‘into, inside’; PTh \*-xu: ‘into downward’; PMZ \*hoh ‘inside, contents’.
82. PCh-Tz \*yeʔ TO CRY | Ch *yeh+t-* ‘to cry’; PTz186 \*yaʔs ‘to cry, yell’; PTh \*ta’sá ‘to cry, yell, vocalize’; PMZ \*yaʔs ‘to cry, yell’.
83. PCh-Tz \*yV:hʔk<sup>y</sup>(i) TO GROW, GROWN | Ch *ya:k’i* ‘grown, adult’; PTz185 \*yahʔk<sup>y</sup> ~ \*yehʔk<sup>y</sup> ‘to grow’; PTh \*stak- ‘to grow’; PMZ \*ye:ʔk ‘to grow’.
84. PCh-Tz \*ʔaʔm or \*ʔaʔm TO SEE, LOOK AT | Ch *ʔam-* ‘to see something, to look at something’; PTz \*ʔaʔm or \*ʔaʔm ‘to see, look at’; (no PTh); PZ \*ʔaʔm ‘to look’ (note: ChisZ-N *ʔaʔm* ‘to look at it, to see it’), PMZ [\*ʔaʔm].
85. PCh-Tz \*ʔiš or \*ʔiš TO SEE, SEEK | Ch *ʔiš+i-* ‘to seek; to collect; to tease’; PTz \*ʔiš or \*ʔiš ‘to see’; (no PTh); PMZ \*ʔiš ‘to see’.
86. PCh-Tz \*ʔoy or \*ʔoy TO GO AND RETURN, ARRIVE | Ch *ʔuy-* ‘to arrive, reach’; PTz \*ʔoy or \*ʔoy ‘to go (roundtrip)’; (no PTh); PMZ \*ʔoy ‘to go (and now have returned)’.
87. PCh-Tz \*ʔo:<sup>2</sup>ʔç or \*ʔo:<sup>2</sup>ʔç TO STICK | Ch *ʔue+te-* ‘to stick, adhere; to stick something on’; PTz \*ʔo:<sup>2</sup>ʔç or \*ʔo:<sup>2</sup>ʔç ‘to stick’; (no PTh); PMZ \*ʔo:<sup>2</sup>ʔç ‘to stick’.
88. PCh-Tz \*ʔo:<sup>2</sup>k<sup>y</sup> or \*ʔo:<sup>2</sup>k or \*ʔo:<sup>2</sup>k<sup>y</sup> or \*ʔo:<sup>2</sup>k REED | Ch *ʔakt* ‘kind of musical horn (about 1½ to 3 ft. long, consisting of a hollow reed bent in a hook and three parallel reeds with fingering holes connecting the longer and shorter arms of the hook); whistle, flute; bow, arrow for

<sup>13</sup> By reconstructing ‘to write’, we do not mean to imply that prehistoric speakers of Ch had writing. Since ‘to write’ regularly develops through semantic extension of words meaning ‘to draw’ (Brown 1991), the latter plausibly was the original meaning of the Ch reflex and, perhaps, of the PMZ word as well.

- bow, blowgun arrow; barrel of gun'; PTz \*ʔɔ:kʷ or \*ʔɔ:k or \*ʔɔ:kʷ or \*ʔɔ:k 'reed'; (no PTh); PMZ \*ʔɔ:kwin 'reed'.
89. PCh-Tz \*-a:kʷa<sub>1</sub> CHEEK | Ch *wa:ku* 'cheek'; PTz \*-a:kʷa 'cheek'; PTh \*laka- 'face, planar surface'; PMZ \*ʔa:ka 'cheek, edge'.
90. PCh-Tz \*-ə<sup>h</sup>ka:<sup>2</sup> HOUSE | Ch *hana* 'house, home, room, dwelling'; PTz \*tʷəka: (note: revised from Tz157 \*tʷək) 'house'; PTh \*čaqa:- 'house'; PMZ \*tək 'house'.
91. PCh-Tz \*-oy or \*-o<sup>h</sup>y GOOD, WELL | Ch *huyi/huygi/huyyi/huyigi* 'good, successful, effective; well, proper, true, right'; PTz \*oy or \*o<sup>h</sup>y 'good, well'; (no PTh); PMZ \*ʔoyV 'good, well'.

**7. Structural similarities.** For a very old genealogical grouping like Ch-Tz (see 9 below) we should not expect to encounter many direct and unequivocal structural similarities or grammatical correspondences. When we do find a few seemingly related features, they are worth pointing out, not because they serve to cement the hypothesis but because they, at the very least, add some plausibility to the proposal of common origin and provide direction for future research. Ch, Th, and MZ languages do indeed share several structural features that give them a common "feel," such as extensive use of head-marking in the clause, absence or near absence of nominal case, complex verbal morphology, and so on; however, none of these can be claimed as evidence for common descent, and even as a "feature complex" they represent a set of properties that frequently co-occur, particularly in languages of the Americas.

A further confounding factor is the geographic separation of Ch from Tz languages in their present-day locations: in terms of typological profile, Ch and Tz languages turn out to be more similar in many respects to other languages of their geographic vicinity than they do each other. Th and MZ, for example, share many of the traits of the Mesoamerican linguistic area (Campbell, Kaufman, and Smith-Stark 1986).<sup>14</sup> Ch, in contrast, is located in an area dominated by SOV languages and, being an SOV language itself, has many of the typological traits commonly found for that language type

<sup>14</sup> The evidence for the claim that Ch is a Mesoamerican language in part relates to the finding that its closest relatives are all spoken in Mesoamerica. Whether or not Ch is a Mesoamerican language in the sense of sharing many of the typical features defining Mesoamerica as a linguistic area (Campbell, Kaufman, and Smith-Stark 1986) is another matter. A systematic check reveals that this is not the case. Particularly interesting are the features with respect to which Totozoquean languages consistently are in conformity with the Mesoamerican areal pattern whereas Ch is not: Ch does not follow the Mesoamerican pattern of nominal possession ('his<sub>i</sub>-N<sub>j</sub> the N<sub>i</sub>'); it lacks relational nouns, a vigesimal numeral system, locatives derived from body parts, numeral classifiers, body-part incorporation, the inclusive/exclusive distinction in pronominals, and morphological processes involving vowel harmony. Thus, typologically, Ch is clearly not a Mesoamerican language.

<i>hi(h)</i> - 'be' (singular subject, any posture)
<i>na(h)</i> - 'be' (plural subject, any posture)
<i>či</i> - 'be standing' (singular subject)
<i>pe(h)</i> - 'be lying' (singular subject)

FIG. 17.—Chitimacha postural verbs.

(e.g., genitive-noun order, postpositions) which contrast with those found in Tn and MZ. Under the hypothesis of remote common origin, one of the two groups would have had to have undergone major restructuring of its grammar—most likely Ch, since it was subjected to areal influences moving into the U.S. Southeast from Mesoamerica (see 9 below)—making the task of uncovering incontrovertible phylogenetically motivated grammatical parallels extremely difficult. What we present in the sections below, then, is only intended to be suggestive of potential links rather than compelling evidence for them.

**7.1. Grammatical correspondences between Ch and Tn.** In trying to match grammatical parallels with lexical evidence for common descent, the gold standard is shared features that are both typologically unusual and in some way linked to idiosyncratic features of some or all of the daughter languages in question. In 7.1.1, we examine some idiosyncrasies in the uses of postural auxiliaries in Tn and Ch and, in 7.1.2, we present a case suggestive of a link between Ch demonstrative morphemes and their functional counterparts in the Tn languages. In 7.1.3, we consider three potential morphological cognates from the verbal inflectional paradigms.

