

AN
ETYMOLOGICAL DICTIONARY
OF THE
CHINANTEC LANGUAGES

Studies in Chinantec
Languages

Volume 1



By Calvin R. Rensch

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**An Etymological Dictionary
of the Chinantec Languages**

Studies in Chinantec Languages 1

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Calvin R. Rensch

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**To my wife
Carolyn**

...who has shared with me all the years of study of the Chinantec languages and the many pleasures of living our lives with a host of Chinantec friends,

...who has contributed to our understanding of the Chinantec languages through continuing discussion of structure and usage,

...and who, during times when the project had to be set aside, encouraged me to bring this volume to completion.

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Acknowledgment

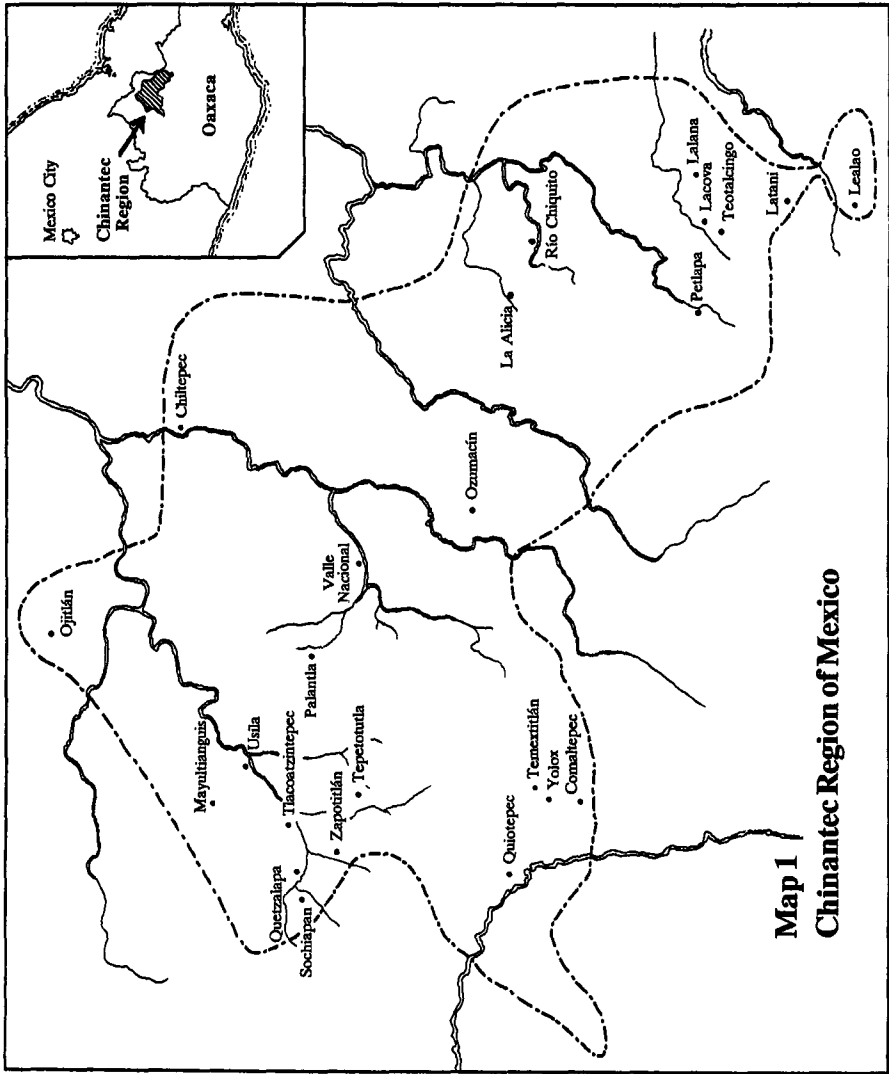
At several stages in the preparation of this dictionary colleagues of the Summer Institute of Linguistics in Mexico who have shared in the study of Chinantec languages have contributed by providing language data and by discussing with me various points in the analysis of the language in which they are especially interested. I am happy here to acknowledge my debt by identifying the contributors and the names of the corresponding languages.

Judi Lynn Anderson	Comaltepec Chinantec
Jaci Bernhardt	Tlacoatzintepec Chinantec
Mabel Lewis	Tlacoatzintepec Chinantec
William R. Merrifield	Palantla and Valle Nacional Chinantec
Wanda Pace	Comaltepec Chinantec
Frank E. Robbins	Quiotepec and Valle Nacional Chinantec
James Rupp	Lealao Chinantec
Leo Skinner	Usila Chinantec
Paul Smith	Ojitlan Chinantec
David O. Westley	Tepetotutla Chinantec

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Map 1
Chinantec Region of Mexico

Introduction

Figure 1
Intelligibility testing scores
among the Chinantec languages

	Test Points																		
	Oj	U	Ti	Ch	M	S	Qe	Tp	Pa	VN	Oz	Li	To	RC	A	Le	Qi	Y	Co
Reference Points																			
Oj		31		20	47														
U	43		84	20	99	45	56	69											
Ti		48		76	100	66	100												
Ch	31		85			56			71										
M										40									
S	49	32	74		73		79												
Qe						11												7	12
Tp			15					78		70	63								
Pa	39	33					59		72	22	22								
VN				13					54	53		43							
Oz											22				23				
Li													100	83	68				
To																			
RC																			
A												87	97	97					
Le												27	28		24				
Qi							60											88	69
Y							48										100	87	71
Co															79				76

1

Dialect Variation

The Chinantec people¹ of northern Oaxaca, Mexico speak a group of moderately differentiated languages. That these languages are related has been recognized since the days of first European contact, when these peoples and languages were introduced to the Spanish by their Aztec culture brokers with the single label *chinanteco*.

On the basis of dialect intelligibility test results (Egland 1978:12) fourteen mutually unintelligible languages have been recognized within the Chinantec language family. When intelligibility scores between two dialects fell below approximately the 80 percent range the dialects were recognized as separate languages. In some areas speakers understand less than 50 percent of the language most closely related. Within a number of the language areas so defined there are smaller but locally recognizable differences.

The present study is based on data from 23 Chinantec-speaking communities.² The intelligibility testing reported in the Egland study involved 19 of these communities (plus seven others). The intelligibility scores for those 19 communities are presented in Figure 1.³

It is of interest to note the extent to which the intelligibility is not reciprocal between certain pairs of languages. People of Palantla understand 69 percent of the speech of Usila while people of Usila understand only 33 percent of the speech of Palantla. Similarly, Valle Nacional understands

¹The 1970 national census indicated that there were more than 55,000 speakers of these languages.

²Oj Ojitlán; U Usila; Tl Tlacoatzintepec; Ch Chiltepec; M Mayultianguis; S Sochiapan; Qe Quetzalapa; Z Zapotitlán; Tp Tepetotutla; Pa Palantla; VN Valle Nacional; Oz Ozumacín; Ll Lalana; Lc Lacova; Pe Petlapa; To Teotalcingo; RC Río Chiquito; A La Alicia; Le Lealao; Lt Latani; Qi Quiotepec; Y Yolox; Tm Temextitlán; Co Comaltepec

³Scores are taken from Egland 1978:15.

53 percent of the speech of Ozumacín while Ozumacín understands only 22 percent of Valle Nacional. Lalana understands 87 percent of Tepinapa while the latter understands only 68 percent of the former. The scores for Quiotepec and Comaltepec are 87 percent and 69 percent, respectively.

This leads to the observation that intelligibility testing subjects from some language areas are simply more successful in understanding the speech of other areas than are their counterparts in those areas in understanding their speech. For example, the Palantla people scored 53 total points higher than those in other areas did on the speech of Palantla. Those in Valle Nacional had a plus 80 score, Lalana a plus 42 score while the people of Usila had a minus 86 score, Ozumacín a minus 34 score. Within the highlands the Quiotepec people scored 42 points higher than did the people of Comaltepec. So, we may conclude that not only is intelligibility not reciprocal between certain pairs of languages but that speakers of some languages score overall considerably higher than do some of their communication partners from other areas.

The fourteen Chinantec language areas proposed on the basis of intelligibility testing (Egland 1978:12) are as in (1).

- | | | |
|----------------|---------------|----------------------|
| 1. Oj | 6. Tp | 11. A - RC - Te - Ll |
| 2. U | 7. Tlatepusco | 12. Le |
| 3. Tl - M - Qe | 8. Pa | 13. Qi - Y |
| 4. Ch | 9. VN | 14. Co |
| 5. S | 10. Oz | |

Swadesh (1960) performed calculations of glottochronology on lexical materials from several Chinantec languages. He concluded that within Chinantecan there was an internal divergence of 15 minimum centuries, although it is not certain whether the word lists at his disposal provided a truly representative sample of the diversity. His calculation of 15 minimum centuries for the Chinantec languages may be compared with 16 minimum centuries for Otomi-Mazahua, 24 minimum centuries for Zapotecan, 25 minimum centuries for Popolocan, and 39 minimum centuries for Mixtec-Cuicatec-Amuzgo.

Internal subgroupings among the Chinantec languages may be noted on the basis of structural similarities shared by some languages and not by others. Phonological differences provide one useful type of structural information to be examined in this way. We may analyze 47 phonological changes which have taken place in more than one of the Chinantec language areas. Of these 47 we find that Ojitlán speech has participated in 32 of the innovations and is the phonologically most innovating area. By contrast,

Comaltepec has participated in only four of the innovations and is the phonologically most conservative area.

The major Chinantec language areas have the following scores:

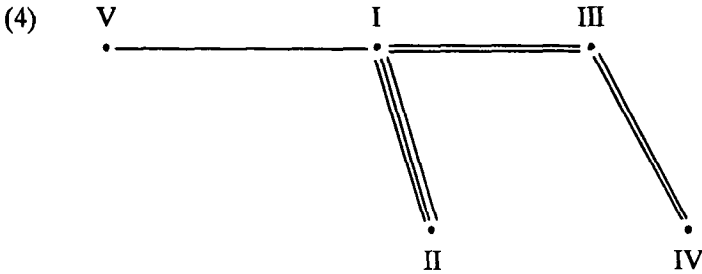
(2) Oj	32	VN	12
U	27	Pa	11
Tl	24	Le	10
S	24	Li	9
Tp	23	Oz	7
Qe	22	Qi	6
Ch	21	Co	4

It should be pointed out that while the first seven language areas cluster within a spread of eleven and the second seven language areas cluster within a spread of only eight, the gap between the two groups is nine. This seems to suggest a more innovative northern grouping, ending with Tepetotutla, and a more conservative southern grouping, beginning with Palantla.

When we compare Chinantec language areas by pairs we find that with some pairs both languages have undergone all of the phonological changes of the less innovating partner—in other words, they share 100 percent of the possible shared phonological innovations. Other pairs of languages have no phonological innovations in common. There are four pairs of languages grouped by sharing 100 percent of the possible shared phonological innovations: Tp-Pa, VN-Oz, Li-Le, and Qi-Co. This leaves the languages of the Oj-U-Tl-Ch-S-Qz area. At the 88 percent threshold every one of those six languages is linked to at least one other language in that grouping. At the 75 percent level every language in that grouping is linked to every other. Thus, we may recognize on this basis four relatively tight groupings and one more loosely connected grouping. Below the 75 percent threshold we find more remote connections among the five groupings. These lower figures for percentage of shared innovations are shown in (3).

(3)		II	III	IV	V
I	Oj-U-Tl-Ch-S-Qe	74%	67%	44%	50%
II	Tp-Pa		58	56	0
III	VN-Oz			71	25
IV	Li-Le				25
V	Qi-Co				

These figures suggest that groups I and II are relatively similar. Groups III-IV and I-III are less so and almost equally similar, both groups falling close to a 70% figure. Group II is not particularly similar to either III or IV. Group V is markedly dissimilar to all other groups, group I being the closest to it of any. These relationships are presented in the schema of (4).



It is also instructive to observe the number of innovations shared by particular groupings of Chinantec languages. It is not surprising to find that the largest bundle of phonological innovations (7) links Oj, U, Tl, Ch, S, and Qe. The next largest bundle (5) includes Tp with the first group, and the next largest bundle (4) includes both Pa and Tp with the first group. The groupings of languages determined by such bundles of innovations are presented in (5).

(5) 2	Oj	U	Tl	Ch	S	Qe	Tp	Pa	VN	Oz	Ll	Le
4	Oj	U	Tl	Ch	S	Qe	Tp	Pa				
5	Oj	U	Tl	Ch	S	Qe	Tp					
7	Oj	U	Tl	Ch	S	Qe						
2	Oj	U	Tl	Ch								
2	Oj	U										
3										Qi	Co	

These findings largely substantiate the groupings proposed by percentages of possible shared phonological innovations. However, there are two departures worthy of note: The VN-Oz and Ll-Le groupings (III and IV) are not here distinguished, and the grouping of Tp and Pa is here divided by a bundle of five innovations which took place in Tp but not in Pa.

Further useful observations about subgrouping may be made on the basis of shared lexical changes. The entries of this dictionary provide considerable data concerning lexical changes that have occurred in the Chinantec languages through time and geographical space. From the corpus of this dictionary at least 36 sets have been identified which reflect lexical changes in which each of the variants is supported by at least two languages. In some sets phonologically dissimilar forms are found in different areas. In other

sets forms which are phonologically similar but not relatable by processes now recognized are found in different areas. In a few sets a term has been found in one group of languages but either no term at all or a Spanish loan has been found in the others. Of the 36 sets with competing morphs 14 of them have an innovating form in Oj, U, Tl, Ch, S, and Qe. In five more sets a distinctive form is found in those six languages and in Tp and Pa. In three sets VN and Oz are added to the previous grouping. Seven sets distinguish Ll and Le from all others, while seven others distinguish Qi and Co from all others. Interestingly, this criterion suggests precisely the same five groupings indicated by percentages of possible shared phonological innovations.

It is tempting to compare the general picture that emerges from the application of these linguistic criteria with the scanty picture we gain from historical documents written shortly after the conquest, even though the historical picture presents a relatively late period. From two colonial documents called *relaciones* we learn of two centers of the Chinantecs, one at Usila and one at Gran Chinantla. The first center we can assume was at or close to the present site of Usila. The second center apparently was located in a river valley to the south, probably in the Valle Nacional river valley but not necessarily at the present site of Valle Nacional. Also, rather early religious documents were produced in Yolox. The picture of centers located in the northern lowland river system, the southern lowland river system, and the western highlands fits well with the linguistic groupings and with the major topographical features of the Chinantla. The western highlands are separated from the lower Chinantla by the high and difficult terrain of the Cerro Pelón area. These languages are the phonologically most conservative ones (grouping V) and are distinguished by several of the lexical innovations. The northern and southern river systems are divided by a transverse spur of the Sierra Madre called the Cerro Armadillo, which runs deep into the lowlands nearly to the confluence of the Santo Domingo and the Valle Nacional rivers. The southern lowland area, represented by the Gran Chinantla and including the VN-Oz and Ll-Le areas is the more conservative of the two both phonologically and lexically. The northern lowland area, represented by Usila and including the Oj-U-Tl-Ch-M-S-Qe area is the most innovating in both respects. The Tp and Pa areas are located astride the Cerro Armadillo and serve as a transition zone between the northern and southern lowland areas.

It is of interest to compare this division of the Chinantla into regions on the basis of phonological and lexical criteria with the earlier systems proposed by Bevan, Weitlaner and Cline, and Merrifield based on cultural and ethnolinguistic factors.

Bevan (1938) recognized Central (hu-hmei), North and Western, Highlands (dzah-hmi), and Southeastern (wa-hmi) groups on the basis of cultural traits, including traditional dress, as well as statements of local people about similarities.

Weitlaner and Cline (1962) maintained the system of Bevan with the exception that they divided the second group into Northern (Oj and U) and Northwestern (Tl and S) groups.

Merrifield (1966) identified six major Chinantec centers on the basis of morphemically simple toponyms and "animal" names for the people of each center or region. Since his study drew on lexical items from Palantla it is natural that the centers so identified should be found primarily in the central area. This should not be viewed as a serious limitation since this area almost certainly includes the most ancient Chinantec population centers.

Figure 2 compares these three systems with that of the present study in terms of the principal linguistic areas.

In general, the four systems are quite similar. Bevan, Weitlaner and Cline, and the present study agree that the southeastern and highlands areas are clearly distinct. Weitlaner and Cline and Merrifield agree in dividing Oj-U from Tl-S. While the present study would suggest that this is not a major linguistic break, there is no question that significant linguistic differences separate these two areas. Merrifield's study identified four cultural centers in the central region. This study indicates that the hill people of Tp and Pa cluster linguistically as opposed to the valley people of VN and Oz. Inasmuch as VN and Oz are probably the areas from which our linguistic data are most scanty, we can expect that this picture will be clarified as more information becomes available from these central valley areas.

Figure 2.
The division of the Chinantla
into regions

	Bevan	Weitlaner and Cline	Merrifield	Present Study
Oj		Northern (IV)		I
U	North and West		Usila (wasp)	
Tl			Chiltepec (type of insect)	
S		North- western (V)		
Tp		Central (I)	Tepetotutla (?)	II
Pa	Central (hu-hmei)		S.P. Tlatepusco (lizard)	
VN			Valle Nacional (hawk)	III
Oz			Ozumacín (emaciated)	
Ll	Southeast	Eastern (II)		IV
Le	(wa-hmi)			
Ql	Highlands (dzah-hmi)	Western (III)		V
Co				

[blank]

2

Phonological Developments

The inventory of elements of the Proto Chinantec phonological system has been reconstructed as in (6)-(8).

(6) Consonants and laryngeals

*p	*t	*k	*k ^w	*ʔ
*b	*z	*g	*g ^w	
	*s			*h
*m	*n	*ŋ		
*w	*l	*y		
	*r			

There were clusters of *ʔ or *h and each of the six voiced continuants, both oral and nasal, and *g.

(7) Nuclear elements

palatal		nonpalatal	
*i	*iu	*i	*u
*e	*ia	*ə	*a
	* ^(V)		
	* ^(Y)		

Vocalic length could occur with any nucleus with or without final *ʔ. Vocalic nasalization could occur after any voiceless stop, *w, *r, or *y; always occurred after nasals; but (almost) never after any voiced stop or *l.

(8) Prosodic elements

*H	*L
* ^(V)	

The two tones, high and low, occurred in combinations *HL, *LH, and *HLH. The ballistic accent could occur with both tones and all three combinations and with most combinations with length and final *ʔ.

A simple summary of the major sound changes through which the contemporary languages developed is provided here. The reader is referred to the charts provided in the appendices for a fuller picture of the phonological developments in various environments in the several languages.

The following are the major sound shifts affecting the consonants and laryngeals:

(1) devoicing of voiced stops *b, *z, *g^w to p, c, kw/u in Oj-Z and Qi and the devoicing of *g to k in Oj-Z but not in Qi.

(2) loss of *ʔ from *ʔC clusters in Tl and Le and the loss of *ʔ from the *ʔg cluster in Oj-Le, i.e., in all but Qi-Co.

(3) loss of the labial element from *k^w and *g^w before a contemporary rounded vowel in U, Qe-Oz, which are derived variously from *i, *i, *e, or *a; also, the loss of the labial element from *w, *hw, and *ʔw before a contemporary rounded vowel in U-Oz except S or Z, which are derived variously from *i, *i, *e, or *a.

(4) change from affricate *z to stop tʃ in U and Qi and to stop g in Y, Tm, and Co before *i and *iV.

(5) merger of *n and *ŋ before *i as ny in M, S, and Qe and as ñ in Oj and Ll-Le.

(6) change of *hy to s(y) in Tl-Pa and to x in Qi and Y.

(7) change from sibilant *s to flat fricative θ in Tl-Z and to affricate c in Tp-Pa everywhere and to affricate c in VN-Oz before *i and *iV.

(8) plosivization of voiced continuants *w and *y: *w to gw in Tl-Ch and to g before *i in U and M; *y to d(y) in U-Z and to g(y) in Tp-Oz and Tm.

(9) loss of *r everywhere in VN-Oz and before high vowels in Ll-Le.

The following are the major sound shifts affecting vowels and other nuclear elements:

(1) backing of *i to i- and u-like reflexes after *k^w, *g^w, *w, *hw, and *ʔw in Oj-Pa and of *i to u-like reflexes after the same consonants in Oj-VN, Qi, and rarely Oz.

(2) backing of *e to a or o after any labial in all languages and of *ə to o after any labial in Oj, Le, and Qi.

(3) fronting of *i, *u, and *a to i-, iu-, and ia-like reflexes after *z in U, Qi-Co.

(4) fronting of *iu to merge with *i everywhere in Oj, U, and Tp, and in many environments in Tl-Z.

(5) rounding of front vowel *i· to ö in Oz after *g^w, *w, and *hw.

(6) quality reversal of vowels before *ʔ, i.e., V = Vʔ and V· = Vʔ: reversal of *a and of *ia in Oj-Oz, reversal of *u and of *iu in U-Z, and reversal of *i and of *i· regularly in U and less pervasively in the languages of the Tl and S type.

(7) loss of length in accented syllables closed by *ʔ in Ll, Le, and Co.

(8) change of the quantity difference to a quality difference in Oj-VN, i.e., *V became V₁V₂ or Vy, Vw, or Vg, especially so with long vowels.

(9) multiple reflexes conditioned by tone in Tl-Pa and especially so in Pa.

(10) change of *Vŋ to ʏ in Oj-Tp and Oz and occasionally in Pa and perhaps in VN; backing of horizontal tongue position and shifting to mid vertical tongue position of vowels followed by *ŋ in Pa regularly and to some extent in Ll and U-Qe.

The following are the major sound shifts affecting the tone system:

(1) change of vowel quantity difference to a tone (and vowel quality) difference in Oj-Pa and probably in VN-Oz.

(2) change of difference in presence of the ballistic accent to a tone difference in Oj-U and Qi⁴ and largely so in Tl-S and Co even though the ballistic accent does occur in those latter languages.

(3) merger of *^H and *^{HLH} in at least some contexts in Oj-U and Tp-Pa.

⁴A new analysis of Qi prosody (Robbins 1968:sec. 2.21) includes three tones and a ballistic accent; in that case Qi may be more like Co.

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Ongoing Issues in Proto Chinantec Phonology

There are several issues relating to the phonological structure of Proto Chinantec for which there is conflicting evidence. Some of these were mentioned in the earlier study of Proto Chinantec phonology (Rensch 1968:109, 110), and some issues are raised here for the first time.

3.1. Voiced stops and nasals. As already noted, there is a distributional constraint between the type of initial consonant and vocalic nasalization. In general, only oral vowels occur after *b, *z, *g, *g^w and *l; only nasalized vowels after *m, *n, and *ŋ; either oral or nasalized vowels after *p, *t, *k, *k^w, *ʔ, *s, *h, *w, *y, and *r. Because of this fact the phones *[b] and *[m], *[z] and *[n], and *[g] and *[ŋ] were observed to be in complementary distribution in the earlier study and were reconstructed as variants of *b, *z and *g, respectively. Furthermore, the clusters *[hg] and *[ʔg] occur only before oral vowels while *[hŋ] and *[ʔŋ] occur only before nasalized vowels. So, they were reconstructed as the clusters *hg and *ʔg. Finally, in general, the clusters *[hw], *[ʔw], *[hy], and *[ʔy] occur only before oral vowels while *[hm], *[ʔm], *[hn], and *[ʔn] occur only before nasalized vowels. So, they were reconstructed as *hb, *ʔb, *hz, and *ʔz, respectively, to parallel *hg and *ʔg. The complementary distribution of these sounds and sequences favors this analysis. So does the fact that in a few sets both *[hw] and *[hm] (or *hbV and *hbY) must be reconstructed either because of reflexes supporting one or the other in the various languages or because of morphophonemic alternation within one or more languages. The same is true of *[hg] and *[hŋ].

However, in this study these sounds are labeled as *b, *z, *g, *hw, *ʔw, *hy, *ʔy, *hg, *ʔg, *m, *n, *ŋ, *hm, *ʔm, *hn, *ʔn, *hŋ, and *ʔŋ. The reasons for the change are as follows:

(1) It reflects the presumed phonetic nature of the phones much more closely.

(2) The development of *w, *hw, and *ʔw; *y, *hy and *ʔy in many languages was parallel and this facilitates the grouping of these phonetically similar sounds.

(3) There is a small but significant number of sets in which nasalized vowels occur after *hw, *ʔw, and *g. In the other labeling there was no convenient way to distinguish, e.g., *[hwY] from *[hmY].

(4) The contemporary Chinantec languages all have a full set of frequently occurring nasal consonants as well as nasalized vowels. This labeling avoids the awkwardness of proposing for the parent of these languages a system that has no element labeled as a nasal consonant. It also avoids the impression that the phonetic sequences hb, ʔb, hz, and ʔz occur in any environment.

3.2. Palatalization of nasals. The velar nasal is palatalized as ñ or ny in nearly all of the languages before *i or *iu. The alveolar nasal is palatalized as ñ in Oj and Ll-Le and as ny in M-Qe in similar environments. As a result, in those languages and in those environments it is impossible to distinguish *n from *ŋ. As may be observed from an examination of the charts in the appendix, the environments in which the palatalization of *n takes place are quite specific and at times appear to be arbitrary. For example, *n is palatalized before *i: in the Oj, S, and Ll areas. However, *hn is not palatalized before *i: in any of the areas. There appears to be a contrast between palatalized *n and nonpalatalized *n in the sequence *ʔnɿ. In the set *ʔnɿ^{HLH} *rope* the nasal is palatalized in all three areas, whereas the other three sets, *ʔnɿ^L *war*, *ʔnɿ *break* and *ʔnɿ *avocado*, show no palatalized reflexes in any of the three areas. On the basis of these sets one might postulate both alveolar and palatal nasals (as well as a velar nasal) for the parent language. Thus the set labeled *rope* could be labeled with a palatal nasal and the other three sets labeled with an alveolar nasal. However, this is the only specific environment in which such consistently different sets of reflexes are found. There seems to be insufficient evidence to propose such a contrast. Rather, it is suggested that there was but a single alveolar nasal, which was palatalized in those areas to differing extents in different phonological environments. It is further suggested that the process is one which is still taking place so that in the future a more regular, presumably more uniformly palatalized, picture may yet emerge. The impression of a change not yet worked through uniformly is further heightened by the situation of the nasals before *iy. In the sets labeled *niy: no languages have palatalized reflexes. In the set labeled *niy Oj has a palatalized reflex while Ll does not. In the sets labeled *niy:ʔ Oj and S have palatalized reflexes, Qe does not have a palatalized reflex, and Ll shows one set with a palatalized reflex and one without. It is difficult to see that reconstructing a palatal nasal would clearly sort out the confusion.

The large majority of verb stems have the same stem-initial consonant throughout the paradigm. However, a number of IRREGULAR verbs show an alternation of initial consonants as well as the more common alternation of vowels. Many of these reflect *s or *z in the third-person form, which alternates with a labial consonant in the second-person and sometimes the first-person singular as well. Examples are cited with a proposed Proto Chinantec form even though some of them have been reconstructed solely on the basis of the Lalana cognate rather than on cognates from various languages.

(10)	go	go home	sit, live	dance	grind	heart
1st sg.	*ni·	*niaʔŋ	*ni	*g ^w aŋ	*g ^w aŋ	*zi
2nd	*g ^w a·	*g ^w aʔŋ	*ni	*g ^w aŋ	*g ^w aŋ	*ʔa·
3rd	*za·	*zaʔŋ	*g ^w e	*zaŋ	*zi	*zi
	tell	remove	fish	hold	lie down	
1st sg.	*hwa·	*hwaʔŋ	*hwaʔŋ	*hmaʔ	*ʔa·	
2nd	*hwiʔ	*hwaʔŋ	*hwaʔŋ	*hmaʔ	*hma	
3rd	*siʔ	*saʔŋ	*saʔŋ	*saʔ	*kia·	
	self	know	set afire	smell	drink	
1st sg.	*ʔŋia·	*ma·	*hu	*hu·ʔ	*u·ʔ	
2nd	*ʔwa	*ma·	*hu	*hu·ʔ	*ʔu·ʔ	
3rd	*ʔŋia·	*ŋi/*ŋa	*hɨ	*hɨʔ	*ʔiʔ	

It seems unmistakable that labial consonants are associated with second-person forms. In the case of *hɨ and *ʔi the vowel is labialized rather than the consonant. The assibilants *s and *z are frequently but not always associated with third-person. Quite possibly this alternation is the vestige of an old set of person-marking prefixes in which a sibilant marked third-person, a labial second-person and possibly a nasal first-person singular.

3.5. Variety of vowel reflexes. The scatter of vowel reflexes in Palantla was noted in Proto Chinantec Phonology (Rensch 1968:109). Since that time data about the vowels of Tl, S, and Tp have become available, and the scatter of vowels has come to be seen as a regional phenomenon from Tl through Pa although the development is perhaps more marked in Palantla than elsewhere. Once the conditioning factors of length, nasalization, final *ʔ, and final *ŋ have been accounted for, there remain two and occasionally more reflexes, especially with the old long vowels. It has come to be seen that tone plays an important part in determining the varying vowel reflexes. For example, *a· has two principal reflexes in Tl: o and ew. The reflex o occurs with Tl 12, 34, and 4 while ew occurs with 2,

3, and 42. Cf. the following Tl forms: to¹² *seed of the mamey*, tó⁴ *grindstone*, to⁴ *roast*, co⁴ *guilt*, có⁴ *straight*, but tew³ *banana*, tew³ *hole*, ?ew³ *herb*, cew² *sickness*.

Similarly, in Tp *a· has the reflex au with 1̇, 2, and 32 and o with other tones. Cf. the following Tp forms: tau² *banana*, tau² *hole*, zau³² *straight*, but to²¹ *seed of the mamey*, to² *grindstone*, to³² *roast*, ?o²¹ *mouth*, zo²¹ *sin*, zo²¹ *sickness*. From the forms tau² *banana* and to² *grindstone* and also the pair zau³² *straight* and to³² *roast* it is evident that when a single tone pattern has more than one historical source, the source must be specified. Tone 2 in Tp comes from *L and *LH. The reflex is o with tone 2 that comes from *LH and is au with tone 2 that comes from *L. Similarly, 32 comes from *LH with and without an accent. With *LH with accent the reflex is au and without accent it is o.

The principal reflexes of *ī in Pa are ay and iy. The former occurs with 1, 3, and 32 while the latter occurs with 2. Cf. the following Pa forms: tay¹ *foot*, ŋi¹tay³ *machete*, hay³² *clear land*, cay¹ *sand* but ziy² *dog*, miy² *hawk*, míy² *ball*.

3.6. Stability of complex syllabics *iu and *ia. The complex nuclei *iu and *ia seem clearly to be required in the set of reconstructed syllabics of Proto Chinantec. However, they seem to have been more readily replaced by simple vowels than was the case with other syllabics. As already noted, *iu was replaced by *i reflexes in all environments in Oj, U, and Tp and in many environments in Tl-Z. Three of the four sets labeled *hiu include some language forms that reflect *u rather than *iu. In addition, a number of sets reflecting *ia include forms reflecting the simplex *a but in contexts in which the presence of *a is not explainable in terms of the *V~*iV alternation. Note, for example, the set *?ia.^L *early in the morning* in which the Tl, S, and Qe forms reflect *a· rather than *ia·. Several languages seem to reflect *ā rather than *īā in the pronouns *hnia *we* and *hniá *I*.

Furthermore, the complex syllabics are more limited in distribution. Neither occurs after any labial consonant although the other front syllabics *i and *e may. Neither do they occur following *r nor, of course, *y.

3.7. The status of *ə and *e. The low front vowel *ə and its palatal counterpart *e are relatively rare. They occur most frequently after labial consonants, with some frequency following *h and *ʔ, only occasionally following most consonants and apparently not at all following *y and *z. Their independent status in some environments seems assured, but their distributional limitations may yet furnish a clue to some special source for these vowels.

3.8. *e after *w-like consonants. Since *e and *ia occur only rarely in the same environment, it is possible that some sets labeled as one should

really be labeled the other. Although sets following the *w-labials have been labeled as *e, it should be considered whether these sets should really be labeled as *ia. The following considerations would favor the *ia identification:

(1) Sets labeled *k^we yield VN *kyu* and Oz *kya*. These yV reflexes are characteristic for *ia rather than for *e. Similarly, the Co reflexes for *k^we and *k^we· are *kwia* and *kwe·*, exactly the usual reflexes of *ia and *ia. The Ll reflex of *k^we· is *kwä·*; again, ä is the usual reflex of *ia.

(2) A few verbs, such as *hwe·?~*hwa·? *say*, show an unusual *e~*a alternation. A relabeling of the first form as *hwia·? would result in the common *a~*ia alternation.

In spite of these considerations the label *e is retained in this study for the following reasons:

(1) The reflexes after *hw, *ʔw and especially *g^w are normal for *e rather than for *ia. No iV or yV sequences occur in the contemporary languages after those consonants.

(2) Some sets labeled as *hwe and *k^we have alternants labeled as *hwə and *k^wə, which could not be relabeled as *hwa and *k^wa because of different sets so labeled.

(3) The Proto Chinantec syllable seems to have maintained a kind of balance such that the complex syllabics occurred only after simple, non-vocalic consonants such as *t, *s, *ŋ etc. while the complex syllabics never occurred after the complex semivocalic consonants such as *k^w or *hw, *ʔy or *z. Such a combination of complex consonant plus complex syllabic would, apparently, have resulted in an unacceptably HEAVY syllable.

3.9. *i and *ə following *l. As observed in a note attached to the set labeled *li~*li *happen*, *i has often been replaced by *ə after *l in Ll, less frequently in Oz and VN. This shift seems to have taken place only in verbs. Curiously, the substitution does not seem to have taken place after *hl or *ʔl. Neither has *i been replaced by *e in those *li sets with *li alternants. Since regular reflexes of *i occur in a few sets in those languages, it is not possible to regard these as special reflexes of *i after *l. Although the motivation for the shift is not clear and the vowel alternation patterns in these verbs are anomalous, the shift does not seem to be a recent development since the *lə (< *li)~*li *happen* verb has been copied in the morphology of Lalana Chinantec as a derivational affix with two forms li- and la-.

Proto Chinantec Morphology

Proto Chinantec morphology included inflectional categories of (a) person-number, (b) gender, (c) tense-aspect, and (d) transitivity. Noun stems could be inflected for category (a). Adjectives could be inflected for categories (a) and (b). Verbs could be inflected for all four. This discussion will deal primarily with verb morphology since in that way all categories will be considered. Since a system of vowel alternations affects the marking of both (a) and (c) it will be considered first.⁵

4.1. Vowel alternation. Proto Chinantec verbs were characterized by a system of vowel alternation, which continues in some form in all contemporary languages. As already observed, the Proto Chinantec vowel system consisted of two sets, a palatal set and a nonpalatal one:

(11)	palatal	nonpalatal	
	*i *iu	*i *u	
	*e *ia	*ə *a	

The corresponding members of the two sets alternate in the paradigm of many verbs. For example, *i alternates with *i, *iu with *u, etc. Many verbs have but a single vowel nucleus with no alternation, and the classes of those which have an alternation and those which do not seem to be arbitrary rather than being related to phonological shape. Those verbs with vowel

⁵Tone alternations are a marker of person-number and tense-aspect in most verbs and of person-number in obligatorily possessed nouns in all Chinantec languages. They also play a large part in the marking of transitivity and a smaller part in marking gender. The patterns of tone substitution are not discussed in this study. They are so extensive and, in spite of considerable study, so poorly understood either synchronically or diachronically that they will require an independent study.

alternations are distributed in three classes depending on the pattern of the paradigm—the L pattern, the U, pattern and the tense pattern.

In the L pattern the palatal nucleus occurs in the first-person plural and the second-person in the past. (In both the L and U patterns the palatal nucleus also occurs in the positive—but not the negative—imperative and the motion verb forms. These will not be discussed further in this connection.) The nonpalatal nucleus occurs in the remaining persons and tenses of the paradigm. The L pattern is represented in (12), where P indicates palatal vowels.

(12)	first sg.	first pl.	second	third
present		P		
future		P		
past		P	P	

The verb *la~*lia *buy* is an example of the L pattern.

The U pattern is like the L pattern except that the palatal nucleus also occurs in third-person forms, as in (13).

(13)	first sg.	first pl.	second	third
present		P		P
future		P		P
past		P	P	P

The verb *na~*nia *open* is an example of the U pattern.⁶

In the tense pattern the nucleus of past-tense forms is nonpalatal while the nucleus of future-tense forms (and present, if any) is palatal. The verb *tq̄~*tiq̄ *spill* is an example of the tense alternation pattern.

4.2. Gender. Proto Chinantec adjectives and numerals agree with the noun to which they are attributive with regard to gender (inanimate or animate) and verbs agree with the primary noun associated with them (object with transitive and ditransitive verbs and subject with intransitive verbs). Inanimate gender is unmarked, and animate gender is marked by a suffix attached to the adjective, numeral, or verb.

A survey of the markers of animate reference in the contemporary Chinantec languages does not immediately suggest the form of the marker of that category in Proto Chinantec. In most cases the marker includes nasalization—nasalization of the stem vowel in Oj, U, Tl, S, Tp, and Oz (?), postvocalic -ŋ in VN and Co, postvocalic -n in Ll. In some languages the

⁶The L pattern corresponds to Merrifield's distributional pattern B, and the U pattern to his distributional pattern C (Merrifield 1968:39).

marker is primarily a high front vowel or palatal semivowel, but in every case there is some involvement of nasalization. In Tp when the stem is marked by nasalization for animate reference, a third-person subject is marked by a postvocalic -y, except in the case of an intransitive verb when a free subject expression follows. Similarly, in Co, -i is the marker of third-person on stems marked as animate by -ŋ. In Oz third-person is also marked by a suffix -i, but it is not certain whether this has any special relation to forms marked as animate. In Le animate is marked by -y; however, some older speakers use a variant -n after the stem vowel i. Similarly, in Qi animate reference is marked by -i after the stem vowel when that vowel is other than i and by nasalization when the stem vowel is i. It should be noted that this suffix does not occur before the focus marker -mo, which, significantly, begins with a nasal. In Usila the third-person is marked by a suffix -i when no free subject or possessor follows. In Pa most forms marked as animate have a syllable nucleus different from that of the inanimate form, but occasionally a short vowel (and rarely a long vowel) is simply nasalized. The different, oral vowel marking animate gender in Pa usually has a mid vertical tongue position e, ə, o, or back horizontal tongue position o or u. Long vowels frequently show Vw in Pa when marked as animate.

In most languages either a nasal or a palatal marker occurs, or they occur in noncontrastive distribution. However, from Tp and Co, where both occur, it may be seen that the nasal element is primarily a marker of animate reference while the palatal element marks third-person in that environment. Hence, *-ŋ is posited as the Proto Chinantec marker of animate gender.

The markers for animate reference and third-person occurred together frequently, so it is not surprising that in some languages a morpheme something like *-iŋ developed. That seems to have been the case in Lalana. In Ll animate reference is marked by suffix -n and, redundantly, by a set of vowel changes, which are primarily palatalizing. The -n may be seen as the development of *-ŋ and the palatalization of the vowels as the development of *-i. Cf. Ll ?o *he buries it*, ?a:n *he buries him*; lo *he buys it*, lən *he buys him*; ja *he places it*, jən *he places him*.

In languages throughout the Chinantla the picture is obscured by the development of the old *-n marker of first-person singular, which merged with the results of *-ŋ animate reference. In the Lalana area, for example, the fused form *-iŋ marking animate reference fell together with the marker of first-person singular so that the palatalizing vowel changes that redundantly mark animate reference also occur in first, (and second-) person singular forms.

An almost complete correlation exists between *-ŋ and animate reference. However, there are some forms which have final *-ŋ but which occur with

either animate or inanimate referents, at least in contemporary languages and probably in Proto Chinantec. Cf. *ʔmi:ŋ *new (inan. or an.)*. Furthermore, there is a class of verbs with plain stems in the first- and third-persons but which have stems with final *-ŋ in the second-person. Cf. U tie³² hnia⁴ *I can endure*, tja^{ʔ32} ʔnei³ *you can endure*; Pa tyaw³ hni² (*first sg.*), tyā^{ʔ31} ʔni² (*second sg.*); Ll taⁿ²³ (*first sg.*), te-hn²nu³ (*second sg.*), tä²³ (*third*). Such a paradigmatic alternation, although relatively rare, further undermines the complete correlation between *-ŋ and animate reference.

