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David Oltrogge and Calvin R. Rensch

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Classification of the Otomanguean Languages and the Position of Tlapanec

Calvin R. Rensch

1. In colonial times the genetic relationships of a number of Middle American language groups were recognized. A single name was often applied to groups of languages, in spite of considerable variation in some cases. At this historical distance, however, it is difficult to state the extent to which the application of a single name to a family of languages was due to ignorance of linguistic diversity on the part of the colonial name-givers.

Although the interest in matters of linguistic phylogeny during the nineteenth century originally focused on the languages of Eurasia, it eventually extended to the languages of Middle America. However, until the past few decades statements of linguistic relationship in Middle America have been based primarily on considerations of typology and geography. For example, de Angulo[1] viewed Oaxaca as a typological area in which a "monosyllabic morphology", as illustrated by Chinantec, had been widely diffused. Likewise, it was surely for geographical reasons that Mason[2] associated Chontal (Tequistlatec), a Hokan language of southern Oaxaca, with Zapotec, a linguistic neighbor, and that Schmidt[3] grouped Tepehua, a Totonacan language,with Otomi, Mazahua, Matlatzinca, and Pame, also spoken in central Mexico.

1.1. One of the earliest broad groupings proposed for Middle American languages was that of Mixtec and Zapotec. Orozco y Berra[4] reflected such a proposal in his Mixteca-Zapoteca family over a century ago. His grouping, which also included Cuicatec, Chocho, and Amuzgo, formed the core of a Oaxacan grouping and was gradually expanded by others in more inclusive combinations.

Pimentel[5] retained and expanded Orozco y Berra's Mixteca-Zapoteca family, adding Mazatec, Popoloc, Chatino, and even, hesitantly, Chinantec. The inclusion of Chinantec in the larger Oaxacan grouping came to be a mark of Mexican classifications--as opposed to American systems, which did not include it--well into the twentieth century. Pimentel also associated Pame, Mazahua, and Otomi as an order separate from the Oaxacan grouping, thus initiating the recognition of the Otopamean grouping.

In the work of Brinton[6] Matlatzinca came to be asociated with Pame, Chichimeco Jonaz, Mazahua, and Otomi in a single stock. Thus, apart from Amuzgo and Chinantec, which from the beginning were called by single language names, the Otopamean grouping was the first of the major sub-groups within Otomanguean to be isolated; probably geography had an influence in the identification of this grouping, situated as it is on the northern frontier of the

Otomanguean mass. Brinton also dissociated Chinantec from the larger Oaxacan grouping; in this judgment he was followed by Mason[7], Thomas[8], and Thomas and Swanton[9].

Leon[10] continued the tradition of the large Oaxacan grouping, but he divided the Zapotec branch from the languages to the west. Thus, the Zapotecan sub-group came to be recognized as distinct from the Mixtecan languages, although at this time Chinantec was still grouped with the Zapotecan languages.

Belmar[11] like Leon, recognized a large grouping and was the first to add Otomi to that grouping.

Mechling[12] contributed significantly to the refinement of the sub-grouping of the large grouping outlined by others: He united Chatino and Zapotec into his Zapotec group and distinguished a Mazatec group from the Mixtec group. However, his association of Trique with Mazatec, Ixcatec, Chocho, and Popoloc and of Amuzgo with Mixtec and Cuicatec can now be seen to be less accurate.

The large grouping long recognized was divided by Lehmann[13] into Mixtec, Cuicatec, Zapotec, and Chinantec sub-groups and an anomalous Amuzgo-Chatino sub-group. Here for the first time Chiapanec and Mangue were associated with some members of the original grouping, viz., Trique, Mazatec, Ixcatec, Chocho, Popoloc, and the Otomian group.

Schmidt[14] was apparently the first to approximate the term Otomanguean by his use of the term Otomi-Mangue to identify members of the grouping. His Otomi-Mangue group, however, was smaller than the group now called Otomanguean in that it did not include the Mixtec and Zapotec languages, which he classified apart from the Otomi-Mangue group.

In his well known Encyclopedia Britannica article Sapir[15] united Otomian, Chinantec, and Chiapanec-Mangue with the large central Oaxacan grouping. He was the first to include all of these although he offered the suggestion somewhat uncertainly. Probably following Lehmann, Sapir included in his Otomian stock a curious grouping consisting of Mazatec, Chiapanec-Mangue, and Otomi.

Mason,[16] largely following Sapir, recognized a Macro-Otomanguean phylum including the Otomanguean stock, comprising Popolocan, Chorotegan (Chiapanec-Mangue), Otomian, and Triquean; the Mixtecan stock, comprising Cuicatec, Mixtec, and Amuzgo; the Zapotecan stock, comprising Zapotec and Chatino; and the Chinantecan stock.

1.2. In the latter half of the decade of the nineteen fifties classifications of the Otomanguean languages based on the calculations of glottochronology began to appear.

Manrique[17] proposed Otomi-Mazahua and Matlatzinca-Ocuilteco as sub-groups of Otopamean on this basis; Bartholomew's conclusions based on a comparative reconstruction of Otopamean confirm these associations.

Fernández de Miranda, Swadesh, and Weitlaner[18] classified language separations as recent, distant or remote according to the number of minimum centuries of separation calculated by reckonings of glottochronology. According to this classification Amuzgo was grouped with the Mixtecan languages in a distant relationship. The Chiapanec-Mangue group was excluded from Otomanguean because "the Manguean division appears to fit better elsewhere."[19] Nevertheless, the relationship of Chiapanec-Mangue to the other branches of Otomanguean has been demonstrated in Fernández de Miranda and Weitlaner 1961 and in Rensch 1966.[20] Otomi-pamean, Popolocan, Mixtecan, Chinantecan, and Chatino-Zapotecan were characterized as having remote relationships in a network which also included Huave. Recent studies concerning Huave based on the assumptions of the comparative method have corroborated the claim that Huave should be included in the Otomanguean grouping.[21] The suggestion of a dialect net of relationships extending to many other languages not generally recognized as Otomanguean also characterized Swadesh 1960 and Swadesh 1962. In the latter the Manguean group (Mangue and Subtiaba-Tlappanec) was linked with Oaxacan (Zapotec, Chatino, Mixtec, Cuicatec, Amuzgo, Mazatec, Chocho, Popoloc, and Ixcatec) through the link of Huave. The exclusion of Manguean, Chinantec, and Otopamean from the main Oaxacan grouping, however, does not accord well with the results of application of the comparative method. Such studies show Manguean, Chinantecan, and Otopamean to be coordinate branches of Otomanguean along with Mixtecan, Popolocan, Amuzgo, and Zapotecan.

2. A number of comparative studies of the several branches of Otomanguean have appeared in recent years. Most of the more comprehensive studies are here considered, and in some cases revisions of the reconstructed systems are offered.

2.1. The phonological system of Proto Mixtecan was originally reconstructed by Longacre[22] in detail and with an extensive array of cognate sets. The inventory postulated in Proto Mixtecan included stops *t, *k, *k^w; spirants *θ, *x, *x^w; pre-nasalized stops *^{n}d, *^{n}g, *$^n g^w$; nasals *m, *n, *ñ; semivowels *w, *y; extrasystematic *ɬ, *ʔ; vowels *i, *e, *ï, *a, *u, *o, *ɔ; tones *^{1} (high), *^{2}, *^{3}, *^{4}.

In subsequent statements regarding the Proto Mixtecan inventory Longacre has removed *ñ, *ɔ, and the anomalous cluster *tn from the roster of phonological elements and has expressed considerable doubt about *ɬ.

2.1.1. The nasal *ñ, originally proposed by Longacre, depended on evidence from Mixtec alone. The Mixtec ñ was shown in Mak and Longacre 1960 to have developed in some cases from a pre-Proto Mixtecan *ny cluster and in other cases from *y followed in the next syllable either by a nasal consonant preceding the vowel or by *m following the vowel.[23] Thus, the original reconstruction *ñ was replaced by *y either immediately preceded by a nasal or followed by a nasal in a more remote environment. Proto Mixtecan nasal plus *y > Proto Mixtec *ny and so, ñ in the Mixtec languages; however, Proto Otomanguean **ny > Proto Mixtecan *l (cf. 2.1.2.).

2.1.2. The lateral *l was originally characterized as "extrasystematic"[24] and was reconstructed only before *l and *u. By 1961 Longacre was becoming "increasingly suspicious of the phonemic status of *l."[25] The occurrence of *l as opposed to *y seemed to be related to the presence or absence of *ʔ. Therefore, Longacre 1964 treated *[l] as an allophone of *y.[26] However, in more recent statements regarding Proto Mixtecan Longacre has again indicated the status of *l as uncertain.[27] Since the evidence for Proto Mixtecan *l consists of a scant three sets, Longacre's hesitation is understandable. However, it seems better to retain *l as the Mixtecan development of Proto Otomanguean **ny, because (a) the Proto Otomanguean cluster **ny became *l in Popolocan, Chiapanec-Mangue, Zapotecan, and Chinantecan, and (b) **nn and **ny are the only Otomanguean nasal clusters not shown by Longacre to have special Mixtecan developments. Proto Otomanguean set 397 shows the *l reflex of **ny in Popolocan, Chiapanec-Mangue, and Chinantecan, while Zapotecan shows the reflex of the variant **y:

PPn *ka-llhl/ntʸihl[4] *pasture, grass*

PCM *nl-nu-lű/lu *flower*

PCn *lf (H) *flower*

IZ gieʔ *flower*[28]

Presumably, a similar development of *l from Otomanguean **ny took place in Mixtecan as well. Unfortunately, the only PMn set showing *l which figures in an Otomanguean etymon is PMn 19, where all other branches of POM with identified cognates show one of the POM consonantal alternants **s or **n. Nevertheless, it is here suggested that *l be retained in the roster of PMn consonants as the development of POM **ny, even though the evidence is admittedly rather indirect.

2.1.3. The vowel *ɔ, as originally reconstructed for PMn, was withdrawn in Longacre 1962[29] in favor of *am when apparent contrasts between *ɔ and *am proved illusory.

2.1.4. The PMn cluster *tn, unique among those originally posited by Longacre in not involving *ʔ, was in Longacre 1960 abandoned in favor of *t(V)m.[30] Mixtec dialect forms of the shape tnV were said to have undergone metathesis. Dialect forms of the shape NV were attributed to this same source. However, it is here suggested that the Mixtec dialect forms of the shape NV reflect PMn *hnV, rather than *tVm. In five of Longacre's 1957 sets (22, 110, 111, 161, 221) the reconstruction of *n is required by at least one of the branches of Mixtecan. In set 221 *n is the only consonant to which Mixtec bears witness, while Cuicatec and Trique witness to *y but not to *t. Furthermore, the cognate forms from other branches of Otomanguean witness to **n or **y but not to **t; and the Chinantecan form suggests an initial **h: Mixtec nu̱^{3}ʔu̱^{2}, Nu̱^{3}ʔu̱^{2}, Cuicatec dl̨^{1}l̨^{1}ʔyu̱^{1}, Trique ya̱ʔ^{34} *teeth*; A ña^{21}ʔ *palate*; PCh *ie·ʔya *teeth*; IZ laya *teeth*; PCn *ha̱ (< **hyan) *tooth*.