**7.1.1. Postural auxiliaries.** Auxiliary verbs that express the posture of the actor are found in languages around the world (Newman 2002) and are a well-known feature in the U.S. Southeast (Watkins 1976 and Kaufman 2013). Swadesh (1939:32–35) reports for Ch a set of auxiliary verbs, some of which encode the posture or plural number of the subject. These are given in figure 17. These auxiliaries follow a main verb in participial form, constituting a periphrastic continuative inflection; for the two auxiliaries that specify posture, the inflection carries the added meaning of being standing or lying while performing the action expressed by the main verb, as in (1):<sup>15</sup>

<sup>15</sup> The abbreviations used in the interlinearized examples in this paper are as follows: 1, 2, 3 = first, second, third person; AOR = aorist; FUT = future tense; IMPF = imperfective aspect; NFP = non-first person; PFV = perfective aspect; PL = plural; PO = possessive; PROG = progressive aspect; PRTPL = participle; ST.PL = stative plural; SUB = subject.

*wi: 'be sitting; exist (posture unknown/unspecified)'
*ya: 'be standing; exist (standing)'
*ma: 'be lying; exist (lying)' (first and third person)
*pa: 'be lying; exist (lying)' (second person)
*waká 'be high; exist (high up)'

FIG. 18.—PTh postural verbs.

- (1) *hamči:kš hiři*  
*hamči-kš hi-iři*  
 have-PRTPPL be-AOR:NFP  
 'he had it' (Swadesh 1939:90)

Here, the verb *hamči* 'to have' appears in participle form (indicated by the suffix *-kš*) and is followed by the posture-neutral auxiliary *hi(h)*- 'be'. The auxiliary itself is conjugated for the same person, tense, aspect, and mood categories as regular verbs, although with slightly less paradigmatic regularity.

Postural auxiliaries are also found in Mesoamerica (Haviland 1992 and Aissen 1994), and languages of the Tn family have a set of postural verbs that are used in auxiliary-like functions (fig. 18; also see section B of Appendix B, the online supplementary materials). While these verbs are used as main predicates in descriptive ('X is sitting/standing/lying/up high'), locative ('X is there sitting/standing/lying/up high'), and existential ('there is an X sitting/standing/lying/up high') expressions, they are also reported to form compounds in many Tn languages, such as in this Upper Necaxa example:<sup>16</sup>

- (2) *kałwáyá:t namintsá tayá tsa'má lú:wa'*  
*kałwán-ya:t na-min=tsá tayá-∅ tsa'má lú:wa'*  
 weep-stand FUT-come=now take-IMPF that snake  
 'she's standing there weeping, the snake will come and take her'<sup>17</sup>

This example shows the posture verb *ya:t* 'be standing' compounded with the verb *kałwán* 'weep', giving a continuous/progressive sense to the event as well as expressing the posture of the subject. In addition, one of the posture verbs, *\*ma:* 'be lying', has become grammaticized in the Central Tn group as the expression of the progressive aspect, as in this example from Upper Necaxa:

<sup>16</sup> This construction is mentioned only in passing in most sources on Tn languages, where its frequency and productivity are unknown; it is described in detail for Upper Necaxa in Beck (2011a), where it is extremely common and productive.

<sup>17</sup> Unattributed Upper Necaxa examples are taken from Beck's fieldnotes.



<i>ha</i> 'this one (near deixis)'
<i>t'a</i> 'that one (medial)'
<i>sa</i> 'that one (far deixis)'
<i>we</i> 'that aforementioned'

FIG. 20.—Chitimacha demonstratives.

While the consonant correspondences between the two sets of verbs in figure 19 are plausible (Ch *h* ~ PTh \*w, Ch *č* ~ PTh \*y, Ch *p* ~ PTh \*m), they are not found as regular correspondences within the lexicon (see 5 above). Nevertheless, the structural correspondences are suggestive. Both languages have an auxiliary system for the formation of continuatives that is sensitive to both posture and number of the subject, and in both systems (1) the “default” posture verb in both Tn and Ch is based on the verb ‘be sitting’; (2) the Ch form for ‘be lying’, *pe(h)*, may in fact correspond to the Tn second-person stem, \*pa:’; and (3) the plural auxiliary *na(h)* in Ch is similar to and potentially cognate with the stative plural marker \*-nan found in Tn. Two alternative diachronic scenarios might account for these parallels: either a PCh-Tz plural inflection of postural bases became reanalyzed in Ch as a plural auxiliary in its own right, or the plural auxiliary became reanalyzed as a plural inflection and was added to postural bases in PTh. It is, of course, impossible to tell which of these two (or any number of other possible) pathways is correct, but the connection between the two systems is comfortable to make and, if substantiated, offers a satisfying explanation of the development of one of the more idiosyncratic features of modern Tn grammar.

**7.1.2. Demonstratives.** Swadesh (1939:108; 1950:42) reports four demonstratives in Chitimacha (fig. 20).<sup>18</sup> The demonstrative elements have four forms—plain (e.g., *ha* ‘this’), substantival (*ha:š* ‘this one’), locative (*hanki* ‘here’), and directional (*hank* ‘hither’). The plain forms are used as determiners and the substantivals are independent anaphoric elements. The proximal demonstrative determiner makes a number distinction (*ha* ‘proximal singular’/ *ho* ‘proximal plural’) as well as having special forms indicating posture (*ha* ‘this (any posture)’, *han* ‘this (sitting)’, *hač* ‘this (standing)’). The formative -č in *hač* is also seen in the Ch posture verb *či* ‘be standing’.

<sup>18</sup> Three of the four words in figure 20 are included in Swadesh’s (1939) grammar; the fourth, *t'a* ‘medial’, appears in his dictionary (Swadesh 1950:42). The gloss given there is a rather vague “demonstrative”; however, the medial sense of the word surfaces in his gloss of the substantival form *t'a:š* ‘that one, standing not far off but not forming part of the same group’.

	PROXIMAL	MEDIAL	DISTAL	SPECIFIC
NON-DEMONSTRATIVE	<i>a:</i>	<i>a'n</i>	<i>a:'x</i>	<i>tʂa'</i>
DEMONSTRATIVE	<i>wa:</i>	<i>wa'n</i>	<i>wa:'x</i>	

FIG. 21.—Upper Necaxa Totonac deictic morphemes.

PROXIMAL	*a:
MEDIAL	*a'n
SPECIFIC/DISTAL	*ta'
DEMONSTRATIVE	*w ~ *u

FIG. 22.—PTh deictics.

The situation in Totonacan languages is somewhat murkier and more complex, the data from most languages being restricted to translations of demonstrative or deictic elements as simply *this* or *that* (or *este* and *eselaquel* in Spanish). The most elaborate deictic system reported is that of Upper Necaxa Totonac (Beck 2011b:54), which combines three degrees of deixis with a demonstrative/non-demonstrative distinction and includes an additional element glossed as ‘specific’ (fig. 21). Note that this set of forms shows a clear and regular alternation between demonstrative (marked by the prefix *w-*) and non-demonstrative forms. All the elements in figure 21 can be used independently as adverbials or can be combined with a range of bases to form a variety of deictic words, the most relevant to the discussion here being those based on *-ma* (possibly descended from the PTh postural verb \**ma:* ‘be lying’; see below), which are words with the dual functions of determiner and anaphoric pronoun.