4.3. Transitivity. The Chinantec verb may show up to three states of transitivity: intransitive (one argument—agent or undergoer), transitive (two arguments—agent and patient) and ditransitive (three arguments—agent, patient, and beneficiary).⁷ Very few verbs, if any, have varying stems to reflect all three states of transitivity. Many, however, show two states.

The contrast between intransitive and transitive stems is marked primarily by tone differences. In some languages the distinction is further marked by vowel changes, in which case the palatal nucleus marks the transitive stem and the nonpalatal nucleus the intransitive, as in (14).

(14)	Oj	yā ²³ ʔni ²	<i>come down!</i>	yā ³¹ ʔni ²	<i>lower him!</i>
	Pa	na ³	<i>it opens</i>	nyé ³²	<i>he opens it</i>
	Ll	mi ³ noh ³	<i>it opened</i>	mi ³ neh ²	<i>he opened it</i>
	Qi	no ²	<i>it opens</i>	no ³⁴	<i>he opens it</i>

The ditransitive state is marked by the addition of *-ʔ to the stem. Cf. the following transitive and ditransitive forms meaning *give*: Oj kwo¹ ʔni², kwo^{ʔ31} ʔni²; Tl kwé², kwé^{ʔ2}; Pa kwi³², kwi^{ʔ32}; Qi kwo⁴, kwo^{ʔ2}; Co kwā, kwāʔ. The southeastern languages alone mark the ditransitive state by the addition of length. Cf. the forms equivalent to the ones given immediately above: Ll kwā²³, kwā²³; Le kwo⁴, kwo⁴.

It is concluded that in Proto Chinantec the transitive state was marked by a tone difference with or without a palatal vowel change and that the ditransitive state was marked by a final *-ʔ with or without a tone difference.

Almost certainly Proto Chinantec had a device for deriving a stative verb from an active verb root. Cf. the following cognate stative forms meaning *is asleep*, derived from the active root *g^{wi}:ŋ *sleep* by a prefix something like *ri^L-: Oj ri²kwī³¹, U ra³ku², S rakwū, Tp rə²gu^{ʔ3}, Pa ri²gwé³, Ll ri³gwin³.

⁷The transitive (and ditransitive) verbs in some cases and in some languages exhibit a prominent feature of causation, but morphologically causative and transitive notions are but a single category.

It is quite likely that there were, in Proto Chinantec times, parallel devices for deriving an active verb from a stative verb root. Cf. the following forms: Oj ka¹³li³ma⁷³ ?ni² *did you know?*, Pa li³ŋyi³²za *he will find out*, ka³li³ŋyi³²za *he found out*, Ll li²³ŋi³² *he will know*, ka²³la²³ŋi³² *he came to know*, Qi ka li feh? *it became big*. This prefix is probably derived from the verb * $\text{ɬ}^{\text{LH}} \sim *li$ *be, become* and creates an active intransitive verb stem, which may be preceded by aspect prefixes.

Cf. also the following forms, which mean *learn, cause to become acquainted* in all but the Qi form: Oj hma¹tj² ?ni², U ma²təg²³, S ma tɨ, Tp hme²təg³², Pa mi²tə³², VN ka mi tɨ, Ll mi³tin³, Qi ɸ ?laih *make well*. This prefix is probably derived from the verb * hme^{LH} *make, do* and creates an active transitive stem, which may be preceded by aspect prefixes and which, of course, may occur with an additional nominal argument.

It seems less certain that the activating prefixes were a feature of Proto Chinantec than is the case with the stativizing prefix inasmuch as they both seem clearly derived from fully functional verbs, which seems not to be the case with the stativizer. Although their status is now well established and they are widely distributed, it is possible that the activating prefixes are the result of independent morphologizing of complex verbal constructions of Proto Chinantec.

4.4. Person and number. The person-number categories are the one system common to both nominal and verbal inflection. Three persons are clearly distinguished by changes of tone on all obligatorily possessed nouns in the various Chinantec languages. In Oj, U, and Pa the tone of the first-person plural noun form seems always to be the same as that of the third-person form. In Ll the tone of the first-person plural form seems to be the same as that of the second- or third-person but not the first-person singular nor a new tone. It is only in Qi that the tone of the first-person plural is distinct. The second- and third-persons plural always follow the tones of the second- and third-persons singular. The distribution of different tones in nouns is indicated in (15).

(15)	Oj	U	Pa	Ll	Qi
first sg.	A	A	A	A	A
second	B	B	B	B	B
third	C	C	C	C	C
first pl.	C	C	C	B or C	D

In Oj, U, and Pa tones B and C are alike with some nouns and with others all three are alike. In Qi with a few nouns the tone of the second-person

plural does not seem to be derivable from that of the second-person singular. Apart from Qi nouns the first, second, and third persons seem to be the only tones that need to be distinguished for nouns. The status of the tone of the first-person plural is not a crucial question, however, because it is clearly one of those persons that must be distinguished in verbs.

An examination of the verbal paradigm of the several Chinantec languages shows that first-person singular, first-person plural, second-person, and third-person are distinguished in terms of vowel and tone changes. Other persons such as second- and third-persons plural and exclusive and inclusive distinction in first-person plural are at times distinguished by person markers but not by internal marking of tone and vowel changes.

From the internal marking of the vowel and tone alternations we turn to the external person marking system. Every Chinantec language about which relevant data are available marks at least one person by an external person marker.

Ojitlán marks second-person singular by stem-final $-ʔ$, as does every language except Ll and Le. Third-person is marked by $-a^2$ or the full form ca^2 . First- and second-persons singular and plural forms are regularly followed by the full personal pronoun. Cf. $\tilde{n}i^{23}$ hna^3 *my face*, $\tilde{n}i^{?1}$ $?ni^2$ *your face*, $\tilde{n}i^1a^2$ or $\tilde{n}i^1$ ca^2 *his face*.

In Usila first-person singular may be marked by suffixing tone 4 and first-person plural inclusive by tone 1. Second-person singular is marked by both tone 3 and $-ʔ$. Alternatively, the first- and second-persons singular and plural forms may be marked by a postposed free personal pronoun.

In Tlacoatzintepec second-person singular is marked by $-ʔ$. First-person singular (and sometimes second-person singular) is marked by nasalization of the stem vowel.

In Sochiapan the second-person is marked by $-ʔ$ and the third-person by $-s$. Otherwise, marking is accomplished by postposed free pronouns.

Free pronouns are also common in Pa in addition to the $-ʔ$ marker of second-person. Otherwise, the three singular persons are suffixed by simpler, posttonic forms of the personal pronouns: $-hni$, $-?niw$, $-za$.

Beyond Palantla the use of the free personal pronoun is not nearly as common. Naturally, there are markers which distinguish the various persons.

Actually in Ll-Co there are two sets of person markers, one which follows stems ending in $*-ŋ$ (normally those marked for animate gender) and one which follows other stems. The external person markers of the Chinantec languages are summarized in (16) and (17).

(16) Person markers with plain stems

	1st sg.	2nd sg.	3rd	1st incl.	1st excl.	2nd pl.
Oj	Pro	-ʔ + Pro	-a ² /Pro	Pro	same Pro	Pro
U	-4/Pro	-ʔ + 3/Pro		-1/Pro	Pro	Pro
Tl	Y	-ʔ				
S		-ʔ	-s			
Pa	-hni/Pro	-ʔ + -ʔniw/Pro	-za/Pro	Pro	Pro	Pro
Ll	-n	-n		-ra ²	-raʔ ³¹	-raʔ ³
Le	-y	-y		-a ²	-aʔ ¹	-aʔ ³
Qi	-h	-ʔh		-hʔ	-ʔh	-h.ʔ
Co	-(v)	-ʔ	-r			

(17) Person markers with *ŋ stems

	1st sg.	2nd sg.	3rd	1st incl.	1st excl.	2nd pl.
U			-i ³ /Noun			
Ll	-na ²³	-nu ³		-na ²	-naʔ ³¹	-naʔ ³
Le	-a ⁴	-u ³	-y	-a ²	-aʔ ¹	-aʔ ³
Qi	-na ²	-u(ʔh) ³	-j ²	-nahʔ ³¹	-naʔh ¹³	-nahʔ ²³
Co	-n	-nʔ	-i	-naʔ	-naʔ	-náʔ

Clearly *-ʔ seems to have been the Proto Chinantec marker of second-person singular. First-person singular seems to have been marked by a nasal. Lalana and Co indicate that it was *-n. The marker of third-person was probably *z(a), as suggested by Oj, S, Pa, and Co.

Assuming that Ll-Co maintains the state of affairs of Proto Chinantec in distinguishing two sets of person markers, the *-n, *-ʔ, *-z(a) set occurred following plain stems and a different set—*-na, *-(ʔ)nu, *-i~∅ (before a noun)—occurred following *ŋ stems. All of these suffixes appear to be simplified forms of the following proforms: *hniá^H or ^L I, *ʔn(i)(u)^L you (sg.), *za(·)^L person, *ʔi^L that (one).

The situation of the plural persons is less clear. Apparently, both persons used a suffix similar to *-naʔ after *ŋ stems. After plain stems, suffixes similar to *-raʔ seem to have occurred.

4.5. Tense and aspect. Just as the person-number system of Proto Chinantec distinguishes four primary persons marked internally from the fuller, secondary set of person-number distinctions marked externally, so Proto Chinantec distinguishes a set of three primary tenses marked internally from a fuller set of aspects marked externally. The tenses are

present/progressive, future/intentive, and past/completive. All three are distinguished by differences of tone and vowel. One or both of the first two tenses in most languages is also marked by a tense prefix, but the form of the prefixes is so varied that it is uncertain that any of these can be traced to the Proto Chinantec period. The past tense, however, is consistently marked by the prefix *ka-.

At least Pa, Ll, and Qi have forms with prefixes that mark motion associated with the action. These prefixes occur with forms with the palatal alternant in alternating verbs. They may also occur with distinctive tones and constitute a separate tense, but at this point data are not sufficient to make such a determination regarding the parent language.

Each Chinantec language has a number of aspect prefixes that occur with specific tense forms of the verb stem. It is quite likely that Proto Chinantec had a number of such aspect prefixes which were only indirectly tied to the tense system, but at this stage of knowledge it is difficult to say which categories were a part of that system or what might have been the markers of those categories.

The proposals concerning the verb morphology of Proto Chinantec are summarized in (18) and (19).

(18) **Transitive inanimate verb with L vowel-alternation pattern⁸**

	first sg.	first pl.	second	third
present	CVn ^{1a}	CiV ^{2a} ra?	CV ^{3a}	CV ^{4a} za
future	CVn ^{1b}	CiV ^{2b} ra?	CV ^{3b}	CV ^{4b} za
past	ka-CVn ^{1c}	ka-CiV ^{2c} ra?	ka-CiV ^{3c}	ka-CV ^{4c} za

(19) **Ditransitive animate verb of the same stem**

	first sg.	first pl.	second	third
present	CVŋ ^{5a} na	CiVŋ ^{6a} na?	CVŋ ^{7a} nu	CViŋ ^{8a}
future	CVŋ ^{5b} na	CiVŋ ^{6b} na?	CVŋ ^{7b} nu	CViŋ ^{8b}
past	ka-CVŋ ^{5c} na	ka-CiVŋ ^{6c} na?	ka-CiVŋ ^{7c} nu	ka-CViŋ ^{8c}

⁸In these paradigms la, lb, lc, etc. refer to different but related tone patterns. They may be a single tone or a combination of tones.

Dictionary

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Explanatory Notes

The following conventions are observed in the entries of the etymological dictionary:

1. Initial consonants are arranged in the following order: *p t k k^w ? b z g g^w s h m n ŋ w l y r; ?g ?m ?n ?ŋ ?w ?l ?y hg hm hn hŋ hw hl hy.

2. Syllable nuclei and final elements are arranged in the following order: CV CVŋ C'V C'Vŋ CV... CV... CV.

3. Forms exhibiting alternation within a verb paradigm (cf. section 4, especially 4.1, of the Introduction) are joined by the sign ~. These forms are not simply alternate reconstructions but are reconstructed alternations based on paradigmatic alternations in daughter languages. For example, see set no. 27, in which alternating vocalic elements are shown in the U, Tl, Pa, Ll, Le, and Co forms. Contrast this with the following set, no. 28, in which alternate reconstructions must be posited since no single reconstruction satisfies the divergent forms of the daughter languages.

In most cases the alternating elements are vowels. Less commonly, the alternating elements are tones, usually marking tense differences. In a small class of verbs a stem with a final glottal stop alternates with one without glottal stop.

4. Vocalic nasalization, although automatic after a nasal consonant, is not marked in that environment.

5. After labial consonants the Lalana reflexes of *e are usually ä. However, they are written in the entries simply as a since no contrast occurs in that environment.

6. Tone has been reconstructed on the basis of tonal data from five dialect areas: Oj-U, Tl-S, Tp-Pa, Ll-Le, and Qi-Co. A tone reconstruction is provided for a given set if:

(a) two or three languages with tonal data unanimously reflect the same reconstruction,

(b) three out of four languages with tonal data reflect a given reconstruction, or

(c) more than four languages have tonal data and the cognates reflect a given reconstruction with conflicting evidence coming from no more than two dialect areas.

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An Etymological Dictionary of the Chinantec Languages

*p

1 *pí·ʔ^H *small* Oj piʔ¹ miʔ² U peiʔ¹ (tone 2 expected) Tl peʔ Ch ca pi (reflects a short vowel; ʔ expected) M peiʔ S piʔ Qe peiʔ Z piʔ Tp píʔ¹ Pa píʔ¹ VN ko peiʔ *a little bit* Oz či piʔ *child* Ll piʔ² (*inan.*) (the first Ll and Le forms reflect an unaccented syllable) piʔn² (*an.*) Le piʔ² (*inan.*) píʔ¹ (*an.*) Qi pihʔ¹ Co piʔ¹ (*inan.*) piʔ¹ (*an.*) (accent expected).

2 *pé·ʔ^L *bubble* U ʔ⁴paʔ⁴ Tp póʔ² Pa póʔ² *full and firm* Ll mi³¹peʔ³ *button* Lt mi peʔ. The following forms probably also belong to this set: Ll peʔ³ *fist* Lt peʔ *fist*.

3 *pe·ʔ^{LH} [1] *light* (*inan.*) *pé·ʔ^{LH} [2] *light* (*an.*) U paʔ⁴ [2] Ll pa·ʔ³ [1] peʔn³ [2].

4 *pa [1] *big, fat* (*inan.*) *paŋ [2] *big, fat* (*an.*) U pa¹ [1] Tl meg³θég³

pa² *bubble* [1] pā² [2] M ra pa [1] S pa [1] Qe pa [2] Tp pa³¹ [2] Pa pa¹ *big in circumference* [1] VN pa hmai *boil* Qi po²⁴² *round* [1].

*t

5 *ti^L *short* Oj ti¹ (tone 2 expected) U a³teg³ (*animate*) Tl teg³ S ti² Tp tə² Pa ti² Ll tih³ (h unexplained) Le ti Qi ti³⁴ Co ti¹².

6 *ti^{LH} *master, accomplished person* Oj co⁴ ti² *school teacher* ti² ʔma² *carpenter* U teg³ ʔ⁴³ *doctor* a²teg²³ *school teacher* (tone 3 is U reflex of *^{LH}) Tl tég² *teacher* (CV⁴ expected) S ti³² *school teacher* Tp tə³² *master* Pa tiw³² *school teacher* tiw³² miw³² *doctor* Ll ti³² *mason* (tone 3 expected) Qi ti⁴ *musician* ti⁴ fohʔ³ *school teacher* Co ti² *master*. The following forms apparently belong to the same set: *tiŋ^{LH}

learn Oj hma¹tɿ² ?ni² learn! U ma³tag²³ (tone 3 expected) a³tag³ learned person TI tag³ become accustomed (C⁴ expected) tɛg³ learned person S ma tɿ co Tp tɿ² za² (32 expected) hme²tag³² za² teach Pa mi²ta³² za² VN la mi ti hna LI tin³ Le tɿ (i expected) Qi tih² (ii and tone 4 expected) Co ti-ɿ². The second forms of TI and Tp and the Qi and Co forms reflect a long vowel.

7 *tɿL [1]~HL [2] reach (inan. subj.) *tɿɿ^{HL} [3] reach (an. subj.) Oj tɿ² [1] tɿ⁴ until [2] U teg³⁴ [2] TI tɛg³ [1] S ka³tɿ²¹ [1?] (23 expected) Tp tɿ³¹ [1 or 2] (tone doesn't match) Pa tɿ² (past) [1] tɿ³ (future) [2] tɿ¹ [3] (tone 2 expected) LI ka²³tɿh³ (past) [1] ri²³tɿh²³ (future) [2] tɿh²³ [3] (reflects ballistic syllable) Le ga⁴tɿ³⁴ [1] (tone 3 with ballistic accent expected) Qi tɿh⁴ it fits, has correct measurement [3] (h not expected) Co si²tɿɿ²¹ gather [3] (12 expected).

8 *tɿLH (zɿ) it is pleasing (to one's heart) U teg³ cei⁴³ TI tɛg⁴ Qe hna? tɿ ca Tp tɿ³² zɿ³² Pa tɿw³² zɿ³² Qi tɿh⁴ ci¹ (h unexpected) Tm tɿ zi Co tɿ² dɿr²¹.

9 *tɿH foot, lower leg Oj tɿ³¹a² U si¹tag³² TI tag⁴ M ti ce S ta³co² Tp mi²tag²¹ za² Pa tay¹ VN tai za Oz ma ti hni my foot LI tɿ² Le tɿ Qi tih² Co tɿ¹.

10 *tɿL machete U a²ni²³ tag⁴ TI ɿwɿ¹ mi¹ tág³ S mi tai Qe mi ta (ai

expected) Tp ɿi¹ tág² Pa ɿyi¹ tay³ (tone 2 expected).

11 *tɿɿ^L [1] or LH [2] *tɿɿ^L [3] fight U si³tag⁴ [1] TI tɛy³ [3] Ch ma i tɿ co [3] S na¹tɿ²³co² [1 or 2] Qe la tɿ [1 or 2] Tp ki² tɿ³² za² [2] Pa tɿ³² za² [2] tɛ² [3] (may reflect short vowel) Oz ?i tɿ [3] LI ?a²³. tɿn³¹ ill-willed [3] (CV.h² expected) Le da² tɿn³ za³ [3] (oral vowel expected but no accent) Qi tɿh⁴² [1 or 2] (3 or 24 expected; h not expected).

12 *tɿ [1]~*te [2] call (intr.) *tɿ-? [3]~*te-? [4] call (tr.) Oj a⁴ tɿ³ ?ni² do not call! [1] te² ?ni² call! [2] U te²³ [1 or 2] TI tɛ³ [2] tɛ² (tr. with only third person object) [3 or 4] Ch ka tya co [2] (tie expected) S li tyɛ co a person called me [2] (tie expected) Qe te co [2] Tp tɿ² za² [1 or 2] tɿ² [3 or 4] Pa tɿw² [1] tɿ² za² [1] (reflects long vowel) tɿ² za² [3] te²hnye²¹ we call [4] LI tɿ³² [1] te² call! [2] tɿ³ [3] te² [4] (In this verb and several others which have a stem marked for two or more participants by an added ? LI marks the same category by added length. Cf. sec. 4.3 of the Introduction.) Le te³² [1] mi da tye [2] Qi teh call! [2] (h not expected) tɿ²h² [3] Co tɿ² [1] tɛ² (second person past) [2] tɿ²r¹² [3].

13 *tɿ-?ɿ^{LH} [1]~*te-?ɿ [2] advise Pa tow² [1] tyow² you (sg.) advised [2] LI to⁴?n³ [1] Le ga³táy² [1] ga⁴tya²?a² we advised [2].

- 14 ***tij** *reach (tr.)* Ll tin²³ Le t⁴ (iy expected).
- 15 ***ti^L** [1] *thin (inan.)* ***tí-ŋ^L** [2] *thin (an.)* Oj t² [1] U tai³ [1] Tl tay³ [1] Ch tey [1] M tei [1] S tei² [1] Qe tai [1] Tp tei² [1] Pa ti² [1] te² [2] VN tei [1] Oz ti [1] Ll ti³ [1] Le ti³ [1] ti⁴ [2] (tone 3 expected) Qi tih²³ [1] tih²³ [2] Co tiŋ² [2].
- 16 ***ti** *cat* Oj ði²ti² U a¹tei¹ (reflects a short vowel) Tl tay¹ Ch ci tey S mi¹tei³² Qe mi tai Qi ?yia⁴ ti² *jaguar* (reflects a short vowel) Co ?yé¹² ti¹.
- 17 ***ti** [1] ***ti?** [2] *scratch, peel* U tai³ [1] Tl táy⁴ [1] táy² [2] Tp téi³² za² [2] Pa tey³² [1] Ll ti²³ [1] Le ti⁴ [1] Qi tih⁴ [1] Co tír¹² [1].
- 18 ***tij** *set fire to* Pa te³² Co tíŋ²¹.
- 19 ***tí^{HL}** *rain* Ch hmi tey Tp hmi³² téi³ (ballistic accent unexpected) Pa hmiw ti Qi hmi³ ti³⁴ *drizzle* (reflects a short vowel).
- 20 ***té^{LH}** *castrated* U te⁴³ Ch te? (ty expected) S ka tye? *capon* Qe te? Tp té³ (32 expected) Pa te³² Ll te? Lt tye? Co te².
- 21 ***tu^H** *navel* Oj ði¹tu^{1a2} U ʔ⁴ta³-teu¹ (tone 2 expected) Tl tyu⁴² (42 occurs in Tl obligatorily possessed nouns rather than the more common tone 2; presence of y in this set, ***tu^H** *lima*, and ***tu^{7LH}** *bag* is puzzling) Ch ci tu M ci tu S ci tu co Tp si¹tu¹ za² Pa máy³ tu¹ za² VN
- mi tu za Oz mi tu Ll mi²tu² Le mi¹tu² Qi mi¹ tu² Co mi tu¹ (length not expected). This set may be related to the one immediately following.
- 22 ***tu^H** *lima, a type of citrus fruit* U ʔ⁴ʔ³teu¹ Tl mág³ nya³tyu² Qe hj² teu (u expected) Tp mi²tu¹ Pa ?wi³² tu¹ Qi hjh⁴ tu². This set may be a part of ***tu^H** *navel*
- 23 ***tu^L** *turkey* Oj tu² U a¹teu³ Tl tu³ S tu² Tp tu² Pa tu² VN tu Oz tu Ll tu³ Le tu³ Qi tu³⁴ *hen, poultry* Y tu *fowl* Co tu¹².
- 24 ***tú^{LH}** *knife* Oj ñi¹ tu⁴ U a²-ñi²³ tau⁵ (43 expected) Tl mí¹ táw¹ (4 expected) Ch nyi tau? Qe mi te? (may be a misrecording of teu?, the expected form) Tp ni¹ŋi¹ tó³² (u expected) Pa ŋy¹ tó³² VN ŋyi tau? Oz ñi tu? Ll tu² Le tu? *machete*.
- 25 ***tú^{LH}** *stomach* Oj tu^{1a2} (4 expected) U o¹tau³² (43 expected) *intestine* S të^{7s} *interior stomach* Qe teu^{7s} *spleen* Tp rə²tú³² za² Pa tow³² VN tau? za Oz tu? Ll tu² Le tu? a Qi tu³ Co tu².
- 26 ***tu^L** *tube* Ll tu³ *blow gun* Qi tuh²³ Co tú²¹ (2 without accent expected).
- 27 ***tu^{LH}** [1]~***tiu^H** [2] *defecate* Oj ma²tu²hli² t²?na¹ *the hen laid eggs* [1] U tau³ [1] ni²tai³⁴ *I'm going to defecate* [2] Tl taw³⁴ [1] tay⁴ *you defecated* [2] S kwa¹tai² *she is*

laying eggs [1] (32 expected) **Qe** teu [1] **Tp** tag³² za² [1] **Pa** taw³² za² [1] tew¹ hnye?¹ *we defecate* [2] **Li** tu-³ [1] tō-³ra² *we defecate* [2] (tone 2 expected) **Le** ga³tu-³ [1] ga⁴tyu-²a² *we defecated* [2] **Qi** tuh⁴ [1] **Co** tú-r¹² [1] (tone 2 without accent expected) tō- *we defecate* [2].

28 *tu.^H [1] *tiu.^H [2] *blind (inan.)*
 *tu-ŋ^H [3] *tiu-ŋ^H [4] *blind (an.)* **Oj** tō³¹ [3] U a³tə³² [3] **Tl** ca³ taw⁴ [1] **Ch** tɸ [3] **S** ca tɸ [3] **Qe** ca tɸ [3] **Tp** tɸ²¹ [4] **Pa** tew¹ [2] tyuw¹ [4] **VN** za tyuŋ [4] **Li** tu-² (*attributive position*) [1] tu-n² (*predicate position*) [3] **Lt** tuy [3] **Le** tu- [1] tuy²³ (*predicate position*) [3] (tone 2 expected) **Qi** tüh³ [2] (tone 2 expected) tɸih²⁴² [3] or perhaps [4] (tone 2 but an oral vowel expected) **Co** tiɸ-ŋ¹ [4].

29 *tu-ʔ^L *buzzard* **Oj** si¹tu² U a¹-teu³ hue⁵ **Tl** tu³hwé² **M** tu[?] hwi **S** tu²hwe³² **Tp** i¹tə²cɸ³¹ (u expected) **Pa** tu-²cɸ¹ **VN** tu sɸi[?] **Oz** tu si[?] (nasalization expected) **Li** tu-³sɸ[?] or tu³sɸ[?] **Le** tu-[?] **Qi** tuh[?] (23 expected) **Co** tu-[?] sɸ[?]. The pretonic forms of **U**, **Tl**, **S**, **Pa**, **VN**, **Oz**, and the second **Li** term are identical to those of *tu^L *turkey*. The following set may be related to this one; some forms are identical and the tone of the **Qi** form in this set fits the correspondence of the following set.

30 *tu-ʔ^{LH} *bag* **Oj** si¹tu² U a²to³ lo³ *pocket* a²to³ ʔɸ[?] *cloth bag*

(teu[?] expected) **Tl** tyu[?] (y unexpected; cf. *tu^H *navel*) **Ch** tu lo (reflects *tu) **S** tu[?] (ë expected) **Qe** teu[?] **Tp** ci¹tə²?mi[?] (i would have been expected if form had been closed by ʔ) **Pa** tu[?] **Li** tu-[?] **Le** mi[?] tu[?] (long vowel expected) **Qi** tuh[?] **Co** ?mi¹tu[?] *burlap bag* (long vowel expected). The forms of **U**, **Ch**, and **Tp** show evidence of leveling in pretonic position. This set may be related to the one immediately preceding, the one immediately following, or both.

31 *tu-ʔ^{LH} *clay pot* U a²teu[?] **Tp** ni¹tɸ[?] **Pa** tə[?] **Co** tu[?]. These forms and those of the preceding set may belong to a single set with a gloss such as *container*.

32 *ta^H *work* **Oj** ta¹ U ta¹ (2 expected) **Tl** ta² **S** ta²¹ (1 expected) **Tp** ta¹ **Pa** ta¹ **VN** ta **Oz** ta **Li** ta² **Lc** ta **A** ta **Le** ta² **Qi** hma to² *do work* **Y** ta **Co** ta¹.

33 *ta^L *reed* **Oj** ma² ta² U a²?ma³ ta³ **S** ?ma ta **Tp** ni¹?ma² ta³² (2 expected) **Pa** ?ma² ta² **Oz** ma ta **Li** ?mo³ ta³ **Lc** ?mo to **Pe** ?mo to **A** ?mo to **Le** mɸy[?] ta³ **Qi** to³⁴ **Co** ta¹².

34 *ta^{LH} *ladder* **Oj** ?ma² ta² U a²-?ma³ ta³ **Tl** tá⁴ **S** ta³² **Tp** ni¹ta³² **Pa** ta³² **VN** ta **Oz** ?ma ta **Li** ta³ **Lc** to **Pe** to **A** to **Le** ta³ **Qi** ?mo³ to² (4 expected) **Co** ?ma¹² ta¹² (2 expected).

35 *ta *scrape* Tl tá² *weave* S kyu¹⁻ ta³² Pa ta³² *scrape, weave* Ll ta²³ Le ta⁴ Co ta *remove bark*.

36 *tá^H *a kind of basket* U a²u⁷³ ta²³ S mi² ta² *reed basket* (probably belongs to the *ta^L *reed* set) Tp ci¹mi² tá¹ *large basket* Pa mi² ta¹ (probably belongs to the *ta^H *work* set) Co mo² tá² (1 expected).

37 *tá^{LH} *bee* Oj to⁴ U a¹ma²⁻ to⁷⁴³ *wasp* Tl to⁴ (accent expected) S mu² to² (23 expected) Tp i¹si²tá⁷³² Pa ta⁷³² (vowel o expected) VN toa[?] Ll to² Le tá² Qi to⁷³ *honey bee* Co ta².

38 *tá^{LH} *a kind of fruit, perhaps zapote* U u⁴to⁷⁴³ma³ *black zapote* Tl tó⁴ *zapote* S hj[?] to[?] *sour orange* Tp mi²tá⁷³² *zapote* Ll mi³¹⁻ to⁷¹ *orange* (form in isolation is to²) Le ta² *orange* (accent expected) Co ta².

39 *tá[?] [1] *tá[?] [2] *brains* Oj to⁷¹ ði¹a² [1] U o¹to⁷² [1] Tl tó⁷¹ ci⁴²⁻ ceg³ [1] S tó⁷³ [1] Tp ti¹to⁷² [1] (a expected) Pa tó⁷² tyo⁷³¹ zi¹ za² [1] Ll to^{h2} [2] Le tá² [2] Qi to^{h3} [2] Co tó¹ [2].

40 *tá[?] [1] ~ *tia[?] [2] *put in (inan. obj.)* *tia^{7η} [3] *put in (an. obj.)* *tia^{7H} [4] *be in (stative inan.)* *tiá^{7η} [5] *be in (stative an.)* Oj a⁴ to⁷³ ?ni² *don't put it in!* [1] te² ?ni² *put it in!* [2] U to⁷³ *prick, stick with needle or thorn* [1] tie⁷³² *it contains* [4] (vowel quality but not

tone of the U and Tp forms reflects a short vowel) Tl tó⁷⁴ [1] Ch tyo[?] [4] (vowel quality of the Ch and S forms reflects a short vowel) S tyo[?] [4] Tp tio⁷³¹ [4] tiø⁷³¹ [5] Pa tó⁷³² za² [1] tyo⁷³² hnye⁷¹ *we put in* [2] tyów⁷³² [3] tyo⁷³¹ [4] (vowel quality reflects a short vowel; l expected) tyó⁷³² [5] Ll mi³to⁷² [1] tä⁷³²ra² [2] (reflects a long vowel) ta⁷ⁿ³² [3] tä⁷² [4] ta⁷ⁿ² [5] Le ta⁷⁴ [1] (reflects a long vowel) Qi to^{7h34} or ²⁴ [1] Co te⁷²¹ [4]. This set may be related to *tä[?] *put in*.

41 *ta^H *seed of the mamey* U u⁴to³² Tl to¹² (4 expected) S mi to Tp mi²to²¹ Pa taw¹ Oz mi to Ll mi²to² Qi mi²toh² Co mi²to¹² (1 expected).

42 *ta^H *posole leaf* Oj mo³¹ to² *tender banana leaf* (31 expected) U ma²to³² Tl mew³to⁴ Tp hme¹tióg²¹ (reflects *ia-) Pa muw² taw¹ Ll me³ to² Le me³ ta².

43 *ta^L *banana* Oj to² U o¹to³ Tl tew³ Ch to M hu to S tó² Tp ni¹tau² Pa taw² VN tao Oz na to Ll to³ Le ta³ Qi to^{h23} Co to².

44 *ta^L *hole* Oj to² fii⁷⁴ *cave* U to³ Tl tew³ Ch to M to lo S tó² Tp tau² Pa taw² VN tao Oz ta gwa ni ear (o > a in pretonic position) Ll to³ Le ta³ Qi to^{h23} *cave* Co to².

45 *ta^{HL} *grindstone (metate)* Oj sya¹to² U a²si²to²³ Tl tó⁴ S to² Tp

ni¹to² Pa to² (əw expected) VN toa
Oz si to Ll to²³ Lc ša to Le ta⁴ Qi
toh⁴ Co tó¹².

46 *ta·LH *roast* U to³ Tl to³⁴ Tp
to³² za² Pa táw² (32 expected) Ll
to³ Le ga³ta³ Co to.

47 *ta· *soap* Oj ŋi¹ to² Tl ci²to¹² or
ci² tó² S ci to Qe si to.

48 *ta·^H *sand* Tl si ta? *river sand*
S θi¹ tá¹ *river sand* (reflects ac-
cented syllable) Qi toh?⁴² Co to?²¹.

49 *ta·^L *charcoal* Oj yi³ ta³ (2
expected) U o¹hd^yi³ ta³ Tl ta⁴ S
si²ta²? Tp ni¹ta²? VN hi toa? Oz hi
ta? Ll hi³ to³? Le ši³ ta³? Qi
toh?²³ Co tó¹².

50 *ta·^L *shrimp, bamboo* Oj ta?²
U hō⁴³ta³? Ch ta? S ŋma²ta²? *bam-
boo* ta?² *shrimp* Tp i¹ta²? Pa ta?²
Ll to³? Le ta?³ (long vowel ex-
pected) Qi toh?⁴ (23 expected) Co
tó¹².

51 *tá·^L [1] (*past*) ~ *tiá·^L [2]
(*future*) *fall* (*inan. subj.*) *tá·^L [3]
(*past*) ~ *tiá·^{LH}? [4] (*future*) *fall*
(*an. subj.*) Oj ka³ta³ [1] ka³tā³ [3]
U ta⁴ [1] a⁴tā⁴ [3] tī⁴ [4] Tl
ka³⁴tā²? [1] (3 expected) Ch ti tya?
[2] ka tāj? (transcription uncertain)
[3] S ka³ta³ [1] ta?²¹ [2] (< *ta·?
3 expected) ka tāj? [3] Tp ta² [1]
(accent expected) Pa tá²? [1] tyi?²
[2] tāj² [3] tyā³ [4] VN ka toa? [1]
ka ta? [3] Ll ka²³to³ [1] ri²³tā³
[2] (reflects unaccented syllable)
ka²³təⁿ³ [3] ri²³teⁿ³ [4] Lc ri tə?

(< *ta·^L) Le ma ta? [1] Qi toh?¹
[1] (34 expected) Co (ni)té?¹² [2].
The following forms witness to a
pair of related stems: *tia·^{HL} [5]
fell (*inan. obj.*) *tá·^{HL} [6] *fell* (*an.
obj.*) Pa tyi?³² [5] tāj?³² [6] Ll tā·²³
[5] təⁿ²³na²³ (*first sg.*) [6]. Other
forms in the Ll paradigms, ri²təⁿ²
you will cause it to fall and teⁿ²
he causes him to fall, suggest that
the transitive forms also had the
*CV ~ *CiV alternation found in
the intransitive set and that the
distinction between transitive and
intransitive sets was one of tone.

52 *tiu *cut off* Oj e² či¹ti²a² či¹a²
he's cutting hair U tei²³ (reflects ac-
cented syllable) Tl tyú² Tp ti³² za²
Pa tyu³² Ll tön³² (Ll and Le forms
reflect syllable-final *ŋ) Le tyu³²
Co tör².

53 *tiú^L [1] *leave* (*inan. obj.*)
*tiú^{HL} [2] *leave* (*an. obj.*) Tp tí² za²
[1] Pa tyú² [1] tyúw² [2] Ll tó³² [1]
tön³² [2] (3 with syllable-final h ex-
pected in both forms) Le ga³tyú³
[1] ga³tyúy³ [2] Qi tüh²⁴ (h reflects
a long vowel but the tone does
not) Co tō [1] ka tiyij¹ [2] (12 and
an accent expected).

54 *tiú^{LH} *gun* Oj ti³ U a²tei⁴³ Tl
ŋwí¹ tí³ Ch tyu M tyu S tyu²³ Qe
tyu Tp tí³² Pa tyú³² VN tyu Oz na
ti Ll tōh² To tō A tō Le tyú² (na-
salization not expected) Qi tū³ Y tū
Co tó²¹.

55 *tiu· *pulp, shredded material* Tp
tei³¹ *meat of fruit* Pa tyu³¹ Ll tō².

- 56 *tiu.ʔ^H *milk, breast* Oj č¹tiʔ¹a²
breast Tl meg³tiʔ¹ *milk* tyú^{ʔ2} *suck*
milk Ch tyuʔ co *breast* M tyuʔ ci
breast S mi²tyuʔ²¹ *milk* (32 ex-
pected) Qe mi teiʔ *milk* Tp ziʔ³¹
milk (t is expected in Tp and Pa)
Pa zyú^{ʔ1} *breast* (accent not ex-
pected) Ll mi²tö.ʔ² *breast* Le hmi
tyu.ʔ *milk* Qi tüh^{ʔ34} *breast* (the Qi
and Co forms reflect ^L with an ac-
cent) Co tó^{ʔ12} *breast*.
- 57 *tia *father (address form)* U
tia²³ Tl tya S ta (tya expected) Qe
tya Tp tia³¹ Pa tyá¹ (tyi expected)
Oz ta Ll ta³¹hmi³ Le dya² (voicing
of stop not expected) Co tia¹². U,
Pa, and perhaps Tp reflect ^H and
an accent; Le also reflects ^H.
- 58 *tia *early* U to⁵ʔie³ Tl téy⁴ Qe
to nei Tp tē³² *early* tæ² ʔo³ʔiog²
early in the morning Ll tãh³ Le
ru^{ʔ4}tya³⁴ Qi ka³ta³ *a little while*.
The vowel reflexes in U, Tl, Qe,
and Tp are very difficult; perhaps
in some cases at least this is due to
their pretonic position.
- 59 *tia *dip tortilla in food* Pa tyí²
Ll tã³² Co tiá².
- 60 *tia.^L [1] *white (inan.)* *tia.ŋ^L
[2] *white (an.)* Oj te² [1] tã² [2] U
tie³ [1] tiʔ⁴³ [2] (tone 3 expected)
Tl tyu³ [1] tʔ [2] Ch tyu [1] M ti
[1] S tyó² [1] (accent not expected)
tyʔ [2] Qe tyu [1] Tp tiog² [1] Pa
tew² [1] tyuw² [2] VN tyoŋ [2] Oz
tö [1] Ll tã³ [1] tã² [2] (ten³ ex-
pected) Le tya³ [1] tyéy⁴ [2] (tone
3 without accent expected) Ql
- tah²³ [1] taih²³ [2] Co te.² [1] tia.ŋ²
[2] (e.ŋ expected).
- 61 *tia. [1] ~ *tia.ŋ [2] ~ *tia.ŋ [3]
endure Oj te^{ʔ3}a² [1] e² sa³ te³ hna³
I can't endure [1] tã^{ʔ1} ʔni² *endure!*
[3] U sa⁴ tie³² hnia⁴ *I can't endure*
[1] o⁴ tã^{ʔ32} ʔnei³ *can you endure?*
[3] Tl tó^{ʔ4} [3] (yo expected) Ch tyʔ
[2] S tya tyoʔ co *he doesn't endure*
[1] Qe tyuʔ [1] Tp tio^{ʔ31} za² or
tió^{ʔ32} za² [1] Pa tyú^{ʔ3} za² [1] tyaw³
hni² *I endure* [1] tyã³² (tr. an. obj.)
[2] tyã^{ʔ31}ʔni² *you endure* [3] VN tye
[1] Ll tã²³ [1] ri²³te.hn²nu³ *you'll*
endure [2] Le ʔa⁴ ri⁴tya⁴ *he can't*
stand [1] ri⁴tya⁴³u³ *you'll stand it*
[1] tyey³² [2] Ql tah^{ʔ34} [1] Co
té.ʔ²¹ [1] te.ŋ [2]. The final ʔ in
some [1] forms seems to be a late
development inasmuch as the
vowels are reflexes of *V. rather
than *V.ʔ.
- 62 *tia. *clay griddle* Oz i tö Ll
yi²³tã³² Lc ya ta To ʔye ta RC ye
ta A ʔi ta Le ya tya.
- 63 *tia. *tender banana leaf used for*
patting out tortillas Oj mo³¹ te²
posole leaf Tp hme¹ tióg²¹ Pa
mu¹tyáw³¹ Ll me³ tã³¹ Le me³tyá²
Co mo²té.²¹.
- 64 *tiá.HL *sticky* U tie⁵ (34 ex-
pected) Tl tyó² Tp tio³ Pa tyo³ Ll
tã.h²³ Le tya⁴ (accent expected) Co
té² (length expected).
- 65 *tiá.LH [1] *watch, spy (intr.)*
*tiá.ŋ.LH [2] *watch, spy (tr. an. obj.)*
U tã⁴³ *spy on in order to kill* [2]

(source unclear; may reflect *taŋ) Tp tiog³² za² [1] Pa tyaw³² [1] tyə³² [2] Ll tä.³² [1] te-n³² [2] Le ga³tya⁴ [1] ga³tyéy³ [2] (long vowel and 2 with an accent expected in both forms) Co té-ŋ²¹ [2].