2.1.5. With the elimination of *ɔ the vowels *ɪ, *e, *ɨ, *a, *u, *o remained in Longacre's roster, with only *ɪ, *a, *ɨ, and *o occurring before post-syllabic *m.

It seems necessary, however, to recognize only four vowels for Proto Mixtecan: *ɪ, *e, *a, *u. As Longacre himself has well pointed out, *Vm sequences developed in the daughter languages sometimes with nasalized reflexes and sometimes with oral reflexes of a differing vowel quality. He also described the post-posed *m as having a "raising and backing influence".[31] Probably the conditioning factor for the nasalized reflexes was an adjacent laryngeal, although careful demonstration of such a hypothesis has never been given and perhaps cannot be. However, if such a hypothesis is accepted, the nasalized reflexes can be said to be derived from *Vm sequences in a laryngeal environment (*VHm) while the oral reflexes can be said to be derived from *Vm sequences not in a laryngeal environment. Then, if Longacre's *o is relabeled as *u; his *ɨ as *em; and his *u as *um, all oral reflexes can be accommodated in a four vowel system. It only remains to relabel his *ɪm, *ɨm, *am, and *om as *ɪHm, *eHm, *aHm, and *uHm, respectively.

The relationship between Longacre's systems of Proto Mixtecan nuclei, both original and revised, and that proposed here is displayed in Table 1.

Longacre 1957	*ɪ	*e	*a	*o	*ɪ	*ɨ	*ɔ	*u
Longacre (more recently)	*ɪ	*e	*a	*o	*ɪ	*ɨ	*am	*u
Revision	*ɪ	*e	*a	*u	*ɪm	*em	*am	*um

Longacre 1957	*ɨm	*ɨ̈m	*am	*om
Longacre (more recently)	*ɨm	*ɨ̈m	*am	*om
Revision	*ɨHm	*eHm	*aHm	*uHḿ

Table 1

Comparison of Longacre's Systems of Proto Mixtecan Nuclei with Present Revision

It will be noted that Longacre's *ɨ is relabeled as both *ɨ and *ɨm. Some sets which Longacre labeled as *ɨ contain Cuicatec forms some with vowel ɨ and some with vowel e. It is assumed here that Cuicatec ɨ reflects PMn *ɨ and Cuicatec e reflects *ɨm.

Similarly, Longacre's *am is here relabeled as both *am and *aHm. Those forms with oral reflexes are assumed to have developed from PMn *am while those with nasalized reflexes are assumed to have developed from PMn *aHm.

It should be pointed out that the revised system of nuclei here presented for Proto Mixtecan is the result of a thorough application of Longacre's own suggestion of a PMn post-posed *m which yielded both oral and nasalized reflexes in preceding vowels. He began such an application himself in his reanalysis of *ɔ as *am but did not continue applying it throughout the system.

2.1.6. Longacre reconstructed *ʔ in three positions in the ultima of Proto Mixtecan: initially, finally, and interrupting the vowel. However, the last distribution was reconstructed with some doubt since some examples of interrupted syllables in the daughter languages occur in sets which seem to reflect PMn syllables closed by *ʔ. Furthermore, some PMn ultimas developed as CVV in Mixtec and Cuicatec while others developed as CV. In addition, some Trique forms closed by glottal stop are cognate with Mixtec and Cuicatec forms with no closure. To account for these data PMn *ʔ is here reconstructed only in initial and final position; and an additional laryngeal *h is reconstructed in the same two positions. The reflexes of PMn initial *ʔ have been stated by Longacre, viz., Mixtec ʔ occurring before nasal or semivowel but lost before stop or spirant; Cuicatec ʔ occurring before nasal or semivowel but shifted to precede the consonant of the penult if ultima begins with a stop or a spirant; Trique ʔ occurring before nasal or semivowel but lost before stop or spirant or, sometimes, shifted to close the ultima.

The Mixtec and Cuicatec interrupted syllables, which Longacre interpreted as reflecting PMn interrupted syllables, are here reinterpreted as reflecting PMn *CVʔ, with the closing *ʔ protected by a rearticulated vowel.

The PMn initial *h postulated here is reconstructed from sets where Trique shows a closed syllable and Mixtec and Cuicatec show no laryngeal.[32] The PMn final *h is reconstructed from sets where T again shows a closed syllable but M and C show CVV syllables. It is suggested that the Mixtec and Cuicatec syllables of the shape CVV were at an earlier period CVhV, paralleling the CV?V forms. Thus, the developments of the two laryngeals in syllable-final position were parallel in Mixtec and Cuicatec.

The reflexes of both PMn laryngeals in both distributions are displayed in Table 2.

	*CVh	*CV?	*hCV	*?CV
Mixtec	CVV	CV?V	CV	?NV; TV
Cuicatec	CVV	CV?V	CV	?NV; ?(CV)TV
Trique[33]	CVh/CV?/CV[21]	CV.?V	CVh/CV?/CV[21]	?NV~NV?; TV~TV?

Table 2

Reflexes of Proto Mixtecan Laryngeals

(N = nasal or semivowel; T = stop or spirant; C = consonant; V = vowel; . = syllable division)

The revised phonological system of Proto Mixtecan is displayed in Table 3.

consonants:	*t	*k	*k^w	
	*θ	*x	*x^w	
	*n_d	*n_g	*n_{gw}	
	*n		*m	
		*y	*w	
	*l			
laryngeals:	*?	*h	(opening or closing the syllable)	
vowels:	*i	*u		
	*e	*a		
tones:	*$_1$	*$_2$	*$_3$	*$_4$ (and clusters *$_{23}$, *$_{24}$, *$_{34}$, *$_{32}$, *$_{42}$, *$_{43}$)

Table 3

Revised Phonological System of Proto Mixtecan

2.2. The phonological system of Proto Popolocan was reconstructed by Gudschinsky[34], by comparing Popoloc, Chocho, and Ixca-

tec, with her own reconstruction of Proto Mazatec. Her proposed inventory included stops *t, *tʸ, *k, *kʷ; affricates *c, *č; fricatives *s, *š, *h, *hʷ; nasals *m, *n, *ñ; semivowels *w, *y; and probably *l; oral vowels *i, *e, *a, *o, *u, and their nasalized counterparts; *ʔ in initial, final and interrupting distributions; tones *¹, *², *³, *⁴.

2.2.1. Because of wide distribution of *h, nearly as great as that of *ʔ, the element *h, like *ʔ, is here considered to be a laryngeal in PPn. In Gudschinsky's analysis *ʔ may precede the syllable onset, close the syllable, or interrupt the nucleus, whereas *h may only precede the syllable onset or follow it. However, Proto Popolocan sequences of the shape *CVhV, although considered dissyllabic by Gudschinsky, are here considered to be monosyllabic because of (a) the limitations on vowel sequences which occur and (b) the occurrence of nasalization before the *h. PPn *h is flanked only by vowels of identical quality or by the sequences au and ai, whereas other consonants may be flanked by any sequence of vowels. Similarly, nasalization, which is typically restricted to ultimate syllables in the daughter languages, may occur in the penult, especially in Ixcatec, Popoloc, and Chocho, when the consonant of the ultima is h or when h has been lost from the form. Therefore, a third distribution of *h is here recognized for PPn, viz., that of interrupting the syllable. Thus, the restated distribution of PPn laryngeals may be summarized as follows: PPn syllables may be interrupted by either laryngeal or closed by *ʔ. When the syllable is interrupted, no other laryngeal may occur. Whether or not the syllable is closed by *ʔ, a laryngeal may precede the consonantal onset or *h may follow the onset.

2.2.2. The vowel *o of Gudschinsky's inventory of vowels is poorly attested, and in every set of cognates the cluster au occurs in some form. Also in every cognate set witnessing to *o a laryngeal either interrupts the nucleus or precedes it. A similar sequence ai also occurs in interrupted syllables in the daughter languages.[35] Consequently, *ai is here added to the inventory of PMn syllabics and the parallel *au replaces Gudschinsky's *o. The inventory of PPn syllabics as here revised, then, is *i, *e, *a, *u and clusters (occurring only in interrupted syllables) *ai and *au.

The phonological system of PPn proposed here is displayed in Table 4.

2.3. The phonological system of Amuzgo, described by Bauernschmidt,[36] is a full one. It is displayed in Table 5.

consonants:	*t	*tʸ	*k	*kʷ
	*c	*č		
	*s	*š		
	*n	*ñ		*m
	*l	*y		*w
syllabics:	*i	*u	*ai	*au
	*e	*a		
laryngeals:	*ʔ	*h		
tones:	*¹	*²	*³	*⁴

Table 4

Revised Phonological System of Proto Popolocan

consonants:	p	t	c	tʸ	č	k	kʷ	kʸ
	b̥		s		š			
	mᵖ	nᵗ		nᵗʸ		ŋᵏ		
	m	n		nʸ				
	w	l		y				
		r						
		r̃						
	mb	ṅ						
vowels:	i			u				
	e			o	ę			ǫ
	ä		a	ɔ	ą̈		ą	ɔ̨
laryngeals:	ʔ	h						
tones:	¹	²	³	(single-syllable combinations ¹³, ²¹, ³²)				

Table 5

Phonological System of Amuzgo
(Bauernschmidt)

2.4. The phonological system of PCM was reconstructed by Fernández de Miranda and Weitlaner.[37] The reconstructed system leaves many questions unanswered, especially regarding the accentual system. However, the fact that they were able to deduce the major features of the system from the meager and in some cases inadequately transcribed data is a tribute to their craftsmanship. The inventory of elements proposed by Fernández de Miranda and

Weitlaner is displayed in Table 6.

consonants:	*p		*t		*k	*?		
	*m_b		*n_d		*n_g			
			*s			*h	*h^w	
	*m		*n	*ñ			*M	
	*w			*y				
			*r					
			*l					
vowels:	*ɪ	*ɨ	*u	(geminate clusters *ɪɪ, *ee, *aa, *uu;				
	*e		*a	diverse clusters *au, *aɪ)				
accentual:	accent of uncertain nature							

Table 6

Phonological System of Proto Chiapanec-Mangue
(Fernández de Miranda and Weitlaner)

The system of PCM proposed here modifies that of Fernández de Miranda and Weitlaner by (a) the addition of the stop *č and (b) the elimination of the vowel *ɨ.