The extent to which this system is paralleled in the other languages of the family is difficult to determine, although it is possible to reconstruct at least four elements for PTh (fig. 22; see also section B of Appendix B, the online supplementary materials). One of the factors making the reconstruction of this system problematic is that the various elements have undergone considerable reanalysis in the daughter languages and, in several cases, have been lost altogether.<sup>19</sup> In Tepehua, for instance, the deictic system has been largely reduced

<sup>19</sup> In the discussion that follows, we make reference to the Totonacan family tree proposed in Brown et al. (2011). This tree recognizes the uniformly accepted division of the family into Tepehua (T, H, Pf) and Totonac branches but proposes a first division of the Totonac branch

		<i>-má</i> 'neutral'	<i>ya:t</i> 'be standing'	<i>wi:t</i> 'be sitting'	<i>waká:t</i> 'be high'
PROXIMAL	NON-DEMONSTRATIVE	<i>a:má</i>	<i>a:yá:t</i>	<i>a:wí:t</i>	<i>a:waká:t</i>
	DEMONSTRATIVE	<i>wa:má</i>	<i>wa:yá:t</i>	<i>wa:wí:t</i>	<i>wa:waká:t</i>
MEDIAL	NON-DEMONSTRATIVE	<i>a'nmá</i>	<i>a'nyá:t</i>	<i>a'nwí:t</i>	<i>a'nwaká:t</i>
	DEMONSTRATIVE	<i>wa'nmá</i>	<i>wa'nyá:t</i>	<i>wa'nwí:t</i>	<i>wa'nwaká:t</i>
DISTAL	NON-DEMONSTRATIVE	<i>a:'xmá</i>	<i>a:'xyá:t</i>	<i>a:'xwí:t</i>	<i>a:'xwaká:t</i>
	DEMONSTRATIVE	<i>wa:'xmá</i>	<i>wa:'xyá:t</i>	<i>wa:'xwí:t</i>	<i>wa:'xwaká:t</i>

FIG. 23.—Upper Necaxa postural deictics.

to a single element (*hu* in Tl and H, *an* in Pf—apparently descended from different PTh morphemes, \*w ~ \*u and \*a'n, respectively), which functions as a definite determiner (Watters 1988, Smythe Kung 2007, and MacKay and Trechsel 2010); all three Tp languages, however, retain traces of \*a'n in their adverbial system (cf. Tl *ánča* 'there', Pf *ánča* 'there', H *ʔaníʔ*).

M, on the other hand, has three determiners—*hun* 'that', *na'n* 'that', and *wi'n* 'this'—all of which are reported to be demonstratives (MacKay 1999). The PTh demonstrative \*w ~ \*u is preserved in the determiner system of A, which also has forms corresponding to all three degrees of deixis found in U, although it is unclear from our sources whether or not they continue to express the proximal ~ medial ~ distal distinction. FM is the only other language reported to have an exact phonological analogue to U *tsa'má*, although FM *tsamá* is glossed simply as 'the, that'. We hypothesize, however, that U *tsa'má* and FM *tsamá* are cognate with the Sierra-Lowland form \*támá 'that'. In the Sierra languages, \*ta'má forms a part of a three-degree deictic system in which the reflex of the PTh demonstrative forms part of the proximal, \*u:má, while the distal, \*a:'má, contains a reanalyzed reflex of the medial \*a'n. In P, *ta'má* is glossed as 'distal', but there is no medial deictic reported at all. The base used for the determiners in the Sierra-Lowland languages is *-ma*, as it is in A and one series of forms in U.

In U, A, C, and HT the deictic prefixes combine with posture verbs, as in the forms from U given in figure 23. Taken as a paradigm, the pattern shown

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between M and Central Totonac. Central Totonac consists of Northern (U, A), and Lowland-Sierra, which in turn is subdivided between Sierra (C, Co, HT, Ol, Oz, Z) and Lowland (P). FM is tentatively grouped as a coordinate branch within Sierra-Lowland, although MacKay and Trechsel (2013) place it in the Northern group.

in figure 23 suggests that the “neutral” forms (those used with an object in any posture) are based on a phonologically reduced form of the verb \*ma: ‘be lying’; this hypothesis is strengthened by the fact that in A and Z the base for demonstratives is -má:, although it is -má in P, U, and the Sierra languages apart from Z.

It is difficult to find incontrovertible reconstructions of a possible Ch-Tz deictic proto-system, although this paper does reconstruct Ch *t’a* ~ PTh \*ta’ (set 59) and PTh \*a’n ‘medial’ is related to the Ch adverbial deictic *manki* through set 34. In addition, there is a potential correspondence between Ch *we* ~ PTh \*wa ‘proximal demonstrative’, although this set falls below the threshold of persuasiveness for set inclusion in this paper (see section D of Appendix B).

The proto-system suggested by these parallels, a system with (minimally) three degrees of deixis and a morpheme indicating demonstrativity or a related referential discourse category (‘that already referred to’), is not novel enough to be considered evidence of genetic relatedness. A system with a definite article distinct from the demonstrative system is, in fact, the preferred pattern reported in the *World Atlas of Language Structures* (Dryer 2011), and a system with three degrees of deixis is found in 38% of the sample presented in Diessel (2011). What is significant, however, is the association for Tn and Ch between deictic markers and number/posture.<sup>20</sup> This is an uncommon and rather distinctive characteristic, and the parallel is made even stronger by the apparent relationship between the Ch proximal “upright” determiner *hač* (*ha* ‘proximal’ + *-č* ‘standing’) and the Ch posture verb *či* ‘be standing’; if this etymology is correct, then the parallel between the Ch construction and Tn forms like those in figure 23 becomes exact and would constitute a very strong grammatical correspondence between the two.

**7.1.3. Morphological parallels.** Although there are no extensive parallels or cognates in the morphology, there are three forms from the verbal paradigm that show some resemblance.

**7.1.3.1. First-person subject and object.** The first-person subject marker in Ch is a suffix *-ki*; the PTh first-person singular is marked by a prefix \*i’k-, e.g., Ch *hiki* ‘I was’ (Swadesh 1939:33), U *i’kwí.t* ‘I sit’.

The first-person object marker in Ch is a suffix *-ki*; the first-person object marker in PTh is \*kin-, e.g., Ch *ʔutki-* ‘to tie me’ (Swadesh 1939:37); U *kinčí:* ‘s/he ties me’. It should be noted that Campbell (1997:chap. 8) informs us that a first-person morpheme involving /k/ is commonplace in the Americas

<sup>20</sup> Although a number distinction is not maintained in the determiner systems in most Th languages, Troiani (2004:113) reports a singular/plural distinction for the proximal determiners in HT—*umá* ‘this’, *umaqót* ‘these’; the plural morpheme involved here is that used for plural subject/object agreement in Sierra languages and as a totalative/terminative morpheme in the rest of Central Th (Beck 2012).

and so its presence in both of any two languages is not a particularly significant finding.

**7.1.3.2. Past tense.** Auxiliary verbs in Ch have three aorist (past imperfective) conjugations, one of which involves a prefixal element *?iš-*; the PTh past tense prefix is *\*iš-*, e.g., Ch *?išč'in* ‘you/she/he stands’ (Swadesh 1939:33), U *išyá:t* ‘s/he stood.

**7.2. Grammatical correspondences between Ch and MZ.** Mixe-Zoquean languages are known to be efficient in renewing their morphologies through grammaticalization (Wichmann 1993). For example, Wichmann (2003) shows how one language (Texistepec Popoluca) restructured its entire aspect–mood system and parts of its person marking system in what was probably just a few hundred years. Moreover, it is likely that MZ languages have been structurally influenced by their Mayan neighbors. Thus, experiencing difficulties in finding morphology which is cognate with Ch or even with Totonacan is not surprising. Where we do see some morphological connections, these are rather inconspicuous and in some cases concern non-productive morphology and morphological processes.