66 *tia-ŋ^L poor, pitiable Oj ta³ ŋi² U a³ti⁴ŋei³ Pa ti²ŋy⁶² Ll za³ ta-n³ To za tea (phonemic analysis here uncertain) Le za tye-y³ Qi ca³ ta³ni³ Co ti ŋi-ŋ¹. The reduced reflexes in Oj, U, Pa, Qi, and Co are due to the pretonic position. The Oj, U, and Qi forms reflect an accent.

67 *tiʔ sharp (used of the taste of unripe bananas) U teiʔ⁵ acrid Tl tiʔ² Pa tiʔ¹ Ll tiʔ³ Le ruʔ⁴tiʔ² Qi tiʔ²⁴ Co tiʔ¹².

68 *tɯ^{LH} drum, guitar U a²tɯ³ Tl tɛw⁴ Ch tɯ S tɯ³² guitar Tp ci¹tɯ³² guitar Pa tɯ³² guitar VN tu (nasalization expected) Ll tɯ³ Le tɯ³ Qi tɯ⁴ guitar Co tɯ² guitar.

69 *tɯ^{LH} deaf Oj tɯ² U a³tɯ³ Tl ca³tɛw⁴.

70 *tɯ^{HL} [1] two (inan.) *gia tɯ^L [2] twelve (inan.) Oj tɯ⁴ [1] kya⁴tɯ³ [2] U tɯ³⁴ [1] kia⁵tɯ⁴ [2] Tl tɛw² [1] kya³⁴təw³ [2] (reflects *ú-) Ch tɯ [1] M tɯ [1] S tɯ³ [1] (23 expected) kya³tɯ²³ [2] Qe tɯ [1] Tp gia³tɛ² [2] Pa tɯ³ [1] gye³ tɛ² [2] VN tɯ [1] Oz na tɯ [1] Ll tɯh²³ [1] gi²³tɯh³ [2] Pe gye tɯ [2] Le tɯ⁴ [1] ja⁴tɯ³⁴ [2] (3 and an accent expected) Qi tɯ³⁴ [1] dʷa⁴tɯ³⁴ [2] Co tɯ² [1] gi²tɯ² [2] (12 and an accent

expected). Ll, Pe, and Le reflect *tiɯ rather than *tɯ in the [2] forms.

71 *tɯ^L [1] spill (past) ~ *tiɯ- [2] spill (nonpast) Oj ka³tɯ² [1] U a⁴təw³ [1] təi²³ [2] Tl ka³⁴təw³ [1] təw⁴ [2] Ch tɛy [2] S ka təi [1] Qe ma təi [2] Tp təg² [1] Pa təw² [1] tɛw³² [2] Ll ka²³tɯ³ [1] ri²³tɯ³ [2] Le ma⁴³tɯ³ [1] ri⁴tɯ³ [2] Qi ka³tɯh²³ [1] tɯh³⁴ [2] Co tɯ² [1].

72 *tɯ^{LH} bird Oj tə² U hɯ⁴³tə²³ (3 expected) Tl tə⁴ S tə Tp i¹tə³² Pa tə³² VN təŋ (ŋ not expected) Oz tə Ll tɯ³ Le tə³ Qi tɯ⁴ Co tə².

73 *tɯʔ put in U tɯʔ²³ Ll tɯʔ²³ Le ga³tə⁷⁴ (short vowel expected) Qi tɯʔ^{h3} (h not expected). This set may be related to *táʔ etc. put in.

74 *tɯ^{HL} [1] *tɯ^{7HL} [2] become accustomed Tp ra²tɛ² [1] (ə expected) Pa tə² (present) [1] li³tə³ (past) [2] (the vowels of both forms reflect *CV-ʔ but the tones reflect an open syllable; apparently the vowel quality of [2] and the tone of [1] apart from results of the accent, were generalized in the Pa paradigm) Ll tɯ²³ra² (first person plural) [1] tɯʔ²³ [2] Le tə²³a² (first person plural) [1] (4 expected) tə⁷⁴ [2].

75 *tɯ- [1] ~ *tiɯ- [2] throw away (inan. obj.) *tɯ-ŋ [3] ~ *tiɯ-ŋ [4] throw away (an. obj.) Oj a⁴ tɯ² ʔni² don't throw it away! [1] tɛ² ʔni² throw it away! [2] U tɯ³⁴ [1] tɛ³

- ?nei³ *throw it away!* [2] Tl t² [1]
 Ch ka t² [1] ty² *throw it away!* [2]
 S li t² co [1] Tp t² za² [1] t² za²
 [3] Pa t³² (*first person singular*) [1]
 t² [2] ty² [4] Ll t³² [1] t³
throw it away! [2] t³² [3]
 i²³t²hn²³na²³ *I'm going and throwing
 them away* [4] Lt ma t² [1] ty²
 ñu *throw it away!* [2] Le ga³t³ [1]
 ty³ *throw it away!* [2] Qi t² [1]
 (CVh expected) Co t² [1] t² [2]
 (vowel quality reflects long vowels
 in both Co forms).
- 76 *t²LH *thorn* Oj t² U a²t⁴³ Tl
 t⁴ S t² Tp ni¹t³² Pa t³² VN
 t² Ll t² Le t² Qi t⁴³ Co
 t²¹.
- 77 *t²HLH *avocado* Oj t³¹ U t⁴t²
 Tl ty² (reflects *ti²) Ch t² go S
 t¹ Tp mi²t²¹ Pa t² VN t² Ll
 mi²t² Le t² Qi kwa³t²⁴² Co
 gw² t¹² (accent not expected).
- 78 *ti²L [1] *be standing (pl. inan.
 subj.)* *ti²η^L [2] *be standing (pl. an.
 subj.)* S na¹ty²³ [2] Tp t² za² [2]
 (the Tp and Pa forms reflect *t²η)
 Pa ni¹t² [2] Ll t² [1] t²hn³ [2]
 Qi n² t² (*singular subj.*) [2] (3
 expected) Co t² [1].
- 79 *ti² [1] *stick on, write down
 (inan. obj.)* *ti²η^{LH} [2] *stick on,
 write down (an. obj.)* *t² [3] *stuck
 on, written down (stative inan.)* U
 t² [1] t³ [2] ma³ra³t³ [3] S ra¹-
 t³² [3] Tp t³² [3] Pa ty³² [1]
 ty³² [2] t³² [3] Ll t³² [1] t²n [2]
 t²³ [3] Le ga³ty³ [1] ga³ty³ [2]
- t⁴³ [3] Qi t² or ² [1] t² or ²
 [3] Co t¹² [3].
- *k
- 80 *ki *dream* U ki⁴ Tl k² S ra ki
 co Tp ki³² za² Pa ki³² Ll ki²³ Le ki⁴
 Qi kih⁴ (h not expected) Co kir².
 The U form suggests *i, as does a
 rare Ll first person plural form ki³-
 ra², which may suggest that at one
 stage this verb followed the com-
 mon *i ~ *i alternation pattern.
- 81 *ki [1] *stop (past) ~ *ki [2] stop
 (nonpast)* U keg³⁴ [1] Tl k² [2] (na-
 salization not expected) S ka³ki³
 (*past*) [2] Pa ki² [1] ky² [2] Ll ka²³
 kih³ [1] ri²³kih³ [2] Le ma⁴³ki³⁴ or
²³ [1] ri⁴kyi³⁴ [2] Qi ka³ki³⁴ [1] t³⁴
 [2].
- 82 *ki²LH [1] *fall over (inan. subj.)*
 *ki²η^{HL} [2] *fall over (an. subj.)* Oj
 ki² ?ni² [1] U keg²³ [1] (ag ex-
 pected) k² [2] Tl ka³⁴k² [2] S
 ka k² co [2] Tp k² or ² za² [2] Pa
 cyi¹ki²³² [1] k² [2] (the [2] forms
 of Pa and Ll reflect an accented
 syllable) Ll ki²³ [2] Le ma⁴³ki²⁴
 [1] (2 and an accent expected) ga⁴-
 kiy²⁴ [2] Qi ka³ki²⁴ [1] Co ki²¹ [1]
 (2 expected).
- 83 *ki? *cry* Le ki²⁴ Co ki²².
- 84 *ki? *rosary* Ll mi³¹ki²¹ Le mi⁴-
 ki²¹.

85 *kíʔLH *lizard* Oj čí¹ki^{ʔ3} U a¹-kag^{ʔ43} Tl kág^{ʔ4} S ka^ʔ (i expected) Qe ki^ʔ kau *iguana* Tp í¹ki^{ʔ32} Pa cyí¹ki^{ʔ31} (32 expected) VN ci kai^ʔ Oz ča ki^ʔ Ll ki^{ʔ2} Le kí^{ʔ2} Qi ki^{ʔ3} Co kí^{ʔ2}.

86 *kí^{HL} *pine* Oj ʔma² ki² U a²-ʔma³ kag²³ Tl ma³ kág⁴ Ch ʔma kag M ma ki S ʔma² ka² Qe ʔma kai Z ma ki Tp ki² Pa ʔma² ki² VN ʔma kai Oz ʔma ki Ll ʔmo³ ki²³ Lc ʔmo hwi ki Le miy^ʔ ki⁴ Qi kih⁴ Co kí¹².

87 *kí^{HL} *left (hand)* Oj ho¹ tí⁴ki^{ʔ2} U ta⁵keg^{ʔ3} Pa ta³la³kay^{ʔ32} *counter clockwise* VN ko li ki^ʔ (ai expected) Oz ri ká^ʔ (i expected) Ll tí³ki^{ʔn23} *backwards* (reflects an accented syllable; the Ll and Le forms also reflect a final *ŋ) Le na³kí^ʔʔ⁴³ (4 expected).

88 *kí^ʔ [1] ~ *kí^ʔ [2] *dress oneself* Tl kég^{ʔ2} [1] kí^{ʔ1} (*first person pl.*) [2] S kie^ʔ co [1] Tp kí^{ʔ32} za² [1] Pa káy^{ʔ32} [1] kyey^{ʔ32} (*second person past*) [2] Ll kí^{ʔ32} [1] ki^{ʔ3} *put on clothes!* [2] Le ga³kí^{ʔ3} [1] ga⁴kyi^{ʔ2-a2} (*first person plural*) [2] Qi kih^{ʔ2} ca³ [1] tvi³⁴ [2] (ih^ʔ expected; may not be cognate) Co kí^{ʔr21} [1] kí^ʔ (*first person pl.*) [2].

89 *kə^L [1] *eat (second person present)* ~ *ke^L [2] *eat (second person past)* ~ *ke^{LH} [3] *eat (first person plural)*. These are morpheme alternants of *gə^ʔ *eat*. Tp kó^{ʔ2} [1] (Tp and Pa [1] forms reflect an accented syllable.) Pa kíw^{ʔ2} [1]

kyí^{ʔ2} [2] kye³² [3] Ll kə^{ʔ(n)3} [1] ka²³kye^{ʔ(n)3} [2] kye^{3ra2} [3] Co kə^{ʔ1} [1] (12 expected).

90 *kə^ʔ *dirty* U ke^{ʔ2} M kí^ʔ.

91 *kə^{ʔŋ} *mixed* Oj na¹kə^{ʔ2} U ni²kə^{ʔ2} Tp rə²kə^{ʔ32} Pa ri²kow^{ʔ32} *mixed* kúw^{ʔ2} *he mixes* Ll ri³ko^{A.ʔn32} Lc ri ka^{ʔ(n)} To ri ka^{ʔn} Le ka^{ʔ43} ju^{ʔ43} (*inan.*) káy^{ʔ3} jú^{ʔ3} (*an.*) Qi kai^{ʔ42} Y ka^ʔ Co si ka^ʔʔ² (long vowel expected).

92 *kí^{LH} *trash* U ma² ki³ Tl meg²-kég¹ (tone 4 expected) Ch ma keg M ma ki S ma¹kí³² Qe ma ki Z ma ki (Tl, Ch, M, S, Qe, and Z forms reflect *i) Tp hme¹ki³² Pa kyí³² VN kyi Ll kí³ *war* (seems to be a cognate in spite of semantic shift) Pe ki *trash*, *war* Le kyí³ Qi tvi⁴ Y ki Co ki².

93 *kí *forehead* Oj čí¹ki^{2a2} U ma³-ki⁴³ Tl cí²ki¹² ceg³ S kye^{12co2} Qe ci ki Tp cí¹kí³ Pa zí¹kyí³² za² VN kyi hna Ll kih² To mi ki Le kyí² Qi tva^{ʔ1} tvi² Y ki Co de ki².

94 *kí^{LH} [1] ~ *kí^{LH} [2] *pay* Tl ka³⁴kág³ [2] (eg expected) Tp kí³² za² [1] Pa kyí³² za² [1] kí³² hní² (*first person singular*) [2] VN kyi [1] Ll kí³² [1] kí³² (*first person singular*) [2] Le ma kyí³² [1] kiy³² (*first person singular*) [2] Qi kih² [2] (3 expected, but h not expected) Y ki [1] Co kí² [2] (does not reflect an accented syllable). May be related to *kij^{LH} *cost, be spent*.

- 95 *ki.^H *locust* U a¹si²ki³² TI ki¹-nay¹² (i rather than expected ay because of pretonic position; uncertain whether tone reflects *^H) Pa cyi²kyiw² (1 expected) LI ki² Lt kyi.
- 96 *ku? *heel* U kau?⁴³ TI kaw?⁴² S kie? Tp kú?³² LI ku?²³ To ki? (u expected) Le kú?⁴ tí?^{2a2} (nasalization not expected; Le, Qi, and Co reflect a long vowel) Qi kuh?⁴² Co ku?²¹ tí.¹
- 97 *ku.^H *money* Oj ku³¹ U o⁴kau³² TI kaw⁴ S kie, ku də *cents* (red money) Qe keu Tp ku²¹ Pa kow¹ VN kau Oz ku LI ku² Le ku² Qi kuh² Co ku¹.
- 98 *ku.?^L [1] *eat* (third person present inan. obj.) ~ *kú.?^L [2] *eat* (imperative; third person nonpresent inan. obj.) ~ *kiu.?^L [3] *eat* (first person plural inan. obj.) *ku.?^{LH} [4] *eat* (third person present an. obj.) ~ *klu.?^{LH} [5] *eat* (first person plural an. obj.) Oj ku?³ ?ni² (imperative) [2] ki?¹ hna?¹ [3] U keu?³ [1] kəp?³ [4] (reflects a short vowel) TI ku?⁴ [1] káw?³ (second person past) [2] (reflects a short vowel) kí?² [3] Ch kaw? [2] kyu? hna [3] S kie? (imperative) [2] kyu? [3] Tp kag?² za² [1] Pa kəw?² [1] ków?³ (third person future) [2] kyew?³² [3] kuw?³² [4] kyuw?³² [5] VN kau? [1] LI ku?³ [1] ku?² (imperative) [2] kyö-?³ra² [3] ku.?ⁿ [4] kyu.?ⁿ³na² [5] Le ku?³ [1] kyu?³² [2] (long vowel expected in both forms) Qi ku?^{h3} [1] (h? with 23 expected) Co ku?^{r1} [1] (a long vowel with 23 and an accent expected).
- 99 *ku.?^{HL} *it hurts* Oj e² ku?² ?i²³ hna³ *my head hurts* U keu?³ TI ku?⁴ S kie?² Tp ki?² Pa kaw?³² LI ku.?²³ Le ku?⁴³ (tone 4 expected) Qi ku?⁴ (h expected) Co ku?¹.
- 100 *ku.?^L (to) *fence* LI ku.?³² Le ku.?³².
- 101 *ku.?^{LH} [1] *get stuck in a tight place* (intr.) *kú.?^{LH} [2] *stuck in a tight place* (stative) U si²kəp?⁵ [1] (reflects a short accented vowel) Tp rə²kí?³² [2] (reflects a syllable without the final *ŋ) Pa kuw?³² [1] LI ka²³ku.?ⁿ²³ [1] ri³ku.?ⁿ³² [2] Co ku?[?] (tr.).
- 102 *kú.?^{LH} *be joined* U kəp?² (intr.) TI la²kəw?⁴ (stative) Pa kuw?³² or kúw?² (tr.) LI ka²³ku.?ⁿ²³ (intr.) ku?ⁿ³² (tr. inan.) Le kuy?³² (tr.) (nasalization not expected) Co ku?[?] (tr.).
- 103 *ká.^H *corn borer* Oj ha?³ ka¹ U a¹ka²³ TI ká¹ (nasalization not expected) S ha¹ka¹² Tp i¹ká¹ Pa cyi¹-ká¹ LI koh² Co kó¹.
- 104 *ka? *touch, play with* TI kó?² LI ko.?³² (the LI and Le forms reflect a long vowel) Le ka.?³² Co ka?².
- 105 *ká?^{HL} *outside* Oj tí⁴ko?⁴ U ta⁴ko?⁵ TI teg³ko?⁴ *back* (reflects a syllable without accent) S ka? ?nyu

(o expected) **Tp** ka¹?né²¹ (reflects *ka, but the tone is difficult) **Pa** ti³ka[?]31 *behind* **VN** ti koa? **Li** ri²³-ko²³ *behind* **Pe** li ko? *behind* **Lt** ja ka? *behind* **Le** ru⁴ka[?]3 *behind* (short vowel expected) **Qi** ko[?]3 *near* **Co** ka²lu.¹ (reflex in a pretonic syllable). May be related to *ka? *back*.

106 *ka.LH *play* **Oj** ko³¹ ?ni² (*imperative*) (tone does not match) **U** di²ko³i³ (*third person plural*) ma⁵-kie³² hnia¹ *let's play* (reflects *kia) **Tl** kó⁴ (reflects an accented syllable) **Ch** e di ko **S** na ko **Qe** la ko **Tp** ko³²za² **Pa** kow³²za² **VN** koa hna (*first sg.*) **Li** ko³² (reflects an accented syllable) **Qi** koh⁴ **Co** kor¹ (2 expected).

107 *ka.HLH [1] *dumb (inan., and an. in special syntactic positions)* *ka.ŋ^{HLH} [2] *dumb (an.)* **S** kô¹ [2] **Tp** kô²¹ [2] **Pa** kaw¹ [1] kow¹ [2] **Li** za³ ko^{.232} [1] ka^{n.232} za³ [2] **Le** ka^y42 [2] **Qi** ca³ kaih²⁴² [2].

108 *ka. [1] *burn (nonfuture inan. subj.)* ~ *kia. [2] *burn (future inan. subj.)* *ka.ŋ [3] *burn (nonfuture an. subj.)* ~ *kia.ŋ [4] *burn (future an. subj.)* **Oj** e² ka³ko³ [1] a⁴ kâ²³ ?ni² *don't get burned!* [3] **U** ko²³ [1] sa⁴ kie⁴ *it won't burn* [2] **Tl** ma³ci²kó² [1] **S** ka ko [1] ka kô ca [3] **Tp** kau² [1] **Pa** kəw² [1] kyéw³ [2] kuw² [3] kyúw³ [4] **VN** kao [1] **Oz** mi ko *kerosene* [1] **Li** ko³ [1] kya^h3 [2] ka²³kaⁿ3 [3] ri²³ka^hn²³ *he'll get burned* [3] (a [4] form expected) **Le**

ka [1] **Qi** koh²³ [1] **Co** ko¹ [1]. Cf. *ka.ŋ^L *angry*.

109 *ka. *iguana* **U** a¹kag[?]43 ko¹ **Tl** keg⁴ ko¹ **Ch** kag[?] ka (o expected) **S** ki ko **Qe** ki[?] kau **Tp** i¹ki[?]21 káu²¹ **Pa** ci¹ki[?]31 káw³¹ **VN** kai[?] kao **Li** ki[?]2 i³ko^h3 **Lt** ki[?] ya ka **Qi** ki[?]4 koh⁴² **Co** ki[?]2 kó²¹.

110 *ka.ŋ^L *angry* **Oj** kâ² **U** kô³ **Tl** kô³. Initial consonant could be reconstructed as *g; the vowel might be nasalized if the initial consonant is *k. This set may be a part of the *ka. *burn* set.

111 *ka.ŋ^H *back* **Oj** ka[?]1a² **U** ma³-ka[?]32 **Tp** mi²ka[?]21 za² (21 occurs in **Tp** obligatorily possessed nouns rather than the more common 31) **Pa** ka[?]1 za² **VN** ka lu za (**VN** and **Oz** reflect *ka in pretonic position) **Oz** ka lu hni *my back* **Li** ko[?]2 *above* **Qi** koh[?]42 t^vi² **Co** mo[?] ko[?]21. This set may well be related to *ká[?]HL *outside*.

112 *ka.ŋ^H [1] *big (inan.)* *ká[?]ŋ^H [2] *big (an.)* **U** ka[?]2 [1] kâ[?]2 [2] (both forms reflect an accented syllable) **Tl** ka[?]1 [1] kâ[?]2 [2] (tone does not match) **Z** ka[?] [1] **Tp** ka[?]31 [1] kâ[?]31 [2] (both forms reflect an unaccented syllable) **Oz** ka[?] [1] **Li** ko[?]2 [1] kə[?]n² [2] **Qi** koh[?]42 [1] **Co** ko[?]21 [1].

113 *ka.ŋ *lose one's way* **Oj** a⁴ kwa³kâ[?]31 ?ni² **U** ŋeg²³ kô[?]2 (a expected) **Ch** kâ[?] **Tp** zi²kô[?]32 za²

- hui³² (a expected; the U and Tp forms may reflect a short vowel) Pa zi³ko⁷32 za² Li si³ka⁷n³² Qi ŋa⁴-kaih⁷42.
- 114 *kiu^H leg Oj mo²ki¹a² U ma³-ki³² (2 expected) Tl kyu⁴² ceg³ (42 occurs in Tl obligatorily possessed nouns rather than the more common 2) M ma kyu za S kyu¹ Qe ki Tp mi²ki²¹ za² leg ci¹ me¹ki¹ za² pants Pa kyu¹ (possessed form) VN kyu za Oz sa kye hni my leg Ll kyö² Le kyu Qi t³ü² Y kyü Co kiö⁻¹ (short vowel expected).
- 115 *kiú^{LH} coatí Oj ki³ U a²ki⁴³ Tl kí³ Ch kyu M kyu S kyu²³ Qe ki Tp i¹ki³² Pa kyú³² VN kyu Oz kye Ll kyöh² Le kyú² Qi t³ü³ Co kió²¹.
- 116 *kiu^{7H} corner of the house Tp ki⁷31 Pa kyu⁷31 (1 expected) Qi t³ü^h742 Co ki⁷ŋ⁷21 (neither nasalization nor ŋ expected).
- 117 *kiu⁷ chop, cut Oj ki⁷31 ?ni² (imperative) U kei⁷2 Tl kí⁷2 Ch ki⁷ (the Ch, M, S, and perhaps Qe and Qi forms reflect a short vowel) M ki⁷ S ñi¹kye(i)⁷1 (past) kwa¹-kyei⁷32 Qe kwa kye⁷ Tp kí⁷32 za² Pa kyú⁷32 za² VN kyu⁷ Ll kyö⁷32 Le kyu⁷32 Qi t³ü⁷h³ Co kió⁷r²¹.
- 118 *kia dirty Tl kya² Ch kya S ma kya ?la⁷ Qe kya.
- 119 *kia[?] [1] of him, her, them (inan.) *kiaŋ [2] of him, her, them (an.) Oj ki⁷1 [1] kyá¹ [2] U kie⁷ [1] ki⁷1-i³ (the second U form and probably the first Oj form reflect *ki⁷) Tl kyo⁷1 [1] Ch e kyo da⁷ of the baby [1] M kye ca [1] S kyo⁷(?) co [1] Tp kió⁷32 [1] kiá³² [2] Pa kya⁷32 za² [1] kyá³² [2] VN kye⁷ [1] Oz kye do [1] (the Ch, M, and perhaps S and Oz forms reflect *kia[?]; cf. forms in next set) Ll kye⁷2 [1] kye⁷32 [1] (the vowels of both Ll [1] forms suggest a short vowel) kyehn² [2] kye-n³² [2] A ki⁷ [1] Le kya⁷ [1] Qi t³ya⁷h⁴ [1] t³ya⁷4 ?i²do² [1] Co kiá⁷r². The following set is probably related: *kiá[?] [1] *kiá[?]ŋ [2] my ([1] may have an inanimate referent and [2] an animate referent) Oj ki³ [1] (probably reflects *ki[?]; cf. Oj and U forms of preceding set) U k⁷é⁴ [2] Tl kyö¹² [2] Ch e kyo hna [1] M kye hna [1] S ?i kyö hna [2] Qe kyö hna [2] Tp kió³ [1] kiá³ [2] Pa kyew³ [1] kyá³ hní² [2] VN kye [1] Oz kyá [2] Ll kyahn²³ [1] (long vowel expected) kye-n²³na²³ [2] A kya [1] (ki expected) Le kye [1] (a expected) Qi t³yah²⁴² [1] Co kie^{12e} [1] (long vowel expected).
- 120 *kia^H palm Tl kyó¹ or mi²-kyo¹² (4 expected) S ?ma mi²kyo³ Tp ci¹kió¹ Pa kyew¹ type of thatching leaves Ll me⁻³ kya⁻² palmetto Lc ?mo mi kya To me kye A ?mo me ki Lt me kya Qi ?mo³⁴ ü¹t³yah² tree used in making mats.
- 121 *kia^H firefly Tp si¹kió¹ Pa cyi¹kyew¹ Oz čí lu kyu (a expected) Ll kya⁻².
- 122 *kia^L [1] lie down (intr.) *kia⁷LH [2] lying down (stative) Oj

- kye² ?ni² (*imperative*) [1] U ra³kiá³ [2] (reflects *kia) Tl kyo³⁴ [2] (ø expected) S ka³kyo² [1] Qe la kyu *he placed it* [1] Tp kiog² za² [1] rə²kiá³² za² [2] Pa kyew² [1] ri²kyo³² [2] Oz mi ni kyə [2] Ll ka²³kyá³ [1] ri³ka·?n³² [2] (reflects *ká·?ŋ) To mi kye za [1] A mi ki [1] Le ri⁴kyá³ [1] Qi t'viah²³ [1] Y kye place [1] Co kier¹ [1].
- 123 *kiá· *chile ancho* Ll ?u²³ kya·h² To ?u kye A mi ?u ki.
- 124 *kia·?L *parrot* U a⁴kiá³ Tp i¹kiá¹ (2 expected without accent) Pa kyí² (no accent expected) Ll kya·?³ To kye? Le kya?³ (long vowel expected) Qi tu³t'viah?²³ Co tu²kie? (long vowel expected).
- 125 *kia·?L or HL *dig* U kia? Tl kya?⁴ S kwa¹kyá?².
- 126 *kí^{LH} [1] ~ *kí· [2] *tie, knot* U kəg³ [1] ke(i)?⁴ (*second person past*) [2] (nasalization expected; vowel reflex uncertain) Tl kǐ³⁴ [2] (fits the tone of [1]) Pa kǐy³² [1] kyǐw (*second person past*) [2] Ll ri³·kǐn³¹ (*stative*) [1] (probably reflects accented syllable) (this form and the Y and Co forms reflect a final *ŋ) kǐ²ra?³ (*plural imper.*) [2] Le ga³kǐ³ [1] ga⁴kyǐ²a² [2] Y kaŋ [1] (ǐ expected) Co si¹kiⁿ [1] (nasalization and 2 expected).
- 127 *kǐ·ŋ^L *afterward* U ta⁵kəg³ (the U, Tp, and second Tl forms reflect no *ŋ) Tl ci²kəg² or kəg (3 expected) Tp kəg² Pa cyi¹kəg³ (the
- tone of the following form fits the tone correspondence) kə² *he followed* Ll kǐn³ Le za³kǐy³.
- 128 *kǐ·?ŋ *be covered* Ll kǐ·?n³² Le kǐy?³ Co kǐŋ?
- 129 *kǐ·ŋ^{LH} [1] *cost, be spent (present)* ~ *kǐ·ŋ^L [2] *cost, be spent (nonpresent)* Oj kǐ² [1] U kǐy⁴³ [1] Tl kǐ⁴ [1] S kyə [1] Qe kyəi [1] Tp kǐ³² [1] Pa kyə³² [1] ka kǐ² (*past*) [2] Ll kǐ·hn²³ [1] (Ll, Le, and Qi [1] forms reflect *^{HL}) ka²³kǐ·hn³ [2] Le kyǐy⁴ [1] Qi t'vǐh³ [1] Co kiŋ²¹ [1] (accent and nasalization expected). This form may be related to *kǐ^{LH} ~ *kǐ^{LH} *pay*.
- 130 *kǐ· *pick (fruit)* Tl kǐ² Le kǐ⁴ Co kǐ.
- 131 *kǐ·ŋ *close (book)* Ll kǐn³² Le kǐy³².
- 132 *kǐ·^{HLH} *stone* Oj kǐ³¹ U a²·kəy² Tl kəw² S kǐ¹ Qe kǐy Tp mi¹·kəg¹ Pa kəw¹ VN kəy Oz ča kǐ Ll kǐ·h² Le kǐ·¹ Qi kǐh²⁴² Y kǐ Co kǐ·¹².
- 133 *kǐ·^{HLH} *rainbow* U a⁵kəy² Tl meg²kəw² S hmi²kǐ¹ Qe mi kǐy Tp mi¹kəg¹ VN kəy Ll mi³¹kǐ·h¹ Lt hmi kǐ Qi kǐh²⁴² tuh?²⁴² Co kǐ·¹².
- 134 *kǐ·^{LH} *tail* Oj čǐ¹kǐ² U dya¹·kəy⁴³ Tl kəw⁴ceg Ch (ci) kəw S kǐy² Tp ne¹kǐ³² há?² Pa kəw VN kəy Ll kǐ·h² Lt kǐ Qi ?mo³ kǐh⁴³ Co ni kǐ·²¹.

135 *kə^H *cornmeal* Oj kə¹ U o¹kə³
(2 expected) TI kə² S kə Tp ti¹kə¹
Pa kə¹ VN kə Oz kə Lɪ kə² Lc kə
Pe kə To kə RC kə Le kə Qi kə²
Co kə¹.

136 *kə [1] ~ *kiə [2] *kə· [3] ~
*kiə· [4] *bring, take, carry* (these
stems are used in several ways to
mark motion toward or away from
speaker and toward or away from
home base) Oj ɲa² kə¹ ʔni² *bring it!*
[1] kə¹ ʔni² *take it!* [3] kɨ³ ʔni² ʔi³
breathe (take air)! [4] (kyɛ ex-
pected) U kə²³ *charge (money)* [1]
ni²kiə³ *went to bring* [2] kə³ tvi⁴
breathe [3] TI kə³ *bring* [1] kyə² [2]
kəw⁴ *take* [3] Ch kəw *takes* [3] (ɔ
expected) M kə ca ci *breathe* [3] S
ka kə ci co *breathed* [1] ca kyə *is
bringing* [2] kwa kə *takes* [3] ma li
kyə co *took* [4] Tp kə² za² *charge*
[1] kiə³² za² *bring* [2] kə² za² *take
home* [3] kiə² za² *bring home* [4] Pa
kə² za² *take* [1] kyi² hnye^{ʔ1} *we take*
[2] kəw² za² *take home* [3] kyəw²
hnye^{ʔ1} *we take home* [4] VN kə
takes [3] (əɔ expected) Oz kyə
breathe [2] Lɪ kə³² *take* [1] ku³kyə³
go bring! [2] ri²³kə³h²³ *will take
home* [3] ku³kyə³h²³ *go bring back!*
[4] Lc kyə *take* [2] or [4] To kyə
bring [2] or [4] A ku kyə *go bring!*
[2] or [4] Le kə³² [1] kyə^{32a2} *take* [2]
kə⁴ [3] kyə^{42a2} [4] *take back* Qi
kə³⁴ ca³ tvi³⁴ *breathe* [1] tɸəh⁴ *bring*
[4] Co kár¹² *take* [1] (nasalization
expected) kiɛ² *bring* [2] kə· *take
back* [3].

137 *kəʔɲ^{HL} [1] ~ *kiə·ʔɲ^{HL} [2]
full, fill Oj kəʔ² [1] U si²kəʔ³ [1] TI

lá³⁴kəʔ⁴ [1] Ch hma kəʔ [1] *fill* ci
kəʔ *full* [1] (the second form does
not reflect a final *ɲ) M ci kəʔ [1]
S ma²kəʔ²³ [1] Tp ci²kəʔ² [1] Pa
ci¹kəʔ²² [1] VN ci kəʔ [1] Oz na kəʔ
[1] Lɪ ti²kəʔɲ²³ *full* [1] ri²³kyə·ʔn²³
will fill [2] To mi kyəʔ [2] A la kəʔɲ
[1] Le na kəʔ [1].

138 *kə^L [1] *one (inan.)* *gia kə^L
[1] *gia kə^{HL} [2] *gia kiə^L [3]
eleven Oj kə² [1] kya⁴kə² [1] U kə³
[1] kiə⁵kə³ [1] TI kəw³ [1]
kya³⁴kəw³ [1] Ch kə [1] kya kə [1]
S kə² [1] kya kə [1] or [2] Tp kəw²
[1] gia³kəw³ [2] (accent in the Tp
and Pa forms not expected) Pa
kəw² [1] gye³kəw³ [2] VN kəɔ [1]
Oz kə [1] gya kə [1] or [2] Lɪ kə³
[1] gi²³ kyə·h³ [3] A gya ki [3] Le
kə³ [1] gya kyə [3] Qi kəh²³ [1]
ɸya⁴kəh⁴ [2] (Qi and Co forms do
not reflect an accented syllable) Co
kə² [1] gi²kə¹² [2].

139 *kiə^L [1] *four (inan.)* *kiəɲ [2]
four (an.) Oj ki³ [1] or [2] U ki⁴ [1]
TI ki³ [1] Ch kyə [1] M kyə [1] S
kyə²³ [1] kyə³ [2] (23 expected) Qe
ki [1] Tp kə² [1] Pa kyə² [1]
gye³kyə² *fourteen* [1] kyə² [2] VN
kyə [1] kyəɲ [2] Oz kyə [1] Lɪ
kyəh³ [1] kyəhn³ [2] Le kyə³ [1] Qi
tvi³⁴ [1] ɸya⁴tvi⁴ [1] tvi² [2] (24
expected in all the Qi forms) Co
kiə¹² [1] (accent expected).

140 *kiɸ^L [1] *dry (inan.)* *kiɸɲ^L
[2] *dry (an.)* Oj ki² [1] U kəi³ [1]
ma³ki³ [2] TI ki³ [1] Ch ma kiɲ [1]
(ɲ not expected) M kəi [1] S kəi²
[1] Qe kəi [1] Tp kəi² [1] Pa kyiw²

[1] kyø² [2] VN kyɸ [1] Oz kyɛ [1]
Ll ri³kyø³ [1] ri³kyɸ.n³ [2] To ri kyø
[1] (nasalization expected) Le kyɸ.³
[1] Qi tʷɸh²³ [1] tʷɸh²³ [2] Y kyɸ
[1] Co kiø² [1].

141 *kiɸ.LH *beat, pound* U keɸ³ S
kyɛɸ²³ (reflects accented syllable)
Tp keɸ³² za² Pa kyɛw³² Ll kyø²³ (3
expected) Le kyɸ.⁴ (3 expected) Co
kiø.r¹ (tone 2 expected).

142 *kiɸ.L *tasty* Tl ma³kɸ³ S ma²-
kyɛɸ³ (23 expected) Tp hmá² kéɸ²
Pa ma²kyɸw² Ll mi³kyø.h³.

143 *kiɸ.ʔ *touch* Ll kyø.ʔ³² Le
kyɸ.ʔ³².

144 *kiɸ.HL *below* Oj ti⁴kiɸ⁴ *low al-*
titude U ta⁵kiɸ³⁴ Tl kyɸ² (accent ex-
pected) S ti kyɛ Tp kiɸ² and le²kiɸ³
(second form matches tone corre-
spondence) Pa ti³kyɸ² (3 expected)
Le šaʔ kyɸ.

145 *kiɸŋ *trip, stumble* Pa kyɸ³² Ll
ti²³kyɛ.n³¹ (length not expected).

146 *kiɸʔHL *with* Tl kyøʔ² (reflects
accented syllable) Tp kiɸʔ³¹ (Tp
and Pa forms reflect a long vowel;
both also apparently reflect an ac-
cented syllable and, therefore, 3 is
expected in the Tp form) Pa kyɸʔ¹
or ³¹ (second form matches tone
correspondence) Ll kyɸʔ² Qi tʷɸʔ⁴
near Co kiɸʔ¹² *near*.

*kw

147 *kwⁱL *corn* Oj kwⁱ² U ɸ⁴ku³ Tl
kwu³ S kwu² Qe mi ku *kernels of*
corn Z ku Tp kuig² *cornfield* Pa
kwⁱ² VN ʔni kwu *corncob* Oz mi
kwⁱ *kernels of corn* Ll kwⁱ³ Le kwⁱ³
Qi kwuh²³ *cornfield* Co kwⁱ².

148 *kwⁱHL *cooked* Oj kwⁱ² U ku²³
S ma kwo Qe ma ku Tp kuⁱ² (ig
expected) Pa kwu² (iy or ay ex-
pected) Ll ri³kwⁱ³ (23 expected)
Le na kwⁱ Co kwⁱ¹² (accent ex-
pected).

149 *kwⁱHLH *firewood* Oj na¹kwⁱ²
(31 expected) U na²ku¹ Tl kwu⁴² S
kwo¹ Qe ku Tp ni¹kuig¹ Pa kway¹
VN kwu Oz na kwⁱ Ll kwⁱ²³² Le
kwⁱ⁴² Qi kwuh²⁴² Co kwⁱ¹².

150 *kwⁱ *sugar, cane* (perhaps
derived from *kwⁱL *corn*) Oj hwi¹
kwⁱ² U o¹heu²ku³ Tl ma²kw^u¹ Ch
hu kwu M ʔma kwu S hwi kwu Qe
hwi ku Tp kuig¹ ŋi^{ʔ32} Pa ʔma²
kwⁱ² VN ʔma kwu Le miyʔ kwⁱ *a*
cane-like stalk Qi kwa¹ ŋi^{ʔ4} (uh ex-
pected; present form probably due
to pretonic position) Co kwⁱ ŋi^{ʔ1}
(long vowel expected).