2.4.1. In general, both in Proto Chiapanec and in Proto Chiapanec-Mangue the palatal phone *[č] occurs before front vowels and the velar phone *[k] before back vowels. However, in Proto Chiapanec sets 43, 44, 87, 158, and Res 19 *[č] occurs before back vowels and in sets 44, 91, and 264 *[k] occurs before front vowels.[38] Thus, *č and *k appear to have been in contrast in Proto Chiapanec times.

Quite correctly, Fernández de Miranda and Weitlaner indicate that *[k] and *[č] appear to be in complementary distribution in their PCM sets. However, since there does not appear to have been any structural change in this area between the Proto Chiapanec-Mangue and Proto Chiapanec horizons, it would seem likely that this lack of contrast results from the fact that no Mangue cognates have been found for the Chiapanec forms which demonstrate the contrast between *[k] and *[č]. Thus, it would seem quite reasonable to project the contrast, which was operative in Proto Chiapanec times, into Proto Chiapanec-Mangue, as well. This proposal is strengthened by the fact that there are different sources in Proto Otomanguean for *[k] and *[č]: *kV < **kV, *čV < **YkV, at least where V is a back vowel; before front vowels this same development may have taken place, or *č may be the regular development of POM **k.

2.4.2. Fernández de Miranda and Weitlaner based their reconstruction of *ï on the correspondence of Proto Chiapanec *u with Mangue i (or e). However, the majority of their examples occur after PCM *i, after which PCM *u never is reconstructed. It appears, therefore, that *[ï] is an allophone of *u, occurring after *i. Other examples of their reconstructed *ï occur in pre-posed syllables, where frequently one language shows variant forms one with i and another with u. If i and u were in alternation at one period, it would be expected that the alternants would be preserved somewhat randomly in the daughter languages. Consider PCM sets 179, 180, and 267, where variants with *i and *u are preserved in both Chiapanec and Mangue. Nevertheless, in PCM set 59 Fernández de Miranda and Weitlaner reconstructed *ï in the pre-posed syllable even though *i and *u alternate in that very syllable in Proto Chiapanec. Therefore, the reconstruction of *ï is here abandoned in favor of (a) *u after *i and (b) an alternation between *i and *u elsewhere.

2.5. The phonological system of Proto Otopamean was reconstructed by Bartholomew in her comprehensive study The Reconstruction of Proto Otopamean.[39] Her POP system is displayed in Table 7.

consonants:	*p	*t	*k
		*c	
		*s	
	*m	*n	
vowels:	*i	*o	(with a variety of vowel clusters)
	*e	*a	
laryngeals:	*ʔ	*h	(initially or finally in the syllable)
tones:	six tone contrasts		

Table 7

Phonological System of Proto Otopamean
(Bartholomew)

The stem-initial consonants of Proto Otopamean underwent a series of voicing, nasalization, spirantization, etc., mutations depending on preceding environment.[40] In addition to the stem--consisting of a consonant, a vowel or cluster of vowels, a tone pattern, and two, one, or no laryngeals--Bartholomew reconstructed stem formatives, which follow the stem. These forms, consisting of a consonant or consonant cluster, appear to have been distinct morphemes; but in most cases their semantic value is not clear.

2.6. Proto Zapotecan developed into Zapotec and Chatino branches, which have, for the most part, been studied independently.

2.6.1. The first comparative study of the Zapotecan languages was Swadesh's reconstruction of Proto Zapotec, based on four Zapotec dialects.[41] The system of Proto Zapotec posited by Swadesh is displayed in Table 8.

consonants:	*p	*t	*č	*k	(all but the last row may occur geminated; several diverse clusters were also reconstructed)
		*s	*š		
		*n			
		*l			
	*w	*r	*y		
laryngeal:	*?				
vowels:	*i		*u		
	*e	*a	*o		
tones:	high, low, rising, falling				

Table 8

Phonological System of Proto Zapotec
(Swadesh)

2.6.2. Proto Chatino was reconstructed by Upson and Longacre[42] based on evidence from three dialects of Chatino.[43] The set of elements they proposed for Proto Chatino is displayed in Table 9. However, the reconstructed element *h^w shown in Table 9 is in each case preceded by *u, whereas *h is in no case preceded by that vowel; and apart from *k^w no other labialized element was reconstructed. Accordingly, the element reconstructed by Upson and Longacre as *h^w is here regarded as a variant of *h following *u.

consonants:	*t	*t^y	*k	*k^y	*k^w	*?
	*c	*č				
	*s	*š	*h	*h^y	*h^w	
	*l	*l^y				
	*n	*n^y				
		*y			*w	

vowels:	*ɨ		*u	*į		*ų
	*e	*a	*o	*ę	*ą	*ǫ

vocalic length

Table 9

Phonological System of Proto Chatino
(Upson and Longacre)

2.6.3. The system of Proto Zapotecan assumed here is that proposed in Rensch 1966, reconstructed from Proto Chatino and Isthmus Zapotec. Further refinement of the reconstruction of Proto Zapotecan is to be expected as a better understanding of Proto Zapotec is achieved. A manuscript of the late María Teresa Fernández de Miranda comprehensively treating the structure of Proto Zapotec has been readied by Bartholomew for publication; when that study is available, it should contribute substantially to our understanding of the ancestor of the contemporary Zapotec languages.

The inventory of Proto Zapotecan used here is displayed in Table 10.

consonants:	*t	*tʸ	*k	*kʷ
	*d	*dʸ	*g	*gʷ
		*č		
		*ǰ		
	*s	*š		
	*z	*ž		
	*N			
	*n			
	*L			
	*l			
		*y		*w
vowels:	*i	*a	*u	
laryngeal:	*ʔ	(interrupting or closing the penult or ultima)		

Table 10
Phonological System of Proto Zapotecan

(All voiceless consonant symbols and *N and *L represent fortis consonants; all other consonant symbols except *y and *w represent lenis consonants.)

2.6.4. Swadesh proposed that the source of the fortis-lenis contrast common to the Zapotec dialects was geminated versus single obstruents in Proto Zapotec.[44] The geminate clusters were said to have developed on the analogy of diverse clusters; indeed, many were thought to have assimilated from diverse clusters, e.g., **kt > *tt. To support this hypothesis Swadesh cited the fact that a single type of obstruent occurs in Chatino. More recently Longacre has made a proposal similar to that of Swadesh, viz., that PZn fortis consonants developed from Proto Otomanguean clusters of nasal plus consonant.[45]

However, the Chatino evidence currently available suggests that a postposed, rather than preposed, element may have given rise to the contrast. In PCh monosyllables and forms of the shape *CV?V vocalic nasalization corresponds with lenis articulation of the obstruent in Zapotec; in other word types length of the penultimate vowel corresponds with fortis articulation of the obstruent in Zapotec. Consider the following sets:

PCh *kʷą	IZ gi'ba?	*sky*
PCh *kʷę·?ę	IZ bi	*air*
PCh ši	IZ nanaši	*sweet*
PCh *ta·?a	IZ sa?a	*fiesta*
PCh *ki·ce?	IZ gi?ičí	*thorn*
PCh *wica	IZ wiǰe	*day after tomorrow*

It is here proposed that the Proto Zapotecan lenis consonants were phonetically shorter than their fortis counterparts and were followed by phonetically nasalized vowels. It may be that by Proto Zapotec times the fortis consonants functioned as consonant clusters, although even that is not clear. However, it appears that the fortis-lenis contrast developed from **CV versus **CVn rather than from consonant clustering. The proposed development of lenis consonants assumes an intermediate stage in which the final **n was realized as vocalic nasalization and the current stage in which the initial consonant is weakened. Thus, it is the fortis rather than the lenis consonants which have undergone the more straightforward development.

Evidence of another sort makes it difficult to accept Longacre's suggestion: If one were to accept the development of the PZn fortis-lenis contrast from presence vs. absence in POM of a preposed nasal, one would be left without a source for PZn *č and *L since PZn *č < POM **nt and **ns and PZn *L < **ny. Consider the following developments of both the preposed and postposed nasal of POM:[46]

POM	PZn
**tV	*tV
**tVn	*dV
**ntV	*čV
**ntVn	*ǰV
**yV	*yV
**yVn	*yV
**nyV	*ĻV
**nyVn	*ɨV

2.7. The system of Proto Chinantecan assumed in this study is that originally reconstructed in Rensch 1963, and slightly modified in Rensch 1966.[47] The inventory of elements of Proto Chinantecan is displayed in Table 11:

consonants:	*p	*t		*k	*kʷ
	*b	*z		*g	*gʷ
		*s			
	*m	*n		*ŋ	
		*ɨ			
	*w	*r	*y		
syllabics:					
non-palatal	*i̱	*u			
	*ə	*a			
palatal	*ɨ	*ɨu			
	*e	*ɨa			
laryngeals:	*h	*ʔ			
tones:	high low (single-syllable combinations high-low, low-high, and high-low-high)				
other syllable features	vocalic length (*V·)				
	vocalic nasalization (*Ṿ)				
	controlled (*CV) and ballistic (*CV́) syllable types				

Table 11

Phonological System of Proto Chinantec

3. Several scholars have presented intermediate reconstructions based on evidence from two or three branches of Otomanguean.[48] However, these will not be discussed here. Rather, the structure of Proto Otomanguean will be described as reconstructed in Rensch 1966 on the basis of evidence from seven branches of Otomanguean: Mixtecan, Popolocan, Amuzgo, Chiapanec-Mangue, Otopamean, Zapotecan, and Chinantecan.