**7.2.1. Valency-augmenting suffix.** Swadesh (1939:36) mentions an “indirective” (applicative) suffix *-a?* ‘for someone, acting on something belonging to someone’. PMZ has a valency-augmenting suffix *\*-hay*, which is attested in forms such as PMZ *\*su:s?-hay* ‘to whistle at’ (derived from *\*su:s?* ‘to whistle’) and PMZ *\*nəm-hay* ‘to say something to someone’ (derived from pMZ *\*nəm* ‘to say’) (Wichmann 1995:394, 537). It is productive in at least some MZ languages—for example, in Chiapas Zoque, where Faarlund (2012:82–83) describes it as an applicative. Although Swadesh does not provide a morphological analysis of the verb form *ne ma?* ‘to teach something to someone’, which is a candidate for being cognate with PMZ *\*nəm-hay*, it could be analyzed as containing the applicative *-a?*. Thus, Ch *-a?* and PMZ *\*-hay* have similar functions, and could even be cognate.

**7.2.2. The imperative.** The Ch imperative is formed by means of a suffix *-ʔa*, which appears to incur a high pre-final tone (Swadesh 1939:41). It may or may not be cognate with the PMZ imperative suffix *\*-ə/-a* (the form is vowel-harmonic) reconstructed by Wichmann (1995:107).

**7.2.3. Collective suffix.** Ch has many different ways of expressing the plural, often involving whole suppletive stems. This is not the case in MZ languages, but there does seem to be a morphological link in this domain (in addition to the postposition or suffix reconstructed in set 67). In the cognate sets in Wichmann (1995) there are 11 examples where a final *k* is present in one or more languages but missing in others. No systematic distribution of this final element could be found across these languages, so it was reconstructed in parentheses (although in a few cases the parentheses were omitted), indicating the uncertainty of its status in the proto-language. Some

examples are PMZ \*ʔunV(k) ‘child’, \*çiki(k) ‘bedbug’, \*we:ʔnV(k) ‘wasp’, \*koso(k) ‘knee’, PM \*te:ʔn-i(k) ‘ladder made of one piece of wood’ (this last form is a nominalization of \*te:ʔn ‘to step’). Sense can be made of the irregular appearance of this element if it is interpreted as a collective marker which fell into general disuse but was sporadically reanalyzed as part of the stem. Note that all the forms refer to beings or objects that usually come in groups (including ‘ladder’ if the etymological meaning is ‘steps’). According to Swadesh (1939:62), Ch plural suffixes include *-kank*, *-kampa*, *-mank*, and *-kaʔa*. In addition, the dropping of a final vowel and/or reduplication may be involved in plural formation. Apparently, the plural of a given noun cannot be predicted. We note that a recurrent element in the four plural suffixes listed is *k*, which would suggest that the ancestor of Ch and Tz had a plural suffix *\*-k*, and that this suffix was augmented by other morphological material in Ch while it became unproductive in MZ and was lost in Th.

**7.2.4. Head-first order in noun–adjective compounds.** Whether treated as separate words or written as one word, the order in Ch of noun–adjective phrases (or compounds, as the case may be) is head first. Swadesh (1939:75) gives examples such as *k’ušt’atin* ‘glutton’ (from *k’ušti* ‘food’ + *ʔatin* ‘large’) and *kipinun* ‘mulatto’ (from *kipi* ‘flesh’ + *pinun* ‘red’). In PMZ we find the term *\*nəʔpin* ‘blood’. Synchronically, the first element of the word is identified with PMZ *\*nə:ʔ* ‘water’. The element *\*-pin* is not attested elsewhere in the lexicon, but comparison with Th *\*(S)pi’n* ‘red’ (Brown et al. 2011:349) reveals that the etymology ‘red’ can be assigned. This is now further supported by the Ch root *pin* ‘red’ occurring, for instance, in the Ch form *kipinun* ‘mulatto’ just cited (note comparative set 46). If *\*nəʔpin* is etymologically ‘water’ + ‘red’, we find the same order of the elements as found in Ch. A similar example is PMZ *\*çípin* ‘wart’, analyzed in Brown et al. (2011:366) as consisting of *\*çi* ‘pimple’ + *\*pin* ‘red’. These are compelling because other, more transparent compounds of adjectives and nouns have the opposite order, even in PMZ; note *\*çapats-kuy* ‘buckthorn’ (lit., ‘red’ + ‘tree’) and similarly formed names of trees (Wichmann 1995:354). Thus the order noun–adjective may have been the pre-PMZ state of affairs that shifted at some point. The dominant order in Th languages is adjective–noun, suggesting perhaps that the process of shift began in PTz, after the split from Ch.

**8. Summary and discussion of results.** The data and analyses presented above provide substantial evidence for the proposal that Chitimacha and languages of the Totozoquean family are descended from a common ancestor. As with any proposal of a distant genetic relationship (DGR), this one is vulnerable to criticism concerning the quality of data presented in its support.

Number of Correspondences	Number of Sets
5	4
4	15
3	57
2	15

FIG. 24.—Number of correspondences observed for Ch-PTz comparative sets.

DGR proposals typically involve comparing words of different languages that are similar in sound and meaning. If words compared are conclusively demonstrated to be cognate, then the languages to which they pertain are proved to be genealogically related. Such proof must negotiate a number of hurdles. Campbell (1997:206–59) and Campbell and Poser (2008) discuss factors that may confound attempts to establish genealogical relationships based on lexical similarities. Among these, especially problematic are comparison of short words, too much semantic latitude for words compared, onomatopoeia, and failure to account for unmatched segments of compared words. These factors are reviewed below with respect to their impact on the convincingness of the Ch-PTz proposal. Another issue of considerable importance for assessing the strength of a DGR proposal is the extent to which comparative sets are supported by regular sound correspondences. Proposals for which only a few sound correspondences are observed are less convincing than those showing many.

**8.1. Sound correspondences.** Critical reviews of DGR proposals (e.g., Campbell 1973; 1988; 1995; 2011 and Campbell and Kaufman 1980; 1983), while identifying weaknesses of comparative sets, often fail to acknowledge counterbalancing strengths. One such strength is a healthy number of comparative sets supported by sound correspondences, a feature that is a strong positive for the Ch-PTz proposal. In this proposal, words are judged plausible candidates for cognation only if these show a minimum of two regular sound correspondences.<sup>21</sup> Figure 24 gives the number of comparative sets showing different numbers of correspondences. The vast majority of sets demonstrate more than the minimum of two correspondences—meaning, of course, that the vast majority do not include short words (those with

<sup>21</sup> A correspondence is considered regular only if it recurs in at least two comparative sets. In the vast majority of instances, a correspondence is attested by more than two sets (see figures 11 and 12).

fewer than three segments), for which chance resemblance is an issue. On average, Ch-PTz comparative sets show 3.1 sound correspondences. Fifty-seven of the 91 sets involve comparison of CVC words wherein all three segments correspond. Nineteen sets involve more complex words in which both compared forms are either CVCV or CVCVC, all of whose segments correspond.

While the importance of sound correspondences for the comparative method has rarely been challenged, there remains the possibility that some comparative sets assembled for DGR proposals attest to corresponding sounds that in fact are not products of common ancestry but rather are artifacts of coincidence. For example, correspondences that are very rare among the world's languages or not found at all (Brown et al. 2013), such as p:k or s:m, are more likely to be bogus in DGR proposals than more frequently occurring correspondences. Proposals riddled with highly uncommon correspondences should be considered suspect.