151 *kwə [1] *kwə [2] *give (inan.*
obj.) *kwəŋ [3] *give (an. obj.)* Oj
kwo¹ ʔni² [1] or [2] kwⁱ³¹ ʔni² [3]
(tone suggests a long vowel) U
kue²³ [1] or [2] Tl kwé² [1] kwé² [3]
M kwⁱ [1] or [2] S li kwe co [1] or
[2] Qe ma la kwe [1] or [2] Tp
kuə³² za² [1] or [2] Pa kwⁱ³² za² [1]

- kway³² za² (*intr.*) [2] kwa³² za² [3] VN kwə [1] or [2] Oz kwa [1] or [2] Ll kwə²³ (*tr. inan. obj.*) [1] kwə²³ (*ditr. inan. obj.*) [2] kwən³² (*tr. an. obj.*) [3] Le kwo⁴ [1] kwo⁴ [2] kwoy³² [3] Qi kwoh⁴ [2] Co kwər² [1] kwəŋ [3] (short vowel expected).
- 152 *k^wə [1] *k^we [2] *sneeze* Tl kwé³ [1] Tp kué² za² [1] (ə expected) Pa kwí² [1] or [2] Oz ma kya [2] Ll kwa³² [2] Le kwe³² [2] Co kwír² (reflects *i).
- 153 *k^wi^{LH} [1] *know (inan. obj.)* *k^wi^{ŋLH} [2] *know (an. obj.)* Oj hma¹kwí² ?ni² ca² [2] U ku²³ (*third person singular*) [1] ku⁴³ (*first person singular*) [2] Tl kwú³ [1] (4 expected) Ch kwu [2] S tya kwo hna (*first person singular*) [1] Qe tya kə na (*first person singular*) [2] Tp kuí³² za² [1] kuí³² za² [2] Pa kwu³² za² [1] mi²kwe³² za² [2] VN kwu [1] (i expected) Ll kwi³ [1] kwiⁿ²³ [2] (3 expected) Le kwi³ [2] (the variant -n of the animate marker is expected rather than nasalization) Qi kwíh⁴ ca² [2] Y kwi [1] Co kwí^{r12} [1] (2 expected without an accent). Pa and Tp [1] forms reflect *k^wi[?]. Oj through Pa reflect an accented syllable while Ll through Co reflect an unaccented syllable.
- 154 *k^we^H *large quadruped* Oj co⁴ kwa¹ *horse* kwa¹hwí² ?ye³¹ *cow* kwa¹ no² *deer* U a²kua³²heg³² *horse* (2 expected in all the U forms of this set) a⁵kua³²heu²³ *cow*
- a²kua³² nau³ *deer* Tl ceg³kwá² *horse* (accent not expected) kwa²náw¹ *deer* Ch kwa *horse* kwa naw *deer* S ca²kwa¹ *horse* kwa hwi ?yo *cow* kwa ni *deer* Qe ca kwa *horse* kwa hwi ?yu *cow* kwa nei *deer* Tp i¹kua¹ *horse* i¹ka²hui³² *cow* Pa kwí¹ *horse* cyi²ka¹hwu² *cow* kwa nuw¹ *deer* VN ka hi? *horse* ka nau *deer* Oz kya hi? *horse* kya ?ya *cow* Ll kwa² *horse* kwa²?yo⁷³ *cow* kwa²nu³ *deer* Pe kwa ?ye? *cow* To kwa ?ye? *cow* RC kwa zo *horse* kwa ?ya? *cow* A kwe *horse* kwe ?ye? *cow* Le kwe² *horse* kwe ya? *cow* kwe nu *deer* Qi kwa² *horse* kwa² nuh²³ *deer* Y kwe *horse* Co kwia¹ *horse*. The loss of u/w/y in some Tp, Pa, and VN forms is probably due to pretonic position. The following set differs by tone in most languages but is no doubt related to this set.
- 155 *k^we *monkey* U a¹kua⁴ Tl kwa³hlá² Ch kwa ?u S kwa ?u? Qe kwa^{HL}a Tp i¹kua³² Pa kwí³² VN kyu Ll kwa²?u⁷³ A kwe ?u? Lt kwe ?u? Qi kwa³ ?uh?²³ Co kwia¹ ?ú?¹². The following set differs by tone in the Tl and Pa forms from those of this set but is no doubt related to this and the immediately preceding set.
- 156 *k^we *rabbit* Oj lo³¹ kwa³ U a²lo¹ kua⁴ Tl lo²kwa³⁴ *rabbit-like animal* Tp lo²¹kua³² Pa la¹kwí³ VN lo kyu Oz lo kya. Cf. the two preceding sets.
- 157 *k^we^L [1] *long (inan.)* *k^we^{ŋL} [2] *long (an.)* Oj kwo² [1] kwá² [2]

U kue³ [1] kuɛ⁴³ [2] (3 expected)
 Tl kwo³ [1] kwɔ³ [2] S kwo² [1] Qe
 ku [1] Tp ku² [1] Pa kuw² [1] VN
 ko [1] kɔ [2] Oz kyo [1] Ll kwa³
 [1] kwa:hn²³ [2] (3 expected with-
 out h) A kwö [1] Le kwe [1] Qi
 kwah²³ [1] Co kwe² [1].

158 *kʷé.LH *arm* Oj mo² kwo^{2a2} U
 dʷa¹kue⁴³ *wing* Ch mo kwos M kwo
 S kwo co Qe ku Tp mi²ku³² za² Pa
 kow³² za² VN ko Oz sa kyo Ll
 kwa:h² A kwö Le kwe Qi kwah² (43
 expected) Co mi²kwé.²¹ *elbow*.

159 *kʷe.ʔH *gourd dipper* Oj ho¹
 kwa¹ U a²kua¹ (32 expected) Tl
 kwa¹ Ch kwa (? expected) S
 kwa³² Qe kwa? Tp ni¹kua³¹ Pa
 kwɨ¹ VN ko? Oz wa kya? Ll
 kwa?² A kwö? Le kwe? Qi
 kwah?⁴².

160 *kʷé.ʔH *bark, peeling* U o¹-
 kua² Tl kwá¹ S kwá¹ Tp kuá¹
 Pa ci¹kwú¹ VN ko? Oz sa kya? Ll
 kwa?² A kwö? Le kwé¹. Cf.
 *kʷá.ʔH *case*.

161 *kʷa.ʔL *bald* U kua³ tʷi² Tl
 kwa⁴ S ca kwa³² ci (2 expected)
 Tp kua² Pa ku² VN za kwa? Oz
 ja kwa? Ll kwo.³ Le kwa?³ Qi
 kwoh?²³ Co kwó.¹².

162 *kʷa.ʔL *gourd for carrying
 water* Ll mi³¹kwo.³ Co kwó.¹².

163 *kʷá.ʔH *case* Oj kwo¹ *peeling,
 pod* (reflects short vowel) Ch kwa?
pod S ci kwo? *shell* (reflects short
 vowel) Qe kwa? heu? *armadillo*

shell Oz mi kyá? si kya? *green
 beans* Ll kwo?² *pod*. The following
 forms are probably part of this set:
 U o¹kua?² *conch* Ch ci kwa? *conch*
 S ci kwa ha? *sea conch* (reflects
 short vowel; final ? expected) Pa
 há?² kwú?¹ si² *snail, clam*. This set
 may be related to *kʷé.ʔH *bark,
 peeling*; all but the Ll form could
 be accommodated in that set and
 the Pa and Oz forms would fit bet-
 ter there.

164 *kʷi or *kʷi.L *button* Oj mi³¹
 ši¹kwɨ² U ɥ⁴ku³² (3 expected) Tl
 mág³ ci²kwɨ³.

165 *kʷi.ʔ or *kʷi.ʔ *pull* Oj kwɨ?³¹
 ?ni² U ku² Tl kwú?⁴ S ma la kwɨ?
 co.

166 *kʷi.ʔ [1] *kʷa.ʔ [2] *Oaxaca* U
 nei² kuá?³ [2] Tl ni²kwá?² [2] S nyi
 kwá? [2] Tp i¹kuɨ?² [1] Oz na kwɨ?
 [1] (i expected) Ll i²kwɨ?³ [1] (i
 expected) or i²kwɔ.³ [2] Le ñi
 kwɨ? [1] (i expected) Pe ñi kwɨ? [1]
 (i expected) To i kwɔ? [2] RC he
 kwɨ? [1] (i expected) A i kwɨ? [1] (i
 expected) Le ši kwɨ? [1] (i ex-
 pected) Qi ni²kwɨ?¹ [1] Co ni²kwɨ?¹
 [1].

167 *kʷi.H *wrinkles* P kwɨy¹ Ll
 kwɨ.².

168 *kʷi.LH *flee, run* Oj kwa² ?ni²
 kwi²?i² (*imper.*) (nasalization
 expected) U ku³ Tl kwú⁴ (reflects
 accented syllable) S ma ka kwɔ co
 Tp kuɨg³² za² Pa kwɨy³² za² Ll
 kwɨ.²³ (does not match tone

correspondence) kwɨ³² (*plural subj.*) (reflects accented syllable; this alternant suggests there may have been an alternation in this stem between *j̄ and *j̄̃) Le kwɨ⁴ (does not match tone correspondence) Qi kwɨh⁴ ca³ Co kwɨr¹ (2 expected).

169 *kʷɨ^{LH} wax, resin Oj ha^{ʔ3} hmo² kwɨ² bee U kɨ⁴³ Tl kwɨ⁴ Tp kuɨg³² Pa kwɨy³² Ll kwɨh²³ (2 and j̄ expected) Qi kwɨh⁴³ Co kwɨ²¹.

170 *kʷɛʔ [1] *kʷɛ̃ʔ [2] be hungry Oj ʔo³¹kwɨ³ [2] (the Oj and Tl forms reflect *j̄) U kɨɛ^{ʔ43} [1] Tl kwɛg³⁴ [2] Ch ka ma nyi kɔ [2] (perhaps form should have been recorded as kwɔ) S nyi kwɨ na (*first person singular*) [2] Qe ma i kɨʔ [1] Tp i¹kɔ^{ʔ32} za² [1] Pa li³ⁱ¹kwɨ^{ʔ3} [1] kɔ³² [2] Ll kwɛ^{ʔ23} [1] kwɛhn^{2nu3} (*second person*) [2] Le kwɛʔ [1] kwɛy (*first person singular*) [2].

171 *kʷɛ̃^L shirt, clothing Oj si¹kwɨ² a² (ɔ expected) U a²kɨɛ³ Tl kwɨ³-ceg Ch ʔmi kwɔs VN kwɛ Ll kwɔ³ Le kwɛ.

172 *kʷɛ̃. Petlapa, a Chinantec village Ll mo^{ʔ3} kwɔ² Le maʔ kwɛ.

173 *kʷɛ̃ʔ grow Oj kwɛ²³ U si³-kɨɛ³ Tl kwɨ² S ma ka kwɔ Tp zi²kɔ³ za² Pa za²kɔ¹ Ll si³kwɛ̃hn²³.

174 *kʷɛ̃ʔ^{LH} hill Oj kwɛ^{ʔ2} U kɨɛ^{ʔ3} Tl kwɛ^{ʔ4} (accent not expected) Ch kwɛʔ *ascent* S ka²-

kwɔ^{ʔ1} (ɛ̃ and 32 expected) Qe kwɛʔ Tp zi¹kɔ^{ʔ2} Pa kɔ^{ʔ32} VN kwɛʔ Oz ɛi kɔʔ Ll kwɔ^{ʔ3} Le kwɛʔ Qi kwɔh^{ʔ4} Co kwɔ^{ʔ12} (2 with a short vowel and no accent expected).

*ʔ

175 *ʔi^{LH} [1] count (*inan. obj.*)~ *ʔi [2] count (*inan. obj.*) (*frequently imper.*) *ʔiŋ [3]~*ʔiŋ [4] count (*an. obj.*) Oj a⁴ ʔi² ʔni² (*neg. imper.*) [1] ʔi³ ʔni² [2] U si²ʔeg³ [1] Tl ʔág⁴ [1] (eg expected) ʔi⁴ read [2] Ch teg ʔegs [1] ʔi [2] M de ʔi [1] S na ʔi [1] ʔi [3] Tp ʔi³² za² [1] Pa ʔiw³² [1] ʔiw² [2] ʔə³² [3] VN ʔi (*first person singular*) [1] ʔei [2] (e expected) Oz ʔi [1] ʔi [4] Ll ʔi³ count, read aloud [1] ʔih³ [2] ʔin²³ [3] ʔin²³ [4] (length not expected in the latter two forms) Le ʔi³ [1] ʔi³ [2] Qi ɸ⁴ih²⁴ ca³ [2] (h not expected) Co hmi²ʔir¹ [2].

176 *ʔi^{HL} diaper Oj si¹ʔi² U a²-ʔag²³ Tl ʔág⁴ S ci ʔa Ll ʔih² (23 but no h expected) Lt la ʔiʔ (final ʔ not expected).

177 *ʔi^{HLH} [1] late, delayed (*inan.*) *ʔiŋ^{HLH} [2] late, delayed (*an.*) U ʔag³⁴ [1] (1 expected) Tp rə²ʔi³² za² [2] (21 expected) Pa ʔa¹ [2] Ll ʔi²³² [1] ʔin²³² [2] Co ɨ²ʔiŋ¹² [2].

178 *ʔi. bear fruit Oj ka³ʔi³ U ʔag³ Tl ʔág² S ʔi Qe ma ʔai Tp ʔag³² Pa ʔay³² Ll ʔi³ Lt ʔi Qi ʔih⁴ Co ʔi¹².

- 179 *ŋi· [1] *ŋi· [2] *think* U ko³ŋei²³ ce³ *a thought* [2] Tl ʔey¹² *believe* [2] (reflects syllable with final *ŋ) Ch ti ʔeg cegs [1] (Ch through VN [1] forms reflect a short vowel) M ʔi ci [1] Tp ʔi³² z³² za² *worry* [1] Pa ʔiw³² z³² za² [1] VN ʔi zia (*first person singular*) [1] ʔei ʔao (*second person*) [2] Oz ʔi [2] Qi ʔih³ ci² ca³⁴ [1] Co ʔi¹² di^r²¹ [1].
- 180 *ŋi^{LH} [1] ~ *ŋi^{LH} [2] *hang* (*intr. inan.*) *ŋi^{LH} [3] *hang* (*tr. inan.*) *ŋi^L [4] *hang* (*tr. inan. imper.*) Oj a⁴ ʔi² ʔni² (*neg. imper.*) [3] ʔi³ ʔni² [4] U d^va¹ʔei⁴³ [2] si²ʔag³ [3] Tl ʔag³⁴ [3] ʔái(ʔ)² [4] (tone 3 expected) Ch ʔay [4] S na ʔi [1] kwa ʔi [4] Qe ʔai [4] Tp ʔag³² za² [3] Pa ʔey³² (*pres.*) [2] ʔíy² (*past*) [1] (32 expected) ʔay³² [3] ʔéy² (*second person past*) [4] Ll ri³ʔi^h² [1] ʔi³ [3] ʔih³ [4] Le ʔi³ [3] ʔi³ [4] Qi ʔih³ [2] (43 expected) ʔih³ ca³ [3] (4 expected) Co ʔi^r² [3] (final ? not expected, but the checked syllable accounts for the short vowel).
- 181 *ŋi·ŋ^{LH} [1] ~ *ŋi·ŋ^{LH} [2] *pull* Tl ʔág⁴ *pull out* [1] (does not reflect final *ŋ) Pa ʔá³² [1] (accent not expected in either Pa form) ʔéy³² [2] (reflects a syllable without final *ŋ) Ll ʔin³² [1] ʔin³ (*imper.*) [2] (reflects a syllable without accent) Le ʔiy³² [1] ʔiy³ [2] (reflects a syllable without accent) Co ʔəiŋ²¹ [1] (í and an accent expected).
- 182 *ŋi·ŋ^{LH} *jump up* Tp ʔi³² Ll ka²³la²³ʔi^h².
- 183 *ŋi·ŋ^H *topil, a municipal messenger* U si³mai^{ʔ2} ʔag^{ʔ1} (eg and 32 expected) Tl ʔeg^{ʔ1} S ca ʔi^ʔ (nasalization not expected) Tp ci^{ʔ2} ʔi^{ʔ31} Pa ci^{ʔ2} ʔiw^ʔ Ll ʔi^{ʔ2} Lt ʔi^ʔ Qi ʔih^{ʔ42} Co ʔi^{ʔ21}.
- 184 *ŋi·ʔ [1] *pierce, stick* (*inan. obj.*) ~ *ŋi·ʔ [2] *pierce, stick* (*inan. obj. imper.*) *ŋi·ŋ [3] *pierce, stick* (*an. obj.*) Oj a⁴ ʔi^{ʔ3} ʔni² (*neg. imper.*) [1] ʔi^{ʔ3} ʔni² [2] Tl ka³⁴ʔág² [1] (final ? expected in both Tl and Ch) Ch ʔegs [1] (reflects short vowel) S ʔi^{ʔs} [1] Tp ʔi^{ʔ32} za² [1] Pa ʔi^{ʔ32} [1] ʔey^{ʔ32} (*second person past*) [2] ʔəʔ³² [3] Ll ʔi^{ʔ32} [1] ʔi^{ʔ3} [2] ʔi^{ʔn}³² [3] (long vowel expected) Le ʔi^{ʔ32} [1] ʔi^{ʔ3} [2] (long vowels expected) Qi ʔi^{ʔ3} ca³ [1] (ih expected) Co ʔi^ʔ [1] ʔi^ʔ [2] (long vowels expected).
- 185 *ŋə^H *body* Oj ʔə^{1a}² U ʔe³² (tone suggests a long vowel) Tl ʔə⁴² ceg³ (42 occurs in Tl obligatorily possessed nouns rather than the more common 2) Ch lo ʔəs *skin* Ll la³ʔe² *skin* (*leather-body*) A lo ʔe(n) *skin*.
- 186 *ŋə *sing* Oj ʔə¹ ʔni² (*imper.*) Tl ʔə² Ch ma di ʔəs S ʔie co Qe ʔə Tp ʔə³² za² Pa ʔiw³² za² VN ma ka ʔe za Ll ʔe²³ Le za³ʔe⁴ *cantor* Qi ʔə⁴ ca³ Co ʔər².
- 187 *ŋə *chicken* (*possessed form*) Qi ʔə⁴ ca³ Co ʔər¹.
- 188 *ŋəŋ^{HL} *frighten, scare off* U si²ʔag²³ (ə and tone 3 expected;

- may not be cognate) Tl ʔé² (reflects accented syllable) Pa ʔá² (accent not expected) Ll ʔən²³ Le ʔa⁴ (reflects a syllable without final *ŋ) Co hmi ʔəʔ (reflects a syllable with final *ʔ but not final *ŋ).
- 189 *ʔá-LH *kick* U ʔe⁴³ Tl ʔá⁴ (*inan. obj.*) ʔá⁴ (*an. obj.*) (reflects *ʔá-ŋ) Tp ʔə³²za² (reflects short vowel; cf. following set) Pa ʔi³² Co ʔá-r¹² (21 expected). The following set probably belongs with this one: *ʔá-LH *step on* Pa ʔiw³² (*inan. obj.*) ʔa³² (*an. obj.*) (reflects *ʔáŋ) Ll ʔe.²³ (e and 32 expected; length here, as the ʔ in Qi, Y, and Co, may be a marker of (di)transitivity) Le ʔe.⁴ (cf. note on the Ll form) Qi ʔəʔ³ Y ʔəʔ naʔ (*first pl. incl.*) Co ʔəʔ.
- 190 *ʔə-ŋ^{HL} *scarce* Pa ʔə² Ll ʔo^An²³ Co ʔə-iŋ¹² (accent expected).
- 191 *ʔə-ʔ *spit* Pa ʔiw^{ʔ31} saliva Ll ʔo^Aʔ³² Le ʔo-ʔ³². This set may be related to *ʔeʔ *saliva*.
- 192 *ʔi-LH *tortilla* Oj ha¹ʔ³ U a²ʔei⁴³ Tl ʔi³ S ʔi²³ Tp ni¹ʔi³² Pa ʔé³² (i expected) VN ʔe Oz wa ʔe Ll ʔih² (i expected in Ll through A) Lc ʔi Pe ʔi To ʔi RC ʔi A ʔi Qi ʔi³ Co ʔi²¹ (length not expected).
- 193 *ʔi^H *take care* Oj hmo³¹ ʔni² ʔi¹ Ch hmos ʔi S hmo wa ʔi Tp hmo³² za² ʔi¹ Pa hmo za ʔi¹ Le ʔi³ (tone 1 expected) Co hme⁻¹ ʔi¹ ʔwə^{ʔ2}.
- 194 *ʔi^H [1]~*ʔi^L [2] *enter* U ʔei⁴ [2] Tl ʔi⁴ (1 or 3 expected) S ma²ʔi³² (12 or 23 expected) Qe ʔai (reflects long vowel) Tp ʔi² za² [2] Pa ʔi¹ (*present, future*) [2] ʔi² (*past*) [1] Ll ʔih² (*past*) [1] ri²³ʔih³ (*future*) [2] Qi ka³ʔi² [1] (does not reflect accented syllable).
- 195 *ʔi-^{HLH} *where original timber has been cut* Pa nuw² ʔey¹ Ll he² ʔi.²³².
- 196 *ʔi^L *accede* Pa ʔé² həw¹ (reflects syllable closed by *ŋ) Ll ka²³-ʔi:h³ hu:h².
- 197 *ʔi^L *that, those (an.)* U ʔe⁴³ (ei expected) Tl ʔéy⁴ (3 expected; reflects syllable closed by *ŋ) Tp ʔéi² Pa ʔéy² Ll ʔih³ (the Ll and Co forms reflect a short vowel) Co ʔi¹ do (12 expected; reflects a syllable closed by *ŋ).
- 198 *ʔi-LH *missing, lacking* U ʔei⁴³ Tl ʔáy⁴ Pa ʔey³² Ll ʔi:h² Le ru^{ʔ4}ʔi³⁴ (accent and tone 2 expected).
- 199 *ʔi-ʔLH [1] *ʔi-ʔHL [2] *weight, measure, peso* Oj ʔiʔ² [1] U ʔei^{ʔ43} [1] (reflects accented syllable) Tl ʔay^{ʔ4} [1] S ka²ʔei^{ʔ32} [1] Qe ʔaiʔ [1] Tp ʔéi^{ʔ3} [2] Pa ʔé^{ʔ3} [2] (ey or i expected) Ll ʔiʔ²³ [2] Le ʔi-ʔ⁴ [2] Qi ʔih^{ʔ34} [2] Y ʔiʔ [2] Co ʔiʔ¹² [2] (2 is probably the expected reflex). The following set is homophonous with the preceding one and probably is a part of the same set:

200 *ʔi-ʔLH [1] *ʔi-ʔHL [2] *command* Oj hmo³¹ ʔni² ʔi² [1] U huɛ³ ʔei⁷⁴³ [1] (reflects accented syllable) S ma ka hmo ʔe⁷ [1] (reflects short vowel; ei expected) Tp ʔéi⁷³ [2] Li ʔi³ ʔi²³ [2]. Cf. *ʔi-ʔLH *weight, measure, peso*.

201 *ʔi-ʔηLH *accept* Li ʔi-ʔn³² Co ʔij⁷².

202 *ʔe [1] *teach (intr.)* *ʔeη [2] *show (tr. an.)* *ʔeʔ [3] *teach (dir. inan.)* Oj ʔe¹ ʔni² (*imper.*) [1] U ʔe²³ [1] TI ʔé² [1] Qe ʔe [1] Tp ʔə [1] ʔi³² za² [2] Pa ʔe³² [1] ʔa³² [2] ʔé⁷³² [3] Li ʔe²³ [1] ʔen³² [2] A za ʔə *teacher* [1] Le ʔe⁴ [1] ʔey³² [2] Qi ʔe⁷³ ca³ [3] Co ʔer² [1]. In addition, Li ʔe.²³ *teach, show (dir. inan.)* reflects *ʔe and Co ʔeij¹² *show (tr. an.)* reflects *ʔeη.

203 *ʔéL [1] *ʔé-ηL [2] *shell corn* Oj ʔe³ ʔni² (*imper.*) [1] U si²ʔe⁵ hnia⁴ (*first person singular*) [1] (4 expected) TI ʔé³ [1] ʔé³ [2] Ch ʔe [1] (Ch and S reflect a long vowel) S ʔe [1] Qe ʔe [1] Tp ʔá²za² [1] Pa ʔé² [1] ʔá⁷² *pick* [2] (reflects *ʔ rather than length) Li ʔe³² *pick* [1] ʔe-n³² *shell* [2] (3 and h expected in both forms) A ʔen [2] Le ʔe³² *pick* [1] (ʔé³ expected) ʔey³² [2] (ʔé-y³ expected) Qi ʔe³⁴ ca³ [1] (reflects an unaccented syllable) Co ʔe [1] ʔé-η² *pick* [2].

204 *ʔeʔ *saliva* Oj hmi²ʔe^{71a2} TI meg³ʔé⁷¹ Ch hmai ʔieʔ M mai ʔaʔ or mai ʔaiʔ S mi ʔeʔ Tp hmi¹ʔá⁷³² Pa hmi ʔiw⁷³¹ (e expected; this

form may belong to *ʔə-ʔ *spit* set) VN hmi ʔaiʔ Oz hmi ʔeʔ Li mi²³ʔe⁷² To mi ʔəʔ te (*first person plural*) A mi ʔəʔ Qi hmih²³ ʔe⁷² Co hmi² ʔe-ʔr² (short vowel expected).

205 *ʔe. [1] *ʔe-ʔ [2] *what?, which? (inan.)* Oj ʔe² [1] U ʔe⁷⁴ [2] (nasalization not expected) TI ʔé⁷³ [2] Ch ʔe [1] M ʔeʔ [2] S ʔe [1] or ʔeʔ [2] Tp ʔe² [1] Pa ʔe² [1] VN ʔe [1] Oz ʔe [1] Li ʔe.² [1] A ʔa wa ʔno [1] Le ʔe² [1] Qi ʔeh²⁴² [1] Co ʔe¹ [1] (long vowel expected).

206 *ʔe. *tumpline* U a²ʔe³² TI ʔá⁴ Ch ʔa lie (e expected) S nyu ʔa Tp ci¹ʔag³¹ Pa ʔe⁷³¹ (final ʔ not expected) Li ʔe.³² *flexible handles* Lc mo ʔe Pe ba mi ʔe Le ñi⁷⁴² ʔi.³⁴ (e expected) Qi ni²ʔeh⁴¹ Co ni²ʔé.¹

207 *ʔe-ʔ *belch* TI ʔé⁷⁴ (reflects a final *η) Tp ʔá⁷² za² Pa ʔé⁷² Li ʔe.⁷³² Le ʔe.⁷³².

208 *ʔuL *chisel* U a²ñi²³ ma³ʔeu³ Tp ni¹ ηj¹ ʔi² Pa ηy¹ ʔi³² (2 expected) Li ñih² ʔu³ Co ʔú¹² (reflects accented syllable).

209 *ʔuLH *glass, mirror* Oj ʔu¹ (2 expected) U a²ʔeu³ TI ʔú⁴ S ʔu³² Tp ni¹ʔi² (32 expected) Pa ʔi³² VN ʔu Li ʔu³ Le ʔu³ Qi ʔu⁴.

210 *ʔuHLH *staff* U na²ʔma³ ʔeu¹ Tp ʔma²ʔi⁷³¹ (vowel quality reflects an open syllable) Pa ʔma² ʔi³¹ (1 expected) Li ʔmo³ ʔu.²³² (short vowel expected) Co ʔma ʔú¹ (12 expected).

211 *ʔú^L *wide* Oj ʔu³ U ʔeu⁴ TI ʔú³ M ʔeu S ʔu²³ Tp ʔʔ Pa ʔʔ VN ʔu Oz ʔu LI ʔuh³ Le ʔú³ Qi ʔu²⁴ Co ʔú¹².

212 *ʔú^{LH} *casserole* Oj ho¹wi² ʔu² (3 expected) U a²ʔeu⁴³ TI ʔú³ S ʔu²³ Tp ni¹ʔʔ³² Pa ʔʔ³² Oz wa ʔu LI ʔuh² Le ʔú² Qi ʔu³ Co ʔú²¹.

213 *ʔúʔ^{LH} *finger nail* Oj ʔu¹ sya¹ kwo²a² (final ʔ with 4 expected) U si¹ʔau^{ʔ43} TI ciʔú^{ʔ4} ceg Ch ci ʔuʔs or ci ʔawʔs M maʔauʔ za S ʔi ʔieʔs or ʔëʔ co Qe ʔeuʔ Tp ci¹ʔúʔ³² za² Pa ci¹kwiʔ ʔow^{ʔ32} VN kwaʔ ʔauʔ hna (*first person singular*) LI ʔuʔ² To hwi ʔuʔ Lt ʔuʔ Qi moh⁴ ʔuʔ² (3 expected) Co ni¹ʔuʔ².

214 *ʔu·ʔ^L *monkey* Oj ca² ʔuʔ² Ch kwa ʔuʔ S kwa¹ʔuʔ¹ (2 expected) LI kwa²ʔu·ʔ³ A kwe ʔuʔ Lt kwe ʔuʔ Qi kwa³ ʔuh^{ʔ23} Co kwia¹ʔúʔ¹² (long vowel expected).

215 *ʔú·ʔ^H *peach* Pa ʔúʔ¹ Qi ʔuh^{ʔ1} Co ʔuʔ¹ (accent expected).

216 *ʔa^H *be in (of liquids)* Oj ʔa¹ U si²ʔa¹ *enter (of liquids)* (2 expected) TI ʔa² S ʔa Tp ʔa²¹ Pa ʔa¹ LI ʔo² Le ʔa Qi si ʔoh² (h not expected) Co ʔá¹ (reflects an accented syllable).

217 *ʔa^H [1] *ʔi^H [2] *question marker* TI ʔi² [2] ʔa [1] Pa ʔi¹ *positive question marker* [2] LI ʔa² [1] Lc ha [1] (? rather than h expected in Lc and QI forms) Qi ho¹ *nega-*

tive question marker [1] (reflects accented syllable).

218 *ʔaŋ^{LH} *cross, traverse* U si²ʔa³ TI ʔa³ (tone 4 with accent expected) Tp ʔa³² za² Pa ʔa³² LI ʔon³ Le ʔay³ Co ʔa (reflects syllable without *ŋ).

219 *ʔa·^H *mouth* Oj ʔo³¹a² U ʔo³² TI ʔo⁴² ceg³ (4 expected) S ʔo³co² Qe ʔau Tp mi²ʔo²¹ za² Pa ʔaw¹ VN ʔoa hna (*first person singular*) Oz wo ʔo hni (*first person singular*) LI ʔo² Le ʔa² Qi ʔoh² Co mi ʔo¹. The following forms probably belong to the same set: *ʔa·(?)^H *door* Oj ʔoʔ³¹ U o²ʔnei³² Ch ʔo kwa nyu S ʔo ta kye *window* Tp ʔo²¹ ʔné²¹ VN ʔoaʔ LI ʔo·ʔ² ʔñö³¹ Qi ʔoh² Co ʔó²¹ (1 expected). This set is probably related to one or both of the two following sets.

220 *ʔa·^L [1] *ʔa·ʔ^L [2] *hollow, make a hole* U ʔo³to³ *hollow* [1] Ch ʔo to *hollow* [1] S ʔo to *hole* [1] Pa ʔóʔ² za² *make a hole* [2] (a expected; reflects an accented syllable) VN ʔoʔ *broken* [2] (oa expected) LI ʔo³² *make a hole* [1] (3 expected) ku³ʔo·ʔ³ *hollow* [2] Le ko ʔaʔ *hollow* [2] Qi ʔo³⁴ ca³ *make a hole* [1] ʔoʔ² *deep* [2] (oh expected in both forms and 23 in the second one). This set is probably related to the immediately preceding one.

221 *ʔa·(?)^{LH} *cry* Oj ʔoʔ³¹ ʔni² (*imper.*) (tone does not match) U ʔoʔ⁵ (tone does not match; the

- vowels of the U, Tl, and S forms, at least, reflect an open syllable) Tl ʔoʔ⁴ ceg³ S ti ʔoʔ co *shout* Qe kwa ʔau Tp ʔo³² za² Pa ʔo³² VN ʔoaʔ hna (*first person singular*) Ll ʔo-ʔ³² (reflects an accented syllable) ʔo-²³ cry (*animal*) Qi ʔoh⁴ ca³ Co ʔor². This set is probably related to the two sets immediately preceding.
- 222 *ʔa^L herb Oj ʔo² mi³ U ma²-ʔo³ Tl ʔew³ S ʔó² (accent not expected) Pa moʔ³¹ ʔow² leaf Ll ʔo³ medicine Le ʔa medicinal herbs Qi ʔoh²³ Co ʔo².
- 223 *ʔa· [1] bury (*inan. obj.*) *ʔa-ŋ [2] bury (*an. obj.*) U si²ʔo³⁴ [1] ʔo³⁴ [2] Tl ʔo³⁴ [1] Ch ma di ʔo [2] S ma ca ʔo [2] Tp ʔó² za² (*an. obj.*) [1] Pa ʔéw² (*intr.*) [1] ʔúw² [2] Ll ʔo³² [1] ʔan³² [2] Le ʔa-³² [1] ʔay [2] Qi li²si²ʔaih²⁴² [2] Co ʔó-r²¹ [1].
- 224 *ʔa· [1] *ʔa-ŋ [2] *ʔia· [3] pardon, help Oj hma¹ʔa² ʔni² help [2] U ma⁴ʔo³² help [2] Tl ma ʔéw³ [1] Ch ma ʔos [2] S ma ʔos [1] Tp hme²ʔo³¹ za² help [1] Pa mi²ʔa³² (*intr.*) [1] (reflects short vowel) mi²ʔow³¹ [2] Ll mi²ʔä-h² help, pardon [3] mi²ʔa-hn² thanks [2] Qi mih hmi ʔah beg pardon [3].
- 225 *ʔa· your heart U ni²ʔoʔ⁴³ Tl ʔoʔ⁴² S ʔoʔ ʔno Qe ʔauʔ ʔno (vowel quality of Qe, Tp, and Pa forms reflects long vowel but not a closed syllable) Tp ʔauʔ² Pa ʔowʔ³² ʔni² (reflects *a-ŋ) VN ʔao Ll ʔa-hn² Lc ʔo ʔni (an expected) Lt ʔay Qi ʔoʔh²⁴ Co ʔoʔ² (long vowel expected). Most forms are closed by ʔ, which is a marker of second person and not a part of the stem.
- 226 *ʔa· Lalana, a Chinantec village Ll mi³ te²ʔo³ Lc mi ta ʔo Le mi tya ʔa.
- 227 *ʔa· hen Ch ka ʔo S ka ʔo.
- 228 *ʔá^H rotten, dried out U ʔo²³ Tl gya (reflects *ʔia) Ch ma ʔo Tp ʔáu¹ Pa ʔéw¹ VN ma ʔao Ll ka²³ʔä³ (reflects *ʔia; 2 with final h expected) Qi ʔoh¹ Co ʔó¹.
- 229 *ʔiu [1] be in (*singular inan. subj.*) *ʔiuŋ [2] be in (*singular an. subj.*) U ʔei¹ [1] Tl gi [1] gyó³ [2] Ch mai ʔyu lo si necklace [1] S mai ʔu læ co necklace [1] (reflects *u) Tp ʔi²¹ [1] Pa ʔyu¹ [1] ʔyúw¹ [2] VN mai ʔyu lauʔ necklace [1] Ll ʔyö² [1] ʔyuhn² [2] Pe ʔö [1] ʔön [2] Qi ʔyü¹ [1] ʔyui [2] Co ʔi^ó-²¹ [1] (length not expected).
- 230 *ʔiu-ʔ be afraid Ll ʔyö-ʔ²³ To ʔöʔ.
- 231 *ʔia^L early in the morning Oj ma⁴ ti⁴ ʔye² breakfast U to⁵ʔie³ Tl meg² gya⁴ʔew³ early (the Tl, S, and Qe forms reflect *ʔa·) S ʔo nei Qe ʔo nai Tp tə² ʔo³ʔiog² Pa tu³ʔew² VN ʔo Ll i²³ʔä³ To ʔni ʔa ta Qi ʔah²³ Co la²ʔe². This set may be related to *iá.^{HL} tomorrow.
- 232 *ʔia^{LH} [1] have, take care of (*inan. obj.*) *ʔiá-ŋ^{LH} [2] have, take care of (*an. obj.*) U ʔie³ take care of

- [1] **Pa** ʔyo³² *have* [1] ʔyow³² [2] **Ll** ʔä³ [1] ʔän³² [2] **Le** ʔe⁴ [1] (tone 3 expected) ʔey³² [2] **Qi** ʔoh⁴ ca³ *have* [1].
- 233 *ʔla· *star* **Ll** li²³ʔä·hn² (reflects *ia·ŋ) **Lc** nö ʔa **Pe** ni ʔa **To** ni ʔa **RC** nö ʔa **A** nö ʔa **Le** ñu ʔe.
- 234 *ʔiá^{HL} [1] *ʔa^L [2] *tomorrow* **Oj** ʔye⁴ [1] **U** ʔie³⁴ [1] **Tl** ca⁴ʔew³ [2] meg² gya³⁴ ʔéw² *early in the morning* (segments fit [2] but the tone fits [1]) **Ch** ca ʔo [2] **M** ca ʔo [2] **S** ca ʔo [2] **Tp** ʔióg³ [1] (accent not expected) **Pa** ʔá³ [2] (reflex of long vowel expected but no accent; tone fits [1]) **VN** ʔi ʔo [1] or [2] **Oz** ʔö [1] **Ll** ʔäh²³ [1] **Lc** me ʔa [1] **RC** me ʔa [1] **Le** ʔe⁴ [1] (accent expected) **Qi** ca³ ʔoh³⁴ [2] (tone of **Qi** and **Co** reflects short vowel) **Co** de²ʔo¹² [2] (long vowel expected). This set may be related to *ʔia^L *early in the morning*.
- 235 *ʔi [1] *ʔu [2] *ʔa [3] *no* **Oj** hī²ʔi³ [1] **U** a⁵ʔa¹ [3] **Tl** ʔeg¹ [1] **Ch** hā ʔā [3] **Tp** hā²ʔō²¹ [2] **Oz** ʔa ʔā [3] **Ll** hī ʔi [1] **Qi** ʔu³⁴ or ²⁴ [2] **Co** ʔu¹ [2].
- 236 *ʔi^L *thief* **Oj** ca² ʔi² **U** cie³ ʔag³ or a³ʔag³ **Tl** ca³ ʔág³ (accent not expected) **S** ʔaj² **Tp** za² ʔag² **Pa** za² ʔiy² **Ll** za³ ʔi³ (i in **Ll**, **Lc**, **To**, **A**, and **Le** not expected) **Le** za ʔi **Qi** ca³ ʔuh²³ **Co** ʔi² (nasalization expected).
- 237 *ʔi·ŋ [1] *ʔi·ŋ [2] *shoot* **U** ʔag²³ [1] **Tl** ʔag⁴ [2] **Tp** ʔi²ʔa² za² [2] **Ll** ʔi·n³² [1] **Qi** ʔuh²¹² [1] (neither the **Qi** nor the **Co** form reflects a final *ŋ) **Co** ʔi·r¹ [2].
- 238 *ʔi·ʔ [1] *drink* *ʔi·ʔ^L [2] (*imper.*) *gu·ʔ [3] (*first sg.*) *ʔú·ʔ^L [4] (*second*) *ʔni·ʔ [5] (*first pl.*) **Oj** ka³ʔi³a² [1] (nasalization expected) ʔi²ʔ³ ʔni² [2] a⁴ ʔu³ ʔni² (*neg. imper.*) [4] **U** ʔag[?] [1] (all **U** forms reflect a short vowel) ʔaj[?] [4] (*second person past*) [2] lau[?] [3] **Tl** ʔég[?] [1] ʔáy[?] [2] (i expected) lāw[?] [3] ʔáw[?] [4] ní[?] [5] **Ch** ʔeg[?]s [1] ʔey[?] [2] ʔaw[?] [4] **S** ʔi[?]s [1] ʔi[?] [2] **Qe** kwa ʔi[?] [1] ʔaj[?] [2] **Tp** ʔi[?]ʔa[?] [1] **Pa** ʔi[?] [1] ʔé[?] [2] (i expected) gi[?] [3] ʔów[?] [4] ʔnyu[?] [5] (reflects *i·u·) **VN** ʔej[?] [2] ʔau [4] (final ʔ expected) **Oz** ʔu[?](n) [3] or [4] **Ll** ʔi·ʔ³² [1] ʔi·ʔ³ [2] (reflects unaccented syllable) u·ʔn²³ [3] ʔu[?]n³ [4] ʔni·ʔ³ra² [5] **Le** ʔi[?]ʔ³² [1] ʔi[?]ʔ³ [2] u·y[?] [3] ʔúy[?] [4] ʔi[?]ʔ³²a² [5] (n rather than initial ʔ expected) **Qi** ʔuh[?] ca³ [1] ʔih[?] [2] du[?]h² [3] **Co** ʔi[?]r² [1] (long vowel expected). The following set is probably related to this one as a ditransitive form: *ʔi·ʔŋ^{LH} *give to drink* **Pa** ʔé[?]ʔ³² **Ll** ʔi·ʔn³².
- 239 *ʔi^{LH} *paint, color* **U** o¹ʔej³ **Tl** ʔi⁴ **S** ʔi **Qe** ʔej (i expected) **Tp** ʔe³² **Pa** ʔe³² **VN** ʔe **Oz** wa ʔe **Ll** ʔi³ **Le** ʔi³ **Qi** ʔi⁴ **Co** ʔi².
- 240 *ʔi^H *sound, make noise* **U** ʔaj³² **Tl** ʔay⁴ **S** ʔe¹² (reflects accented syllable) **Tp** i²ʔej³¹ (21 expected) **Pa** ʔey³¹ (1 expected) **Ll** ʔi² **Lt** ʔi **Qi** ʔih² **Co** ʔi¹.