The basic structure of the stressed ultima of Proto Otomanguean,[49] as reconstructed, consisted of a consonant, a vowel, and a tone. This core could be preceded by the palatal element (**Y), the nasal (**n), a laryngeal (**H), or a combination of these. The core could be followed by the nasal, a laryngeal, or both. There apparently were no dependency restrictions in the occurrence of these preposed and postposed elements. The reconstructed elements of the system are displayed in Table 12.

consonants:	**t		**k	**kʷ
	**s			
	**n			
		**y		**w
vowels:	**ɨ		**u	
	**e		**a	
laryngeals:	**ʔ		**h	
tones:	**₁ (high), **₂, **₃, **₄			

Table 12

Phonological System of Proto Otomanguean

3.1. The POM consonants are reconstructed from sets of correspondences of identity in the several branches of Otomanguean with the following exceptions: POM **t is reflected as *h in the Chatino side of Proto Zapotecan; POM **k before **ɨ or **e is reflected as *č in Proto Chiapanec-Mangue; POM **kʷ is reflected as *p in Proto Chiapanec-Mangue, Proto Otopamean, and the Isthmus Zapotec side of Proto Zapotecan; POM **s is reflected as *θ in Proto Mixtecan and as *t in the Chatino side of Proto Zapotecan; POM **w is reflected as the first member of Proto Otopamean *oV clusters; POM **y is reflected as the first member of Amuzgo and POP *ɨV clusters.[50]

The following forms from POM 48 illustrate **t:

(48) PMn *θa-ta(h)[24] *tortilla*

PCM *tá? *cooked corn*

PCh *kyaha *tortilla*

IZ geta *tortilla*

The following forms from POM 116 and 115 illustrate **k:

(116) PPn *n-/s-kahi *head, face*

A šk̨ *head*

PCM *^{n}gu-/ku-či-ma *head*

PCh *?ike *head*

IZ ike *head*

PCn *kî *forehead*

(115) PMn *ka^{32} *crow*

PPn *ni-n-ke *buzzard*

PCM *na-ka-tuwî *buzzard*

POP *ka-? (IV) *crow*

The following forms from POM 202 and 177 illustrate **kʷ:

(202) A ma^{2}ci^{1}kʷá?^{2} *to hit*

POP *paih-? *to hit*

IZ rigapa *hit with the hand*

(177) PCM *nú-/nuu-/ni-pa/pa? *corn, roasting ear*

PCh *nsukʷa? *dry, shelled corn*

PCn *kʷɨ· (L) *corn*

The following forms from POM 250 and 277 illustrate **s:

(250) PCM *si-ki-lá? *paper*

POP *si *leaf*

PCh *ki·tʸi *paper*

(277) PMn *θi(h)^{32}/^{42} *tough*

PCM *^{m}ba-ya-si *strong, strength*

PCH *ti·hi *tough*

The following forms from POM 346 illustrate **n:

(346) PPn *t-hni? *blood*

PCM *ni-hú *blood*

PCh *tenę *blood*

IZ rini *blood*

The following forms from POM 320 illustrate **y:

(320) PMn *ya(m)?/?yam/θam?[34] *rope, cord, root*

PMaz *ntu[1]ya[1], *nta[1]ya[1] *yuca*

A nč?io?[1] *root*

PCM *yá? *sweet potato, yuca*

POP *?i-iHC/*?i-ioHC *root*

The following forms from POM 390 and 380 illustrate **w:

(390) PMn *?wa/wa?[2]/[3] *plum, peach*

PPn *s-tu-wa[3] *potato, short, round*

PCM *[m]bu-/na-/nu-wá *egg*

PCn *?wɨ·? (LH) *orange, peach, plum*

(380) PMn *nam-/[n]dam-/k[w]am-/xam-/kam-we(m)[34] *to come down*

POP *(n)hoa? *arrive*

PCn *wɨ· (L) *ascend*

3.2. The reflexes of POM clusters of consonant plus nasal or palatal or both[51] are displayed in Table 13.

	PMn	PPn	A	PCM	POP	PZn	PCn
**nt	*[n]d	*nt	nt	*[n]d	*=t	*č	*z
**nk	*[n]g	*nk	nk	*[n]g	*=k		*g
**nk[w]	*[n]g[w]		nk[w]	*[m]b	*=p		*g[w]
**ns	*[n]d	*c	c	*[n]d	*c	*č	*z
**nn		*m	n̥n	*m			*m
**ny	*l	*l		*i	*nl	*L	*l
**nw	*m	*m	m	*m	*m	*k[w]	*m
**Yt		*t[y]	t[y]			*t[y]	*tiV
**Yk		*č	k[y]	*čV			*kiV
**Yk[w]							*k[w]V
**Ys		*š	š			*š	*siV

	PMn	PPn	A	PCM	POP	PZn	PCn
**Yn		*ñ	n^{Y}	*ñ			*nɨV
**Yw							*wV
**Ynt		*nt^{Y}	nt^{Y}				*zɨV
**Ynk			nk^{Y}				*gɨV
**Ynk^{w}							*g^{w}V
**Yns		*č	č				*zɨV
**Ynw							*mV

Table 13

Proto Otomanguean Consonant Clusters

Special vowel reflexes occur after a labial consonant in Proto Chinantecan and after the development of **k in Proto Chiapanec-Mangue when the consonant in POM was preceded by the palatal. The symbol = indicates a weakening of the initial consonant in POP forms.

3.3. Longacre has proposed several sets of consonantal alternations for Proto Mixtecan.[52] Similarly, several sets of consonantal alternations are recognized for Proto Otomanguean: **t ~ **y ~ **n; **s ~ **y ~ **n; **k ~ **y ~ **n; **k^{w} ~ **k ~ **w (~**n).[53] The presence of these alternations is sometimes indicated by a set of forms in a single language which differ by the consonants in question. However, more frequently, forms in related languages appear to be cognate even though the consonants do not show an established correspondence but, rather, reflect one of the members of these four sets of consonants which are, therefore, assumed to have been in alternation.

The first of the alternation sets is illustrated by the following forms from POM 74:

(74) PMn *yam-/tam-hnam/tam/nam?/yam?[2] *tree, tree trunk, firewood, stick, wood* (reflecting **n, **t, **y)

PPn *na/nta/ya/la *tree, boards, stick, wood* (reflecting **n, **t, **y)

PCM *ya *tree, firewood* (reflecting **y)

POP *t?ą̈o-t *burning wood, firewood, pine* (reflecting **t)

PCh *yaka *tree*, IZ yaga *tree* (reflecting **y)

PCn *?mą̈ (L) *tree*, *?ya· *oak tree* (reflecting **n, **y).

3.4. The four Proto Otomanguean vowels are reconstructed from correspondences of identity with the following exceptions: POM **e is reflected as *i in PMn, PCM, and PZn, as *ä in Amuzgo, and as *ɨ in PCn; POM **u is reflected as *o in POP.

The following forms from POM 245 illustrate **i:

(245) PMn *θi-ʔmim^{32} *money, bright, egg yolk, copper-colored, yellow*

PPn *si^{2}-/sa-ne *yellow*

A ka^{3}nǰi^{21} *yellow*

PCM *na-^{n}di-ku-me *yellow*, *na-^{n}di-ii-me *white*

PCh *ka·ǰi *yellow*

IZ naguǰi *yellow*

The following forms from POM 268, 278, and 19 illustrate **e:

(268) A ka^{1}cä̈^{1} *moth, butterfly*

PCh *šɨ *butterfly*

PCn *sɨ̈ (L) *butterfly*

(278) PPn *ceʔe *stomach, intestines*

PCM *^{n}gu-si *stomach*

IZ laǰi'doʔ *heart, stomach*

PCn *zɨ̈ (LH) *heart*

(19) Trique ga^{3}ǰih^{2} *sneeze*

PPn *the^{3} *itch, cough*

POP *theʔ *a cold, cough*

The following forms from POM 67 illustrate **a:

(67) PMn *yam-/ya-Hta^{42} *river, valley, canyon, water, to dissolve,* etc.

PPN *ʔi-/na-nta^{3} *water, river*

A n^{t}a^{1} *water*, hn^{t}a^{1} *river*

PCM *na-^{n}da *stream, lake*

IZ guǰa *dampness*

PCn *ziá· (LH) *pool, lake*

The following forms from POM 327 illustrate **u:

(327) PMn *θu^{43} *breast, milk*

PPn *tʸu-cu^{3} *nipples*

A nᵗa^{1}cu^{1} *milk*

POP *coiHC-t?/-? (IV) *to nurse*

IZ rižupi *suck*

3.5. Each of the vowels was optionally followed by the nasal **n. There are typically two reflexes of **Vn in each language: an oral reflex differing in quality from the reflex of **V alone and a nasalized reflex. Apparently, the presence of a laryngeal in the environment was the factor which conditioned the nasalized reflexes.[54] Therefore, the source of the oral reflexes is labeled **Vn while the source of the nasalized reflexes is labeled **VHn.[55] The principal reflexes of the POM vowels in the several branches of Otomanguean are displayed in table 14.

	PMn	PPn	A	PCM	POP	PZn	PCn
**i	*i	*i	i	*i	*i	*i	*i
**in	*im	*e	e	*u	*o	*C̥i	*u
**iHn		*į	ę		*ǫ		*ų
**e	*i	*e	ä	*i	*e	*i	*ɨ
**en	*em	*a	a	*a	*a	*C̥i	*a
**eHn		*ę	ą		*ą		*ą
**a	*a	*a	a	*a	*a	*a	*a
**an	*am	*e	o	*u	*o	*C̥a	*u
**aHn		*ą	ǫ		*ą		*ą
**u	*u	*u	u	*u	*o	*u	*u
**un	*um		o			*C̥u	*a
**uHn		*ų	ǫ		*ǫ		*ų

Table 14

Reflexes of the POM vowels

The symbol *C̥ in PZn indicates a lenis consonant.

3.6. Either of the Otomanguean laryngeals, **? and **h, could precede the consonant of the syllable or follow the vowel or could occur in both positions with no apparent dependency restrictions. Following the vowel the laryngeal cluster **h? could occur.

The principal reflexes of the laryngeals in their various distributions are displayed in table 15.

	PMn	PPn	A	PCM	POP	PZn	PCn
**?CV	*?CV	*?CV	C?V		*C?V	*CV?CV	*?CV
**hCV	*hCV	*hCV	ChV		*ChV	*CV?VCV	*hCV
**CV?	*CV?	*CV?	CV?	*CV?	*CV?	*CV?	*CV?
**CVh	*CVh	*ChV	CV́	*CV́	*CVh	*CV?V	*CV́
**CVh?		*ChV?	CV́?	*CV́?			*CV́?

Table 15

Reflexes of the POM laryngeals

The following forms from POM 420 illustrate initial **?:

(420) PMn *kʷi-/xi-/ⁿda-/ya-/yam-/ta-ʔyam(H)[23] *to bark (of a dog), to yell*

A ka[1]cʔiǫʔ[1] *coyote*

POP *nʔio *coyote*

PCh *siːʔya *to shout*

PCn *ʔyaːʔ (LH) *jaguar*

The following forms from POM 361 illustrate initial **h:

(361) PPn *ǩa-/ǩu-hmi *person, man, male*

PCM *ᵐbu-/nu-hʷi/hʷe/we *husband, man, male*

PCn *hmį́ː (L) *father*

The following forms from POM 332 illustrate final **?:

(332) PPn *šuʔ[4] *stone, grindstone*

A chóʔ[2] *stone*

The following forms from POM 68 illustrate final **h:

(68) A ma[2]ci[1]hnǫ́[1] *to dance*

POP *nąih-mʔ (II) *dance*

IZ ru'yaʔa *he dances*

The following forms from POM 297 illustrate the final cluster **hʔ:

(297) A čáʔ[3] *like, similar*

PCn *iáʔ *thus*

Considerable alternation in Proto Otomanguean between presence and absence of a given laryngeal and between the two laryngeals can be deduced from the evidence. For example, the data from POM 420 cited above show, in addition to the initial **ʔ, evidence for a final **ʔ in A, PCn, and perhaps PMn, but no final laryngeal in POP and PCh.