Brown et al. (2013) apply an automated sound correspondence recognition program to a data set consisting of standardized word lists for over half of the world's languages. This produces a compendium of 692 recurrent sound correspondences with information about the frequency of occurrence of each correspondence. The compendium includes only correspondences involving non-identical sounds such as k:g, a:o, and t:č and, consequently, excludes those involving phonological identity such as k:k, a:a, and t:t. Three statistics relating to worldwide frequency of occurrence are provided for each correspondence: NG = number of genera (standardly recognized genetic groups of languages with time depths roughly similar to those of major Indo-European subgroups) in which a correspondence occurs, AG = number of genera in which the correspondence could be found (given available sound segments in word lists pertaining to languages of a genus), and PC = percentage of available genera in which a correspondence occurs.<sup>22</sup>

The Ch-PTz proposal recognizes 14 correspondences that involve identical sounds, all of which occur commonly across the world's languages: four vowel correspondences (i:i, a:a, u:u, and o:o; fig. 14), and ten consonant correspondences (k:k, m:m, n:n, p:p, s:s, š:š, t:t, ç:ç, w:w, and y:y; fig. 12). Figure 25 presents frequency statistics from Brown et al. (2013) for 14 of the 18 Ch-PTz correspondences involving non-identical segments.<sup>23</sup> In figure 25, correspondences are given in rank order based on the PC frequency statistic, from largest to smallest.

<sup>22</sup> For details, readers are directed to Brown et al. (2013), which can be accessed at <<http://www.linguisticsociety.org/content/language-vol-89-issue-1-march-2013>>.

<sup>23</sup> Because of a peculiarity of the transcription orthography used in the Brown et al. (2013) study, it is impossible to retrieve worldwide frequency statistics for four of the Ch-PTz vowel correspondences (i:i, a:ə, a:i, and a:o).

Ch-PTz Sound Correspondence	PC	NG	AG
e:a	30.25	98	324
u:o	29.69	95	320
h:x	20.45	27	132
s:š	19.08	29	152
a:i	17.40	59	339
č:č̣	16.24	19	117
∅:ʔ	12.57	24	191
k:kʷ	11.76	4	34
u:a	10.95	37	338
č:t	5.88	11	187
č̣:t	4.83	7	145
č:š	3.25	4	123
n:t	1.23	4	325
n:k	0.30	1	328

FIG. 25.—Worldwide frequency for 14 non-identical Ch-PTz correspondences.

Only one of the 14 Ch-PTz correspondences of figure 24, n:k, is exceptionally rare. The uncommonness of n:k is highlighted by the fact that it could occur in any of 328 available genera, but in fact is found in only one, suggesting its possible status as an artifact of coincidence. Nevertheless, n:k is included in the current analysis because it is supported by five comparative sets (fig. 12), which is three more than the minimum of two sets required for retention, a finding that counterbalances chance explanation. The correspondence n:t might be viewed as similarly problematic, but certainly not to the same extent as n:k. In any event, correspondence frequencies reported in figure 24 show that the Ch-PTz proposal is far from saturated with rare correspondences potentially explained only by chance.

The Ch-PTz proposal is supported by an additional association extending across a number of observed correspondences. Correspondences involving all obstruents of Ch, save the bilabial stop, taken together strongly support a general association between Ch ejectives and PTh laryngealized vowels (5.4). This involves 33 comparative sets, of which only one fails to conform to the generalization (fig. 14). The chance that such a robust association is explained by random variation must be infinitesimally small.

**8.2. Other factors.** Of the various potential deficiencies in the evidence for DGR proposals, semantic latitude in lexical comparison is a

strong candidate for being the most egregious. Imagination and creativity underlie the human knack for finding with ease semantic resemblances for phonologically similar words whose meanings in reality are unrelated phylogenetically. This significantly increases the risk of assembling comparative sets that involve chance similarity. One way to counter this problem is to eliminate semantic latitude altogether by including in DGR proposals only sets in which translations of compared words are equivalent. However, a problem with this approach is that some genealogically affiliated languages may be so greatly chronologically removed from one another that all cognate words may have diverged to some degree in meaning. To insist that proposals of DGR compare only words showing translation equivalence is to give up on the possibility of recognizing true genealogical affinities for some very distantly related languages.

On the other hand, a DGR proposal totally lacking sets showing translation equivalence will not be convincing to most scholars, including the present authors. Consequently, if proposals do not involve some degree of translation equivalence, the comparative method will probably never succeed in producing persuasive proposals for distantly related languages. Typically, DGR proposals, such as the present one, involve a mixture of degrees of semantic latitude, including both sets showing and not showing translation equivalence. Proposals with a preponderance of sets with translation equivalence will be more convincing than those with only a few such sets. But even a proposal with just a few sets with translation equivalence will be more persuasive than those with no such sets at all. For the Ch-PTz proposal, of the 91 supportive sets (see 6 above), 59—or close to two-thirds—show translation equivalence, a result we believe renders this proposal sound with respect to the criterion of semantic latitude.

Proposed cognate sets involving words that are potentially onomatopoeic are also problematic. Non-cognate words can be phonologically similar because the referents are associated with characteristic or iconic sounds. Proposals showing an excessive number of onomatopoeic sets should be regarded as questionable. We estimate that of the 91 Ch-PTz sets, 80 (88%) are in no way potentially artifacts of onomatopoeia. The basis for this estimate is discussed in section D of Appendix B, the online supplementary materials.

A set with unexplained, non-matched phonological segments of compared words is another problem. When there are unmatched segments, the segments that do match may not be reflexes of a genuine morpheme but rather subparts of unrelated elements selected due to accidental resemblance. The more segmental residue present in compared forms, the greater the likelihood is that the similarity is spurious and due to coincidence.

In identifying comparative sets for the Ch-PTz proposal, care was exercised to avoid or minimize unexplained segmental residue. However, when

comparisons involve words from languages whose morphology is not fully understood—such as Chitimacha, which now lacks fully fluent speakers—elimination of unexplained, unmatched segments is especially challenging. For the Ch-PTz proposal, 33 sets (37%) are completely free of this defect. In well over half (35/57) of the remaining proposed sets showing unanalyzed residue, the problem resides in unmatched material in the Ch word following the matched segments. A number of these unmatched elements are found repeated in more than one set, occasionally in semantically similar (albeit not reliably definable) contexts, and several resemble the analyzable stem-formatives identified and discussed in section D of Appendix B.<sup>24</sup> As our understanding of Chitimacha stem formation improves, some of the problematic residues may very well turn out to be, or to have been in the past, analyzable suffixes.

**8.3. System for vetting comparative sets.** In response to the concerns with evidence discussed above, we have developed a heuristic system for vetting Ch-PTz comparative sets. The system facilitates the quantitative estimation of the convincingness of sets by assigning points to features of sets that lessen the possibility that similarity is explained by factors other than phylogenetic affinity. In the system, two points are given to sets for each pertinent sound correspondence, two points for translation equivalence, one point for no potential for onomatopoeia, and one point for no unexplained, unmatched segments. Using this system, each Ch-PTz set receives an aggregate point score. We have chosen an aggregate point score of seven as indicating what we consider to be the threshold of convincingness, with sets showing scores of seven and above being convincing in our opinion, and those with scores lower than seven being unconvincing. The 91 sets assembled here are the sets which remain after a larger group of 111 sets originally recognized were culled of sets with point scores below seven. Details of the development of the system and its application to Ch-Tz sets are presented in section D of Appendix B.