- 241 *ŋi^L [1] *ŋi^H [2] *who?* Oj ŋi² [1] U ŋaj³ [1] Tl ŋey³ [1] Ch ŋi S ŋi Qe ŋej Tp ŋej² [1] Pa ŋey² [1] VN ŋej Oz ŋi Ll ŋi² [2] Le ŋi Qi ŋih¹ [2] (Ql and Co forms reflect an accented syllable) Co ŋi¹ [2] (long vowel expected).
- 242 *ŋi: *stomach* U ma³ŋej² (the U and M forms reflect a short vowel) Tl ŋay⁴² M ŋi S ŋes Qe ŋajs.
- 243 *ŋi: *dig* Oz ŋi Qi ŋi? (final ? not expected but jh is expected) Co ŋi:r¹.
- 244 *ŋi: *lose, destroy* Oj e² ca⁴ ŋi²a² *get lost (motion)* ŋi³¹ ŋni² *destroy (imper.)* U ma⁴ŋaj² *lose (first person singular past)* si²ŋaj⁴ cei⁴³ *forget* Tl ŋey⁴ Ch ka ŋi *get lost (past)* S ŋa ŋi Tp ŋé² (accent not expected in Tp and Pa forms) Pa ŋé² VN ŋej Oz ma ŋey *lose (future)* Ll ŋi²³ *steal* ŋi²³ zih² *forget (the latter form may not be cognate)* Le ŋi⁴ *steal* Qi ŋi² ci² ca³⁴ *forget, lose* Co di¹²ŋi:ŋ²¹ (nasalization expected).
- 245 *ŋi:^{LH} *a drunk* Oj ca²ŋi² U a³ŋaj⁴³ Tl ca³ ŋey⁴ Ch ca ŋi S ca² ŋe² Tp za² ŋe³² Pa za² ŋe³² Le za ŋi Ql ca³ ŋih⁴³ Co dia¹² ŋi:ŋ²¹ (nasalization expected).
- 246 *ŋi:ŋ^H [1] *ŋi:ŋ^{HL} [2] *shadow, shade* Oj ŋi²¹ [1] (does not reflect accented syllable) U ŋej²² [1] Tl ŋi²¹ [1] (nasalization expected; does not reflect accented syllable) Ch ŋi ŋi? S nyi ŋi? Qe ŋi ŋej? Tp ŋé²¹ [1] Pa ŋi²¹ *shade* [1] ŋi² *shadow* [2] (32 expected if vowel was long) VN ŋejŋ (final ? expected) Ll ŋi² *shade* [1] ŋi:ŋ²³ *shadow* [2] Qi ŋih²¹ [1] Co ŋi²¹ [1] (accent expected). A form with final *ŋ underlies the Tl, Ch, Tp, the second Ll, and probably VN forms. A form without final *ŋ underlies each of the Pa forms. The forms from the other languages are ambiguous.
- 247 *ŋu:^{HL} *chile* Oj mi³ŋo² U u⁴-ŋaj²³ Tl ŋaw⁴ S ŋi² *chile* ŋu²ta² *chile ancho* Qe ŋeŋ Tp mi²ŋag² Pa ŋow² VN ŋaj Oz mi ŋu Ll ŋu²³ Le ŋu⁴ Qi ŋuh⁴ Co ŋu¹².
- 248 *ŋu:ŋ^H *fat* U ŋeŋ²³² Tl ŋú²³ (1 expected) S ŋo? co Qe ŋeŋ? Tp ŋo²³¹ za² Pa ŋo²³¹ (1 expected) Co ŋu:ŋ²¹.
- 249 *ŋá:^{LH} [1] *ŋá:^{LH} [2] *bridge* Oj ŋá⁴ [1] (3 expected) U a²ma³ŋo⁴³ *hammock bridge* [2] Tl maŋó⁴ [2] (nasalization expected) S ŋma²ŋo² *vine bridge* [2] Tp ci¹ma²ŋá³² (archaic) [1] Pa ŋma² ŋá³² [1] VN ŋá [1] Oz ma ŋá [1] Ll ŋoh² [1] Lt ŋá Qi ŋo³ [1] Co ŋá²¹ [2] (vowel reflects [1]).
- 250 *ŋa:^H [1] *ŋa:^{ŋH} [2] *dark* U o¹ma³ŋo³² *soot from smoke* [1] Tp hmi¹ŋo¹ [1] Oz na ŋo [1] Ll li³ŋo³ [1] ŋo³ *soot from smoke* [1] ŋo:ŋ³ or ² *muddy, dirty* [2] (2 expected) To ri ŋo [1] Le ŋu ŋá? [2] Qi ŋoh²⁴² [2] Co miŋo¹ [1].

251 *?ḡ· (to) harvest Pa ?ḡ³² L1 ?ḡ²³ Le ?ḡ⁴.

252 *?ḡ·^H papaya Oj ?ḡ¹ Tp mi²?ḡ³¹ Pa ?ḡ¹ VN mi ?ḡ? (oa expected) L1 mi³¹?ḡ³¹ (2 expected) Qi ?o² (nasalization and final ? expected in Qi and Co forms) Co ?o¹.

253 *?ḡá^L inside Tp ?ḡi^ó?² L1 ?ḡ³ Le ?ḡ?. The Tp form probably reflects *?ḡ. Since in nearly all L1 and Le forms reflecting *ḡḡia the nasal is missing, it is possible that this entire set should be labeled *?ḡiá^L.

254 *?ḡ^{HL} sigh, moan U ?ḡe²³ Pa ?ḡw² (accent not expected) L1 ?ḡ²³ (long vowel expected) Le ?ḡ⁴ (accent not expected) Co ?ḡ· (reflects *ḡ· rather than *iḡ·).

255 *?iḡ^{HLH} uncle VN ?yaḡ my aunt (nasalization expected; ḡ may be a person marker) L1 ?ḡ²³² Le ?ḡ· Qi ?ḡh²⁴² ca³ Co ?ḡ²¹ (12 without an accent expected).

*b

256 *b^{LH} dove Tp i¹hu² b² (32 expected) Pa huw² biw³² L1 b³ mourning dove Le bo³ Qi po⁴ Co b².

257 *b^a a kind of tuber Pa biw¹ Co hi· b^a (a short vowel expected).

258 *b^a·^H ball, short Tl pé⁴ short person (? and 1 expected) Tp b^a?³¹ ball, short Pa za² biw³¹ short person (1 expected) VN za bai? me? underground dwarf Qi po¹ ball (reflects accented syllable with a short vowel) Y b^a? ball Tm bi? ball Co b^a·²¹ ball.

259 *bí^L [1] strength *bíḡ^L [2] strong (an.) Oj pi³ [1] pi³ [2] U ua³pei⁴ [1] paḡ⁴ [2] Tl pi³ [2] S wa pi [1] Qe peḡ [2] Tp bí² [1] bé² [2] Pa bí² [1] bé² [2] VN beḡ [2] L1 hu²³bi²³ [1] (3 and h expected) Qi piḡ³ [2] Co bí·ḡ² [2]. Oj through Pa reflect a short vowel and VN through Co reflect a long vowel.

260 *bí^L [1] move (inan. obj.) *bíḡ^L [2] move (an. obj.) Tp zi²bi³¹ [1] (2 with an accent expected) Pa bí² [1] bé² [2] L1 bi³² [1] bin³² [2] (3 and h expected in both forms) Le bi³² [1] (tone 3 and accent expected) Co bí¹² [1].

261 *be^{LH} handful Ch pa Tp ba³² round (inan.) VN be L1 ba³ Qi pa⁴ Y be cylindrical.

262 *be shave Pa ḡyí¹ na² bá¹ ha³ razor blade L1 ba³² Le be³².

263 *beḡ [1] *be? [2] roll up U si²pa⁵ (first person singular) [1] Tp bá² za² [1] Pa b^a?³² curl [1] L1 ben³² [1] Le bey³² [1] Y be?e (second person past) [2] Co be?r² [2].

264 *be?η^H big, fat Oj pe?¹ Pa bá?² (1 expected) Oz ba? L1 be?n².

265 *ba *beat, pound* Oj pa³ ?ni² U pa²³ Tl pá³ S pa Tp bá² za² Pa bá² *hit with stick* VN ba hna (*first person singular*) Ll bo³² Le ba³² Qi poh²⁴ (h not expected) Y ba Co bár¹².

266 *béŋ^{HL} *clumsy* Tp bə³ *heavy-footed* Ll bə·n³ (length not expected; 23 and h expected) Y bə Co bə² *big, clumsy*. This set is placed at the end of the sequences of *b and an oral vowel because of its unusual nature. All the cognate forms have nasalized vowels, but the expected reflexes before *Y would be nasals. Cf. sec. 3.1 of the Introduction.

*z

267 *zi^{LH} *post* U a^{2?}ma³cei³ Ch ?ma ceg S ?ma²ci³² Tp ?ma²zi³² Pa ?ma²ziw³² Ll zi³ Le zi³.

268 *zi^{LH} [1] ~ *zi^L [2] *grind* Oj či³ ?ni² [2] a⁴ci² ?ni² [1] S ma kwa¹ci³²co [1] Ll zi³ [1] jih³ [2] Lt tay zi [1] Qi cih⁴ [1] (h not expected) Co dir² [1].

269 *zi [1] *ziŋ [2] *be on top of* U ua²ca²i² (an.) [2] Tl ra²cég² [1] Tp tə²zi³¹ *straddle* [2] Pa ti²ziw³² [1] zś² [2] Ll zin³² [2] Co dí·ŋ² [2] (length not expected).

270 *ziŋ *set (sun)* Tl ka³⁴cəg²⁴ (reflects *zi?ŋ) Tp ta² zi³¹ Pa

ka³ta¹zś¹ ?yiw² Ll ka²³zən²³ ŋi² (zin expected; the form may be the animate form of *zá^{HL} *be used up* and not appropriate here).

271 *zi^{LH} *heart* Oj m³ci³a² U ɸ⁴cei⁴³ Tl cég³ M mai ci cye S m³ci²³ Tp zi³² Pa ziw³² VN zi Oz ci (zi expected) Ll zih² Le zi² Qi ci³ Co dí²¹ (length unexpected).

272 *zi^{LH} *ice, hail* U cei⁴³ Ch ceg S ci Tp zi³² Pa ziw³² VN zi Ll zih² Lt zi Qi ci³ Co dí²¹ (length unexpected).

273 *zi^L *dog* Oj ci² U a¹cai³ Tl cag³ M ci S cai² Tp zi²hi²?³¹ (zag expected if cognate were in tonic position) Pa ziy² VN zai Oz zi Ll zi³ Le zi³ Qi cih²³ Y zi Tm zi Co di².

274 *zi? *gall* U o²cei?¹ Ch cag (final ? expected) S ca?¹ (i expected) Tp zi?¹ Pa zi?³¹ VN zai? Ll zi?³ Co di?¹ (long vowel expected). Cf. *zi?^{LH} *bitter* and *zi? *wild herb*.

275 *zi? *wild herb* Pa ha?³² zi?³¹ Ll ho?² zi?³¹. This set and *zi?^{LH} *bitter* and *zi? *gall* are probably related.

276 *zi?^{LH} [1] *zi?^{HL} [2] *bitter* Oj ci?⁴ [1] U cei?³ [1] (reflects syllable without accent) Tl cég?³ [1] S ci?³² [1] (reflects syllable without accent) Tp zi?³ [2] Pa zi?³ [2] Ll ji?²³ [2] Le ji?⁴ [2] Co gi?¹² [2]. Cf. *zi? *gall* and *zi? *wild herb*.

- 277 *zĩ? [1] *zĩ?ŋ [2] *burn up, singe* S ma²ci?² it burned up [1] (does not reflect accented syllable) Tp zĩ?² *singe*, [1] zĩ?³² *wild fire* [1] Pa zĩ?² *burn up*, [1] zĩ?³² *burned up*, [1] zó?² *singe* [2] Ll zĩ?² *wild fire*, [1] zĩ?n³² *singe* [2] Co dí?¹² *singe*. [1]
- 278 *zi^H *head* Oj čĩ¹a² U ma³tvi² Tl ci⁴² S cis¹ Tp mi²zi²¹za² Pa zi¹ VN mai zi hna Oz mi ji Ll mi²ji² Le ji Qi vi² Y gi Tm lo gi Co mo²gi¹.
- 279 *zi^L [1] *zĩ [2] *cooked corn drink* Oj čĩ² [1] U tvi³ [1] Pa ziw² [1] Ll jĩ³ [1] Qi ŷ²cih²⁴² [2] Co hmi²di¹ [2].
- 280 *zi^{LH} *take out* Oj a⁴čĩ² ?ni² U tvi Tl ci S ci²³ (reflects syllable with accent) Tp zĩ² (32 without accent expected) Pa zi³² Ll jĩ³ Le ji Qi tvi^{h4} (h not expected) Y gi? (? not expected; perhaps a marker of second person).
- 281 *zi^{LH} [1] *zi^{LH} [2] *outside* Tl cáy⁴ [2] Ch cyei [2] S cyei? [2] (? not expected) Qe cai? [2] (? not expected) Tp ha¹zi³² [1] Pa ha¹zi³² [1] Ll ši²ji³² [1] Qi i¹tvi⁴ [1].
- 282 *zi^L *wind* Oj čĩ³ U tvi⁴ Tl ci³ S ci²³ Tp zĩ² Pa zĩ² VN zi Oz wu ji Ll jĩ^{h3} Le jĩ³ Ql tvi²⁴ Y gi Co gi¹². The following forms are probably related: *zi^L *Jacatepec, a Chinantec village* U a²tvi⁴ Ch ho ci Tp ha¹zi² Pa ?a¹zi¹ (2 expected) Co ?o gi¹² *Chiltepec*.
- 283 *zi-ŋ^{HL} *roundworms* Ll ji·n²³ Qi zih⁴ (t^v expected).
- 284 *zi^L [1] *hot (inan.)* *zi-ŋ^L [2] *hot (an.)* Oj čĩ³ [1] U tvei⁴ [1] Tl cáy³ [1] Ch cyei [1] M ci [1] S cyei²³ [1] Qe cai [1] Tp zéi² [1] zé²za² [2] Pa ziw² [1] zé² [2] VN ze [1] Oz ji [1] Ll jĩ^{h3} [1] jĩ·hn³ [2] Le ji [1] Qi tvi^{h3} [1] Co gi² [1] gi-ŋ² [2].
- 285 *zu?ŋ *break in two* Tl cęw?² S ka cę? Qe la cęu? Ll zu?n³² *fold in two*.
- 286 *zu^H *water jug* Oj na¹cu³¹ U a²cai³² Tl caw⁴ S cie²³ (3 expected) Qe ceu Tp ni¹zi^{g1} Pa zəw¹ VN zao Oz wa zu Ll zu⁻² Le mi zu Qi cüh² Y zü Co dö⁻¹.
- 287 *zu^L *narrow* Oj cu² U cai³ Ch caw M cyu S cai² Qe ceu Tp zag¹ (2 expected) Pa zəw² VN zao Oz zu Ll zu⁻³ Co dö⁻².
- 288 *zu-ŋ^H *parakeet* Tp i¹zi?³¹ Ll jö-?² (reflects *ziu-?) Qi cüh?¹ (reflects syllable with accent) Co dö-?¹ (reflects syllable with accent, but accent expected in Co form).
- 289 *za^L [1] *za^L [2] *person* Oj ca² [1] U cie³ [2] Tl cew³ [2] Ch 'co [2] M co [2] S cö² [2] (accent not expected) Qe cau [2] Z cau [2] Tp za² [1] Pa za² [1] VN za [1] Oz za [1] Ll za³ [1] Le za³ [1] Qi ca³⁴ [1] Y ze [1] Tm za [1] Co dia¹² [1].
- 290 *za *drip* Tp zá² Ll za²³.

291 *zaj [1] *za· [2] *za·ŋ [3] *dance* U cie²³ hã¹ [2] Ch cos no hã [2] S çã co [1] Tp zã³²za² [1] Pa cyi²zã³² [1] Ll zãn²³ [1] Lc zan [1] To ja [1] (zan expected) A zan [1] Le ga³zẽy⁴³ [1] (zay expected) Qi çẽih³ [3] (nasalized vowel not expected) Co ta de-iŋ¹² [3].

292 *zá^{HL} [1] ~ *zia [2] *be used up* Oj hma¹ çã² ?ni² (reflects *ziaŋ) U cia³⁴ [1] si²tʷa²³ [2] Tl ma³çá² [1] Ch ma ka ca [1] ma kyã cya [2] S ma ka ca [1] Tp ka²za³ [1] Pa za² [1] (reflects syllable without accent) zyí³ [2] Ll mi³zah²³ [1] ri²³ja³ [2] Pe mi ku zo [1] Le ka za [1] ja [2] Qi ca²⁴ [1] (34 expected) Co ka dia¹² [1] (reflects syllable without accent).

293 *za? *half* Oj tɔ⁴co² U to⁵cie²³ S tu³co²³ Tp zo²³ Pa tɔ³zo²³ Ll tu²³zo²³ Le tɔ za? Qi kɔ²⁴ca²⁴ The following forms are probably related: *za· [1] *half* (*inan.*) *za·ŋ [2] *half* (*an.*) and *zia· [3] *half* U ka³cie³² [1] ka³cjɔ³² [2] Tl ka³co¹² [1] ka³cɔ² [2] S cyo ?yu noon [3].

294 *za? [1] (*past*) ~ *zia? [2] (*future*) *find* (*inan.*) *za?ŋ [3] (*past*) ~ *zia?ŋ [4] (*future*) *find* (*an.*) Oj ka³co²³ hna³ [1] U cie²³ [1] tʷie²³ [2] Tl có²⁴ [1] cyó²⁴ [2] Ch co [1] (in this and the following form ? expected, but vowel reflects closed syllable) çã [3] S ka³co²³ [1] cyo²³ [2] ka³çã²³ [3] cyã²³ [4] Qe ma la cau? [1] Tp zio²³za² [2]

Pa zó² [1] zyó²³ [2] zã²³ [3] VN zoa [1] (? expected, but vowel reflects closed syllable) Ll ka²³zo²³ [1] ri²³jo²³ [2] (short vowel expected) ka²³zõ²³ [3] ri²³je²³ [4] Qi ca²⁴ [1] ceih²⁴ [3] (reflects a long vowel) Co dé·?r²¹ [1] (reflects a long vowel).

295 *za^H *guilt, sin* Oj co¹a² (31 expected) U cie³² Tl co⁴ S co³ Qe cau Tp zo²¹ *sin* záu¹ *guilt* Pa zaw¹ Ll zo² Qi cah² Co de¹.

296 *za^{HLH} *corncrib, loft* Ll zo²³² Le za Qi cah²⁴².

297 *za· *male* Oj ca⁴lo³¹ *male mule* U a¹?dʷie²³ cie³⁴ *cock* Tl co³⁴ S tu²co²³ *Tom turkey* Qe ka ?o cau *cock* Tp zó² *young man* Pa tu²zú² *Tom turkey* (zəw expected) VN zo Oz zì zo *male dog* Ll zo-h²³ Le za Qi cah³ Y ho? za *steer*.

298 *za· *beach* U i²cie³² Pa hi¹zaw² Ll zo².

299 *za· *goes* Oj co²³ U cie²³ Tl co³⁴ S co² Qe cau Tp zó³ Pa záu³ VN zao (o expected) Oz zo Ll zo³² Qi ca (ah expected) Co dér² (long vowel expected). This set is probably related to *za·?ŋ go *home*.

300 *zá^{LH} *straight* Oj co² U ko³-cie⁴³ Tl có⁴ *truth* S co Qe hu cau *truth* Tp ko²zau³² Pa zəw³² VN kɔ zo Oz zo Ll zo-h² Ql cah⁴ (43 expected) Co dé²¹.

- 301 *zǎ^{HLH} *sickness* Oj co³¹ U cie² Tl cew² Ch co S có¹ (accent not expected) Qe cau Tp zo²¹ Pa zaw¹ Ll zo^{h2} The following forms are probably related: *za·?^H [1] *za·?^{HLH} [2] *sick* Oj co? U a³cie?¹ [2] (tone reflects an open syllable) Tl cǒ² [2] (reflects *zá·ŋ^{HLH} as do the S and Qe forms) Tp zo?³¹ [2] Pa zo?¹ [2] VN zoa? Ll zo-?²³² [2] Le zay? (reflects final *ŋ) Qi cah?⁴² [1] Y za?a Co de-?^{r21} [1].
- 302 *za·?ŋ *go home* Pa zǎ?³ Ll zə-?ⁿ³². This set is probably related to *za· *goes*.
- 303 *zlú^{HL} [1] *good (inan.)* *zlúŋ^{HL} [2] *good (an.)* Oj čí⁴ [1] U cei³⁴ [1] Tl ci² [1] (accent expected) Ch cyu [1] M cyu [1] S cyu [1] Qe ci [1] Tp ze³ [1] Pa zyo³ [1] zyw³ [2] VN zyu [1] zyuŋ [2] Oz ju [1] Ll jǒh²³ [1] juhn²³ [2] Le ju [1] Qi vǔh²⁴² [1] (34 expected but not h) Y gyü [1] Tm gyu [1] Co gió² [1].
- 304 *zla [1] *put (inan.)* *zlaŋ [2] *put (an.)* Oj ča¹ ?ni² [1] U tʷa³⁴ [1] Tl cyá² [1] S ci [1] Tp zia³² [1] Pa zyi³² [1] zyǎ³² [2] (the Tp and Pa forms require plural objects) VN ze *tell (story)* [1] Ll ja³ [1] jen³ [2] Le ja⁴ [1] Y gye [1].
- 305 *zla? *rafter* U a^{2?}ma³ tʷie?² S ?ma cyo? Qe ?ma cyu? Tp ?ma²-zió?² Ll ?mo³ jo-?³² (short vowel expected).
- 306 *zia? [1] *zia·?ŋ [2] *warm oneself, heat* Tp hme²ziǒ?² [2] Pa zyo?³² [1] mi²zyaw?³ [2] Ll jo?²³ [1] li²³ja-?ⁿ²³ *become warmed* [2] Co hmi giá·iŋ?²¹ [2]. This set is probably related to *ziá·^L *warm*.
- 307 *zia? *distribute* Tp zió?³² Pa zyó?³² Ll jo?²³. These forms are probably related to *ziá·^H *distribution*.
- 308 *zla·?ŋ *arrive at home* Oj čǎ?³ ?ni² U tʷǎ?⁴ Tl cyǎ?² S ku cyǎ? Tp ziǎ?² ?ne² Pa zyǎ?³ Ll ri²³je?ⁿ² Lc ja?ⁿ Lt maǰa?u. These forms are probably related to *zia· *arrive*.
- 309 *ziá?^{LH} *tapir* U a⁵tʷie?⁴³ Ch cyo? M gye? (cy expected) S cyo?³² (reflects a syllable without accent) Qe cyu? Pa zyi?³² (reflects a long vowel) Ll jo?² Lc ja? Pe je? To je? A ze? Lt ja? Ql tʷǎ?³ moh?³⁴ Co gia?².
- 310 *zia·^H [1] *some (inan.)* *zia·ŋ^H [2] *some (an.)* Pa ka²zyew¹ [1] ka zyow [2] Ll ka³jo-² [1] ka³jan² [2] Pe ka ja [1].
- 311 *zia·^H or ^{HL} *cockroach* Tp mi¹-hui?² zioǰ² Pa mi¹zyew².
- 312 *zia·^L *cleared brush* U tʷie³ S cyo Qe cyu Tp zioǰ² Pa zyew² Ll jo-³ Pe ja Le ja Y gye Co gie-¹ (2 expected).
- 313 *zla^{HLH} *agave (maguey)* U ma²tʷie¹ Tl cyo⁴² S cyo¹ *agave fiber* Qe tu? cyu *burlap bag* Tp ci¹zio¹ Pa zyew¹ *string* VN zye Ll jo-²³² To je A ze Le ja Qi tʷia²⁴² (h

- expected) Y gye *agave fiber* Co gie.¹²
- 314 *zia^{HLH} *grandchild* Oj yj²če³¹-a² U a³t³ie¹ Tl cyo⁴² M cye S cyo¹ Qe cyu Tp zio²¹ Pa zyew¹ (*first person singular*) VN zoi (*first person singular*) (zye expected) Oz jo Ll jo²³² Lc ja Pe ja To je RC ja A ze Le ja⁴² Qi t³ia¹² (*first person singular*) (h expected with tone 242) Co gie^{r12}.
- 315 *zia^{HLH} [1] *zia^L [2] *sweat* Oj hmi²če³¹ [1] U t³ie³ [2] Tl meg³-cyo⁴² [1] S mi²cyo¹ [1] Qe mi cyu Tp hme¹ziog² [2] Pa hmi¹zyew² [2] zyew¹ *steam, fog* [1] Ll mi²³jo²³² [1] Pe mija To mije A mize Le mija Qi t³ia²⁴² [1] (h expected) Co hmi²gie² [2].
- 316 *zia^{HLH} *arrive* Tl cyo³⁴ Tp zióg² Pa zyew³ Ll ka²³jo^{h2}. This set is probably related to *zia^{HLH} *arrive at home*.
- 317 *zia^{HLH} *untie* U t³o⁴i³ tjo² *they are getting divorced* Ll jaⁿ³².
- 318 *ziá^H *distribution* Ll to²³jo^{h2} Co hmo^{r1} gié¹. This set is probably related to *zia^{HLH} *distribute*.
- 319 *zlá^L *warm* Tl cyéw³ Ch cyo S cyó²³ (accent not expected) Qe cyu Tp zióg² Pa zyéw² Ll jo^{h3} Pe ja To je A ze Le na ja Qi t³ia^{h3} Co gie. This set is probably related to *zia^{HLH} *warm oneself, heat*.
- 320 *ziá^L *yesterday* Oj če³ U t³ie⁴ Tl cyéw³ or cyú³ Ch cyo M ci (cye expected) Qe cyu Tp zióg² Pa zyéw² Oz jo Ll jo^{h3} Lc ja Pe ja A ze Le ha ja Qi t³ia⁴ (h expected with tone 3) Co gié².
- 321 *ziá^{LH} *pool* Tl cyó⁴ S cyo² Tp zióg³² Pa zyew³² Ll jo^{h2} Qi t³ia⁴³ (h expected) Co gié²¹.
- 322 *zia^{HLH} *chical, jinicuil* Oj kwo¹ ča¹ U ku⁴t³ya³ lo³ (32 expected) Tl cya¹ S cya¹ Tp ni¹-zia¹?³¹ Pa zyi¹ Ll jo¹?² Qi t³ia¹?⁴² Co gie¹?²¹.
- 323 *ziá^{HLH} *cacao, chocolate* Oj mi²ča⁴ U u⁴t³ya³ (reflects syllable without accent) Tl cya⁴ Ch cya¹ S mi²cyá¹ (23 expected) Qe micya¹ ka¹ Tp mi²ziá¹?³² Pa zyi¹?³² VN zye¹ Oz tijo¹ *chocolate drink* Ll mi³¹-jo¹?³² (32 may be derived from tone 2, which is the expected reflex) Lc mi ja¹ Pe mija¹ To mije¹ A mize¹ Le mija¹ Qi mi¹?¹ t³ya³?³ (The Qi and Co forms reflect *ziá^{HLH}) Co tö¹ gia²?.
- 324 *zia^{HLH} *municipal (building)* U hau³² t³ie³ (reflects open syllable) Ll i²³jo¹?³² Pe ñö ja¹ Le ñu ja¹.

*g

- 325 *gi^H *lover* U keg¹ (2 expected) Tp gi²¹za² Pa gi¹ Ll gi² Co gir¹.

326 *giʔ *candle* Ll giʔ² Le giʔ.

327 *gəʔ [1] ~ *kəʔ [2] *eat* U geʔ⁴ *feed* [1] (k expected) Tp gəʔ³² [1] Pa gíwʔ³² [1] kíwʔ² [2] VN nagə [1] (? expected) Ll e-ʔ³² [1] (seems to reflect *ge-ʔ but it may be reshaped from *gəʔ on the analogy of *ia-ʔ *feed*) kəʔn³ [2] Y dəʔ [1] Co gəʔr² [1] kəʔ¹ [2]. Cf *kəʔ *eat*.

328 *giʔŋ (*a*) *swing* Ll tu³ʔi-ʔ³ (this is probably a borrowing from a Qi-type language since g is the expected Ll reflex) Qi dʔiʔ⁴ Co giŋʔ².

329 *gi-ʔ *light (lamp)* Pa gíʔ³² Ll gi-ʔ³ Le gi-ʔ³².

330 *gu^{HLH} *owl* U a²kau¹ Tl kaw⁴² S ku¹ ʔya¹ Qe keu Tp i¹gu¹ Pa gu¹ hiʔ² Ll gu²³² Qi guh²⁴² *screech owl* Co gu¹².

331 *gu-ʔ *I drink* U lauʔ³⁴ (presence of initial l in U and Tl unexplained; U form reflects a short vowel) Tl ləwʔ² (reflects *uʔŋ) Tp giʔ² Pa giʔ³² VN ʔau (the consonant of VN and Oz forms is probably borrowed from the second-person stem *ʔu-ʔ) Oz ʔuʔ Ll u-ʔn²³ Le ga³u-ʔ⁴ Qi du⁴-ʔh² Co duʔ²u. The initial consonant of this reconstruction, although here labeled *g, is far from certain. The U and Tl forms reflect *l, the VN and Oz forms reflect *ʔ, while the Ll and Le forms reflect no consonant at all. The first person singular form of *eat*, labeled *gəʔ,

shares some of the irregular features of this set but seems rather reliably labeled with an initial *g and lends credibility to the labeling of this set with *g.

332 *gaŋ *dumb* U ka² cei⁴³ Pa gyə²za² *immature* (probably developed from syllable with *ia-ŋ) Ll gən³ Qi go³ *ugly* (Qi and Y forms reflect *ga; they may not be cognate) Y ga *ugly*.

333 *ga^{HL} [1] *ga^{HLH} [2] *homeland, base of name for Ojiltán, a large Chinantec town* Oj kə² ʔwɨ³¹ Ojiltán [1] U go³gu³² [1] (g retained and expected 23 reduced to 3 probably because of pretonic position) Tl ko⁴²ceg³ [2] Ch kuʔ ʔwɨ Ojiltán (o expected) S kuʔwə Ojiltán (o expected) Qe koʔu Ojiltán Tp go²¹za² [2] Pa go²za [1] Ll za³ go²³ *ancestor, native* [1] Qi go⁴ʔwəh² Ojiltán [1] Y go *country* Co go¹²o [1] (accent expected).

334 *ga- *play* Pa gúw² *play with* (derived from *ga-ŋ) Ll go-h² *toy*.

335 *ga-ŋ *big* Ll ga-hn³ Le gay.

336 *ga-ʔŋ *I come home* Tp giəʔ²¹ (reflects *gia-ʔŋ) Pa gyoʔ³² (probably reflects *giaʔŋ) Ll a-ʔn³²-na²³ Co gá-ʔn²¹.

337 *giu-ʔ^H *hummingbird* U a⁵ki^{ʔ2} (32 and ei expected) Tl kiʔ¹ (ay expected) S cikyuʔ Qe kiʔ Pa cyi¹gyuʔ¹ Ll gyö-ʔ² Le gyuʔ⁴² (tone

2 and long vowel expected) Qi ʔyüh^{ʔ42} (d^v expected) Y gyü^ʔ Co ʔyö^{ʔ21} (gi expected).

338 *giá^{HL} [1] *ten (inan.)* *giáŋ^{HL} [2] *ten (an.)* Oj kya⁴ [1] kyá⁴ [2] U kia³⁴ [1] kja³⁴ [2] Tl kyá² [1] kyá² [2] S kya²³ [1] kyá [2] Tp gia³ [1] giá³ [2] Pa gyi³ [1] gyaw³ [2] VN gya [1] gyaŋ [2] Oz gya [1] Ll gyäh²³ [1] gyeŋ²³ [2] Lc gya [1] gyan [2] Pe gye [1] A gye [1] (may be a misrecording of a) Le gyá⁴ [1] gye [2] (final y expected) Qi d^va³⁴ [1] d^vei² [2] (34 expected) Y gye [1] Co gí¹ [1] gí¹ [2] (ia expected in the Co forms).

339 *gia^ʔ *mix by shaking* Pa gyá^{ʔ2} Ll kya-ʔ²³ (in Ll and Le g rather than k is expected; short vowel expected in Ll) Le kya^{ʔ4} Co gya^{ʔ21} *swing*.

340 *gia· (hwi) *hell* Oj kye^{hwi} U ki⁴heu⁵ (unusual vowel reflexes in U and Tl may be the result of pretonic position) Tl ki³héw³ Ch kihu S kyohwo Qe kyuhu Pa gyo³hwí³ VN gyahu (may be a misrecording of e) Ll gyä-h²³ hwi^{h2} A gihwi (gye expected; probably the result of pretonic position) Le gyafi.

341 *giá^L [1] *twenty (inan.)* *giáŋ^L [2] *twenty (an.)* Oj kye³ [1] kyé³ [2] U kie⁴ [1] kje⁴ [2] Tl kyú³ [1] S kyu²³ [1] kyö [2] Qe kyu [1] Tp gióg² [1] gió² [2] Pa gyéw² [1] gyüw² [2] (accent expected) VN gyu [1] gyuŋ [2] Oz gye [1] Ll

gyä-h³ [1] gya-hn³ [2] Pe gye [1] To gye [1] A gye [1] Le gya [1] Qi d^viah³ [1] d^vaih³ [2] Y gyeŋ [2] Co gié² [1].

342 *giá^{HL} [1] *seven (inan.)* *giáŋ^{HL} [2] *seven (an.)* Oj kye⁴ [1] kyé⁴ [2] U kie³⁴ [1] kje³⁴ [2] Tl kyú²[1] Ch kyo [1] M ki [1] S kyo²³ [1] kyö [2] Qe kyu [1] Tp gio³ [1] gió³[2] Pa gyo³ [1] gyow³ [2] VN gye [1] gyeŋ [2] Oz gye [1] Ll gyäh²³ [1] gya-hn²³ [2] Pe gye [1] To gya [1] (may be a misrecording of e) A gye [1] Le gyá⁴ [1] gyá⁴ [2] Qi d^via³ [1] d^vai²³ [2] (h expected in both forms and tone 3 in the second) Y gye [1] Co gié² [1] (long vowel expected).

*g^w

343 *g^{wi}^L *haya tree* Pa ʔma² gwíy² Ll ʔmo³ gwí³.

344 *g^{wi}^{HLH} [1] *deaf (inan.)* *g^{wi}^{HLH} [2] *deaf (an.)* Tp guí²¹ [2] Pa gway¹ [1] gwe¹ [2] VN gwíŋ [2] Ll gwí²³² [1] gwín²³² [2] Le gwíy⁴² [2] Qi kwuh²⁴² [1] Co gwíŋ¹² [2].

345 *g^{wi}^ŋ [1] *g^{wi} [2] *sleep* Oj kwí² ʔni² [1] U ra³ku² [1] Tl kwég¹ [2] (reflects a short vowel) Ch kwég [1] M kwu [2] S rakwü [1] Qe rakö [1] Tp ra²guí³ [1] Pa ka²gwe² [1] VN gwíŋ [1] Oz gwí [1] Ll gwín³ [1] Le na³gwíy³ [1] Qi kwuh [2] Y zagwəni [1] Co gwíŋ¹ [1].

- 346 *g^wi? *squeeze* Oj kwi?³ ?ni² TI kwég?² (reflects *g^wi?η) Ch kweg (reflects *g^wi) S malikwi? Tp gui?² Pa gwu?³² Ll gwi?²³.
- 347 *g^wi^L *sky* Oj hmi³kwi² TI ci³-kwi¹ *sky* ma⁴kwi² *earth* (tone 3 expected) S mu³kwi² Qe huku Tp mi²guig³ *earth* (tone 2 expected without accent) Pa zyi²gwi² VN hmigwi Oz migyö Ll mi³¹gwi.³ Le gwi.³ Ql u³kwi³⁴ (the Qi and Co forms reflect a short vowel and the Co form a syllable with accent) Co hmigwi¹².
- 348 *g^wi^{HLH} *squirrel* Oj kwi³¹ TI ca⁴kwi⁴² S ca²kwo¹ Qe caku Tp i¹guig¹ Pa gway¹ VN gwi Oz çigyö Ll gwi.²³² Le gwi Qi kwih²⁴² Co gwi.¹².
- 349 *g^wi? [1]~*g^wi. [2] *cold* Oj kwi?³ [1] kwi³ [2] U ku?⁴ [1] TI kwu?³ [1] Ch kwu? [1] kwu [2] S kwu²³ (*first person singular*) [2] Qe ku [2] Tp guig² [2] Pa gwi?²² [1] gwáy³² (*first person singular*) [2] VN gwi? [1] Oz gyö? [1] gyö [2] Ll gwi?³ [1] (reflects a syllable with accent) gwi-n²³ (*first person singular*) [2] Le gwi? [1] Qi kwih?²³ [1] Co gwi¹ [2].
- 350 *g^we *sit, live* Oj ka³kwa^{2a2} U kua⁴ TI kwá³ S kakwa Tp guá³² Pa gwi³ VN kagwa (?) Oz gya Ll ka²³gwah³ A rigwe Le ma⁴³gwa³⁴ Ql ka³kwa³⁴ Co gwar².
- 351 *g^we. [1] *arrive (at nonbase)* (*inan.*) *g^weη [2] *arrive (at non-*
- base)* (*an.*) *g^we?η [3] *arrive (at base)* (*an.*) U kuę²³ [2] (reflects a long vowel) Ch kakwá [2] S makwá? [3] Tp gwá³² [2] gwá?³² [3] Pa gow³ [1] gwí³² [2] gwí?³² [3] Ll mi³gwa²³ [1] gwehn²³ [2] ri²³gwa?²³ (probably reflects another form *g^we? meaning *arrive (at base)* (*inan.*)) gwe?n²³ [3] Lc gwa?n [3] Le gwéy⁴[2] gwéy?² [3].
- 352 *g^we?η *selection* Pa ku²ri²-gwe?³² Ll ka³gwe-?n³² *a pair*.
- 353 *g^wa^H *ear* Oj ri²kwa^{1a2} U to³-ro³kua¹ (tone 2 expected) TI kwa⁴² S kwa Tp rə²gua²¹ Pa gwi¹ VN logwa Oz tagwa Ll lo³gwo² Pe logwan Le lagwa Qi loh³kwo² Co lo²gwa¹.
- 354 *g^wa^L *stream* Oj hu?⁴kwa² U hu³kua³ *stream water* TI kwá² *river* (tone 3 expected without accent) S kwa³ (tone 2 expected) Pa hmi²-gwu² *stream water* VN hmai gwa Oz hmigwa Ll gwo³ Qi kwo³⁴ Y gwa *ravine, stream bed* Co gwa¹² hyó.²¹.
- 355 *g^wa?η *you go (to base)* Oj kwá?¹ ?ni² U kuá?³ M kwá? Tp guá?³¹ ?ne² Pa gwí?² (*future*) Ll gwa?n³²nu³ Lc migwa?nnu Le mi gwa?u Qi kwoih?²⁴du?^{h24} (reflects a long vowel) Co gwí?² (reflex is rather surprising; a is expected). This set is probably related to *g^wa. *you go (to nonbase)*.
- 356 *g^wa^L *hand* Oj kwo^{2a2} U si¹kue³ TI kwo³ Ch kwo, gwo (most

recordings show gw in spite of the fact that kw is the expected reflex) S kwo² Qe ku Tp mi²gu² Pa guw² VN gwa Oz mago or gwo Ll gwo³ Le gwa³ Qi kwoh²³ Tm gwo Co gwo².