3.7. Three tones have been reconstructed for POM: **$_1$ (high), **$_2$ (mid), and **$_3$ (low). The tone reconstruction is based, however, on evidence from only PMn, PPn, A, POP, and PCn since information about the tonal features of PCM and PZn is lacking. The principal reflexes of the POM tones are displayed in table 16.

	PMn	PPn	A	POP	PCn
**$_1$	*$_2$	*$_3$	1/3	*IV, *V	*H
**$_2$	*$_3$	*$_3$	1/3	*IV, *V	*H
**$_3$	*$_4$	*$_4$	2	*I-*III, *VI	*L

Table 16

Reflexes of the POM tones

The following forms from POM 67 and 38 illustrate **$_1$:

(67) PMn *yam-/yu-Hta$^{4\,2}$ *river, valley, canyon, dissolve*

PPn *ʔ-na-ntaʔ^{3} *water, river*

A n^{t}a^{1} *water*, hn^{t}a^{1} *river*

PCn *zíá· (LH) *pool, lake*

(38) PMn *ne(mh)/^{n}de(m)(H)$^{4\,2}$ *all of, complete, in every place, all finished*

A ka^{2}n^{t}á^{3}, ka^{3}n^{t}a$^{?\,3}$ *complete*

POP *te-k/*toi (V) *to finish something*

The following forms from POM 317 and 73 illustrate **$_2$:

(317) PMn *hθam^{3} *deer, horse*

PPn *ku-ceʔ^{3} *rabbit*

A ka^{1}só^{3} *horse*

PCn *siʉ́· (HLH) *a kind of deer*

(73) PMn *tam(h)$^{4\,3}$ *a span*

PPn *t^{y}ha^{3} *hand, arm*

POP *ʔai, *nʔi-ai (V) *hand*

The following forms from POM 296 and 417 illustrate **[3]:

(296) PMn *ka-hθa^{34} *son-in-law*
PPN *ǩa^{4}-cu^{4}-hmi *person, man, male*
A c?ą́^{2} *person*
PCn *za(·) (L) *person*

(417) PMn *yam?^{24} *night, dream*
PPn *kʷą^{3}?ña^{4} *dusk*
POP *?ɬah-n?/Ø(III) *to sleep*
PCn *?ɬá· (L) *afternoon*

4. Lehmann[56] was the first to point out the close relationship between Subtiaba, of Nicaragua, and Tlapanec, of Mexico. This point of view was accepted by Sapir, who stated that "Subtiaba and Tlappanec are really only dialects of a single language."[57] Sapir followed Lehmann also in his claim of a more distant relationship between Subtiaba and the Hokan languages:

> "This Mexican and Central American language is of very special interest to students of the languages and cultures of the United States because of the great likelihood that Dr. Lehmann is correct in his surmise that it is related to certain languages of California. He seems to believe in a special relationship with Washo, of eastern California and western Nevada, but I believe that this specific formulation of the theory is not quite acceptable... An examination of Dr. Lehmann's material has convinced me that he is essentially correct, but that Subtiaba and Tlappanec are to be regarded as a southern outlier of the Hokan-Coahuiltecan stock as a whole, not of a sub-division of this group to which Washo belongs in particular."[58]

Sapir believed that Subtiaba-Tlapanec had been influenced by contact with the Otomanguean languages but that any shared features were the result of diffusion rather than a common heritage.

> "The phonetic character of Subtiaba seems not dissimilar in some respects to that of Mixtec-Zapotec-Otomi (cf. such syllables as mba and nʸaų) and it would not be at all surprising if this Hokan language, the neighbor of languages of the Mixtec-Zapotec-Otomi group both in Mexico and in Nicaragua (Mixtec, Trique, Mazatec, Mangue-Chorotega) had been somewhat influenced by them in its sound system."[59]

Also in the matter of order of elements in compound nouns he found Subtiaba-Tlapanec atypical of Hokan languages but like some of their Mexican and Central American neighbors.[60]

It is here proposed that the similarities between Subtiaba-Tlapanec and the languages of the Mixtec-Zapotec-Otomi group noticed by Sapir are due not to areal diffusion but, rather, to development from a common ancestor language. It is further claimed that that ancestor language was Proto Otomanguean, the parent of Mixtecan, Popolocan, Amuzgo, Chiapanec-Mangue, Otopamean, Zapotecan, and Chinantecan. The inclusion of Tlapanec in the sets of correspondences does not require the reconstruction of additional elements for Proto Otomanguean; but, of course, the reconstructions of individual etyma are altered by inclusion of the Tlapanec data.

To claim that Tlapanec--and, therefore, Subtiaba--is clearly related to the already recognized branches of Otomanguean, however, is not necessarily to deny its Hokan affiliation. If the Tlapanec-Otomanguean hypothesis is accepted, there are at least two possible views regarding the Tlapanec-Hokan hypothesis: (a) that Tlapanec is not genetically related to the Hokan languages; (b) that Otomanguean (including Tlapanec) is a previously unrecognized branch of Hokan-Coahuiltecan. The task of selecting one or the other of these views--or yet another one--is an engaging object of research but is outside the scope of the present study. Indeed, the comparison of the whole range of Otomanguean and Hokan-Coahuiltecan languages is such an enormous task that a detailed study may well require the work of a whole corps of scholars.

4.1. The following are the reflexes in Tlapanec of the Proto Otomanguean consonants: **t>t; **k>k; **kʷ>p; **s>s; **n>n (and under obscure conditions ñ); **y>ɨ(V); **w>w.

The following data from POM 47, 67, 82, and 91 illustrate the development of POM **t in Tlapanec:[61]

(47) PPn *tʸha-wa(ʔ) *skin*

A thạ́ʔ[2] *skin*, thą́[2] *leather*

Tl šta *skin, leather, belt*

(67) PMn *yam-/ya-Hta[42] *river, valley, canyon, water*

PPn *ʔɨ-/na-ntaʔ *water, river, spring*

PCM *na-ⁿda *stream, lake*

POP *=teh *water*

IZ guǰa *dampness*

PCn *zɨá· (LH) *pool, lake*

Tl māta *canyon*

(82) PMn *ⁿdu?/yu^{24} *handleless palm-leaf basket*
Popoloc šĭ^{4}tu^{4} *palm leaf basket*
A cɔ (sg.), ntɔ (pl.) *handleless basket*
POP *th(o)i *basket*
IZ ruba *handleless basket*
Tl eštu? *basket*

(91) POP *tǫ?-mh/Ø (II) *to plant (corn)*
Tl šaštu *cornfield*

The following data from POM 103, 107, and 108 illustrate the development of POM **k in Tlapanec:

(103) PPn *ki-ča *hard, hard stone, metal*
A ki^{1} *hard*
IZ gie *stone*
PCn *ŋʃ (LH) *metal*, *ku· (H) *money*
Tl akī *strong, hard, heavy, difficult*

(107) PCh *ki·?ya *sin*
Tl ra?ki *evil*, a?kan *sin*

(108) PPn *n-ka-/ča-hų *tomorrow, sun*
PCh *la·kʸe *tomorrow*
IZ gi'ži? *tomorrow*
Tl aka? *sun, day*

The following data from POM 189 and 197 illustrate the development of POM **kʷ in Tlapanec:

(189) POP *=pi *fat*
IZ naro?ba? *big*
Tl āpa *big*

(197) POP *pa (I) *hot*
Tl mbiru?-pu *dry season*

The following data from POM 246, 261, 279, and 336 illustrate the development of POM **s in Tlapanec:

(246) PPn *šu?-ci? *grindstone*
PCh *ki·či *grinding stone*

IZ gɪʔɪče *grinding stone*

Tl ī̲sɪ *stone, rock*

(261) PMn *ka-/xa-/θa-/kʷa-θɪ(m)/yɪ[2] *to nurse, a drop, breast*

PPn *chɨ *milk*

POP *cɪoHC-tʔ/*coɪHC-nʔ (VI) *to suck*

PCh *tɪʔ *to nurse*, *šɪtʸɪʔ *milk*

IZ raǰɪ *to nurse*, nɪʔɪǰɪ *breast milk*

Tl mbī̲sɪ *a drop*

(279) PMn *ye(m)(h)/θem[23] *hail*

PPn *n-ča?ą *frost, cold*

A cą[1] *hail*

PCn *zf (LH) *hail, ice*

Tl eʔsɪ *hail*

(336) *θam/θu-/yam/yu-θu[23]/[32]/[34] *fur, feathers, hair*

PPn *čhų? *cotton, thread*

IZ hɪužu *fringe*

Tl sūn *hair*

The following data from POM 351 illustrate the development of POM **n in Tlapanec:

(351) PPn *na-/nɪ-ʔñu/ñu[4] *teeth*

A nʔǫ́[2] *teeth*

Tl ī̲ñuʔ *teeth*

The following data from POM 402 illustrate the development of POM **y in Tlapanec:

(402) A ɪhó[3] *here*

PCM *ya *today, now*

PO *nuya *now*

Tl (gī̲)hɪoʔ *here*

The following data from POM 373, 379, 380, and 391 illustrate the development of **w in Tlapanec:

(373) POP *ʔoe-ne/*ʔoaɪ-ne/*kʔoe-ne *infant*

IZ nawɪʔɪnɪʔ *small*

Tl tahwin *infant*

(379) PMn *nam-/ⁿdam-/kʷam-/xam-/kam-we(n)[34] *to come down, arrive from above*
A kúe[1] *descend*
POP 461 *(n)hoa? *arrive*
IZ ri'bi? *he goes home*
Tl kawā *below*

(380) PMn *ya-/θa-?we(m)(H)[23]/[32] *market place, pay, wages*
PPn *we?, *te? *buy*
Tl šwa *market place*

(391) PMn *wa *heart, stomach*
PPn *?wa[4] *stomach*
PCM *na-ᵐbu-wé? *heart, stomach*
North Pame na?oa *heart*
Tl awan *stomach*

4.2. The clusters of nasal plus consonant found in Proto Otomanguean are likewise reflected in Tlapanec with the exception of the cluster **nn.

The Tlapanec reflex of POM **nt varies from d to nd, as illustrated by the following data from POM 27, 33, 39, and 97:

(27) PMn *kʷa(m)-/xi-/ka-/ⁿda-ⁿde(m)[32] *to ripen*
PMaz *č(h)i[3]?nte[1] *unmatured*
POP *(n)=tą-? (V) *cooked, ripe*
Tl mirudī? *tender*

(33) PMn *tu-/ⁿdu-ⁿde(m)[32] *avocado*
A (tā́[3])ntā́?[3] *avocado*
Tl šndudī *avocado*

(39) PPn *ku-ntʸa(?)[4] *fox, wolf, badger, dog*
IZ be?eǰe? *mountain lion*
PCn *zi· (L) *dog*
Tl (e)ndī *jaguar*

(97) PMaz *ʔntu^{3} *rots*

PCh *cuʔ *to rot*

IZ riuʔǰuʔ *it rots*

Tl nāniguhndōʔ *to dry out*

The Tlapanec reflex of POM **nk is g, as illustrated by the following data from 120 and 129:

(120) A cʔǫ^{1} tä^{3} šʔa^{13} *coconut palm tree*

PCn *kia· (H) *palm-like leaves for thatching or weaving*

Tl āgu *woven mat*

No other branch of Otomanguean confirms the Tlapanec witness to a pre-posed **n in this set.