**8.4. Borrowing.** To be convincing, a DGR proposal must deal with the issue of borrowing in addition to the factors discussed in **8.1** and **8.2**. If language contact and diffusion cannot be ruled out as a significant source of lexical similarity, then the proposal is not persuasive.

There are ways of distinguishing phonological similarity due to borrowing from similarity due to common inheritance. A major one is that if compared words are phonologically similar, but that similarity is nonetheless not in

<sup>24</sup> The best example is the sequence *ma*, which is found as a suffix-like residue in three forms, all of which are plausible as deverbal or deadjectival nouns (see especially sets 4 and 20), and which matches *-ma* ‘verbal root extension’ identified in section C of Appendix B, the online supplementary materials.

accord with observed sound correspondences, then resemblance is more likely due to borrowing than to genetic association. This highlights the importance that sets assembled for a DGR proposal should be substantially supported by regular sound correspondences, as is the case for the Ch-PTz proposal (8.1). As a general rule, the more lexical comparisons are anchored in sound correspondences, the less likely similarities are explained by borrowing. Also of some importance is that a reasonable number of observed sound correspondences involve pairs of non-identical sounds. Lexical similarity due to borrowing typically entails compared words that are very similar phonologically, if not actually identical. Eighteen Ch-PTz correspondences are of the non-identical type (8.1). Among the 91 sets assembled for the Ch-PTz proposal, none shows phonological similarity discordant with sound correspondences, something which would indicate borrowing.

Campbell and Poser (2008:4) note that throughout the history of comparative linguistics, reference to basic vocabulary has played a prominent role, the underlying assumption being “that with basic vocabulary one had some protection against the possibility that the similarity among the lexical items being compared was due to borrowing” (2008:24). Whether this assumption is true or not, belief in its veracity, as Campbell and Poser (2008) chronicle, has showed considerable persistence over the long history of the comparative method. For this reason, it is worth pointing out the extent to which the Ch-PTz proposal involves basic vocabulary, although doing so requires us to decide just what basic vocabulary may be. Here we identify those Ch-PTz sets comparing words designating items on two 100-item basic vocabulary lists developed, respectively, by Swadesh (1971:283) and Tadmor, Haspelmath, and Taylor (2010). These two lists have 62 items in common, together providing 138 basic vocabulary items. Words of 36 (or 40%) of the 91 Ch-PTz sets involve basic vocabulary referents either as reconstructed meanings or as meanings of reflexes of proto-forms. These items and the sets pertaining to them are:

SAY (3), NIGHT (4), WOMAN (13), KNEE (14), FIRE (16), EAT (17), RAIN (19), COLD (22, 57), MEAT (23), GRIND (24), HEAD (25), BONE (27), LOUSE (30), FISH (33), WING (40), BELLY (41), LIE (43), PERSON (45), RED (46), CLOUD (49), MOON (51), SUN (55), BITTER (58), THAT (59), SEE (68), EARTH (69), HEAVY (71), ANT (72), TONGUE (75), YOU (76), CRY (82), SEE (84, 85), HOUSE (90), GOOD (91)

The considerable geographic removal of Chitimacha from Totozoquean languages (see figure 1) is another factor diminishing the likelihood of borrowing. Nevertheless, in the remote prehistoric past, Ch speakers could have been in contact with speakers of Tz languages, which would explain at least some of the observed similarities.

**9. Speculations on prehistoric developments.** Whether similarities observed between Ch and Tz are due to borrowing or genealogical

relationship, the area of contact or the PCh-Tz homeland was almost certainly in Mesoamerica rather than in the Lower Mississippi Valley (LMV). This is indicated by words for several items originating in Mesoamerica that Ch shares with Tz languages.

Some of these words relate to maize agriculture: MAIZE (set 20), TO SHELL CORN (26), LEACHED CORN (31), LIME (9), and, possibly, CORNFIELD (7). The domestication of maize was achieved in Mesoamerica at least 6,000 years ago (Piperno and Flannery 2001) and maize agriculture spread in prehistoric times from there to most other parts of the New World, including the LMV of the U.S. Southeast, where maize became widely cultivated only some 800 years ago (Rees 2010:16). Leached corn (nixtamal in Mexico, hominy in the U.S. Southeast) is prepared by soaking maize in a solution infused with either wood ash or lime (calcium hydroxide) (Brown 2011:193–95). Use of a lime infusion for making nixtamal is a Mesoamerican practice not employed by indigenous peoples of the U.S. Southeast for making hominy. However, modern Chitimacha people use a lime soak for dyeing cane for basket making (Swanton 1911:348). In Swanton's (1946) massive survey of indigenous cultural traits of the U.S. Southeast, no reports of lime infusions or any other uses of lime are found other than that observed for the Chitimacha.

Ch and PTz also share words for PAPER (38) and TO WRITE (79). To our knowledge, the manufacture and use of paper was not a cultural feature anywhere in the prehistoric or even early-historic U.S. Southeast,<sup>25</sup> but its fabrication from the bark of amate fig trees (*Ficus* spp.) is an ancient feature of Mesoamerican culture (e.g., Borhegyi 1965:27). In addition, writing is not an indigenous feature of the U.S. Southeast, while hieroglyphic script was a prominent trait of prehistoric cultures of Mesoamerica.<sup>26</sup>

In his Chitimacha dictionary, Swadesh lists the word *šiw*, assigning to it a distinctly Mesoamerican gloss, *copal* (a word derived from Nahuatl). Copal is hardened tree resin burned as incense throughout Mesoamerica. While there are two references in Swanton (1946:639, 796) to the Southeast occurrence of a gum-producing “copal-tree,” there are no references to the use of incense by native peoples. Unfortunately, precisely what Swadesh meant to convey with the gloss *copal* is not known, but it is suggestive of a special Chitimacha connection to Mesoamerica.<sup>27</sup>

<sup>25</sup> A computer search of Swanton's (1946) massive work, *The Indians of the Southeastern United States*, finds no references to the use and manufacture of paper in early accounts of indigenous people of the region.

<sup>26</sup> There is no documentation that prehistoric speakers of Chitimacha had writing, nor do we mean to imply that they necessarily did; see n. 14 (attached to comparative set 79).

<sup>27</sup> Swadesh was certainly familiar with the Mesoamerican concept of copal, having been a longtime student of Mexican languages. Interestingly, the Chitimacha word for copal reported by Swadesh, *šiw*, is strikingly similar to the Proto-Chinantecan word for ‘incense’ reconstructed by Rensch (1989:74), \*sim<sup>l</sup>. Contemporary Chinantecan languages are spoken in Mexico in the

Swanton (1946) catalogs other features of Chitimacha culture reminiscent of Mesoamerican traits but not reported for other U.S. Southeast people.<sup>28</sup> These include a game in which a ball is thrown through a ring (1946:686),<sup>29</sup> probable use of the atlatl (1946:819), possible keeping of (domesticated?) turkeys (1946:346), and even a hint of the cultivation of sweet potatoes (1946:292).

There is precious little evidence suggesting how and when ancestors of modern Chitimacha people migrated from Mesoamerica to the LMV. Swadesh recorded a legend dictated by Chief Benjamin Paul entitled “How the Indian Came.”<sup>30</sup> The legend involves a man who encounters a pond too big to be crossed by swimming. He is brought across the pond by an eagle. The English translation of the legend concludes with, ‘This is how Indians crossed the water to this side here. I do not know how people just started being, but that is how the man crossed the water to here’. This legend hints at the possibility of Chitimacha migration by watercraft to the LMV across the Gulf of Mexico from some coastal region of Mesoamerica.