357 *g^wa. you go (to nonbase) Oj kwo¹ ?ni² U kue² Tl kwó² Ch kwo[?]o S kwo[?] Qe ko[?] (u expected) Pa gú[?] (the Pa and Oz forms with person-marking ? are different from those in other sets reflecting *g^wa; nevertheless, they reflect an open syllable rather than *g^wa.?[?]—as is the case with the other languages that use ? as a marker of second person) VN gwa[?] (nasalization not expected) Oz go[?] Ll gwa.n³² Le gway Qi kwoh².?h²⁴ Co gwo.?¹². This set is probably related to *g^wa.?[?] you go (to base).

358 *g^wá.^{LH} box Oj kwo² U a²kue⁴³ Tl kwá⁴ (o expected) S kwo² drawer Qe ku Tp ci¹gu³² Pa gwo³² Oz wagwo Ll gwo.h² Le gwá.² Co gwó.²¹.

359 *g^wa.?^H earth, dirt Oj kwa[?]1 U o¹kua[?]32 Tl kwa[?] S kwá[?]1 (reflects a syllable with accent) Tp gua[?]31lag¹ adobe. Pa gwa[?]1, gwi[?]1 VN gwa[?] Oz gwali adobe (final ? expected) Ll gwo.?² Le gwa[?]2 (long vowel expected) Qi kwoh[?]42 Co gwo.?²¹.

360 *g^wa.?^H alligator Oj kwa[?]1 U a²kua[?]32 S kwa²³ (final ? and tone 3 expected) Pa gwa¹li[?]2 (final ? ex-

pected; does not reflect an open syllable) Ll gwo.?².

361 *g^wa.?[?] church Oj kwa[?]4 U kua[?]3 Tl kwá[?]4 S kwá[?]32 Tp guá[?]32 Pa gwi[?]32 VN ?nui gwa[?] Oz gwa[?] Ll gwo.?³² Le gwa[?] Qi kwo[?]4 (Qi and Co forms reflect a short vowel) Co gwá[?]2.

*s

362 *si [1] changed, other (inan.) *siŋ [2] changed, other (an.) Oj si²³ [1] si[?]23 [2] U seg³⁴ [1] a³sag²³ [2] Tl ra²θeg [2] Tp hme²ci³ change [2] Pa mi²cá³ change [2] Oz na si [1] Ll sin[?] [2] Qi si si it changes [1] Co hmi[?]si[?] change [2] (short vowel expected).

363 *si^H skirt (chapaneco) To ci¹há¹ Oz mi[?] si Ll ?mi[?]3 sih². The following forms also probably belong to this set: U u¹seg²³ fish scales Ch θeg ha[?] fish scales S θi ha[?] fish scales Ll sih² orange membrane. This set is probably related to *si[?]?^H clothing and *hi skirt.

364 *si^L butterfly Oj ha[?]3si³ U a¹seg⁴ Tl ca³θég³ S ci³θi²³ Tp i¹ci[?] Pa cyi¹ciw² VN si Ll sih³ Le si Qi si²⁴ Co gwi²si¹².

365 *si^{LH} glass, bottle Oj si³ U a²seg⁴³ Tl θeg³ (accent expected) S θi Tp ni¹ci[?]32 Pa ci[?]32 (iw expected)

- Oz wa si Lⁱ sih² Le mi si Qⁱ si²⁴ (tone 3 expected) Co si²¹ (short vowel expected).
- 366 *siʔ [1] ~ *siʔ [2] *tell* Oj siʔ³¹ ʔni² [2] U sagʔ⁴³ [1] saiʔ³² [2] (ei expected) Tl θag³⁴ (*first person object*) [1]; (final ʔ expected) θáy²² (*third person object*) [2] Ch θag [1] (final ʔ expected) θeyʔ [2] S ka³θai²³ [1] (i expected; vowels of S and Pa forms reflect an open syllable, as in the Tl and Ch forms) θéi²³ [2] Qe θaiʔ [2] Tp cíʔ³² [1] Pa cay²³² [1] (i expected) cey²¹ [2] VN saiʔ [1] seiʔ [2] (cy expected; the s may have remained because of paradigmatic pressure) Ll siʔ²³ [1] ši²² [2] Qi si³-ʔh⁴ [1].
- 367 *si^H [1] *si^L [2] *nest, sticks* Oj si³¹ [1] U sag³ *nest* [2] Tl θag³ [2] M θi S θai Qe θaiʔ t̥a *bird's nest* (vowel reflects an open syllable) Tp ni¹cag² *nest* [2] Pa cay¹ há²² *his nest* [1] (iy expected) ciy² *nest (unpossessed)* [2] VN sai Oz wa si Ll si² [1] Le si Qi sih² *sticks* [1] sih²³ *nest* [2]. Form [2] seems to be more consistently associated with the meaning *nest*.
- 368 *si^L *valley (barranca)* U ʔi²sag³ S ka³θai²³ *a landslide occurred* (tone 2 expected but not the nasalization) Tp cag² *landslide* Pa ciy² Ll si³ *landslide* Qi kwa³sih²³ Co kalaʔ si¹² (tone and vowel reflect a short syllable).
- 369 *si^{LH} *write* Oj si³ ʔni² (tone 2 expected) U sag³ VN sai Ll si³ Le ʔi²ʔi²a² *we write* (palatalization not expected; this form is also glossed as *wipe* and perhaps should be assigned to *si *wipe*) Qi sih⁴.
- 370 *si blanket Oj si¹si¹ U a²sag¹ Ll ʔmi¹ʔ³si³² *cloth for carrying children*.
- 371 *si^{ŋL} *timid* Ll siⁿ³ Co si^{ŋ2}.
- 372 *si^{HLH} *sand* Oj si³¹ U o¹sag² Tl θag² M θi S θai¹ Qe θi taʔ (reduced from expected reflex of ai because of pretonic position) Tp cag¹ (also recorded as ti¹cag²) Pa cay¹ VN sai Oz mi si Ll si^{h2} Le si Co mi si¹² (accent not expected).
- 373 *si^{7H} *tongue* Oj si^{ʔ1a2} U u¹seg²³ Tl θeg²⁴² (tone 1 expected but not nasalization) Ch θegʔ (nasalization not expected) M ci θiʔ S θiʔ Tp le¹ci²¹ Pa ci²¹ VN sai Oz li siʔ Ll si²² Le síy²¹ *your tongue* (tone 2 without accent expected in third person form) Qi sih²⁴² Co ni¹si²¹.
- 374 *si^{7L} *moon, month* Oj si²² U seg²³ Tl θeg²⁴ Ch θegʔ (ag expected) M θiʔ S θi²² Tp ci²² Pa ci²² VN sai Oz a siʔ Ll si²³ Le si²³ (long vowel expected) Qi sih²³ Co sí²².
- 375 *səʔŋ [1] ~ *seʔŋ [2] *pull out, remove from holder* Tp cíóg²³² [2] Pa ca²³² [1] Ll səʔn³² [1] šeʔn²³ [2] Qi səʔh² [1] (Ql and Co forms do not reflect *ŋ) Co səʔr² [1] seʔr [2].

This set may be related to either or both of the two following sets.

376 *səʔ [1] ~ *seʔ [2] *drag* Tp cagʔ² [1] Pa cíwʔ³² [1] ceʔ³² [2] Ll səʔ³² [1] šeʔ [2] Le séʔ⁴ [1] šeʔ [2]. This set may be related to the set immediately preceding or the one immediately following or both.

377 *səʔŋ (to) *fish* Pa cáʔ² Ll səʔn³ (an alternate stem šeʔn²³ in Ll may reflect *seʔŋ in the parent language). This set may be related to either or both of the two preceding sets.

378 *si^H *ridge, crest of a bird or lizard* U sei¹ *comb of a lizard or bird* S ʰe kaʔo Qe ʰeʔ kaco (the ʔ in Qe and To and A forms probably is a marker of possession) Tp círəʔgiʔ² *cock's comb* Ll ši² *ridge* ši² hmi³ *island* To šiʔ ʔniʔ *cock's comb* A siʔʔniʔ *cock's comb* Le ši¹ (the Le and Co forms reflect a syllable with accent) Co sí¹.

379 *si^H *whether* Oz či *yes-no question marker* Ll ši² *whether, if* Le ši (may have remained i rather than ɨ because of unstressed position in sentence) Co si¹ (reflects *i).

380 *si *wipe* U sei²³ *clean* Tl ʰeɣ² (reflects a syllable like *siŋ; may not be cognate) Tp cí³² Pa cí² Ll ši²³ Le ši⁴ Qi sih²⁴ *clean* Co sí-r²¹ (Qi and Co forms reflect a long vowel).

381 *si^L *snare, trap* U a²sei⁴ *spring* trap Ch ʰi Pa cí² VN cye.

382 *si· *shave, cut* S ʰei³² Ll ši³².

383 *si·ŋ *saw* Ll ši-n³² Le ʔi²ši⁴²a². This set could be related to the preceding one.

384 *si·ŋ *send* U saʔ Tl ʰéyʔ⁴ (final ʔ not expected) Tp cej³² (may reflect *si·) Pa ce³² Ll ši-n²³ Le ši^y⁴ (long vowel expected) Co sí-ŋ¹².

385 *si·^L *youth* O siʔ² yɨ *child* U si³mai² (reduction of ei to i and loss of ʔ due to pretonic position) Tp cí² Pa cí² Oz sa čiʔ píʔ Ll ši³. The following forms, which mean *tender*, probably belong to the same set: *siʔ Oj siʔ³ S ʰiʔ. This set may be related to *siʔ *finger*.

386 *siʔ [1] *be standing (inan.)* *siʔŋ^{LH} [2] *be standing (an.)* Oj siʔ³ ʔni² [1] sɨʔ³¹ ʔni² [2] (tone 4 expected) U siʔ³ [1] sɨʔ³ [2] Tl ʰéyʔ⁴ [1] Ch ʰiʔ [2] M ʰaiʔ [1] (reflects a short vowel) S ʰeʔ [2] Qe ʰajʔ [2] Tp cí³² [1] Pa cí³² [1] ceʔ³² [2] VN cyeiʔ [1] Ll ši-ʔ²³ [1] ši-ʔn²³ [2] (tone 2 expected) Le šiʔ³ [1] ši^yʔ² [2] (refers to image of a saint rather than a person) Qi siʔ³ [1] sɨʔ³ [2] (Qi and Co forms reflect a short vowel) Co siʔ² [1] siŋʔ² [2].

387 *siʔ [1] *si· [2] *finger* Oj mi³sy¹kwo²a² (reflects *sia; probably not cognate) U hɔ⁴si¹kue³ [2] (ai expected if in tonic position) Tl ʰay kwo [2] Ch ʰeyʔ kwo [1] M ʰiʔ kwo [1] (ei expected if in tonic position in M and S) S ʰeʔ kwo [1]

- Qe θai? ku [1] Pa ci gu [2] Oz miši gwo [2] (may be a misrecording of ě or may have remained š in pretonic position) Li mi²si²gwo⁻³ [2] Lc ji gwo [2] A si gwo [2] Lt ši? gwa [1] (may have remained i rather than i because of pretonic position) Le ši gwa [2]. This set may be related to *si? *youth, child*.
- 388 *sa [1] *negative* *sa^H [2] *negative interrogative* Oj sa³ [1] sa¹ [2] U sa² [2] Ch θya [1] (reflects *sia) M θa [1] Tp cá³ [1] ca¹ [2] Pa ca³ [1] ca¹ [2] VN sa [1] Oz sa [1] A sa [1].
- 389 *sa^H *ascent* Oj so² ʔni² *go up!* U so³² TI θo⁴ S θo³ Qe θau Tp co²¹ Pa caw¹ VN soa Oz so LI so⁻² Le sa⁻² Qi soh² Co so⁻¹.
- 390 *sa· [1] ~ *sia· [2] *cook* Oj a⁴so² ʔni² [1] se³ ʔni² [2] U so³ *boil (milk)* [1] TI θo³⁴ [1] S cyo [2] Tp co³² [1] Pa co³² [1] cyew² [2] LI so⁻³ [1] šo· [2] Qi soh⁴ [1].
- 391 *sa·(ʔ)(ŋ) *choke* U a⁴sq⁴ hnia⁴ *I choked on my food* LI si³so^{ʔ23} *he chokes* (the U form reflects *sa·ŋ while the LI form reflects *sa·ʔ).
- 392 *sa·ŋ^{HL} [1] *be splashed, baptized* (intr.) *sia·ŋ [2] *splash* (tr.) U sq²³ [1] TI ka³⁴θyu² ceg³ hmag³ *he was baptized* [2] Ch θq [1] S ma ka θq [1] (tone 2 expected) Qe θaŋ [1] Tp ciq³² za² hmig² *is baptized* [2] Pa cō³ [1] (reflects syllable with accent) cyow³² [2] LI sa·n²³ [1] ša·n³² [2] Qi sai²³ [1] (tone 4 expected) Co sâŋ² [1] (nasalization not expected; reflects syllable with accent).
- 393 *sá^H *liver* Oj mi³so¹ ʔwa² U o¹so²³ cei⁴³ S θyo (reflects *sia·ŋ^H) Qi ca³fuh¹³² (soh¹ expected if in tonic position; both QI and Co forms reflect initial *z) Co dé¹.
- 394 *sá·ʔ^L *dirt* Oj su^{ʔ2} (a expected; reflects a syllable with accent) Ch θa? *algae* S θá?³ *algae* (accent not expected) Pa cá^{ʔ2} VN soa? Oz so? (a expected) LI so^{ʔ3} *dirt, algae*.
- 395 *siu *tamale* Oz wa ču LI šö² A sö ʔa haʔ.
- 396 *siu^{HLH} *lips* TI θay⁴²ceg³ Ch θey M θi S θei¹ Qe θai Tp rə²cei³² (21 expected) Pa cyi¹ʔaw¹ (reduced vowel reflex in pretonic position) LI šö²ʔo² (242 and long vowel expected if in tonic position) A sö ʔo Lt šu Qi loh³süh²⁴² Co cö⁻¹². Cf. *siu·ʔ^{HLH} *rim*.
- 397 *siu·ʔ^L *itch* Oj si^{ʔ2} U sai^{ʔ3} (U through Qe forms reflect a short vowel) TI θay? Ch θey? S θe^{ʔ23} (probably reflects a syllable with accent) Qe θai? Tp ci^{ʔ2} Pa cyu^{ʔ2} LI šö^{ʔ2} (tone 3 expected; reflects a syllable with accent) A söʔ Le šu (final ? expected) Qi süh^{ʔ4} (23 expected) Co só^{ʔ12}.
- 398 *slu·ʔ^{HLH} *rim* TI θay² (42 and final ? expected) Tp cei^{ʔ31} Pa cyu^{ʔ1} *edge (of river)* LI šö^{ʔ232} *brim*

(of *hat*) Le šu-ʔ⁴². This is very likely related to *siu.^{HLH} *lips*.

399 *sia^L [1] *there is/are (inan.)*
 *siaŋ^{LH} [2] *there is/are (an.)* Oj sia²
 [1] sia² [2] U sia³ [1] sia³ [2] Tl
 θya³ [1] θya [2] S θya³² [1] (2 ex-
 pected) θya [2] Tp cia² [1] cia² [2]
 Pa cyi² [1] cyā² [2] VN cye [1] cyan
 [2] Oz ča [1] čā [2] Ll ša³ [1] šen³
 [2] Lc ša [1] šan [2] To ša [1] šan
 [2] A sa [1] san [2] Le ša³ [1] šay
 [2] (šey expected) Qi sah² [1] (34
 expected; post-vocalic h not ex-
 pected in either Qi form) seŋ² [2]
 (nasalization not expected) Y se [1]
 Tm sa [1] Co sia¹² [1].

400 *sia^{LH} *beam (wood)* Oj ʔma²
 sya³ U a²ʔma³ sia⁴³ Tl ma³θya³ S
 θya²³ Pa ʔma² cyi³² Ll šah² A sa Le
 šā².

401 *siaʔ *plant, source* U o¹sie^{ʔ32}
 Tl θyó^{ʔ1} Ch θyoʔ S mi¹θyo^{ʔ21} Qe
 ʔmi θyoʔ Tp cio^{ʔ31} Pa cyú^{ʔ1} Ll
 šo^{ʔ31} (short vowel expected) Lc
 šaʔ A seʔ Le šaʔ Y seʔ *stalk*.

402 *sia^{LH} [1] *sia-ʔ [2] *raise*
(inan.) *sia-ŋ^{LH} [3] *sia-ŋ [4] *raise*
(an.) Oj se³¹ ʔni² [1] (tone 2 ex-
 pected) se^{ʔ31} ʔni² [2] (the [2] forms
 of Oj and S reflect a short vowel)
 U sie³ [1] sjo⁴³ [3] Ch θyo [1] S
 θyoʔ [2] Pa cyo³² [1] cyow³² [3]
 cyúw^{ʔ2} [4] VN cye [1] cyeʔ [2] cyan
 [3] (may reflect a short vowel) Ll
 šo³² [1] (tone 3 expected) šo^{ʔ32} [2]
 ša-ʔn³² [4] A sa [1] Le šaʔ [2] Qi
 sah⁴ [1] Y seŋʔ [4].

403 *sia- [1] *mother (third per-
 son) ~ *sia [2] mother (first person
 singular)* Oj se¹na² [1] U sie²³ [1]
 sia³⁴ [2] Tl θyo¹² [1] θyá² [2] Ch
 θyo [1] θya [2] M θya [1] (reflects
 a short vowel) S mi²θyu¹² [1]
 mi²θya³² [2] Tp ciog³¹ [1] cia³ [2]
 Pa mi²cyéw¹ [1] mi¹cye³ [2] (cyi ex-
 pected rather than cye) VN cyo [1]
 cya [2] (cye expected unless a per-
 son-marking suffix has affected the
 vowel quality) Oz čo [1] Ll šo^{h2}
 [1] šen²³ [2] Lc ša [1] Pe ša [1] To
 še [1] RC ša [1] šen [2] A sa [1]
 san [2] Le ša [1] šey [2] Qi sah¹²
 [1] sah²⁻¹ [2] (vowel without h ex-
 pected) Y sa [1] seŋ [2] Co sér¹²
 [1] se.¹²e [2] (long vowel expected
 in the first form and not in the
 second). The following forms are
 probably part of the same set but
 have developed differently because
 of their pretonic position: Oj
 si¹ʔye³¹a² *grandmother* sya¹h^{q2}
comadre U si²ʔd^ʔie³² *grandmother*
 Ch di ʔyo *grandmother* S di ʔyo
grandmother dya h^q *comadre* Pa
 cyi¹h^{q31} *comadre* Ll ši²ʔyo³
grandmother A si ʔye *grandmother*
 Le ša ya *grandmother* Qi si³ʔyiah²⁻
¹² *grandmother*. Some of these
 forms are the same as forms in the
 *si-(ʔ) *finger* set. They may be re-
 lated sets or it may be that in some
 languages atonic forms of *si- and
 *sia- are alike.

404 *sia-ŋ *breathe, sigh* S θyoʔ Tp
 cio³² Ll šan²³ Lt šeyʔ (final ʔ not
 expected) Qi saih²³ Co siaŋ² (se-iŋ
 expected). All languages employ a

- construction in which *z^{LH} *heart* accompanies the verb.
- 405 *sia·ŋ *leap* Pa cyow³² Li ša·n³².
- 406 *sia·ʔ^H (*cock's*)*comb* Pa cyi^{ʔ1} hen Oz ča? ʔya hen Li šo^{ʔ2} ʔni^{ʔ2} (reflects a syllable with accent) To še? ʔni? A se? ʔni?
- 407 *sia·ʔ^H *forked stick* U i^ʔsie^{ʔ32} *between* (ie rather than the expected ia reflects a short vowel but the tone reflects a long vowel) Tl ma³θyá^{ʔ1} (accent not expected) S ʔma θya? Tp cia^{ʔ31} (nasalization not expected) Pa ca^{ʔ31} (cyi^{ʔ1} expected; may not be cognate) Ll ʔmo³šo^{ʔ2} To ʔmo še? A ʔmo se? Le ma ša ša? Qi ʔmo³ sah^{ʔ42} Co ʔma¹² se^{ʔ21}.
- 408 *sia·ʔ^L *rubber, chewing gum* Oj sya^{ʔ1} (tone 2 expected) U o¹sya^{ʔ3} S θyá^{ʔ2} (accent not expected) Qe θya? Pa cyi^{ʔ2} Ll šo^{ʔ3} Lc ša? To še? A se? Le ša? Qi sah^{ʔ23} Co sé^{ʔ12}.
- 409 *sla·ʔ^L *sheep* U a⁵a³sia^{ʔ3} Tl ca³θya^{ʔ4} S ha θya? Qe ha? θe? (ya expected; seems to reflect *e) Tp há^{ʔ2} cia^{ʔ2} Pa há^{ʔ2} cyi^{ʔ2} VN hoa? cye? Oz wa ča? *hat* Qi ci^{ʔ1} *small animal* (sah^{ʔ23} expected; probably not cognate) Co ho^ʔ sé^{ʔ12}.
- 410 *slá·ʔ^H *crab* U a⁴sia^{ʔ2} Tl θyá^{ʔ1} S ci¹θyá^{ʔ2} (tone 1 expected) Qe θe? (ya expected; seems to reflect *e) Tp i¹ciá^{ʔ1} Pa cyí^{ʔ1} Ll šo^{ʔ2} *crab, padlock* Lc ša? Pe ša? To še?
- A se? Le šá^{ʔ2} Qi sah^{ʔ1} Co se^{ʔ1} (accent expected).
- 411 *sʃ·ʔ^H *clothing* Oj si¹?mi^{ʔ2} ti⁴-yi^{ʔ31} *shirt* (reduced in pretonic position) U a²?u^{ʔ3} se^{ʔ3} *pants* (32 expected; reflects *sʃ-ʔ) Tp ni¹ci^{ʔ31} *shirt* ci¹?mi^{ʔ2} *rags* (probably tone as well as vowel reduced because of pretonic position) Pa ci^{ʔ1} *shirt, ragged* Ll šʃi^{ʔ232} *ragged clothes* (tone 2 expected; reflects *sʃ-ʔ) Qi sʃh^{ʔ42} *shirt* Y sʃ? *clothes* Co sʃ?ʔ *dress*. This set is probably related to *sʃ^H *skirt* and perhaps to *hi *skirt*.
- 412 *sʃ·ʔ^L [1] *sʃ·ʔ^H [2] *bat, buzzard* (When distinguished, [1] is associated with the meaning *bat* and [2] with *buzzard*.) Oj ŋi¹sʃ^{ʔ2} *bat* [1] U a¹ŋi²se^{ʔ3} *bat* [1] Tl ŋi θe^{ʔ4} *bat* [1] S ŋi¹²θi^{ʔ2} *bat* [1] Tp i¹ci^{ʔ2} *bat* [1] i¹tə²ci^{ʔ31} *buzzard* [2] Pa ŋyi¹ci^{ʔ2} *bat* [1] VN tu sa^ʔ? *buzzard* Ll tu³sʃ^{ʔ3} *buzzard* [1] Qi ŋi²sʃh^{ʔ23} *bat* [1] Co ŋi si^ʔη¹² *bat* [1] (sʃ^ʔ expected) tu^ʔ sʃ^{ʔ21} *buzzard*. [2]
- 413 *sʃ·ʔ^ŋ *wrinkled* Tp ci^{ʔ2} Ll sʃ^{ʔn3} Co sʃ^ʔη¹² *wrinkle (noun)* (long nasalized vowel expected).
- 414 *sʃ·ŋ^L *be called* Oj sʃ² U sa^{ʔ3} Tp ce² Pa ce² VN cye? (*second person*) Oz čey Ll šʃ·n³ A sin (nasalization expected) Le šʃ·y³ Qi sih²³ (the Qi and Co forms reflect *si) Co sir¹ (tone 2 expected).
- 415 *sʉ *straight, smooth* Ll sʉhn² (indicates final *ŋ) Le sʉ. The following forms are probably related:

- *sɿ·ŋ *slip, slide* Tp cɿ³² Pa cɿ³ Lɿ šu·n³ (reflects *iu· rather than *ɿ·) Co sɿŋ² (long vowel expected).
- 416 *sɿ^{LH} *palm tree, coconut* Oj mi³sɿ² ho¹ (tone 3 expected) U ɿ⁴sɿ⁴³ ho²³ Tɿ θɿw³ *coyol* Ch ʔma θɿ S ʔma²θɿ²³ Qe θɿɿ ho Tp mi²cɿ³² Pa cɿ³² VN ʔma sɿ Oz ʔma sɿ ni Lɿ sɿh² Qi ʔmo³ sɿ^{ʔ2} *tropical tree but not the coconut palm* (tone 3 expected but not final ʔ).
- 417 *sɿ·ŋ^{HLH} *twin* Oj ca²sɿ³¹ U a³sɿ² (reflects syllable with accent) Tɿ θɿw *twinned (fruit)* Tp gɿɿ² cɿ^{ʔ31} (tone fits a syllable with final ʔ) Pa cɿ² (tone 1 expected) Lɿ sɿ·n²³² Co sɿ·ŋ¹².
- 418 *sɿ^L *lie down!* Oj sɿ³ ʔni² U sɿ⁴ Tɿ θɿ^ʔ (ʔ not expected) Ch θɿ S θɿ²³ Tp cɿ² Pa cɿ² (*first person singular*) Lɿ sɿh³ Le sɿ Qi sɿ²⁴ Co sɿ² (12 expected). Apparently a suppletive stem of *kia^L *lie down*.
- 419 *sɿ^ʔŋ *stick together* Tp r²cɿ^{ʔ2} Pa cɿ^{ʔ32} Lɿ si³sɿ^{ʔn2} Co si sɿ^{ʔ1}.
- 420 *sɿ^H *grass* Oj sɿ³¹ U ma²sɿ³² *malote* Ch θɿ S θɿ¹ (tone 3 expected) Pa cɿw¹ VN sɿɿ Oz mo sɿ.
- 421 *sɿ· *be pleasing* Oj sɿ Tɿ θɿw²ceg³ Ch θɿ M θo (nasalization expected) S θɿ (reflects a short vowel) Pa cɿ².
- 422 *sɿ^ʔ *termite* U a³sɿ^{ʔ4} Tɿ θa^ʔ (nasalization expected) Ch θɿ (final ʔ expected; vowel fits a syllable closed by ʔ) S θɿ^{ʔ1} Tp i¹cɿ^{ʔ31} Pa cɿ^{ʔ1} Oz ča sɿ^ʔ Lɿ sɿ^{ʔ232} Qi sɿh^{ʔ4} *large caterpillar-like worm* Co sɿ^{ʔ21}.
- 423 *siɿ^L *incense* Oj si² U sɿɿ³ Tɿ θɿ³ Ch θɿɿ M θɿɿ S θɿɿ Qe θɿɿ Tp cɿ² Pa cyɿ² VN cyɿ Oz čɿ Lɿ šɿ³ A sɿ² Le šɿ³ Qi si³⁴ Co sɿ¹².
- 424 *siɿ *rub* Tp cɿ² *apply by rubbing* Pa cɿw² (the Tp and Pa forms reflect *sɿ; may reflect a long vowel) cɿ² (*an. obj.*) (reflects a syllable closed by *ŋ) Lɿ šö³² (nasalization expected) Co sɿ^{r2} (reflects a long vowel).
- 425 *siɿ· *fry* S θɿɿ³² *he's going to fry* Qe θɿɿ *cook* Tp cɿ²¹ (reflects *sɿ) Pa cyɿw³² (*inan.*) cyɿ² (*an.*) (reflects syllable closed by *ŋ) Lɿ šö³² Qi sɿh² Co sɿ^{r21}.
- 426 *siɿ^{HLH} *deer (temazate)* U a⁵sɿ² Tɿ θɿɿ² Ch θɿɿ S θɿɿ¹ Qe θɿɿ Tp i¹cɿɿ¹ Pa cyɿw¹ Lɿ šö^{h2} A sɿ² Le šɿ Qi sɿh²⁴² (reflects *sɿ·) Co sɿ¹².
- 427 *siɿ^{ʔL} *sharp* U sɿɿ^{ʔ3} Tp ci^{ʔ31} *raspy, scratchy* (reflects *su·^H; may not be cognate) Pa cyɿ^{ʔ2} Lɿ šö^{ʔ3} Co sɿ^{ʔ12}.
- 428 *siɿ^{ʔLH} [1]~*sɿ^ʔ [2] *seize, grasp* Oj syɿ^{ʔ2} ʔni² [1] a⁴sɿ^{ʔ3} ʔni² [2] U sɿɿ^{ʔ3} [1] sɿ^{ʔ2} [2] Tɿ θɿɿ^{ʔ2} [1] (tone 4 without accent expected) S θɿɿ^ʔ [1] Tp cɿɿ^{ʔ2} [1] cɿɿ^{ʔ2} [2] (ɿ expected) Pa cyi^{ʔ32} [1] VN cye [1] (cyɿ^ʔ expected) Lɿ šɿ^{ʔ3} [1] ri²³sɿ^{ʔ23} [2] Pe šɿ^ʔ [1] To šɿ^ʔ [1] A

səʔ [1] Le šaʔ [1] Qi sɔʔh³ [2] Y sɔʔa [2] Co sɔʔr² [1] (long vowel expected) sɔʔr¹². The L, Qi, and Y forms suggest that the syllable was probably accented.

*h

429 *hi^{LH} [1] *hi^{LH} [2] *skirt (chapaneco)* Oj hi² [2] U a²hei³ [2] Tl hi [2] S hi³ [2] (32 expected) Tp ci¹hó¹ [1] Pa ?miw³² hiw³² [1] VN hi [2] Qi ?mi³ hi⁴ [1]. This set may be related to *si^H *skirt* and perhaps to *sɛ[?] *clothing*.

430 *hi [1] *all (inan.)* *hiŋ [2] *all (an.)* la⁴hi⁴ [1] U la⁴heg³⁴ [1] la⁴hag³⁴ [2] Tl la³⁴heg³⁴ [1] Ch kalaheg [1] kalahɛg [2] M lahi [1] S lahi [1] Tp ka²le³hó³ [1] Pa ka³la⁷ hi³ [1] ta¹ha² [2] VN lihu [1] (i expected) lihiŋ [2] Ll la²³hi³ [1] la²³hin³ [2] Le lahi [1] Qi la³hi²lah²⁴ [1] (i expected).

431 *hi *clean (state)* Tl heg Ll ri³hih².

432 *hi(ŋ) *sloping* Pa cyi¹hi¹ Ll ji²³hin³².

433 *hi^{LH} [1] ~ *hi^L [2] *clear land* Oj a⁴hi² ?ni² [1] hi³ ?ni² [2] U hag³ [1] Tl hag³⁴ [1] háy² [2] (tone 3 expected) S kwa¹hai² [1] (32 expected) hei²³ (*imperative*) [2] Tp hag³² [1] i²héi² [2] Pa hay³² (*present*) [1] hiy² (*past*) [1] héy²

(*motion*) [2] VN makahai [1] Ll hi³ [1] hi³ [2] Le hi³ [1] ši³ [2] Qi hih⁴ *plow* [1] Y hi *plow (imperative)* [2] Co hí¹² [1] (tone 2 without accent expected) hí² [2].

434 *hi Ozumactn, a Chinantec village Tp ma²hag³² Pa mu²hay¹ Oz mahi Qi ɸ³hih²⁴².

435 *hi[?]L *horsefly* Oj hi² S hi[?] (tone 2 expected) Tp i¹hi[?] Pa hi[?] Ll hi[?] Lt hi[?] Qi hih[?] (23 expected) Co hí[?]¹².

436 *hi[?]L *soap vine* Pa wiy² miy² hiy[?] (i expected rather than iy) Ll mi³¹ mi²hi[?]³.

437 *hi[?] [1] ~ *hi[?] [2] *weed, cultivate* Oj a⁴hi[?] ?ni² [1] hi[?] ?ni² [2] Tl hag[?] [1] (reflects a syllable with final *ŋ) háy[?] [2] Ch hag[?] [1] S hei[?] [2] Tp hí[?]³² [1] Pa hí[?]³² [1] (iy expected) hey[?]³² [2] Ll hi[?]²³ [1] hi[?]³²ra² [2] Le hí[?] [1] ši[?]⁴²a² [2].

438 *hi[?]ŋ^H *thin (an.)* Oj hɛ[?]³¹ (tone 1 expected) S hɛ[?] Tp hɛ[?]³¹ Ll hi[?]n² (long vowel expected in Ll and Lt) Lt hiy[?] Qi hiih[?]⁴² Co hiŋ[?]²¹.

439 *hə^H *empty* Oj či¹hə¹ Ch di hə S ma hie Tp rə²hó³ (tone 1 without accent expected) Ll ka²³he² A mi he (ə expected) Lt ma he Co hə¹.

440 *hə [1] *look at (inan.)* *həŋ [2] *look at (an.)* Oj hə²³a² [1] U he²³ [1] Tl hó³ [1] Ch hə [1] hɛ [2] S hie³ [1] hɛ[?] [2] Tp hág³² [1] Pa

- háy³² [1] hǎ² [2] VN ha [1] haŋ [2] Oz hi [1] hǎ [2] LI ho^{Λ.32} [1] ho^{Λ.n}³² [2] Lc hə [1] To hə [1] A hə [1] Le ho³² [1] Qi həh²³ [1] Y həʔ *you looked* [1] Co hǎ-r².
- 441 *həʔ *open up, untie* Tp hǎʔ² Pa híʔ² LI he-ʔn³ (the LI and Le forms reflect a palatalized variant *heʔ) heʔ²³ (may be a better match) Le hǎʔ⁴ (long vowel expected) Co híʔ²¹ *mess up* (ə expected).
- 442 *hǎ-ʔ^H *grape* U ya¹gǔ³ heʔ² *grape vine* Pa gu²hiw^{ʔ31} (tone 1 with accent expected) LI mi²hǎʔ² Le hoʔ Qi miʔ¹ wǔ² həh^{ʔ1} Co gwanʔ hǎʔ¹.
- 443 *hi (to) *bark* Oj hi²³ U hei²³ TI hí² S hi²³ Tp héi² (the Tp forms for *bark* and *scold* seem to have been reversed with regard to vowel length) Pa hí² LI hi³² Le ši³².
- 444 *hiʔŋ *rinse* Pa hǎʔ³² Co híŋʔ².
- 445 *hi^H *bumblebee* U a²hai³² TI háy¹ Ch toʔ hey M hei S he²³ (hei³ expected) Tp i¹hei¹ *hornet* Pa hey¹ VN hei Oz ca híʔ (hi expected) LI hi² Le ši² Qi hih².
- 446 *hi [1] *scold (inan.)* *hi-ŋ [2] *scold (an.)* TI háy³ (*nonthird person object*) [1] hǎy³ (*third person object*) [2] Tp hí² [1] Pa hí² [1] hé² [2] LI hi³² [1] hi-n³² [2] Le ši³² [1] (long vowel expected) Co hí-ŋ¹ [2].
- 447 *hi-ŋ *left (side)* Ch hí M həi Tp hǎ³² *left, inside out*. This set may reflect a nasalized vowel rather than a final nasal or perhaps both.
- 448 *he^H *balsa* U na²?ma³ he¹ (tone 2 expected) TI ma³he² Ch ?ma hǎe S ?ma² hǎe²¹ (tone 1 expected) Tp ?ma² hǎ¹ Pa ?ma² he¹ LI ?mo³ he² Le mi-y^{ʔ3} he² Qi ?mo³ he².
- 449 *he^H [1] *ha^H [2] *where (rel. pro.)* Oj hí¹ [1] (e expected) U he² [1] Ch hí [1] (ie expected) S ha¹ [2] Tp ha¹ [2] Pa ha¹ [2] VN ha [2] Oz ha [2] LI he² [1] Co hǎe¹ [1] (he expected; probably reflects *hǎe).
- 450 *héʔ^{LH} *toad* Oj heʔ⁴ U a¹heʔ⁴³ kwa¹ TI həʔ⁴ Ch ya híʔ S hǎeʔ¹² (23 expected) Tp i¹hǎʔ³¹ (32 with accent expected) Pa heʔ³² VN haiʔ Oz ča heʔ LI heʔ² Le heʔ Qi heʔ³ Co heʔ².
- 451 *he^{HLH} *between, among* Oj he³¹ U he¹ *cornfield* TI hə⁴² Tp hə²¹ (ag expected) Pa hiw¹ LI he²³² Le he⁴² Qi heh²⁴² Co he¹².
- 452 *he- *pant* LI he²³ Co hǎe² *yawn*.
- 453 *heʔ *a kind of fish* Pa cyi¹heʔ² *sand perch (guabina)* LI heʔ² (*dormilón*) Qi heh^{ʔ42} *haddock (robalo)*.
- 454 *hú^H *mosquito* Oj hu¹ U a¹heu²³ TI hú¹ S hu¹² Tp i¹hí¹ *gnat*

- Pa hí¹ VN hu Oz ça hu Ll huh² Le hú¹ Qi hu¹ Co hú¹.
- 455 *hú^H *Mayulianguis, a Chinantepec village* U gua⁴heu²³ Tl wa³hú¹ S kwa hu Tp ko²hí¹ Pa gu²hí¹.
- 456 *huʔ^H *room* Oj huʔ³¹ (tone 1 expected) U hauʔ³² kieʔ¹ teg²³ school Ll ka²³huʔ²³ room ʔwi²huʔ²³ corner Qi huh^{ʔ42} corner (short vowel expected in Qi and Co) Co hu-ʔ²¹ corner.
- 457 *huʔ^ŋ *folded over* Oj na⁴hʔ² U heʔ^{ʔ3} (may reflect a long vowel) Ch ru hʔ^ʔ S ma ra hʔ^ʔ Tp rə²huʔ² (Tp, Pa, Qi, and Co forms reflect a syllable with final *ŋ) Pa hú^{ʔ2} Ll rí³huʔⁿ² Lt na huyʔ Qi hu⁴ʔh² Co huʔ²¹.
- 458 *hú^{ʔLH} *cheek* Oj lo²huʔ^{4a2} U ma³hau^{ʔ43} Ch hawʔ S hie^{ʔ2} (23 expected) Qe heuʔ Tp rə²hú^{ʔ32} Pa ho^{ʔ32} (ow expected) VN hauʔ Oz mo huʔ Ll huʔ² Qi huʔ³ Co lo huʔ².
- 459 *hu^L *dove* Oj hu²tə² Tl haw³ S hu³² (tone 2 expected) Tp i¹hu² Pa huw² Ll hu² great tinamou (tone 3 expected) Le hu³.
- 460 *hu^{LH} *putrid* Tp ma²hu³² Pa ma²huw³² Ll mi³hu³.
- 461 *hu· (to) lie, prevaricate Oj hu¹ tí²hu¹ (noun) Tp há^{g1} tə²há^{g1} (noun) Pa tí³²húw¹ Ll hu³² (verb) u²³si²³hu^{h2} (noun) Le hu³² Co hú^{r21} hmi²go^{r1}.
- 462 *hú^H *word* Oj hu¹ U hau²³ Tl háw¹ S hai¹² Qe heu Z hi Tp há^{g1} Pa hów¹ VN hau Oj hu Ll hu^{h2} Le hú¹ Qi huh¹ Co hú¹.
- 463 *hú^H *possum* Oj hu¹ U a²hau²³ Tl ca³háw¹ S ca hai Z ca hi Tp i¹ma²há^{g1} cɨ^{ʔ31} Pa ma²hów² (the Pa nd Ll forms reflect *L) VN ma hau Oz ma hu Ll mi²³hu^{h3} Le hu Qi hup¹ possum huh¹ a different type of small animal Co hú¹.
- 464 *hú^L *smock (huipil)* Oj si¹mi²hu³ U a²ma³hau⁴ Tl meg³háw³ S ʔmi¹hai¹² (the S, Ll, and Le forms reflect *H) Qe ʔmi heu Tp ci¹ʔmi^{ʔ2} hú² Pa ʔmi^{ʔ32} hó² VN ma hau Oz miʔ hu Ll hu^{h2} Le hú¹ Qi ʔmi^{ʔ3} huh³ Co ʔmi^{ʔ21} hú².
- 465 *hu-ʔ^H *pineapple* Oj huʔ¹ U ʔ⁴heu^{ʔ32} Tl má^{g3} huʔ¹ Ch hu (final ʔ expected) M ma huʔ S mi huʔ Qe heuʔ Z ma huʔ Tp mi²hu^{ʔ31} Pa cyi¹ho^{ʔ31} (tone 1 expected) VN mi hauʔ Oz mi huʔ Qi huʔ¹ (the Qi and Co forms reflect a syllable with accent) (Vh expected) Co hú^{ʔ1}.
- 466 *hu-ʔ^L *deep* Oj huʔ⁴ (tone 2 expected) U heu^{ʔ3} Tl huʔ¹ (tone 4 expected) Ch huʔ S hie^{ʔ3} valley, stream (reflects a syllable with accent; however, ie suggests a short vowel) Qe heuʔ valley Tp hi^{ʔ2} Pa hi^{ʔ2} Ll hu-ʔ³ depression, valley Lt huʔ.
- 467 *hu-ʔ^{LH} *a type of rodent* Tl huʔ⁴ Tp há^{ʔ2} huʔ² mole Pa si¹hu^{ʔ32} Ll hu-ʔ³.