(129) PMn *^{n}dam-/θam-(ʔ)^{n}ga(m) *with, and then*

Tl gā *and*

The Tlapanec reflex of POM **nk^{w} varies from b to mb, as illustrated by the following data from POM 179, 176, and 212:

(179) PCM *na-naa-/ku-^{m}báʔ/lá *frog, toad*

Tl rigaba *toad*, gūbō *frog*

(176) PMn *kam-/^{n}dam-/xam-/tam-^{n}g^{w}em^{2} *day, the heavens, sun, name*

Tl mbiʔi *day, time, name, sunlight*

(212) PCn *g^{w}a·ʔ (H) *earth*

Tl kubaʔ *earth, mud*, mbāʔ *earth, land*

The Tlapanec reflex of POM **ns varies from d to nd, thus merging with the reflex of **nt. The following data from POM 245, 269, 308, 244, and 257 illustrate the Tlapanec development of **ns:

(245) A ka^{3}nčiʔ^{21} *white*

PCM *na-^{n}di-ku-me *yellow*, *na-^{n}di-ii-me *white*

PCh *ka·či *yellow*

IZ naguči *yellow*

Tl miʔšīdiʔ *white*

(269) PPn *cha^{3} *bitter*

PCn *zɬʔ/ziʔ *bitter*

Tl midi? *bitter, sour*

(308) PPn *čhą *child*
A yu^{3}ka^{1}čho^{1} *child*
Tl ādа *child*

(244) A cí^{2} *round*
Tl hndl *circle, wheel*

(257) Trique da^{3}ne^{3} *elbow* (< **ⁿde)
PPn *tʸu-n-ʔčį/yi *knee, elbow*
A cí? ka^{1}šhą?^{1} *elbow*, cí?^{3} štʸé^{2} *knee*
Tl inundi? *knee and thigh*

The Tlapanec reflex of POM **ny is r, as illustrated by the following data from POM 396, 400, and 417.

(396) PPn *ka-ɬhi/ntʸihi^{4} *pasture, grass*
PCM *ni-/nu-ɬú/ɬu *flower*
PCn *ɬí (H) *flower*
Tl ri?i *flower*

(400) IZ ɬe? *fence*
Tl kwara?a *walled, fenced*

(417) PCh *tela *night*, *kʷe·la *star*
IZ ge?ela? *night*
Pcn *?lá· (L) *afternoon*
Tl miru?un *night* (a rather than u is expected).

The Tlapanec reflex of POM **nw is m, as illustrated by the following data from POM 366, 388, and 395:

(366) POP *mhę *tortilla*
Tl gūma *tortilla*

(388) PCh *kakʷa *to weave*
IZ rida?apa *to weave*
PCn *?mą́ (LH) *net*
Tl ama? *net of maguey fiber*, guma *thread, fiber*

(395) PPn *ña-ma *sweet potato, root*

IZ lu'ba? *vine*

PCn *hmą́· *root*

Tl ahmą̄ *vine, root*

The clusters of palatal element plus consonant and the fuller clusters which include the nasal also are poorly attested in Tlapanec. Apparently, only the POM clusters which included an apical obstruent had special development. The Tlapanec reflex of *Yt is č and that of **Ynt is ǰ, as illustrated by the following data from 88, 50, and 52:

(88) reflecting **t: PCn *ta· (L) *cave, hole*

reflecting **Yt: PCh *ketu *hole*

IZ gl?lru? *hole*

Tl čū *hole*

(50) reflecting **t: POP *m?al-(h)-to *grandchild*

reflecting **nt: PPn *?nta^{3} *spouse of child, spouse of sibling*

reflecting **Ynt: A hn^{t}a^{2}ka^{3}nt^{y}hó^{2} *grandchild*

PCn *zia· (HLH) *grandchild, nephew, niece*

Tl ǰa?gu *girl*, ǰama *youth*

(52) reflecting **t: POP *pa-ta/*wa? *buzzard*

PCn *tu·? (L) *buzzard*

reflecting *Ynt: PPn *ku-nt^{y}a?a/nt^{y}aha *crow, buzzard*

Tl ǰa?an *buzzard*

The Tlapanec reflex of **Ys is š, as illustrated by the following data from POM 285 and 272:

(285) reflecting **s: PMn *^{n}dl-θe(m)^{34} *roasting ear*

POP *-sa (V) *ear of corn*

IZ ze?e *roasting ear*

reflecting **ns: A cą?^{2} *corncob*

reflecting **Yns: PMaz *nče^{41} *cooked corn*

reflecting **Ys: Tl eši *corn*

(272) reflecting **s: PCn *są· (H) *hay*

reflecting **ns: POP *=ca-pah-n?/*c?a-pah-n? *fodder*

reflecting **Ys: IZ gižį *hay*
Tl išį *tree, plant*

As indicated above, the POM clusters of nasal plus obstruent have developed in Tlapanec as voiced stops. A similar development took place in Chinantecan before **V and **Vn--i.e., the environments in which oral vowels developed in Chinantecan; however, before **VHn--i.e., the environment in which nasalized vowels developed in Chinantecan--the POM clusters of nasal plus obstruent developed as nasal consonants. That development does not seem to have taken place in Tlapanec, however, inasmuch as examples of voiced stops before nasalized vowels are not difficult to find. Nevertheless, under some conditions which are not now clear the POM clusters of nasal plus obstruent have developed as nasal consonants in Tlapanec also. When the initial consonant reconstructed for the POM etymon is **t or **s, a Tlapanec n could be interpreted as reflecting the **n alternant of **t. Similarly, when the initial consonant reconstructed is **kʷ, a Tlapanec m could be interpreted as reflecting **nw, showing the **w alternant of **kʷ.[62] However, there is no such explanation available for the origin of the Tlapanec ŋ, which is here considered to be derived from **nk under obscure conditions. Consider the following examples:

(131) reflecting **k: PMn *ta-/θa-/ka-ʔka^{3}/^{23} *nest*
reflecting **Yk: A ka^{2}ntkʸá^{2} *nest*
reflecting **nk: Popoloc ci?^{3}nkə?^{4} *nest*, PCM *naa-ŋgu *house, hut, nest*
Tl šaŋaʔ *nest*

(203) reflecting **k: A ka^{1}só^{3} *horse*
reflecting **Yk: PCM *muu-ču-kə́? *deer, rabbit*
reflecting **nk: Tl aŋaʔ *deer*

(233) reflecting **k: PPn *ši-ka^{4} *leaf*
A ckó^{2} *leaf*
PCh *laka? *leaf*
IZ bandaga *leaf*
reflecting **nk: Tl miŋa *edible herb*

4.3. Several sets of consonantal alternations have been described for Proto Otomanguean. These involve principally the obstruents, the semivowels, and the nasal (cf. 3.3.).

In the following sets the Tlapanec form reflects a variant with initial **n or **y while other branches of Otomanguean reflect variants with initial **t:

(38) reflecting **t: POP *te-k/*toi (V) *to finish something*
IZ gi'ra? *all*
reflecting **n: A ka^{3}n^{t}ä^{3}, ka^{3}n^{t}ä?^{3} *complete*
Tl gahnī *full, complete*

(74) reflecting **t: POP *t?ao-t *firewood, pine*
reflecting **y: PCM *ya *tree, firewood*
PCh *yaka *tree*
IZ yaga *tree*
PCn *?ya· *oak*
Tl štuhia *oak*

The following sets reflect alternations which involve POM **s. The Tlapanec forms reflect a variant with initial **n or **y while other branches of Otomanguean reflect a variant with initial **s

(263) reflecting **s: IZ naya?ase? *black*
reflecting **y: PPn *ti-ye *black*
PCn *iia·? (L) *black*
reflecting **n: Tl miskūni? *black*

(325) reflecting **s: PCM *^{n}du-/ma-ku *fingernail*
IZ bišuga *fingernail*
reflecting **n: Tl šŋañu *fingernail, claw*
reflecting **s~**y~**n: PMn *yu(m)/hnumh/?θumh *fingernail*

(250) reflecting **s: PPn *ši-ka *leaf*
PCM *si-ki-iá? *paper*
POP *si *leaf*
PCh *ki·t^{y}i *paper*
IZ gi?či? *paper*
reflecting **y: PCn *hyi (L) *paper*
Tl yī? *paper, book*

(301) reflecting **s: IZ čisa *squirrel*
reflecting **n: POP *mi-nạ *squirrel*
reflecting **y: PMn *yam^{2}/^{24} *squirrel*
Tl yā *squirrel*

The following sets reflect the Proto Otomanguean alternation set **kʷ~**k~**ʷ~**n:

(221) reflecting **kʷ: POP *pa-s *to sweep*
PCh *lukʷa *to sweep*
IZ rundu?uba? *he sweeps*
PCn *kʷʂ· (LH) *resin, wax*
reflecting **k: PMn *ya-/xa-/^{n}da-hka^{24} *pine wood, pine tree, ladder, sweep, candle*
PPn *ya-ni-/nči-ča *pine tree, broom*
A tä́?^{2}ská^{2} *resin,* ka *to sweep*
Tl šti?ka *pine tree*

(142) reflecting **kʷ: IZ beñe *mud*
PCM *na-^{m}bụ-lá? *clay, mud, earth, dirt*
reflecting **ʷ: POP *=poe-hao-m *mud*
Tl wi?i *sand*

(192) reflecting **kʷ: PCn *gʷá· (LH) *box*
reflecting **ʷ: POP *hoa-ta *box*
reflecting **n: Tl ehna *box*

4.4. The development of the POM vowels in Tlapanec is straightforward with the single merger of **i and **e in all environments: **i, **e > i; **a > a; **u > u. The following data from POM 3, 103, and 246 illustrate the Tlapanec development of POM **i:

(3) Trique ga^{4}či^{3} *round*
PPn *tʸhi *round*
Tl hndi *circle, wheel*

(103) PPn *ki-ča *hard, metal*
A ki^{1} *hard*

IZ gie *stone*

PCn *ŋʃ (H) *metal*

Tl akī *strong, hard*

(246) PPn *šu?-ci? *grindstone*

PCh *kɨ·čɨ *grinding stone*

Tl īsi *stone, rock,* sīnu *grindstone*

The following data from POM 20, 107, and 269 illustrate the Tlapanec development of POM **e:

(20) A (cɨ?[3]) štʸé[2] *knee*

Otomɨ *šɨnthe *leg*

PCn *tɨ· *foot, lower leg*

Tl inundɨ? *knee and thigh*

(107) PPn *š-he? *sin*

PCh *kɨ·?ya *sin*

Tl ra?kɨ *evil*

(269) PCM *ya-sɨ *bitter*

PCh *tɨɨʸa *bitter*

PCn *zɨ?/zɨ? *bitter*

Tl mīdɨ? *bitter, sour*

The following data from POM 47, 129, and 388 illustrate the Tlapanec development of POM **a:

(47) PPn *tʸha-wa(?) *skin*

A thą?[2] *skin,* thą́[2] *leather*

Tl šta *skin, leather, belt*

(129) PMn *ⁿdam-/θam-(?)ⁿga(m) *with, and then*

PPn *kahu *with, and*

Otomɨ-Pame *kha *also*

Tl gā *and*

(388) PMn *?kʷah/?wah/?kah/?ⁿdah/wa?/ka? *to spin,* *yu-/θu-(?)wa(H) *thread*

PPn *wa?a/waha *weave*

A ma^{2}wá^{2} *to weave*

PCh *kakʷa *to weave*

IZ ridaʔapa *to weave*

PCn *ʔmą̂ (LH) *net*

Tl amaʔ *net of maguey fiber*, gūma *thread, fiber*

The following data from POM 81, 82, and 351 illustrate the Tlapanec development of POM **u:

(81) PCM *ⁿgi-tuʔ *breast*

PCn *tiu·ʔ *breast, milk*

Tl aʔdu *milk, breast*

(82) PMn *ⁿduʔ/yu^{24} *handleless palm-leaf basket*

Popoloc ši^{4}tu^{4} *palm-leaf basket*

POP *th(o)i *basket*

IZ ruba *handleless basket*, ǰummi *basket*

Tl eštuʔ *basket*

(351) PPn *na-/ni-ʔñu/ñu^{4} *teeth*

A nʔǫ́^{2} *teeth*

Tl īñuʔ *teeth*

4.5. The backing and rounding effect of the POM post-posed nasal is clearly reflected in the Tlapanec reflexes of **Vn. POM **in and **en merged as a while POM **an became u. No clearly distinct reflex of **un has been identified; probably **un became u, thus merging with the development of **u, but it is possible that it was lowered to o, as in Amuzgo. The following data from POM 11, 242, and 260 illustrate the development of POM **in in Tlapanec:

(11) reflecting **ɨ: PPn *(n)tʸihɨʔ *pot, pitcher*

PCM *naa-tʃ *pot*

reflecting **in: PCh *tę·ʔę *clay jar*

IZ riʔi *water jug*

PCn *tu·ʔ *clay pot*

Tl rigīda *water jug*

(242) reflecting **ɨ: POP *m?oHC-c?ɨ-? *large basket*

reflecting **ɨn: PPn *sɻ *handleless palm-leaf basket*

Tl e?ša *palm-leaf basket*

(260) reflecting **ɨ: A čɨ^{3} *sweet*

PCh *šɨ *sweet*

IZ nanašɨ *sweet*

reflecting **ɨn: PMn *wam-/ⁿdam-/kam/kʷam-hθɨ(m)/ θɨ?^{24}/^{42} *sweet, honey, sugar*

PPn *še *sweet*

Tl sā? *honey, nectar*

The following data from POM 36, 109, and 167 illustrate the development of POM **en in Tlapanec:

(36) reflecting **e: PCn *zɨ (H) *head*

reflecting **en: PPn *ca-/š-thę^{2} *forehead*

POP *=tąɨ *forehead*

Tl kīda *forehead*

(109) reflecting **en: PMn *ⁿdV-/yV-kem^{34} *seeds*

A ɨkʸę^{1} *rice, seed*

Tl siga? *seed*

(167) reflecting **e: PMn *yu-/tu-/xa-/θa-(h)kem/kʷe^{2}/^{43} *mountain, hill*

reflecting **en: PCh *sɨɨakʷɨ *slope*

Tl kuba *mountain*

The following data from POM 51, 299, and 322 illustrate the development of POM **an in Tlapanec:

(51) reflecting **a: PMn *ya-/xa-/ta-hta^{24} *back, roof*

Ixcatec ndʸa^{3}sɨ^{3} *neck*

A ka^{2}ntʸá?^{2} *shoulders and neck*

POP *sɨHC-tha/*sɨoHC-tha *back*

reflecting **an: PCh *?ɨcǫ? *back*

Tl sūdu *back*

(299) reflecting **an: PCh *tą *lard*

IZ za *lard*

Tl ɨasu *lard, grease, oil*

(322) reflecting **an: PMn *yam(h)/θamh^{34} *thorn*

PCn *siɥ·? *sharp*

Tl mɬ̄su? *sharp*

The following data from POM 88, 96, and 97 illustrate the possible development of POM **un in Tlapanec:

(88) reflecting **un: PCh *ketu *hole*

IZ gi?iru? *hole*

PCn *ta· (L) *cave, hole*

perhaps reflecting **un: Tl čū *hole*

(96) reflecting **u: PPn *?nt^{y}e-?tu^{4} *mud*

PCM *nii-tú? *ashes*

PCh *ku·cu? *mud*

reflecting **un: PMn *yam-/^{n}dam-/θam-tum$^{34,32/42}$ *sand, powder*

A co?^{2} *mud*

Chinantec of Quiotepec toh?^{42} *river sand* (<*ta·?)

perhaps reflecting **un: Tl yō *powder*

(97) reflecting **u: Trique gu^{3}x̌u^{32} *to rot (wood)*

PMaz *?ntu^{3} *rots*

A kʷi^{2}tó?^{1} *to rot*

PCh * cu? *to rot*

reflecting **un: A kʷi^{2}tó?^{2} *to dry out*

IZ riu?ɟu? *it rots*

perhaps reflecting **un: Tl nānīguhndō? *to dry out*

The Tlapanec developments of the nasalized reflexes of the POM vowel plus nasal sequences, labeled **VHn, are as follows: **ɪHn, **ɵHn, and **aHn merged as ą, and **uHn became ɥ.[63] The following data from POM 11 and 141 illustrate the development of POM **ɪHn:

(11) reflecting **i: PPn *(n)t^{y}ihi? *pot, pitcher*

PCM *naa-tʃ *pot*

reflecting **ɪn: PCh *tę·ʔę *clay jar*
IZ rɪʔɪ *water jug*
PCn *tu·ʔ *clay pot*
Tl rigīda *water jug*
reflecting **ɪHn: Tl dān *pot*

(141) reflecting **ɪ: PCn *gʷɪʔ (L) *cold*
reflecting **ɪn: POP *coe (III) *cold*
reflecting **ɪHn: PPn *kɨ *cold*
Tl migūan *cold*

The following data from POM 107 and 167 illustrate the development of POM **eHn:

(107) reflecting **e: PPn *š-heʔ *sin*
PCh *kɪ·ʔya *sin*
Tl raʔkɪ *sin, evil, guilt*
reflecting **eHn: Tl aʔkan *sin, lack*

(167) reflecting **en: PMn *yu-/tu-/xa-/θa-(h)kem/kʷe[2]/[43] *mountain, hill, slope, ascent*
PCM *na-kuwaa *mountain*
PCh *sɪlakʷɪ *slope*
Tl kuba *mountain*
reflecting **eHn: POP *hąɪ-cʔ *high, sky, mountain*
PCn *kʷą·ʔ (LH) *hill*
Tl aʔhwan *slope, ascent, path*

The following data from POM 52 and 232 illustrate the development of POM **aHn:

(52) reflecting **a: PPn *ku-ntʸaʔa/ntʸaha *crow, buzzard*
POP *pa-ta/*waʔ *buzzard*
reflecting **an: PCn *tu·ʔ (L) *buzzard*
reflecting **aHn: Tl ǰaʔan *buzzard*

(232) reflecting **a: PCn *ká (H) *weevil*
reflecting **an: PMn *yu-/ya-/tu/ta-kam[3] *ant, louse, fly*

PCM *naa-hú? *ant*

reflecting **aHn: PPn *ku-ʔyu-/tʸu-/ču-khą *ant*

A ká[1]šhąʔ[1] *ant*

Tl akuān *ant*

The following data from POM 94 and 336 illustrate the development of POM **uHn:

(94) reflecting **u: PCM *na-ⁿdu-me *black, blue, crow, dark*

PCn *t(i)u· (H) *blind*

reflecting **un: IZ naču?undu? *dark*

reflecting **uHn: PMn *tu(m)(h)/hnumh[42] *black*

A ntǫ́[2] *black*

Tl miru?un *night, darkness*

(336) reflecting **u: PMn *θam/θu-/yam/yu-θu[23]/[32]/[34] *fur, feathers, hair, blanket*

reflecting **un: IZ hlužu *fringe*

reflecting **uHn: PPn *čhų? *cotton, thread*

Tl sūn *hair*

4.6. The laryngeals of Proto Otomanguean are generally preserved in Tlapanec.

POM initial **? is sometimes retained and sometimes not. Apparently the initial **? has been eroded away when word-initial but preserved when protected by a preceding vowel. The following data illustrate the development of POM initial **?:

(10) PPn *š-yeʔe[4] *intestines, manure*

A ntʔi[1] *manure*

Tl teʔdī *dysentery*

(45) Mixtec of San Miguel viʔⁿǰa *nopal cactus*

Proto Otomí *šąntʔą *nopal cactus*

Tl riŋgaʔyu *nopal cactus*

(96) PMn *ⁿda-/ta-ʔyu[24] *mud, mud-hole*

PPn *ʔntʸe-ʔtu[4] *mud*

Tl yō *powder*

(170) PPn *ša-ʔwe^{4} *wasp*
POP *ʔǫe/*ʔoe/*ʔ|ˌ *worm, fly*
Tl aʔma *bee*

(212) PMn *yam-/θam-ʔma(m)ʔ^{2} *land, soil*
PCn *ʔwə *land*
Tl mbāʔ *earth, land*

(368) PMn *ka-/xa-/kʷa-/^{n}da-/na-ʔmi(m)^{2} *to burn, to be warm, to smart*
PPn *cu-/šu-ʔwi *fire, light, sun*
A wʔi^{2} *angry*
Chinantec of Lalana ʔwi^{23} zɨh^{2} *to be angry*
Tl mbiʔi *day, time, name, sunlight*

POM initial **h is clearly retained before voiced consonants. It appears that š is the reflex of pre-posed **h before voiceless consonants. However, both h and š occur before nasals, so it is possible that š has a separate source in Proto Otomanguean. The following data illustrate the development of POM initial **h:

(167) PMn *yu-/tu-/xa-/θa-(h)kem/kʷe^{2}/^{43} *mountain, hill, slope*
POP *hąi-cʔ *high, sky, mountain*
Tl aʔhwan *slope, ascent, path*