The Automated Similarity Judgment Program (ASJP) provides a method for estimating the latest date at which a proto-language was spoken (Holman et al. 2011). The ASJP date for PCh-Tz is 5,582 years before present (B.P.). ASJP dates are based on automated calculations of lexical similarity for groups of related languages calibrated with historical, epigraphic, and archaeological divergence dates known from the literature for 52 language groups. The discrepancies between estimated and calibration dates are found to be on average 29% as large as the estimated dates themselves, a figure that does not differ significantly among the world’s language families. Within this margin of error, the divergence of Ch and Tz from one another would have occurred any time between 7201 and 3963 B.P. Chitimacha may have migrated to the LMV at some point within this chronological range, but it could also have happened later if the breakup of the language ancestral to Ch and Tz took place within Mesoamerica.

As noted above, the historical Chitimacha demonstrate traits that are Mesoamerican in origin. While some of these traits, such as words for maize agriculture and nixtamal, may have developed and become widespread in

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northern region of the State of Oaxaca and adjoining areas of Veracruz, close to where modern Totozoquean languages are spoken.

<sup>28</sup> Swanton (1946) merely reports these features without comment on their possible Mesoamerican origin. The possible Mesoamerican connections of these traits is our observation.

<sup>29</sup> This is a different game from the game known as *chunkey*, which was widespread among Native Peoples of the U.S. Southeast and other parts of North America. According to Swanton (1946:548), *chunkey* has not been reported for the Chitimacha. In Mesoamerica, the traditional ball game involves attempts to throw a ball through a ring or loop.

<sup>30</sup> The date of this recording is not known, but it was probably made in the early 1930s. A transcription of the legend is stored at the American Philosophical Society Library archives in Philadelphia (APS Mss.497.3B63cG6.5 Copy 1 Texts).

Caddo (Possible Borrowing)	Chitimacha (Potential Loan Source)
<i>kisi</i> 'maize' / <i>kišwah</i> 'parched corn'	<i>ku:spa-</i> 'to shell corn'*
<i>-k'as-</i> 'shell corn'	<i>k'asma</i> 'maize'*
<i>ni:'wa</i> 'parched corn mixed with honey'	<i>nowa</i> 'Indian hominy'*
<i>hawa'in</i> 'hoe'	<i>ʔa:wit-</i> 'to hoe'
<i>kuht'is</i> 'pestle'	<i>kihçi-</i> 'to grind'*
<i>kikuh</i> 'mortar'	<i>hoku</i> 'mortar'

FIG. 26.—Caddo words for maize complex items possibly borrowed from Chitimacha. Asterisk (\*) indicates a Chitimacha word that is a reflex of a PCh-Tz word.

Mesoamerica well before 4000 B.P., others, such as the use of lime in making nixtamal and the raising of turkeys, were very late Mesoamerican developments, possibly even later than 1000 B.P. (Brown 2011:193–95 and Breitburg 1993:162). Use of lime and the raising of turkeys by the historical Chitimacha would be suggestive of a very late migration. However, these two traits, as reported above, are not definitively established for the Chitimacha, so that they do not constitute conclusive evidence for a Chitimacha migration to the LMV well after the breakup of PCh-Tz.

However, other evidence suggests a later rather than earlier migration. This consists of maize complex words in the Caddo language possibly borrowed from Chitimacha. Caddo, a now critically endangered language of the Caddoan language family, was spoken along the Red River and its tributaries in the U.S. states of Louisiana, Arkansas, Texas, and Oklahoma. The few remaining speakers now reside in Oklahoma. Caddo was the language of the archaeologically attested Caddoan culture whose sites are distributed across much of the traditional area of the Caddo-speaking people (Girard 2010).

Figure 26 presents Caddo words for maize complex items possibly borrowed from Chitimacha and Chitimacha loan-source words. The Caddo words are among only a very few words found in our comparative investigation of the lexicons of the two languages showing appreciable lexical similarity with words from Chitimacha,<sup>31</sup> suggesting that interaction between speakers of these language was concentrated primarily on maize agriculture and maize processing. In figure 26, an asterisk indicates Ch words that are reflexes of PCh-Tz words (see, respectively, sets 26, 20, 31, 24).

The maize complex vocabulary shared by Ch with Tz (see sets 7, 9, 20, 24, 26, and 31) indicates that when Chitimacha speakers migrated to the LMV, they already possessed an agricultural way of life in which maize was a staple crop. In figure 26, Ch maize complex terms that are reflexes of PCh-Tz words

<sup>31</sup> We systematically compared the Caddo dictionary by Chafe (n.d.) and the Chitimacha dictionary by Swadesh (1950). Forms in figure 26 are also from these sources.

are flagged with an asterisk. These words indicate that similarities between Caddo and Chitimacha words presented in figure 26, if indeed due to diffusion, must have involved Caddo borrowing from Chitimacha rather than the other way around. A Caddo term for bean, *dabas* (probably *Phaseolus vulgaris*), may also have been borrowed from Chitimacha. A phonologically similar word for bean, \*-tapu, reconstructs for PTz (Brown et al. 2011). However, a possible Ch cognate of the latter word is not found among the lexical items assembled in Swadesh's dictionary. In fact, no terms specifically designating bean are reported in the dictionary.<sup>32</sup> This is probably an omission, since Swanton (1946:292) reports bean cultivation for the historical Chitimacha. Plausibly, there was a Ch bean word not reported in Swadesh's dictionary cognate with pTz \*-tapu that was borrowed into Caddo as *dabas*.

The Caddo archaeological culture, which shows cultural continuity with the historically documented Caddo (Girard 2010), is attested for a period spanning A.D. 800 to 1850 (Perttula 2008; also T. K. Perttula, personal communication). There is evidence for low-level Caddo use of maize beginning around A.D. 850. Intensified maize cultivation and its extensive consumption did not begin until between A.D. 1200–1450, with strong attestation commencing around A.D. 1400 (Wilson and Perttula 2013). It is also about this time that beans become a feature of Caddo farming (T. K. Perttula, personal communication). From whom Caddo maize was first acquired is not known, but its origin could have been peoples of the Mississippian archaeological culture to the north and east of the Caddo area. Maize, for example, was intensely cultivated in the American Bottom area and lower Illinois River valley during the Emergent Mississippian period of A.D. 800–1000 (Fritz and Kidder 1993). The importation of maize from the U.S. Southwest is another possibility (T. K. Perttula, personal communication). However, loanword evidence presented (fig. 26) suggests that Caddo speakers could have acquired maize from the Chitimacha, who were their neighbors to the southeast in coastal Louisiana.<sup>33</sup>

The possibility that Caddo speakers acquired maize, as well as words for maize cultivation and processing, from the Chitimacha has implications for determining the latest date Chitimacha people could have migrated to the LMV. If the Chitimacha lent agricultural words to the Caddo, but not the referents designated by them (i.e., maize, maize products, equipment for cultivating and processing maize), they would have in no manner influenced development of Caddoan farming (other than, of course, linguistically). This seems improbable since motivation for borrowing words, especially a whole set of

<sup>32</sup> Swadesh does record for Chitimacha a general term for vegetable fruits, *?uksgamsmā*, to which is assigned the gloss 'peas, beans, legumes'.

<sup>33</sup> Not only were Caddo speakers neighbors with speakers of Chitimacha, but the historical Caddo regarded the Chitimacha as friends (T. K. Perttula, personal communication).

words relating to a single domain of interest, typically involves acquiring designated referents as well as words for them (see Brown 1999).