468 *hu-ʔ *cough, cold* Oj ʔmo³¹ hu^{ʔ1} U heu^{ʔ3} TI hu⁴² (final ʔ expected in TI and Ch forms) Ch di hu na (*verb*) S hu^ʔ Tp hú^{ʔ2} (*verb*) Pa hú^ʔ (*verb*) LI hu-ʔ² (*noun*) hu-ʔ³² (*verb*) Le hu^{ʔ32} (*verb*) Qi hu^{ʔ1} *phlegm* (Vh expected) Co hú^{ʔ1} (*noun*) hú^{ʔ2} (*verb*).

469 *haʔ *mamey, a fruit of the zapote family* Oj ta²ha^{ʔ1} (Oj, Oz, and LI forms reflect a long vowel) U o¹to³ta¹ho^{ʔ5} TI ta³hó^{ʔ1} S ta²ho^{ʔ21} Tp míg² tə¹hó^{ʔ21} Pa ta¹ho^{ʔ31} *zapote* VN mi ta hoa^ʔ Oz mi ta ha^ʔ *zapote* LI mi³¹ta¹ho-ʔ³¹ Le ta ha^ʔ Qi ta²ho^{ʔ1} Co to-²há^{ʔ1}.

470 *ha^L *cotton* Oj ho² U o¹ho³ TI hew³ Ch ho M ho S hó² (accent not expected) Qe hau Tp ni¹hau² Pa həw² VN hao Oz ʔwa ho LI ho³ Le ha³ Qi hoh²³ Co ho-².

471 *ha· *side* Oj ho¹ *side* ho¹ ʔma² *board, plank* U ho³²ʔma³ *board* TI ho, hew S ho *side* ho ʔma *board* Pa haw³¹ *side* haw³¹ ʔma² *board* VN hoa ʔma *board* LI ho-³¹ *side* ho-³¹ ʔmo³ *board* Le ha Qi hoh²³. The following forms all meaning *half* are probably related: Oj tɔ⁴ ča²ho² Pa ka¹hó¹ LI ka³ho³¹. It is possible that the following forms, although semantically more distinct, are also related: Tp ho² *ample, with adequate space* (au expected because of the tone) Pa hu¹ gúw³ *palm of the hand* LI ho-³ *plain* he² ho-³¹ *where it is flat* ho-³¹ gwo³ *palm of the hand* Lt ha *plain* Qi

ho^{ʔ1} kwo³⁴ *palm of the hand* (ʔ is marker of possession).

472 *ha· *I cook* Tp ho³² Pa ho³² LI han²³.

473 *ha· *spread out* TI hó² Tp rə²hó³² Pa hó³² LI ho³² Le ha³². The following set may be related: *haŋ *open, e.g., eyes, book* Pa ha³² LI hən³² Le hay³².

474 *ha· [1]~*hia· [2] *break* U ho³ [1] hie² [2] TI ka³⁴hew [1] S ka ho [1] Tp hau² [1] Pa həw² (*past*) [1] hyéw³ (*fut.*) [2] LI ka²³ho³ [1] rɪ²³-hä³ [2] Qi hoh⁴ [1] Co ka ho¹ [1].

475 *ha-ŋ [1] *hia-ŋ [2] *take (an. obj.)* Tp hiog³² (*first person object*) [2] (reflects a syllable without final *ŋ) hŋia³² (*third person object*) (reflects *hŋiaŋ) Pa húw² (*intr.*) how³² (*tr.*) (both reflect [1]) LI hən²³ *take not to base* [1] hən²³ *take to base* [2] (both forms reflect a short vowel) Co hé-ŋ¹² [2].

476 *há^H *coconut* Oj mi³sɔ² ho¹ U ɯ⁴sɛɯ⁴³ ho²³ Qe θɛɯ ho LI mi³¹sɯh¹ ho-h².

477 *há^{HL} [1] *há^H [2] *day before yesterday* Oj ho⁴ [1] U ho²³ [2] TI hó² [1] Ch ho S ho Qe hau Tp ho³ [1] Pa ma²ho³ [1] Oz ho *yesterday* LI mi²³ho-h² [2] Le he Qi ʔyiah³⁴ hoh¹ [2] Co hó¹ [2] (long vowel expected).

478 *ha-ʔ^H *worm* Oj se¹ha^{ʔ1} U a¹ha^{ʔ32} *maggot, fly* TI ha^{ʔ1} Ch ha

- (final ? expected) M ha? S há?¹
(tone 3 without accent expected)
Qe ha mo? (final ? expected) Tp
i¹ha?³¹ Pa ha?¹ VN hoa? Oz ça
ha? Ll ho-?² *maggot* Qi hoh?⁴² Co
ho-?²¹. The following forms are
probably related: Oj ha?¹ *fly* U
a¹ha?³² *fly* Tl ha?¹ *insect* S ha? *in-*
sect Ll ho?³ *fly* (this form may
belong to *há-?L *animal* in spite of
its meaning) Co ho-?² hi¹² *lightning*
bug (21 expected). The following
forms meaning *Mixe* are perhaps
related: Ll ho-?² Le ha?. The fol-
lowing set is probably also related
to the preceding ones: *ha-?H
Tlacoatzintepec, a Chinantec village
U ma²ha?³² Tl ma ha?¹ S ma ha?
Tp ma¹ha?³¹ Pa ma?³ há?² (tone 1
without accent expected).
- 479 *ha-?H [1] *ha-?L [2] *fist* Oj
mi³ha?¹ [1] U ɸ⁴ha?³ [2] Tl ha?⁴ [2]
S ha?³ [1] Tp ha?² [2] Pa há?² [2]
(accent not expected) VN hoa? Oz
ha? Qi hoh?⁴ (probably [2]; if so,
23 expected) Co hó-?¹² [2].
- 480 *ha-? [1] *how many? (inan.)*
*ha-?ŋ [2] *how many? (an.)* Oj
ha?⁴ [1] hā?⁴ [2] U a³ha?⁴ [1]
a³hā?⁴ [2] Tl há?³ [1] S ha? [1] Pa
há? [1] Ll ho?² [1] hō?n² [2] Lt
hay? [2] Qi hoh?⁴² [1] hōih?⁴² [2]
(aih expected) Co hó-?¹² [1].
- 481 *há-?L *animal* Oj ha?³ U ha?⁴
Tl há?³ Ch ha? M ha? S há?³ (ac-
cent not expected) Qe ha? Tp há?²
Pa há?² Oz sa ha? Le há?³ *snake*
Ql hoh?³⁴ Y ho? za *steer* Co hó?¹².
- 482 *hiu- [1] *blow (inan.)* *hiu-ŋ
[2] *blow (an.)* Oj hi³ ?ni² [1] U hai²³
[1] Tl hí² [1] Ch hi [1] M hi [1] S
hyei³² [1] Qe kwa hyei [1] Tp héi²
[1] Pa hyéw² [1] hyúw² [2] VN hui
[1] Oz hö [1] Ll hyö-³² [1] hyu-n³²
[2] A hö [1] Le ši-³² [1] (seems to
reflect *i rather than *iu) Qi xüh²³
(*first person singular*) [1] Y xü? (*first*
person plural) [1] Co hyó-r² [1].
- 483 *hiu-ŋ *delicate, fragile* U heɸ³ *it*
will break (reflects *u rather than
*iu; ɸ expected) Pa hyúw³ *it will*
break (hŋyo¹ *fragile, weak* suggests
a *hŋiu-ŋ alternant) VN hyɸ *break*
(hyuŋ expected) Ll hyu·hn³ Le
hyu-y³ (š expected; perhaps the
final y prevented the *hi > š
development in this form) Qi
xuih²⁴² *child* Y hyun *child*.
- 484 *hiu-?H *armadillo* Oj hi?¹ U
a⁵hei?³² Tl hu?¹ (the Tl through Z
forms reflect *u- rather than *iu-)
Ch hu (final ? expected) M hu? S
hu?³² Qe heu? Z hu? Tp i¹hi?³¹ Pa
hyu?¹ VN hui? Oz ça hö? Ll hyö-?²
Pe hö? To hö? A hö? Le ši?²
(seems to reflect *i rather than
*iu) Qi xüh?⁴² Co hyö-?²¹.
- 485 *hiu-?L *snail* U hu²hei?⁴, ha?⁴
hei?³ (tone 3 fits the reconstruc-
tion) Tl ci³hu?⁴ (reflects *u-) Ll
mi³¹hyö-?³ To mi hö? A mi hö? Le
mi šu? Lt hyu? (the *hi > š shift
may not have taken place in Lt in
this environment).
- 486 *hia^{LH} *spider* Oj ha?³ mi²ya¹
(initial h and tone 2 expected) U

a¹hia²³ (tone 3 expected) Tl hyá⁴ S ci ha (reflects *a rather than *ia) Qe hya Z ca hya Tp i¹hia³² Pa cyi¹hyi³² VN mi hye Oz tã hö (Oz through Qi forms reflect a long vowel) Ll hä³ Le he³ Qi heh⁴ (this is the only example of *ia- after *h; eh may be the regular development after *h or the vowel may have been borrowed from a Comaltepec-type language, where e is the expected quality) Co hia².

487 *hia [1] ~ *ha [2] *come (other than to base)* Oj hya²³ [1] U hia²³ [1] Tl há² [2] Ch hya [1] S ha [2] Tp há³² [2] Pa hyi³ [1] há³² [2] VN hye [1] Ll mi³hä³ [1] hoh² [2] Le ri⁴he³ [1] Qi ho² [2] Y he [1] ha [2] Co há^r² [2] (vowel quality reflects a short vowel in spite of the length).

488 *h_i^{LH} [1] ~ *h_i [2] ~ *hu [3] *set fire to* Oj a⁴ h_i² ?ni² [1] h_i¹ ?ni² [2] U h_eg³ [1] Tl h_eg⁴ [1] (accent expected) h_i² [2] h_u³ [3] (nasalization not a part of the stem) S h_i [1] Pa h_i³² [1] h_i² [2] VN hu [3] Ll h_i³ [1] h_{ih}³ [2] hun²³ [3] Le h_i³ [1] h_i³² [2] hu⁴ [3] Qi h_u⁴ [3] (nasalization not expected) Co h_i²¹ [1] (tone 2 expected) h_i² [2].

489 *h_i^{HLH} *deep, high* U h_ag¹ long (hair), tall (corn) Tp h_ag Pa h_ay¹ Ll h_n²³² (reflects a syllable with final *ŋ).

490 *h_i^{LH} [1] ~ *h_i? [2] ~ *hu? [3] *smell (tr.)* U h_eg³ [1] Tl h_eg⁴ [1] h_ey² [2] h_u² [3] (nasalization

not a part of the stem) Pa h_i?³² [1] h_i?³² [2] Ll h_i?³ [1] h_i?³ [2] hu?n²³ [3] Le h_i?³ [1] (long vowel expected in all Le stems) h_i?² [2] hu?⁴ [3] Co h_i?² [1] (long vowel but no accent expected in both Co stems) h_i?¹ [2].

491 *h_i? *deliver* Oj h_i?³¹ ?ni² Tl h_ag²² (reflects a short vowel) S ka h_i? Tp h_ag³² (i expected) Pa h_ay?³² *return someone else's property* (i expected) h_e?² (an.) (reflects a syllable closed by *ŋ) Ll h_i?³² Co h_a?^r² (i expected).

492 *h_i? *where?* Oj a²h_i?¹ U h_ai?¹ Tl h_ay?⁴² Ch h_i (final ? expected) M h_ai? S h_i? Qe h_ei? Tp a²há?²¹ (e is probably the expected reflex).

493 *h_i? *feel, think* Tl h_ay (final ? expected) Pa h_e?³² (may reflect a syllable with final *ŋ) Ll h_i?³.

494 *h_i? *be alive* Pa h_i?¹ Ll ri³-h_i?²³ Co h_i?^r¹² (a short vowel expected).

495 *h_i? *sprout (noun)* Pa h_i?² Ll h_i?³.

496 *h_i?ŋ *hiccough* Oj h_i?² lo² ci³a² U h_ai?² Ch h_i? S h_i? Pa h_e?² Ll h_i?n³².

497 *h_i^H *raft, bed* Oj h_i³¹ U a²?ma³ h_ai?³² raft tag³² h_ai?³² bed Tl h_ay⁴ Ch h_ey (possibly h_ay) S h_e?³ Qe h_ai Tp ci¹h_ei¹ Pa h_ey¹ VN h_ei Oz sa h_i Ll h_i² Le h_i² Qi h_{ih}² beam Co h_i¹ raft.

- 498 *h_i^L *season* U h_{aj}³ Ch h_i nyi year (the Ch, Pa, and VN vowels reflect the pretonic position) S h_e Tp h_{ej}² Pa h_i² nyi² year VN h_i nyi year Ll h_i³ Le h_i Qi h_{ih}²³ Co h_i² year.
- 499 *h_i^L *dry season corn (tonamil)* Tp kuig² h_{ej}² Pa kwiy² h_{iw}² Ll kwi³ h_i³ Co kwi h_i¹ (tone 2 expected).
- 500 *h_i^{HL} *mud, dirty* Oj h_i² U h_{aj}²³ Tl h_{ay}⁴ Ch h_{ey} (possibly h_{ay}) M h_i S h_e Qe h_{aj} Tp ti^hh_{ej}³ mud (tone 2 without accent expected) Pa h_e² VN h_{ej} Oz te h_i mud Ll ri³h_i²³ muddy (water) (23 without final ? expected) Lt na h_i? muddy Qi h_{ih}⁴ Co h_i¹².
- 501 *h_i? [1] *turn, rotate (inan.)* *h_i?^{HL} [2] *turn, rotate (an.)* *h_i? [3] *turn (tr.)* Tl co³⁴ceg³ h_{ay} [1] h_{ay}? [3] Tp h_{ej}²³² (*intr. an.*) [3] (the Tp and Pa forms may reflect a syllable with final *ŋ) Pa h_{ej}³² (*intr. an.*) [1] h_{ej}³² [3] Ll h_i²³² [1] h_in²³ [2] Le h_i⁴ [1] Co h_i² [1] h_i?¹² [2] h_i?²¹ [3].
- 502 *h_i? [1]~*h_i?^ŋ [2] *meet (intr. ?)* *h_i? [3]~*h_i?^ŋ [4] *meet, unite (tr.?)* Oj ni² h_i³ hna²¹ we'll see each other (*leave-taking*) [1] U h_{ej} [1] (probably reflects a short vowel) h_{aj}²³ [3] S h_e? [3] (i expected) Tp h_{ej}² [4] Pa h_e² [2] h_{ej}² [4] Ll ri²h_i²ra² k_o?³ we'll see each other (*leave-taking*) [1] h_in³ [2] ri³h_i?n² joined [4] Le za³h_i³ (*tr.*) [1] Co di hmi h_i?²¹ [2].
- 503 *h_i?^ŋ *spill* Pa h_e³² Co h_i?^ŋ¹² *overturn.*
- 504 *h_i?^L *sour* Oj h_i?² U h_{ej}?³ Tl h_i?⁴ S h_i?¹ (tone 2 expected) Tp h_{ej}?² Pa h_i?² VN h_{ej}? Ll h_i?³ Pe h_e? (may be a misrecording of h_i?) Le h_i?³. This set may be related to at least the next two sets.
- 505 *h_i?^L or ^{HL} *orange* Tl h_i?⁴ S h_i? to? *sour orange* Qi h_{ih}?⁴ (reflects *^{HL}) Co h_i?¹² (reflects *^L). This set may be related to *sour, guava*, and possibly *avocado*.
- 506 *h_i?^L or ^{HL} *guava* Oj mi³h_i?² *sweet guava* U u⁴h_{ej}?³ Ch nyi h_o? (the Ch and S forms reflect *h_a?) S nyi h_o? Pa h_i?² (reflects *^L) VN h_{ej}? Ll ?yo²h_i?²³ *custard apple* (reflects *^{HL}) Lt h_i?. This set may be related to the two preceding sets.
- 507 *h_i? *avocado* S kwi h_i? *sweet avocado* Tp kuig² h_{ej}?³¹ Pa miy³ gu²h_i?³¹ Ll mi³¹ku¹h_i?³² Qi kwo⁴ h_{ih}?⁴².
- 508 *h_i? *Usila, a Chinantec village* U he¹heu³ h_{ej}?³ Tl h_i?² S h_i? Tp h_{ej}?³ Pa h_i?³ Qi h_{ih}?⁴.
- 509 *h_i? (to) *light a light* Tl ho?¹ (reflects *ha?) Pa h_{ej}?³² (i expected) Ll h_i? Co h_i?^r²¹ h_i¹².
- 510 *h_i? [1] *offer (in.)* *h_i?^ŋ [2] *offer (an.)* Tp h_{ej}?³² [2] Pa h_i?³² [1] h_{ej}?² [2] Ll h_i?³² [1] Le h_i?³² [1] Co h_i?^r² [1] (long vowel expected).

- 511 *hɛ^H *dance (noun)* Oj hɛ¹ U hɛ¹ (tone 2 expected) Tl hɛ² Pa hɛ¹ Le hɛ² Qi hɛ¹ (tone 2 expected; may reflect a syllable with accent).
- 512 *hɛ^L *seed* U hɛ³ Tl hɛ² Ch mo[?] hɛ² S hɛ² Tp mɨ^{g2} hɛ² Pa mɨ² hɛ² VN mi hɛ² Ll mɨ³¹ hɛ³ Lt mi hɛ² Qi hɛ³⁴ Co mi hɛ¹² (accent not expected).
- 513 *hɛ^η *die* Oj hɛ² ?ni² U hɛ² Tl hɛ² Ch ma ka hɛ² S ma hɛ² Tp hɛ³² Pa hɛ³ VN ka hɛ² Ll hɛ^{hn23} Le ma hɛ² Co hɛ² (ɛ^η expected).
- 514 *hɛ^H *tooth* Oj mi³ hɛ^{1a2} U ɛ⁴ hɛ² Tl hɛ⁴² S hɛ¹ Tp mi² hɛ²¹ Pa hɛ¹ VN mi hɛ² Oz na hɛ² Ll hɛ² Le na¹ hɛ² Qi moh⁴ hɛ² Tm mo hɛ² Co mo hɛ¹.
- 515 *hɛ^H *feather* Oj hɛ¹ U ɛ⁴ hɛ³² (tone appropriate to a long vowel) Tl hɛ² S ci hɛ² Tp ti¹ hɛ¹ (forms in Tp and Ll reflect a syllable with accent) Pa hɛ² VN hɛ² Ll hɛ² Qi hɛ² Co hɛ¹.
- 516 *hɛ^{LH} *foam* Oj ri² hɛ² U o¹ hɛ³ Tl hɛ³ (tone 4 with accent expected) S hɛ² Tp hɛ³² Pa hɛ³² VN hɛ² Ll hɛ³ Qi hɛ⁴ Co hɛ².
- 517 *hɛ² *(to) boil* Oj ka³ hɛ³ U d² a² hɛ³⁴ Tl hɛ² (?) S ma ci hɛ² Tp hɛ³² Pa hɛ³² Ll ka²³ hɛ²³ Le ?i⁴ hɛ⁴.
- 518 *hɛ^L *one (an.)* Oj hɛ² U hɛ³ Tl hɛ³ S hɛ² Tp hɛ² Pa hɛ² VN hɛ²
- Oz hɛ² Ll hɛ³ Lc hɛ² (may be a misrecording of hɛ²) A hɛ² Le hɛ² Qi hɛ² (34 expected) Y hɛ² (nasalized vowel expected) Co ha² (a short nasalized vowel expected).
- 519 *hɛ[?] *guava* Ch nyi hɛ[?] S nyi hɛ[?]. Cf. *hɛ[?] *guava*.
- 520 *hɛ[?] *onion* Oj yi¹ hmi¹ hɛ[?] *scallions* (reflects a syllable without accent) U ɛ⁴ d² a¹ hɛ[?] Tl hɛ[?] *wild greens (quelites)* S si kwu hɛ[?] Qe ci ku hɛ[?] Tp hɛ[?] *wild greens* Pa ci¹ hme hɛ[?] VN i hmi hɛ[?] Ll me² hɛ[?] *wild greens* Qi hɛ[?] *wild greens, vegetables* Co hɛ[?].
- 521 *hɛ^{HL} *so, then* Tl hɛ³ (tone 4 with accent expected) Tp hɛ² Pa hɛ² Ll hɛ²³.
- 522 *hɛ^{HLH} *word (nominal classifier)* S ka² hɛ² hai¹² (tone 1 expected) Qe ka hɛ² heu Pa ka² hɛ²¹ hɛ² Ll ka³ hɛ²³² hu² Qi hɛ²⁴² (reflects a syllable with final *ɨ).
- 523 *hɛ[·] *sibling* Ll hɛ² Le hɛ².
- 524 *hɛ[·] *inanimate referent* Pa hɛ³ Ll hɛ²³.
- 525 *hɛ^{LH} *son, daughter* Oj hɛ³¹ ta² *grinder (mano de metate)* yi² hɛ² U a³ hɛ⁴³ Tl hɛ⁴ S hɛ² Qe hɛ² Tp hɛ³² Pa hɛ³² VN hɛ² Oz hɛ² Ll hɛ³¹ (tone 2 with accent expected) Le hɛ⁴ (*first person singular*) Qi hɛ⁴³ Y hɛ² (ɛ expected) Co hɛ²¹.

526 *həʔ near Tl ma həʔ S ma həʔ Qe ma haʔ (nasalized vowel expected) Oz həʔ.

*m

527 *mi^H thick U ɸ³² thick (hair) (2 expected) Tl meg S mi VN mi Ll mi² Lt mi Qi mi² Co mi¹.

528 *mi^{LH} [1] *mi^{LH} [2] ask for Oj mi¹ ʔni² (2 expected) U ɸ³ Tl még² ceg³ [1] S mi³² [1] Tp mi³² za² [1] Pa miw³² [1] máy³² [2] (accent not expected) Qi mi^{h4} [2] Co mi^{r2} [1].

529 *mi^L woman Oj ca² mi³ U a³ɸ⁴ Tl ca³ még³ M ca mi S ca² mi³ (23 expected) Tp za² mi² Pa miw² VN za mi Oz za mi (a expected) Ll mi^{h3} Le mi³ Qi mi³ (24 expected) Co mi¹². The following set is apparently related to the preceding one: *mi^{HLH} mother, girl Tl mag⁴² mother (vocative form) Ch mag girl S mi¹ mother (vocative form) (reflects a short vowel) Tp za² mi²¹ girl of marriageable age (reflects a short vowel) mag³¹ mother (vocative form) (21 or 1 expected) Pa may mother (vocative form) Ll ši²³mi²³² virgin Le ši mi⁴² girl. The following forms may form a part of this set: Pa ha¹máy³¹ daughter Ll ho²³mi³¹ daughter. The following set is also related to this group of sets and especially the first one: *mín^L female Pa m^{ś2} Ll mi^{hn3}.

530 *mi^{LH} medicine Oj ʔo²mi³ U ɸ⁴³ Tl még³ S mi²³ Tp mi³² Pa miw³² VN mi Oz ma Ll mi³² herb curer (2 with final h expected) Le mi³ (reflects unaccented syllable) Qi ʔoh²³ mi² (3 expected) Co mi²¹ (accent but no length expected).

531 *miʔ liver Tl mag^{ʔ42} (tone reflects *^H and suggests that this set may be related to the following one) Ch mags (vowel reflexes of the Ch and VN forms suggest a syllable closed by *ʔ) M maʔ co S maʔ co Tp ni¹mi^{ʔ32} za² Pa miw^{ʔ32} za² VN mai.

532 *mi^{ʔH} pill Qi mi^{ʔ1} Co mi^{ʔ1}.

533 *mi^{ʔLH} ant Oj mi^{ʔ4} U a¹ɸ^{ʔ43} Tl ca⁴mág^{ʔ4} M ma (final ʔ expected) S cyu maʔ Qe ca maʔ Tp i¹mi^{ʔ21} (32 expected) Pa miw^{ʔ31} (32 expected) VN maiʔ Oz ča miʔ Ll mi^{ʔ2} Le miʔ Qi mi^{ʔ3} Co mi^{ʔ2}.

534 *mi^L hawk Oj mi² li¹ U a²ɸ³ Tl mag³ S mai² Tp i¹mi^{g2} Pa miy² VN mai Ll mi³ Le mi³ Qi mi^{h23} Co mi².

535 *mi^L ball, round object Oj mi³ U ɸ⁴ Tl mág³ S mai²³ Tp mi^{g2} Pa miy² Ll mi³¹ (3 and a final h expected) Le mi²¹ (3 and an accent expected).

536 *mi^{HLH} tick Oj sya¹ mi³¹ yi² U a¹si²ɸ² Tl mag² S mai¹ Tp i¹mi^{g1} Pa may¹ VN mai lao Oz ča mi Ll mi^{h2} Le mi¹ Qi mi^{h242} Co mi¹².

537 *miʔL *basket* Oj si¹miʔ² U a²ʔ³ ta²³ Tl mé^gʔ⁴ (accent not expected) S miʔ ta *reed basket* Tp ci¹miʔ² Pa miʔ² VN maiʔ Ll miʔ³ Lt miʔ Co miʔ¹².

538 *miʔL *snake* Oj (sya¹) miʔ³ (2 expected) U a⁵ʔ³ Tl má^gʔ⁴ (accent not expected; the Tl and S forms reflect a short vowel) S maʔ²³ (reflects an accented syllable) Tp zi² miʔ² Pa miʔ² VN maiʔ Oz miʔ Ll miʔ³ hmi³ *dragon (water snake)* Qi mihʔ²³ Co miʔ¹².

539 *mə^H [1] *mə^L [2] *leaf* Oj mo³¹ [1] U o¹ʔ³² [1] Tl mo¹² [1] S mu²¹ Qe mo Tp mogʔ³¹ [1] (reflects syllable closed by *ʔ) Pa mu¹ [1] muw² [2] VN moa Oz wu mo Ll me.³ [2] Le me.³ [2] Qi moh²³ [2] Co mo⁻² [2].

540 *mə^{HL} [1] *mə^{LH} [2] *bone* Oj na¹mo² [1] or [2] U na²ʔ²³ [1] Tl mo³⁴ [2] S mu³² [2] Qe mo Tp ni¹mu³² [2] Pa mu² [1] VN moa Oz na mo Ll me.²³ [1] Le me.⁴ *egg* [1] Qi moh⁴ [1] or [2] Co mó¹² [1] (long vowel expected).

541 *má^{HLH} *flea, nigua* Oj či¹mo³¹ U a¹ʔ² *flea* a¹ma²kə² *nigua* (reflex of second form due to the pretonic position) Tl ci²mew² *flea* Ch ci mo S si²mu¹ Qe ci mo Tp i¹mu¹ Pa mow¹ VN mi (probably reflects a front vowel) Ll me-h² Le me.² (1 with an accent expected) Qi haih² moh²⁴² Co di²mo⁻¹ *flea* (12 expected).

542 *mi^H [1] *mi[·] [2] *miʔ^H [3] *elbow* U huʔ² ma³kue³ [3] (reflects accented syllable and initial *hm) Tl magʔ⁴ [3] (1 expected) S maʔ kwo co [3] (the Tl and S forms reflect a short vowel) Tp ni¹miʔ²¹ za² [3] (31 expected) Pa miʔ¹ [3] VN mi [2] (reflects a short vowel) Ll mi⁻² [1] Lt mi [1] Qi mihʔ⁴² [3].

543 *mi^H [1] *mi^L [2] *plain* Oj mi² [2] U ʔue⁵ʔ³ [2] Tl mag³ [2] S ʔwe mai² [2] Tp mig² [2] Pa miy² *level* [2] Oz he hwi mi *Valle Nacional, a Chinantec village* [2] Ll mi.³ [2] Qi mih¹ [1] Co mi⁻¹ *plain, Tuxtepec* [1].

544 *miʔ^{HL} [1] *small (inan.)* *miʔ^η^H [2] *small (an.)* Oj miʔ² [1] U meiʔ³ *few* [1] maiʔ² [2] (reflects accented syllable) Tl ca¹ meyʔ² *child* [1] (reflects an accented syllable; accent expected) miʔ¹ [2] S miʔ Qe nyu meiʔ *boy* Tp meʔ² [1] Pa miʔ² [1] meʔ² [2] (tone 1 expected) VN meʔ Oz miʔ Ll miʔ² [1] miʔn²³ *young* [2] (the tones of the Ll forms seem to have been reversed; the tone of the [1] form reflects *^H and the tone of the [2] form reflects *^{HL} on an accented syllable).

545 *miʔ^η [1] *miʔ^η [2] *be ticklish* U ʔ³² [2] Tl méy² *tickle (with a third person obj.)* [1] (may reflect a syllable without final *^η) Tp ci¹-me²¹ [1] Pa ci²mé² [1] Ll miʔn²³ [1] Co mi^η² [1] (long vowel expected).

546 *mí·ʔ^L [1] *mí·ʔ^L [2] *irritating, containing minerals* Pa mí^{ʔ2} [2] Ll mi^{ʔ3} [1] Qi mih^{ʔ23} [2] (the Qi and Co forms reflect an unaccented syllable) Co hmi²mí·ʔ¹² [2].

547 *mí·ʔ^{LH} [1] *mí·ʔ^{LH} [2] *wasp, hornet* U a¹ma²ʔ³ [2] (reflects unaccented syllable) Tl még^{ʔ4} [2] S mu¹ mi^{ʔ2} *wasp* [2] Tp si¹mé^{ʔ32} *wasp* [1] Pa mi^{ʔ32} *red wasp* [1] Ll mi·ʔ³² [1] Ql hoh^{ʔ34} mih^{ʔ3} [1] Co mi^{ʔ2} [1].

548 *mé^{LH} *cane liquor* Oj ma² *cane* (the Oj, U, Ch, and M forms reflect a short vowel) Tl mó⁴ Ch ma cyei M ma S mú² (accent not expected) Qe mo Ll me·h² Le mé² *liquor distilled from the century plant* Qi mah⁴³ Co mé²¹.

549 *ma *mother* U ma⁴³ *grand-mother* VN ma *mother (vocative form)* Oz ma *mother (vocative form)*.

550 *má^{HL} [1] *má^{LH} [2] *food* Oj ma⁴ [1] U ma³⁴ [1] Tl ma³⁴ [2] (reflects a long vowel) S ma³² [2] Tp má³ [1] (the accent of the Tp and Pa forms not expected) Pa má³ [1] VN ma Oz ma Ll moh² [2] (reflects accented syllable) Lt ma.

551 *ma^{LH} *Tepinapa, a Chinantec village* Pa ku³²mow³ Oz gu mo Ll ku³mo³.

552 *ma^{HLH} *turtle* Oj hu²mo³¹ U a²hau³ ʔe¹ Tl hu^{ʔ1} mo⁴ (42 ex-

pected) Ch ku mo S hu mu Qe hu mo Tp há^{ʔ2} mu²¹ Pa ha^{ʔ3} u²mow¹ VN hu moa Ll ku³mo²³² Lt hu ma Qi ha²moh²⁴².

553 *má^{LH} *maguey* S mú² (accent not expected) Tp ci¹mu³² Pa cyú^{ʔ1} mow³² Ll šo·ʔ³¹ mo·h¹ Qi moh⁴³ Co má²¹.

554 *má^{LH} *boat* Oj mo² U a²ʔe⁴³ Tl mó⁴ S mú² (accent not expected) Qe mo Tp ci¹mu³² Pa mow³² VN mo Oz wu mo Ll mo·h² Lt ma Qi moh⁴³ Co mó²¹.

555 *ma·ʔ^{ʔLH} [1] *ma·ʔ^{ʔH} [2] *stalk (of bananas)* U ʔe^{ʔ2} [2] (seems to reflect a short accented syllable) Tp ʔmu^{ʔ2} [1] (preconsonantal glottal not expected) Pa mo^{ʔ32} [1] Ll ma·ʔⁿ³ [1] Co ma·ʔ²¹ [2].

556 *má·ʔ^L *squash* Oj ma^{ʔ3} U o¹ma^{ʔ4} Tl má^{ʔ3} S ci²ma^{ʔ3} Tp ni¹má^{ʔ2} Pa má^{ʔ2} VN moa^ʔ Oz mi mo^ʔ Ll mi³¹mo^{ʔ3} Le ma^ʔ Qi moh^{ʔ34} Co mó^{ʔ12}. The following forms probably belong to the same set: U ʔ⁴hd^{ʔei}¹ ma^{ʔ4} *jicama, an edible tuber* Tl si²ma³ *yuca-like tuber* (final ? expected) Ch ci ma^ʔ *jicama*.

557 *má·ʔ^L *mountain* Oj ma^{ʔ3} U a²ma^{ʔ4} Tl má^{ʔ3} S ma^{ʔ3} Tp má^{ʔ2} Pa má^{ʔ2} VN moa^ʔ Oz mo^ʔ Ll mo^{ʔ3} Le má^{ʔ3} Qi moh^{ʔ34} Co mó^{ʔ12}.

*n

- 558 *ni?HL *grasshopper* Oj na?2 (i is expected, but it is possible that a is the regular reflex of *i after *n in Oj) U a¹nag?3 Tl nag?4 S na? Tp i¹ni?2 Pa cyi¹ni?2 Ll ni?2 *wasp*.
- 559 *ni^{LH} *mushroom* Oj mi³na¹ (i is expected and tone 2; cf. *ni?HL *grasshopper*) U a¹ma³nag⁴³ Tl meg²-nág⁴ S mana² Tp ni¹nag³² Pa nay³² VN nai Ll mi²ni^h2 Le ní² Qi nih⁴³ Co ní²¹ (accent expected).
- 560 *nə^{LH} *that* Oj ni² U i⁴ne³ Tl né² (4 expected) S ni Tp nə³² Pa ná³² (accent not expected) VN a ne Oz e na Ll ní³ Le ní³ Qi ?e²no⁴ Co ?e na¹² (2 expected).
- 561 *nə^{HL} *now* Oj na⁴ U ne³⁴ Tl né² S ne Tp nə³ Pa na³ VN ne Ll ri³ni²³ (final h is expected) Le hə ni Qi no¹²no¹² (34 expected) Co la²ná¹² (2 expected).
- 562 *ni^H *face* Oj ñi¹a² U ma³nei² Tl ni² Ch ni M ma nyi hna *my eye* S nyi¹ Tp zi²ne²¹ Pa ni¹ VN ni Oz mo nen Ll ñi² Le ñi² Qi ni² Co ni¹ (The Oj, U, Tl, Pa, and Co forms also mean *on*).
- 563 *ni^L *sit (imperative)* Oj ñi³ U nei⁴ Tl ní² (3 expected) Ch ni S nyi²³ Tp né² Pa ní² Ll ñih³ Le ñi Qi nih²⁴ (h not expected) Co ní¹² (length not expected).
- 564 *ni?ŋ [1] *ne-?ŋ [2] *I am going home* U nai²³ [1] Tl ni?1 [1] Ch ne? [1] S ma nyi? na [1] Tp né?21 [1] Pa ne?31 [1] Ll ñe-?n²³na²³ [2] Le mi ña?a [2] Qi neih?42 [2] Co nin?2 [1]. This set is probably related to the following one.
- 565 *ni- *I go* Oj ñi³¹ U nai³² Tl nay⁴² Ch ney M nyei S nye² Qe nyai Tp nei³¹ Pa ney³¹ VN nei Oz ni Ll ñi-n²³ Qi nih⁴ Co ni¹². This set is probably related to the preceding one.
- 566 *ni- *flat* U nai² Ch ney.
- 567 *ni- *inside* Ch ney M nyei Pa zyi²néy² VN ti li ni (VN and Oz forms may reflect a short vowel) Oz ne.
- 568 *ni? *stretch* U ñei?2 (n expected) Tp néi?32 Pa ney?32 Ll si³ñi-?3 Qi nih²¹² (? expected) Y ni? *we will stretch* Co ní-r²¹ (? expected).
- 569 *ne *we know* S ne¹ hno?1 Tp ne²¹ Ll ne³ra² Y ne e? Co ne¹na? (long vowel not expected).
- 570 *nú?H *covering vegetation* Tl náw?1 *overgrown cornfield* Tp kuig² nə?31 *corn in the husks* Pa hi¹ ní?1 *overgrown cornfield* Ll kwí³ nu?2 *corn in the husks* he² nu?2 *overgrown cornfield*.
- 571 *nu^L *vegetation* Oj hi¹no² *jungle* U he¹nau³ *jungle* Tl lo²naw³

- rabbit* M nau S nyi¹nai² *jungle* Qe kua neu *deer* Tp nau² Pa hi¹nuw² *jungle* VN nau Oz wa nu Li nu³ Le nu³ Qi nuh²³ Co nu².
- 572 *nu· *peccary* Oj fi³no² U a¹-fi⁴³nau³ Ch nyi naw S mi²nyi²³nai³ Qe mi neu Tp ŋi³² náu³ Pa ŋyé³² núw³ VN nyi nau Li i²³nu-h² Le fi nu Qi fi³nu³⁴ (Qi and Co forms reflect a short vowel) Co ŋi²nu¹².
- 573 *nu· [1]~*niu^L [2] *hear* Oj ?a⁴ no³ ?ni² [1] ni² ?ni² [2] U nau³ [1] nai³ [2] Tl naw³⁴ [1] Ch naw [1] ney [2] M nau [1] S nai [1] Qe kua neu [1] Tp nag³² [1] Pa naw³² [1] new [2] VN nau [1] nui [2] Li nu³ [1] nö³ [2] Lt ga nu [1] fiu [2] Qi nuh¹ [1] Co nur¹ [1].
- 574 *na.^H *fern* Tl meg new S ma² no¹² (3 expected) Pa ma¹naw¹ Li no² Qi u²noh² Co mi²no¹.
- 575 *na.^L Zapotec U a²no³ S nó² (3 expected) Qe no Tp za² nau² Pa nəw² Oz za no Li za³ no³ Le za³ na³ Qi noh²³ Co no².
- 576 *na.^{HLH} *lard, fat* Oj no³¹ U o¹no¹ Tl no⁴² S no¹ Qe nau Tp ti¹no¹ Pa naw¹ VN noa Li no²³² Le na⁴² Qi noh²⁴² Co no¹².
- 577 *na· *stand* Oj no² ?ni² U no² Ch ka no S ka no Qe no Tp nau² Pa nu², nó³ VN ka nao Li no³ Qi noh⁴.
- 578 *ná.^{LH} *rat* Oj sya¹no² U a¹no⁴³ Tl nó⁴ S no² Qe nau Tp i¹nau³¹ (32 expected in Tp and Pa) Pa naw³¹ VN nao Oz ča no Li noh² Lt si na Qi noh⁴³ Co nó²¹.
- 579 *na-?H *net* Oj si¹na¹? U a²na²? (31 expected) Tl na¹ Ch na (? expected but vowel reflects closed syllable) S na? Tp ci¹na³¹? Pa na¹? Li no²? Le na? Qi noh⁴²? Co no²?
- 580 *niu *soap* Oj fi¹to² Tp ni¹-?au² Pa nyu³² VN nyu Oz nö Li ši²nö²³ (short vowels expected in Li, Le, and Co) Le fiu⁴ Qi nü³ Co nö²¹.
- 581 *niu^L [1] *niu-? [2] *become night* Oj tí⁴ka³ni² *night* [1] U nai³ *night* [1] nai² *dark* [2] Tl nay³ [1] Ch ka ma ney [1] S ka³nei² [1] Qe he nai [1] Z ma nei [1] Tp ka²nei² [1] Pa new² *dark* [1] nyo³ [2] VN ma nui [1] te le nyu? *early morning* [2] Oz ga fiu [1] (ö expected) Li nö³ [1] mi³nö²? *be overtaken by nightfall* [2] Le ma fiu [1] Qi ka³nüh²³ [1] Co ka¹nö² [1].
- 582 *niú.^{LH} *star* Oj ni² U ha⁴?nai⁴³ (initial ? not expected) Tl náy⁴ Ch ney M nai Qe nai Tp nei³² Pa new³² VN nui Oz či nö Lc ni ?a Pe ni ?a To ni ?a RC nö ?a A nö ?a Le fiu ?e Qi nü⁴³ Co nó²¹ (long vowel expected).
- 583 *niú-?HL *inside* Oj fi¹? U ta⁴nai⁵? Tl náy³? Ch ney? S nye? Qe nyai? Tp né³? *under* Pa nyú³? VN nui? Oz je ne? Li fiö²³? *inside, under* Le fiú⁴?