(176) PPn *ʔnka-tʸ-hmi^{3} *sky*
PCn *hwɨ· *sky, heaven*
Tl rihmā *sky, above*

(232) A ká^{1}šhąʔ^{1} *ant*
PCM *naa-húʔ *ant*
PCn *ha·ʔ (H) *fly, maggot, worm*
Tl ahŋū *fly*

(47) A thąʔ^{2} *skin*, thą́^{2} *leather*
Tl šta *skin, leather, belt*

(82) POP th(o)i *basket*
Tl ešṭuʔ *large basket, chest, thorax*

The final **ʔ of Proto Otomanguean is unchanged in Tlapanec, as illustrated by the following data:

(90) A (sa²)tǫ́ʔ² *road-runner*
IZ touʔ *turkey*
Tl runduʔ *turkey*

(136) A nčí³ hóʔ² *no, not*
IZ koʔ *no*
Tl raʔkāʔ *no*

(212) PMn *yam-/θam-ʔma(m)ʔ² *land, soil*
PCn *gʷa·ʔ (H) *earth*
Tl mbāʔ *earth, land*

The final **h of Proto Otomanguean has developed as CVʔV in Tlapanec as in the Zapotecan languages.[64]

(52) PPn *ku-ntʸaʔa/ntʸaha *crow, buzzard*
Tl ǰaʔan *buzzard*

(94) PMn *tu(m)(h)/hnumh⁴² *black, soot*
A ntǫ́² *black*
Tl miruʔun *night*

(396) PPn *ka-lihi/ntʸihi⁴ *pasture, grass*
PCM *ni-/nu-lú/lu *flower*
PCn *lí (H) *flower*
Tl riʔi *flower*

4.7. A study of the isoglosses criss-crossing the Otomanguean map has been presented elsewhere.[65] However, a tentative statement regarding the position of Tlapanec within the Otomanguean grouping seems appropriate at this point.

Some of the sound changes which Tlapanec shares with other branches of Otomanguean are the following:

(1) Tlapanec shares with Mixtecan, Chiapanec-Mangue, Zapotecan, and Chinantecan the feature of having merged **nt and **ns. It is more like PMn and PCM than PZn and PCn in that the result is a prenasalized stop rather than an affricate.

(2) POM **i and **e have merged completely in Tlapanec. This is true also in PCM and PZn when the vowels are not followed by **n

and is nearly so in PMn . In PZn **i and **e have merged in nearly all environments, putting Tl a little closer to PZn in this respect than to PMn.

(3) The final **h of Proto Otomanguean has developed as an interrupting glottal stop in both Tlapanec and Proto Zapotecan.

(4) The POM cluster **ny has developed as a liquid, usually *l, in Tl, PMn, PPn, PCM, PZn, and PCn. However, in Tlapanec the cluster has developed as r, the same development as in PCM.[66] In this respect Tl is especially similar to PCM.

(5) Tlapanec shares with PCM, POP, and IZ the phonetic change from **k^w to *p.

If one regards the first two isoglosses as the more significant ones that they involve structural innovations whereas the latter three are merely phonetic shifts, the result is that Tlapanec is grouped with each of the four southern groups--viz., PMn, PCM, PZn, and PCn--by at least one of the two structural innovations. Tl is especially like PMn, PCM, and PZn in sharing both of these innovations.

PCM and PZn--specifically IZ--are the only groupings to share both shifts (4) and (5) with Tlapanec, making the association of these three branches even closer. Shift (3) links only PZn with Tl. Thus, the present conclusion is that Tlapanec is most like Proto Zapotecan, especially Zapotec, from the standpoint of both structural innovations and phonetic shifts. Proto Chiapanec-Mangue[67] and Proto Mixtecan seem to be removed from Tlapanec by successive degrees of separation but still are significantly more like Tlapanec than are the other groups within Otomanguean.

Footnotes

1 de Angulo 1925.

2 Mason 1900.

3 Schmidt 1926.

4 Orozco y Berra 1864. For a more detailed listing of the various classifications of Otomanguean languages, cf. Rensch 1966.

5 Pimentel 1865.

6 Brinton 1891.

7 Mason 1900.

8 Thomas 1902.

9 Thomas and Swanton 1911.

10 Leon 1902.

11 Belmar 1905.

12 Mechling 1912.

13 Lehmann 1920.

14 Schmidt 1926.

15 Sapir 1929.

16
Mason 1940.

17
Manrique 1958.

18
Fernández de Miranda, Swadesh, and Weitlaner 1958.

19
Fernández de Miranda, Swadesh, and Weitlaner 1958, p. 57.

20
Fernández de Miranda and Weitlaner 1961, sec. 5 and 6; Rensch 1966, chap. 6.

21
Longacre reports (Longacre 1968, sec. 6.7.) that he is now "inclined to believe that Swadesh may be correct". He mentions having worked out a reconstructed phonology and sets of cognates. However, the results of his study have not yet been published. Rensch 1973 compares Huave forms with those of languages recognized as Otomanguean and concludes that Huave constitutes an independent branch of the Otomanguean grouping.

22
Longacre 1957.

23
Mak and Longacre 1969, p. 40.

24
Longacre 1957, p. 9.

25
Longacre 1961, p. 27.

26
Longacre 1964.

27
Longacre 1966, p. 47; Longacre 1966, p. 536.

28
Otomanguean sets are drawn from Rensch 1966. The following abbreviations are used for language names: POM Proto Otomanguean PMn Proto Mixtecan, M Mixtec, C Cuicatec, T Trique; PPn Proto Popolocan, I Ixcatec, P Popoloc, C Chocho, PMaz Proto Mazatec; A Amuzgo; PCM Proto Chiapanec-Mangue, PC Proto Chiapanec, M Mangue; POP Proto

Otopamean, PO Proto Otomi, Maz Mazahua, Mtz Matlatzinca, Oc Ocuilteco, NP North Pame, SP South Pame, Ch Chichimeco Jonaz; PZn Proto Zapotecan, PCh Proto Chatino, IZ Isthmus Zapotec; PCn Proto Chinantecan.

29
Longacre 1962, pp. 231, 232.

30
Longacre 1960, p. 36.

31
Longacre 1962, p. 231.

32
Note the exception mentioned in sec. 2.1.4, where *hn is retained in some Mixtec languages as N.

33
For the inter-relationship of the three forms reflecting *CVh and *hCV cf. Longacre 1957, sec. 5.1.

34
Gudschinsky 1959.

35
A larger inventory of vowel clusters is reconstructed for PMaz in Kirk 1966, sec. 5.2, but some of these vowel sequences involve morpheme sequences, as well. Further information regarding the grammar of the Popolocan languages is required before it can be decided whether such a variety of vowel sequences introduced by morpheme sequences was characteristic of PPn itself.

36
Bauernschmidt 1965.

37
Fernández de Miranda and Weitlaner 1961.

38
Fernández de Miranda and Weitlaner 1961, p. 12.

39
Bartholomew 1965.

40
Bartholomew 1965, chap. 3.

41
Swadesh 1947. Suárez (1973) has recently proposed some revisions of Fernández de Miranda's reconstruction of Proto Zapotec (in press), but the present discussion of Zapotecan does not take account of either of those studies.

42
Upson and Longacre 1965.

43
Fernández de Miranda was undoubtedly correct in assigning Papabuco to the Zapotec rather than the Chatino branch of PZn (Longacre 1968, p. 339). As pointed out by Longacre, Papabuco lines up with Zapotec b as opposed to Chatino k^w and with Zapotec s as opposed to Chatino t. Further evidence is provided by Papabuco and Zapotec č and r matching Chatino t and by Papabuco and Zapotec t matching Chatino h.

44
Swadesh 1947, pp. 220, 221.

45
Longacre 1964, p. 1023.

46
For illustration of these developments the reader may consult Rensch 1966, chap. 8.

47
This analysis is preferred over that presented in Weitlaner and Smith 1962. The reconstructed consonant systems are similar. However, Weitlaner and Smith reconstruct 7 vowels and 25 diphthongs, which show a very unsystematic distributional pattern. The diphthongs are replaced in the present analysis largely by the semivowels and vocalic length.

48
Bartholomew 1965; Gudschinsky 1959; Fernández de Miranda and Weitlaner 1961; Longacre 1962; Longacre 1964; Longacre 1966a; Longacre 1966b; Longacre 1967; Longacre and Millon 1961.

49
Rensch 1966, chap. 2.

50
Complete exemplification of the correspondence sets on which the Proto Otomanguean reconstruction is based has not been attempted here. For a fuller demonstration of the correspondences and a fuller description of the Otomanguean system in general the

reader is referred to Rensch 1966, chap. 2.

51
For examples of the POM consonant clusters the reader may consult Rensch 1966, chap. 2.

Some readers may prefer to regard these elements as single consonants, such as **d, **g, **g^w, **c, **m, **l, **t^y, etc. However, they are here regarded as consonant clusters because (a) some reflexes, such as A ŋn or POP *nl, are awkward to explain as developments of single consonants, and (b) these elements apparently alternated with single consonants, as Vn sequences alternated with single vowels.

52
Longacre 1957, pp. 54-61; Longacre 1962, p. 237.

53
Rensch 1966, sec. 2.1.3.

54
Cf. 2.1.5.

55
For examples of the POM vowels with the final nasal the reader may consult Rensch 1966, sec. 2.2.2.

56
Lehmann 1920.

57
Sapir 1925, p. 403.

58
ibid, pp. 403, 404.

59
ibid, p. 426.

60
ibid, p. 493.

61
The Tlapanec data were generously supplied by H.V. Lemley of The Tlapaneco Mission, Inc. from his extensive files of Tlapanec materials. All Tlapanec data are from the Tlacoapa dialect. The number preceding each set corresponds to the Proto Otomanguean set found in Rensch 1966 from which the non-Tlapanec materials of the set were drawn. Since the tones of Tlapanec have not here been re-

lated to those of POM, no tones are recorded on the Tlapanec materials. It is the final syllable of nearly all the Tlapanec forms that is the relevant syllable for comparison in these sets, which contribute to the reconstruction of the Otomanguean stressed ultima.

62
Cf. 3.3.

63
Nasalized vowels are symbolized in Tlapanec data as "Vn".

64
The corpus of Tlapanec data contains a few examples of CVhV forms. It is possible that both CV?V and CVhV reflect two POM laryngeals in the same syllable, as in Popolocan, viz., **?CVh > *CV?V; **hCVh > *CVhV. However, such a proposal leaves no clear reflex of POM final **h in Tlapanec.

65
Rensch 1973.

66
There is a possibility, however, that in PCM *l is the development of **ny while *r is the development of the fuller cluster **Yny.

67
It is of interest that Swadesh 1962 proposes on the basis of glottochronology a Manguean group of languages, which includes Mangue-Chinanteca (perhaps Chorotega) and Subtiaba-Tlapanec.

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