Another possibility is that the Chitimacha introduced maize to Caddo speakers, thus accounting for low-level maize cultivation beginning around A.D. 850. If this were the case, then the Chitimacha must have migrated to the LMV no later than A.D. 850. However, the set of possible borrowings includes maize complex words, which is more consistent with intensive maize agriculture than with the low-level maize farming. On the other hand, the Caddo may have had low-level maize cultivation before contact with the Chitimacha—perhaps acquired from peoples of the Mississippian culture or the Southwest—and subsequently developed as full-fledged maize farmers and consumers sometime between A.D. 1200–1450, as a result of Chitimacha influence. This interpretation accords with the proposal that Caddo borrowing of a Chitimacha set of maize complex terms—and possibly a word for bean as well—implies acquisition from the same source of a full food production system in which maize was the staple crop. If so, the Chitimacha migration to the LMV occurred no later than some 600 to 800 years ago.

We have yet to find loanword evidence suggesting that Chitimacha colonists were in contact with other groups of the LMV and abutting areas. Nevertheless, it seems likely that their influence was not limited to just the Caddo. Indeed, with the determination of a Chitimacha origin in Mesoamerica, prospects are enhanced that linguistic evidence will be forthcoming indicating that other Mesoamerican peoples in prehistoric times either colonized or at least had contact with groups of the U.S. Southeast. Archaeologists have been aware of this possibility since the early nineteenth century, but early explanations for similarities in the archaeological records of Mesoamerica and the U.S. Southeast were highly speculative, something which partly accounts for the cautiousness with which modern archaeologists approach the question. More realistic recent evaluations of the archaeological evidence for cultural contact between the two areas may be found in the comprehensive anthology of White (2005) and the review article of White and Weinstein (2008).

**10. Conclusion.** The genealogical linkage of Chitimacha and Totozoquean languages was first suggested by the Automated Similarity Judgment Program (ASJP), which uses computational methods to classify languages according to lexical similarity. ASJP has produced a classificatory tree for more than half of the world's approximately 7,000 languages (Müller et al. 2010).<sup>34</sup> On this huge tree, Totonacan and Mixe-Zoquean languages are uniquely branched together to the exclusion of any other of the world's languages, attesting to a special lexical resemblance that Brown et al. (2011)

<sup>34</sup> The tree can be accessed at the ASJP consortium's web page: <[http://email.eva.mpg.de/~wichmann/language\\_tree.htm](http://email.eva.mpg.de/~wichmann/language_tree.htm)>.

propose is due to the common descent of these languages from Proto-Totozoquean. In addition, Chitimacha and Huavean (Mesoamerica) are immediately linked to each other, forming a branch directly connected to the Totozoquean languages. The close branching of Chitimacha and Totozoquean languages on the ASJP tree, to the exclusion of all other languages of the world, save Huavean, was the initial motivation for our investigation of the possibility that Chitimacha and Totozoquean languages might share a common ancestor.<sup>35</sup>

Chitimacha sharing of terms for Mesoamerican traits with Totozoquean languages almost certainly involved circumstances situated in Mesoamerica. As suggested above, this could have been contact of speakers of Chitimacha and Totozoquean languages in the region or, more likely, a Mesoamerican homeland for speakers of their shared ancestral language. Whether Ch/Tz similarities are due to borrowing or to common heritage, an inescapable conclusion is that Chitimacha speakers migrated from Mesoamerica to the Lower Mississippi Valley.

## APPENDIX A

### LANGUAGE ABBREVIATIONS, FAMILY IDENTIFICATIONS, AND SOURCES

Abbreviations of names for languages used in this study are listed here in alphabetical order. Languages are also identified with respect to genetic affiliation (either Totonacan [Tn] or Mixe-Zoquean [MZ]) and, where possible, an ISO (639-3) code.<sup>36</sup> In addition, the source for information on each language is given in parentheses. Wichmann (1995) is presented as “W.”

- A Apapantilla Totonac [Tn], ISO code: too (Reid and Bishop 1974)
- C Coatepec Totonac [Tn], ISO code: tos (McQuown 1990)
- Ch Chitimacha, ISO code: ctm
- ChisZ-C Chiapas Zoque, Central Dialect [MZ], ISO code: zoc (W)
- ChisZ-N Chiapas Zoque, Northern Dialect [MZ], ISO code: zos (W)
- ChZ Chimalapa Zoque [MZ], ISO code: zoh (W)
- Cn Coatlán [MZ], ISO code: mco (W)
- Co Coyutla Totonac [Tn], ISO code: toc (lexical database prepared by H. Aschmann)

<sup>35</sup> Investigation of possible phylogenetic association of Huavean with both Chitimacha and Totozoquean through use of the comparative method is currently underway.

<sup>36</sup> It should be noted that the ISO codes for the Totonacan family are inaccurate at best, in some cases grouping together what seem to be mutually unintelligible varieties and in others grouping varieties under one code that should probably belong under another (or, perhaps, under a unique code). Of particular concern are ISO too (Xicotepec Totonac) and tos (Highland Totonac), both of which designate higher-level groupings which, if recognized, would include varieties that have their own ISO codes (e.g., tku, tcw, and tqt, which would fall under too, and toc, which would belong to tos). Also of concern is tlp, which misclassifies Coahuilán Totonac together with Filomeno Mata. Future research will doubtless uncover further inaccuracies.

- CX Cerro de Xinotépetl Totonac, ISO code: tqt (Gerry Andersen, personal communication)
- FM Filomeno Mata Totonac [Th], ISO code: tlp (lexical database prepared by T. McFarland)
- H Huehuetla Tepehua [Th], ISO code: tee (Smythe Kung 2007 and personal communication)
- HT Huehuetla Totonac, ISO code: tos (Troiani 2004)
- M Misantla Totonac [Th], ISO code: tlc (MacKay and Trechsel 2005)
- NHM North Highland Mixe [MZ], ISO code: mto (W)
- OI Olintla Totonac [Th], ISO code: tos (word list prepared by Jorge Tino; Jorge Tino, personal communication)
- Oz Ozelonacxtla Totonac, ISO code: tos [Th] (word list prepared by Gabriela Román Lobato)
- P Papantla Totonac [Th], ISO code: top (Aschmann 1973*a* and amendments thereto by P. Levy)
- PCh-Tz Proto-Chitimacha-Totozoquean
- Pf Pisaflores Tepehua, ISO code: tpp [Th] (Albert Davletshin, personal communication; additional data from J. Watters)
- PGZ Proto-Gulf Zoquean [MZ] (W)
- PM Proto-Mixean [MZ] (W)
- PMZ Proto-Mixe-Zoquean [MZ] (W)
- Pn Pantepec Totonac, ISO code: too [Th] (word list prepared by Gabriela Román Lobato)
- POM Proto-Oaxaca Mixean [MZ] (W)
- PTh Proto-Totonacan [Th]
- PtZ Proto-Totozoquean
- PZ Proto-Zoquean [MZ] (W)
- SaP Sayula Popoluca [MZ], ISO code: pos (W)
- SoZ Sierra Popoluca [MZ], ISO code: poi (W)
- T Tlachichilco Tepehua, ISO code: tpt [Th] (Watters 2007)
- Tp Tepehua
- Tot Totonac [Th]
- TxZ Texistepec Popoluca [MZ], ISO code: poq (W)
- U Upper Necaxa Totonac [Th], ISO code: tku (Beck 2011*b*)
- Z Zapotitlán de Méndez Totonac, ISO code: tos [Th] (Aschmann 1973*b*)

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