584 *nia [1]~*na [2] *open* Oj na³¹ ?ni² [2] U nia¹ [1] Tl nyá² [1] S na ?nyu [2] Qe nya ?nyi [1] Tp niá³² [1] Pa nyí³² [1] ka ná² [2] VN ne [1] Oz ne [1] Ll ne³² [1] ri³no² [2] Lt ña ñu [1] Qi noh²⁴ [2] (h not expected) Co nar² [2].

585 *niá?^H *image, copy* U nio?⁵ (2 expected) Tp nió?¹ Pa nyó?¹ Ll ne?².

586 *nia.^H *chico zapote, a type of fruit* Oj ta²ne³¹ U ɸ⁴ta³nie³² Ch tanyo S ta³no²³ (ny and tone 3 expected) Tp mi²tá?³² nio²¹ Pa ta²nyaw¹ Oz mitanö Ll mi³¹to?¹ ne.² Lt ta? ña Qi to³nah³ (2 expected).

587 *nia. *be snagged* Pa nyáw³² Ll ne.³².

588 *niá.^L [1] *yellow (inan.)* *niá.η^L [2] *yellow (an.)* Oj ne³ [1] na³ [2] U nie⁴ [1] Tl meg³nyew³ [1] (accent expected) Ch nyo [1] M ni [1] S mi³nyó²³ [1] (accent not expected) Qe mi nyu [1] Tp nio²¹ [1] (tone 2 with accent expected) Pa néw² [1] nyó² [2] VN no [1] (ny expected) nyon [2] Oz nö [1] Ll ne-h³ [1] ne-hn³ [2] Le ñá.³ [1] Qi nah³ [1] Co né.² [1].

589 *niá.^{LH} *be in, on* S nyo² Tp ne²¹ (io and tones 32 expected) Pa new³² Ll ne-h².

*ŋ

590 *ŋi *walk* Oj ŋi¹ ?ni² U ŋeg²³ Tl ŋég² S maŋi Tp ŋi³² Pa ŋiw³² gu³?ey³² *run* VN ŋi Ll ŋih³ Qi ŋih⁴ (h not expected) Co ŋir².

591 *ŋi *Choapan, a Zapotec town* Ll mi²³ŋih³ Le miŋi.

592 *ŋiŋ *pass* U ŋag³⁴ *pass it!* Tp ŋi³² Pa ŋá³² Ll ŋihn³ Co ŋiŋ²¹.

593 *ŋiŋ *understand* U ŋag⁴ Tl ŋég³ S ŋi Tp ŋí?² (the Tp and Co forms reflect a syllable closed by *?) Pa ŋé² Oz ŋin (*first person singular*) Co ŋiŋ?².

594 *ŋi^H *illegitimate* Pa ŋí¹ Ll ?i²³ŋih².

595 *ŋi^L *chayote* Oj ri²ni³ (ŋ expected) U o¹ŋeg⁴ Tl ra³ŋég³ M huŋi S ŋi²³ Tp ni¹ŋi² Pa ŋíw² VN maŋi Oz ŋi Ll mi³¹ŋi³ (final h expected) Qi ŋi²⁴ Co ŋí¹².

596 *ŋi. *laugh* Oj ŋi³ ?ni² U ŋeg²³ (ag expected) Tl ŋág³ S ŋai²³ Tp ŋág² Pa ŋíy² VN ŋai Ll ŋi³² Le ŋi Qi ŋih²³ Co ŋír².

597 *ŋi. *ask* Oj ŋi³¹ ?ni² U ŋag⁴ Tl ŋág⁴ S ŋa Tp ŋag³² Pa ŋay³² Ll ŋi²³ Lt ŋi Qi ŋih² Co hmŋi¹.

598 *ŋi. *strain, sift* Tp ŋí² (the Tp and Pa forms reflect a syllable closed by *ŋ) Pa ŋə³² Ll ŋi-h³ Qi ŋih²¹² Co ŋir²¹.

- 599 *ŋi^H *salt* Oj si¹ŋi¹ U o¹ŋi² Tl ŋi² Ch nyi M nyi S nyi¹ Qe nyi Tp ci¹ŋi¹ Pa ŋyi¹ VN ŋyi Oz wufi Ll hwi²ŋi² Le fi²ŋi² Qi ŋi² Co ŋi¹.
- 600 *ŋi^H *smoke* Oj hmi²ŋi¹ U o¹ŋi³² (2 expected) Tl meg³ŋi² Ch hmanyi M hminyi S mi²ny¹ Qe minyi Tp hme¹ŋi¹ Pa hmi¹ŋyi¹ VN ŋyi Oz ufi Ll ŋi² Le ŋi² Qi u¹ŋi² Co hmi²ŋi¹ (short vowel without accent expected).
- 601 *ŋi^H [1] *ŋi^H [2] *bat* Oj ŋi¹sɿ²? U a¹ŋi²sɿ²? [1] Tl ŋi¹θeg²? S nyi¹² [2] Qe nyi¹θɿ²? Tp há²? ŋi¹ [2] Pa ŋyicɿ²? VN ŋyisɿ²? Le ŋi Qi ŋi²sɿ²?²³ [1] Co ŋisɿ²?¹².
- 602 *ŋi^L *year* Oj ŋi² U ŋi³ Tl ŋwi³ Ch nyi M nyi S mi² Qe mi Tp ŋi² Pa hɿ²ŋyi² VN ŋyi Oz ŋe (i expected) Ll hɿ³ ŋi³.
- 603 *ŋi^{LH} *thread* Oj ŋi² U o¹ŋi³ Tl ŋwi⁴ Ch nyi M nyi S mi²ny³² Qe minyi Tp ci¹ŋi³² Pa ŋyi³² VN ŋyi Ll mi³¹ŋi³ Le ŋi³ Qi ŋi⁴ Co ŋi².
- 604 *ŋi^{LH} *knows* Oj ŋi² Ch nyi S nyi³² Qe nyi Tp ŋi³² Pa ŋyi³² VN ŋyi(?) Ll ŋi³² (3 expected) Qi ŋi⁴ Co ŋi² (short vowel without accent expected).
- 605 *ŋiŋ *poor* Oj ta³ŋi² U a³di⁴ŋei³ Ch dinyi S temi Qe tamei Tp te²ŋi² (may reflect a syllable without final *ŋ) Pa ti¹ŋyɛ² VN tinyi (may reflect a syllable without final *ŋ) Qi ta³ni³ (fi expected) Co tiŋi¹ (short vowel expected).
- 606 *ŋiŋ *awaken* Oj ka³hma³ hne³¹a² ŋi¹ (this form may belong to the *ni^H face set) U ŋei³⁴ Ch nyi S nyi Qe nyi Pa ŋye³² VN ŋyiŋ Ll ŋi³².
- 607 *ŋi^H *iron, metal* Oj ŋi¹ U a²ŋi²³ Tl ŋwi¹ Ch nyi M nyi S mi¹ny² (12 without accent expected) Qe mi Tp ni¹ŋi¹ Pa ŋyi¹ VN ŋye (i expected) Oz naŋi *machete* Ll fi^h Le ŋi Qi ŋi¹ bell Co ŋi¹.
- 608 *ŋi^L *arm's length* S ku³ny²³ Tp ka²ŋéi² Pa ŋyi² *fathom* Ll fi^h Qi fi^h (24 and short vowel expected) Co kɿdianɿ.
- 609 *ŋi^{LH} *pig* Oj se¹ŋi³ U a¹ŋi⁴³ Tl ŋwi³ (accent expected) Ch nyi M nyi S mi²ny²³ Qe minyi Tp i¹ŋi³² Pa ŋye³² (i expected) VN ŋyi Oz ŋi Ll šo^h ŋi^h (short vowel expected) Qi ŋi³ Co ŋi²¹ (short vowel expected).
- 610 *ŋi? *sun, lightning* Oj ŋi²⁴ U a²ŋi²³ *lightning* Tl ŋwi²⁴ Ch nyi? *thunder* S mi²³² *lightning* Qe mi? *thunder* Tp ŋi²³ Pa ŋyi²³ *lightning* VN hihminyiŋ? *lightning* Ll ŋi²² Le ŋi? Qi ŋi²⁴ Co ŋi²¹ *sun*. The following forms probably also belong to the same set: Oj ha¹³ŋi²¹ *bread* hmi²ŋi²¹ *sea* hu¹ŋi²¹ *Spanish (language)* U hau²³ŋi²³ *Spanish* ?ei⁴³ŋi²¹ *bread* hu³ŋi²¹ *sea* Tl i³ŋwi²¹ *bread* hmag³ŋwi²¹ *sea* hu²ŋwi²¹ *Spanish* Ch ?inyi *bread* hmagnyi *sea* hunyi *Spanish* (final ? expected in these Ch forms) M hminyei? *sea* S ?imi? *bread* mimi? *sea* humi?

- Spanish* Qe ?imi? *bread* hmaimi?
sea humi? *Spanish* Tp ?i?ŋi?21
bread hág¹ ŋi?21 *Spanish* kuig² ŋi?21
cane Pa ?i¹ŋyi?3 *bread* haw¹ ŋyi?3
Spanish hmi¹ŋyi?31 *sea* (3 expected)
 VN iŋyi? *bread* hmaiyey? *sea* (i expected)
 Ll lu³ŋi?2 *cane* hmi²³ŋi?31
sea hu²³ŋi?31 *Spanish* (short vowel
 and tone 2 expected in the last two
 forms) Le hmiŋi? *sea* Qi huh² ŋi?4
Spanish kwa¹ ŋi?4 *cane* Co iŋ?1
bread hmi²ŋi?1 *sea* hú¹ ŋi?1 *Spanish*
 kwi²ŋi?1 *cane* (accent expected).
- 611 *ŋi?LH [1] *ŋi [2] *on, above* U
 ŋei?43 *before, first* [1] (i expected)
 Tl ?i²nyi⁴² *up above* [2] tegnyf² *high*
in the town [2] Ll ŋi?2 *above* [1]
 i²³ŋi³² (short vowel expected)
higher on a stream or in the moun-
tains [2] Y ŋi? *heights, above* [1].
 This set is probably related to *ni^H
face, on.
- 612 *ŋi^L *hay, grass* U a²ŋei³ M
 nyinau S mi²nyei² Qe mei Tp
 ni¹ŋei² *roofing leaf* ŋi²ma?2 *wild*
grass Pa ŋyiw² Oz ?maso ŋi *palm*
 Ll ŋi³ Le ŋi³ Qi ŋih²³ Co ŋi².
- 613 *ŋi?H *cedar* Oj ?ma² ŋi?1 U
 a²?ma³ŋi?1 (32 expected; perhaps
 borrowed from *sun, sea* set or the
salty set, with which it fits) Tl
 ma³ŋwi (final ? expected in the Tl
 and Ch forms) Ch ?manyi S ?ma²
 nye?2 (tone 3 expected) Qe
 ?mami? Tp ?ma² ŋi?31 Pa ?ma²
 ŋyi?1 Oz ?maŋi? Ll ?mo³ ŋi?2 Le
 ma³ ŋi?42 (long vowel expected;
 seems to be borrowed from the
- salty* set) Qi ?mo³ ŋi?42 (Vh ex-
 pected) Co ?ma ŋi?21.
- 614 *ŋi?HLH [1] *ŋi^LHLH [2] *salty*
 Oj ŋi?31 [1] U ŋi?1 [1] (tone fits
 [2]) Tl ŋwi?1 [1] (42 expected) Ch
 nyi [2] S nye? [1] Qe nyai? [1] Tp
 ŋi?31 [1] Pa ŋyi?1 [1] Oz miŋi [2] Ll
 ŋi²³² [2] Qi ŋi?3 *seaweed* [1] (may
 not be cognate; ŋih?242 is expected)
 Co ŋi¹² [2].
- 615 *ŋu^H *inner tree wood* Tp ni¹ŋi¹
 ni¹?ma² Pa ŋi¹ ?ma² *new white*
wood outside the heart wood Ll
 ŋu²?mo³ *heart wood.*
- 616 *ŋú^{LH} *meat* Oj hwi³¹ŋo³ U
 o¹ŋeu⁴³ Tl ŋú³ S ŋu²³ Qe ŋeu Z ŋu
 Tp ni¹ŋi³² (accent expected) Pa
 ŋíw³² VN ŋo Oz waŋu Ll ŋuh² Le
 ŋú² Qi ŋu³ Co ŋú²¹ (length not
 expected).
- 617 *ŋaŋ [1] *ŋa·ŋ [2] *rabid, crazy,*
drunk U a³ŋo⁴³ [2] Tl ŋó⁴ *crazy* [2]
 S huŋa *joke* [1] caŋo *crazy person*
 [2] Tp ŋá³² *rabid* [1] Pa ŋá³² *crazy*
 [1] Ll mi³ŋəŋ³ [1] Co dia¹² ŋa·ŋ²
 [2].
- 618 *ŋá^{HL} *saw* Ll ŋoh²³ Y ŋa Co
 kaŋár².
- 619 *ŋa?ŋ *went home* Oj ŋa?4 U
 ŋa?2 Tl ŋá?2 Ch maŋay? (y not
 expected) S ŋa? Qe ŋa? Tp
 ka²ŋá?3 Pa ŋa?32 Oz ŋa? Ll ŋə?n²
 Le maŋay? Qi ŋai?2 Co ŋaiŋ?2.
 This set is probably related to the
 following one.

620 *ŋa· went off U a³ŋo²³ Tl ŋó²
S maŋo Tp ka²ŋó³ Pa kaŋó³² Ll
ŋo-h² Le maŋa Qi ŋoh³ Co ŋór²
(long vowel expected). This set is
probably related to the preceding
one.

621 *ŋiu vomit Oj ŋi¹ ?ni² U ŋi²³
Ch nyu M nyu S nyu Qe nyi Tp ŋi²
Pa ŋyú² VN ŋyu Ll ŋö³² Qi ŋüh²⁴
(h not expected) Co ŋiór¹².

622 *ŋiú^{HL} [1] nine (inan.) *ŋiúŋ^{HL}
[2] nine (an.) Oj ŋi⁴ [1] and [2] U
ŋi³⁴ [1] Tl ŋi² [1] Ch nyu [1] M nyu
[1] S nyu²³ [1] nyu [2] Qe nyi [1] Tp
ŋi³ Pa ŋyu³ [1] ŋyo³ [2] VN ŋyu [1]
ŋyuy [2] Oz ŋu [1] Ll ŋöh²³ [1]
ŋuhn²³ [2] Le ŋú⁴ [1] Qi ŋü³⁴ [1]
ŋui² [2] (34 expected) Co ŋiö¹ [1].

623 *ŋiu? father (nonthird person
stem) Oj ŋi²³ hna³ U nei² (ñ ex-
pected) Tl ŋyú² Ch nyu? M nyu?
S nyu? Tp ŋi³ Pa ti¹ŋye³ VN
nui? (ŋ expected) Ll ŋu?n²³ Lt
ŋuy? Qi ŋü?h¹ Y ŋu?.

624 *ŋiu^L duck Oj mi²ŋi² U a¹ŋei³
Tl gya²ŋi³ Tp i¹ŋei² Pa há² ŋyi^{w2}
duck hmi^{y2} ŋyi^{w2} pond VN miŋyuy
(final ŋ not expected) Oz mañö Ll
tq³ mi²ŋö⁻³ duck ŋö⁻³ mud Le
mi³ŋu³ duck ŋu⁻³ mud Qi ma³ŋüh²³
Co ŋiö⁻¹ duck ŋiö² mud (long vowel
expected).

625 *ŋlu-?LH [1] *ŋiu [2] man,
male U a³ŋi³ [1] Tl ŋyew⁴ [1] Ch
cenyu bachelor [2] S canyu young
man [2] Qe ca nyi [2] Tp za²ŋi²
[1] Pa ŋyu³² fiancé, husband [1]

ŋyú² elder brother [2] Ll ho³ŋö⁻²³¹
son [1] (tone 3 expected) ši³ŋö⁻²³²
unmarried young man [2] (short
vowel expected) Le šiŋu young
man [2] Co ŋiö⁻²¹² (tone 2 ex-
pected).

626 *ŋia-?ŋ come here! U nio² (ñ
expected) Pa ŋyá³² Ll ŋa-?n³.

*w

627 *wi^{LH} spider Ll wi-h³ black
widow spider (short vowel expected
and no accent) Qi wu⁴ Co wi².

628 *wi· hurts, pain Oj wi³ U eu⁴³
Ch gwú² S wu Tp uig³² Pa hmi¹-
way³² pain, sickness wu¹ it hurts
him (reflects *wi(·)?) VN u Ll wi²³²
Qi wuh² Co wí²¹. This set may be
related to *wi?~*wi? be hurt,
wounded.

629 *wi^L climb, ascend U eu²³
(tone 4 expected) Tl gwú³ Ch ma
gweg S ma ka wu Tp uig² Pa wí^{y2}
Ll si³wih³ Lt ya wi Qi wuh²³
(reflects a syllable without accent).

630 *wi^{LH} complicated U heu⁴³
(reflects *hwí(·)?LH) Tl gweg hard,
sad (reflects *wi) Tp huí³²
(reflects *hwí(·)?LH; cf. the U form)
Pa wé² (reflects *wi(·)ŋ; 32 without
accent expected) Ll wi³² (32 is ap-
parently related to tone 2 with
postnuclear h, which is the ex-
pected reflex) Co wí^{ŋ21} (reflects

- *wi?LH; nasalized vowel not expected).
- 631 *wi?L *smooth* Oj pi³¹ wi² U eu³ Tl gweg⁴ Ch gweg[?] M wu[?] S wi² Tp ui² Pa wu² (*inan.*) we² (*an.*) (reflects *wi?ŋ) VN u[?] Oz wi[?] Ll wi³ *slippery* wi³ *smooth* (reflects *wi?L) Pe wi[?] A wi[?] Qi wuh²³ Co wí².
- 632 *wi?L *saliva, drool* Tp uś³² (ui² expected) Ll wi³ Qi wuh²³ Co ?wí[?] (preconsonantal ? not expected). This set may be related to *wi?L *smooth*.
- 633 *wi?H *minnows* U a¹si²eu² S ci wi[?] Pa ci¹wú[?] Ll wi² (reflects a syllable without accent) Le vi[?] Co wi[?] (probably reflects *wi?HLH). Cf. *wi?H *fish scales*.
- 634 *wá^L *a long time* U ue⁴ Tl gwé⁴ (tone 3 expected) S we²³ Tp uś² Pa wú² Ll wə^{h3} Le vó³ Qi woh³ Y və.
- 635 *wi?H *fish scales* Tp ui[?] Ll wi² (reflects a syllable without accent) Qi wih[?] Co wi[?] (wí[?] expected). This set seems to be related to *wi?H *minnows* in some way not yet clear. Cf. especially the Co forms.
- 636 *wi^L *vine, hammock bridge* Oj či¹wi² U d^{ya}g^u ?ua³ Tl gw^u Ch gwęg S w^u (accent not expected) Qe w^u Tp ni¹ui^g Pa w^{iy} Ll wⁱ Le vⁱ Qi w^{uh} Y vⁱ Co wⁱ.
- 637 *wi^{LH} *dish* Oj ho¹wi² U a²gu⁴³ Tl gwú⁴ (nasalization expected) M gu S w^o Qe w^u Tp ni¹ui^g Pa w^{iy} VN a u Oz wⁱ Ll w^{ih} (tone 2 expected) Le vⁱ (tone 2 expected) Qi w^{uh} Co wⁱ.
- 638 *wi? [1] ~ *wi? [2] *be wounded, hurt* Oj čil¹wi[?] [1] U ra³gu⁴ [1] Ch ka gwⁱ [1] S ka w^u [1] Qe la wⁱ [1] (u expected) Pa wⁱ Ll ka²³wi[?] [1] ri²³wi[?] [2] Le ga⁴wⁱ [1] ri⁴wⁱ [2] Qi w^{uh} [1] (final ? expected). This set may be related to *wi *hurts, pain*.
- 639 *wi?L [1] *wi^L [2] *wi^L [3] *far* Oj wⁱ [1] U i²gu⁴ [1] i²gu⁴ [2] Tl gw^u [1] Ch gwęg? [1] M gu? [1] S nyi w^u? [1] Qe w^u? [1] Tp ui^g [2] Pa w^{iy} [2] VN ha wⁱ [3] Oz ǝ [3] Ll w^{ih} [2] Le vⁱ [2] Qi w^{ih} [3] (tone 3 expected) Y vⁱ [3] Co wⁱ [3] (nasalization expected). It may be that this set should be reconstructed uniformly with *i. In that case it would be necessary to regard the Ll-Le forms as borrowings from a Tp-Pa language, in which *i-like reflexes are expected.

*1

640 *h^L *cubit, span from elbow to finger tip* U leg³ S li² Tp la² Pa li² Ll lih³ (h not expected).

641 *li [1] ~ *li [2] *happen* U leg³ [1] Ch leg [1] S li [1] Pa liw² [1] lé²

[2] (reflects *iŋ) VN ka le (reflects *ə) Oz ga la (reflects *ə) Ll ka²³ləh²³ (reflects *ə) ri²³lih³ [2] Qi gi³li³ [1] Co ka li [1] liiŋ² (reflects *liŋ). In this set the VN, Oz, and Ll forms appear to reflect *ə. In the set labeled *be* the first Ll form seems to reflect *ə. In the set labeled *why?* the Oz and Ll forms reflect *ə, and the U and S forms probably do, too. The Ll forms in *think* and *imitate* also fit *ə better than *i. Since Ll occasionally shows the expected reflex of *i after *l it is better not to regard these forms as showing aberrant reflexes of *i in specialized environments but rather to conclude that *i was frequently replaced by *ə after *l in several languages, and especially in Ll. Nevertheless, these sets should be reconstructed with the basic stem vowel *i since (a) most languages show vowels that reflect *i and (b) nearly all of these sets are verbs that show an alternant with *i, which regularly alternated with *i but is not known to have alternated with *ə.

642 *li(?) [1] *li [2] (*to end* U leg³ [1] Tl ma³lég³ [1] ma³lag? [1] (reflects a syllable closed by *?) Ch ma li [2] S ma li [1] Tp ka²lə³ [1] ka²li³ [1] (reflects a syllable closed by *?) Ll mi³li-h² [2] (short vowel expected) Co li² [1].

643 *li^{LH} [1] ~ *li [2] *be, become (inan.)* *liŋ [3] *be, become (an.)* U leg³⁴ [1] lag⁴³ [3] Tl lég³ [1] li⁴ [2] Tp lə³² [1] Pa li³² [1] Ll ləh² [1]

ri²³lih²³ [2] lən³² [3]. See note at the end of the set *li ~ *li *happen*.

644 *li(?)^{HL} [1] *li^{HL} [2] *why?* U ?e⁷⁴ lag⁷³ [1] (reflects a syllable without accent closed by *?) lei⁴ [2] (34 expected) ?e⁷⁴ le³⁴ (reflects *ə) Tl li² [2] S ?e? lie? (reflects *ə in a syllable closed by *?) Qe ?e li [1] Tp ?e² lə³ [1] Pa ?e² li³ [1] Oz ?e la (reflects *ə) Ll ?e² ləh¹ (< ləh²³) (reflects *ə) Qi ?eh⁴² li³⁴ [1].

645 *liŋ^L [1] ~ *li-ŋ^L [2] *think* U laj⁴ [2] Tl léy² [2] (tone 3 expected) S li [1] Tp li² [1] Pa lə² [1] Ll ləhn³ [1] li³ra² [2] (reflects *li).

646 *li?^H *spindle* Oj na¹li?¹ U i²⁷lag⁷³² (initial ? not expected) Tl ŋwi¹ lag?¹ *knife, shovel, hoe* S li? Pa ?ma² miy³ li?¹ (reflects a syllable with accent) VN ?ma lai?. The vowels of the U and Tl forms clearly reflect a short vowel while the vowels of the other forms are ambiguous in this regard. However, the tones uniformly reflect a long vowel. This set may be related to *li? *round*.

647 *li^{HLH} *adobe* U a²kua?³² leg¹ (the syllabic reflects a short vowel, but the tone reflects a long vowel) Ch kwa lag S kwa la Qe kwa lai Tp gua?³¹ lag¹ Pa gui? liw (reflects a short vowel) Oz gwa li.

648 *li- [1] ~ *li- [2] *recover, become well* Tl lég³ [1] li⁴ [2] (both forms reflect a short vowel) Pa láy³² [1] léy³ [2] Ll mi³li-n³² [1]

- si³li·n²³ [2] (both forms reflect a final *ŋ) Co lí²¹ [1].
- 649 *li· [1] *li· [2] *li·ŋ [3] *seem, appear* Oj lí²³ hna³ [3] *I feel* U lei³ [2] (reflects a short vowel) Tl léy¹ [3] S li [2] Tp ló³² [1] (reflects a short vowel) Pa ley³¹ [2] Li lí²³ [2] Qi lí^{h2} [1] *feel* (reflects a syllable with *) Co lí²¹ [1].
- 650 *li·ŋ *imitate* Tp cí¹lí³¹ (*third person object*) lág²² (*first person object*) (may reflect a syllable without final *ŋ) Pa ló²² (this and the Tp forms reflect a syllable with final *) Li lə·n³² Co lí·ŋ².
- 651 *li·ʔ *round* U ɸ⁴ma⁴leg²⁴ *wheel* Ch lí[?] (ag is the usual reflex of *ʔ; i as recorded in this set and *li·ʔ *when?* may show a special reflex after *l or may be a misrecording of ag) S cí lí[?] Tp rə lí[?] (this Tp form and the second Pa form reflect *li·ʔŋ) Pa ní¹lí³² *round* la³hi²la³ló²³ *around* VN ní lai[?] Oz lí[?] Li rí³lí²² Qi líh²³ *circle* (final ? expected) Co lí[?] (long vowel expected). The following forms probably belong to the same set: *li·ʔ [1] *li·ʔŋ [2] *roll, slide* Li lí³² [1] lí²³ [2] Le lí³² [1] (long vowel expected) Co líŋ²² [2]. Cf. also *li·ʔ^H *spindle*.
- 652 *li·ʔ *when?* Oj lí²⁴ U ai³ leg²⁴ Tl lé²³ (this may be a misrecording of leg[?] or else the Tl and M forms may reflect *le·ʔ) Ch le[?] (?) M le[?] (?) S lí[?] Tp líg²² (i rather than ig expected) Pa ʔa² líy²² *when?*
- ma²líy²² *a long time ago* VN lai[?] Oz lí[?] Li lí³¹ Qi líh¹³² (final ? expected) Co mí lí²² *a long time*.
- 653 *li^H *edible palmetto shoot* (*tepejilote*) U ho⁴ lei³² (tone 2 expected) Tl lí² S lí¹ Tp ní¹lí¹ Pa lí¹ VN lí Li lí² ʔoh² Qi lí² Y lí Tm lí (i expected) Co lí¹.
- 654 *li^H *flower* Oj lí¹ U o¹lei²³ Tl lí¹ S lí¹² Tp lí¹ Pa lí¹ VN lí Oz wa lí Li líh² Le lí¹ Qi lí¹ Co lí¹.
- 655 *li·ʔ^H [1] *li^H [2] *pretty* Oj lí¹ʔye²² [2] Ch lí ʔyo[?] [2] Pa lí¹ʔyo³¹ [2] Oz lí ʔña [2] Li lí²² [1] Le lí[?] [1].
- 656 *lu^L *gnat* U a¹leu³ Tl lu³ S lu¹² (tone 2 expected) Tp i¹lu² Pa cyi¹lu² Oz čí lu Li lu³ Le lu³ Qi lu⁴ (34 expected) Co lu¹².
- 657 *lu· *thin* Pa luw² (may reflect a syllable with final *ŋ) Li lu·h².
- 658 *lú^{LH} *clarinet* Oj lu² U a²lau⁴³ Pa ləw³² Li lu·h² Co lú²¹ *music*.
- 659 *lú^{HLH} *neck* Oj lu³¹a² U ma³lau² Tl law⁴² (reflects a syllable without accent) S lai¹ Qe leu Tp zi²lag²¹ Pa law¹ VN lau Oz lu Li lu·h² Lt lu Qi luh²⁴² Co mo lu¹².
- 660 *la^L *here, this* Oj la² U la³ Tl la³la³ *in this way* lá² *this* (la³ is the expected form) S la² Tp le²la² *like this* ha¹ lá³ *here* (la² is the expected form) Pa ʔi¹la² *this* VN a la Oz he la *here* Li la³ (may have remained

a rather than shifted to o in the LI area because of high frequency) Lt la Qi lo³⁴ Y la Co la.

- 661 *la [1]~*lia [2] *buy (inan.)*
 *laŋ [3]~*liang [4] *buy (an.)* Oj la¹³
 hna³ (*first person singular*) [1] la²
 ʔni² [2] U la²³ [1] lia⁴³ [2] TI lá² [1]
 Ch la [1] lya [2] S lya [2] Qe la [1]
 Tp lá³² [1] Pa lá³² [1] lyí³ [2] lǎ² [3]
 lyǎ³ [4] VN la [1] le [2] Oz la [2] LI
 lo³² [1] lá² [2] lən³² [3] len [4] Le
 la³² [1] lyá² [2] Qi lo²⁴ [1] la⁴³ [2] Y
 la [1] le [2] Co lár²¹ [1] liá²¹ [2].
- 662 *lá^{LH} *roasting ear* Oj kwí² la³
 TI kwu³ lá³ S la²³ Tp kuig² lá³² Pa
 kwí² lá³² VN ku la LI kwí³ lo³²
 (tone 2 with syllable-final h expected) Le ʔo ha? la *fresh-corn tortilla* Qi lo³ Co lá²¹ (short vowel expected).
- 663 *la? [1]~*lia? [2] *bathe* Oj
 a⁴lo²³ ʔni² [1] le² ʔni² [2] U lo²³
 [1] lie³ [2] TI lyó²² [2] Ch ma la
 lo? [1] ma la ʔo ha lyo? [2] S lo²³
 [1] ʔa lyo? [2] Qe ma la lyo? [2]
 (lyu? expected) Tp ló³² [1] Pa
 ló³² [1] lyo³² [2] VN lo? [1] (oa
 expected) lye? [2] Oz ma lo? [1]
 lö? [2] LI lo²³ [1] lä²³ [2] Le lá⁷⁴
 [1] lya⁷⁴ [2] (short vowel expected
 in both Le forms) Qi lo²³h³ [1] Co
 la⁷² [1] le? [2] (ia expected) lai²
 (*trans. an.*) (reflects *lia?ŋ).
- 664 *la^L *skin, leather* Oj lo² U
 a²lo³ TI lyew³ (reflects *ia· rather
 than *a·) Ch lo M lo S lo³co²
person's skin ló² *sandals* (tone 2
 without accent expected) Tp

ni¹lau² *skin* ni¹lo¹ há² *leather* (tone
 2 is the expected reflex) VN lao Oz
 lo *sandal* LI lo³ Le la³ Qi loh²³ Co
 lo².

- 665 *la^L *flat* Pa ləw² *thin* LI lo³.
- 666 *la^{HLH} *lime, cement* Oj si¹lo³¹
 U u¹lo¹ TI lyo⁴² (reflects *ia· rather
 than *a·) Ch lo M lo Qe lo Pa law¹
 VN loa Oz wa lo LI lo²³² Lt fi la
 Qi loh²⁴² Co lo¹².
- 667 *la^{HLH} *donkey, mule* Oj co⁴
 lo³¹ *burro* U a²lo¹ TI lyo⁴² (reflects
 *ia· rather than *a·) Ch lo M lo
burro S lo VN loa Oz ča lo LI lo²³²
 Le la *horse*. The following set is
 probably related.
- 668 *la^{HLH} *rabbit* Oj lo³¹ kwa³ U
 a²lo¹ kua⁴ TI la naw (a rather than
 o occurs in the forms from TI
 through Pa, except Tp, because of
 the pretonic position) S la nai Tp
 lo²¹kua³² Pa la¹kwi³ VN lo kyu (o
 rather than ao occurs in the
 pretonic position) Oz lo kya LI
 lo²³² ŋi³ Qi loh²⁴² Co lo¹².
- 669 *la^{HLH} *Tuxtepec, a city near
 the Chinantla* Oj ma³lo³¹ U ma⁴lo¹
 TI ma³lyo⁴² (reflects *ia· rather
 than *a·) Ch ma lo Qe ma lo Tp
 ma²lo²¹ Pa ma² law¹ VN ma? loa
 Oz ma lo LI mo²³ lo²³² Lt ma? la
 Qi moh²³⁴ loh²⁴². This set is
 probably related to *la^{HLH} *rab-
 bit/mule* or possibly to *la^{HLH} *lime*.
- 670 *la· [1]~*lia· [2] *begin* Oj
 hma¹le³ ʔni² [2] U ra³lie⁵ [2] TI lo³⁴

- [1] Ch ma ka la lyo [2] S ma li lyo
 [2] Qe ma lyu [2] Tp hme²lióg³ [2]
 Pa mi²lyáw¹ [2] Li lo²³ [1] lä²³ [2]
 Le lá⁴ [1] lyá² [2].
- 671 *la· worm Tl ha[?]3 lo/lew Tp
 i¹lio³¹ caterpillar (reflects *lia·) Pa
 lyo³¹ (reflects *lia·) Ll lo³ worm,
 snake.
- 672 *lá^H whiskers Oj hñi²lo^{1a2} U
 lo²³ Tl ló¹ Ch lo S lo Tp ni¹láu¹ Pa
 lów¹ Ll lo^{h2} Le la Qi loh¹ Y lo Co
 ló² (tone 1 expected).
- 673 *lá^H [1] *la^{LH} [2] pheasant Oj
 tǎ²lo¹ [1] U a²lo²³ [1] Tl ta lo
 (phonetic pitch markings on the
 data suggest that Tl-Ch reflects [1]
 and that S reflects [2]) Ch tǎ lo S
 tǎ lo Tp i¹lo³² [2] Pa lo³² [2] Ll
 hmo³ lo³ cock [2]. The [1] forms
 largely follow *tǎ^{LH} while the [2]
 forms generally do not. The tone
 difference of the [1] forms may be
 the result of tone sandhi patterns
 not yet recognized.
- 674 *lá^L score Oj tǒ⁴ lo⁴ forty
 ña³lo³ hundred U to⁴ lo⁵ forty nia⁴
 lo⁴ hundred Tl lew Ch tǒ lo forty S
 tǒ lo forty Tp ?ñia lo hundred Pa
 tǒ³ láw³ forty ñji³ lów² hundred VN
 tǒ lao forty Ll tǔh²³ lo^{h2} forty
 i³lo^{h3} hundred Qi tǔ³ loh³ forty
 ?ña³ loh³ hundred. The tones of
 the forms meaning *hundred* fit the
 tone reconstruction. The tones of
 the forms meaning *forty* are
 probably the result of old tone
 sandhi, possibly at the Proto
 Chinantec horizon.
- 675 *lá^{LH} prickly pear cactus
 (nopál) Oj lo² U o¹lo⁴³ Tl ma³ló⁴
 Ch lo S lo Tp ni¹lau³² Pa
 cyu[?]lǎw³² cactus fruit (tuna) VN
 lao Qi loh⁴¹ (43 expected) Y lo Co
 lo²¹ (accent expected).
- 676 *la·^H waterfall U i²la[?]3 hu³
 (32 expected) Tl la[?] hmag S la[?]1
 (tone 3 expected) Tp la[?]31 water-
 fall, stream Ll lo[?]2 rapids Le la[?] Qi
 loh[?]42 Co lo[?]21.
- 677 *la·? cut (branches) Pa lá[?] Le
 la[?]32 (long vowel expected).
- 678 *liu speak Ll lö²³ Le lyu⁴.
- 679 *lia^L a kind of owl (lechuza) U
 a²lia³ Tl lyo⁴² (tone 3 and ya rather
 than yo expected) M ta lya S lya²
 Pa la² (reflects *a rather than *ia)
 Ll lä³ Co liá¹ (12 without accent
 expected).
- 680 *liá^L trap Oj la³ U a²lia⁴ Tl
 lyá³ M lya S lya²³ Tp ci¹liá² Pa lí²
 (lyi expected) Oz si la Ll läh³ Le
 lyá³ Qi la²⁴ Y le Co liá¹².
- 681 *lia· load, cargo Oj le¹ U lie²³
 goods lie³ zontle, a unit of weight Tl
 lyo¹² Ch lyo S lyo³² Qe lyu Tp lio³¹
 Pa lyo³¹ load lew² zontle VN lya Oz
 lö Ll lä^{h2} Le lya Qi lah²⁴² tercio, a
 unit of measure Y la bundle. Per-
 haps tone *^{LH} should be recon-
 structed for this set. U 3 and S 23
 reflect a syllable without accent
 and Ll 2h reflects a syllable with
 accent. Tp and Pa 31 is probably a
 variant of 32, which reflects *^{LH}.

Oj 1, Tl 12 and Qi 242 do not fit this reconstruction.

682 *lia· [1]~*la· [2] *wrap* U lie³
[1] Tp li^o32 [1] Pa lyo³² [1] lo³² [2]
Oz lö [1] Ll lä²³ [1] la·n [2] Le lya⁴
[1].

683 *lia·ŋ *escape (intr.), free (tr.)*
Tp li^o2 (intr.) Pa lyaw³ (tr. *first-person obj.*) lúw² (tr. *third-person obj.*)
(reflects *la·ŋ) Ll lä·n³ (intr.) lä·n³²
(tr.) Le le·y³² (tr.) Co (ka)lá·iŋ²
(reflects *la·ŋ).

684 *lia·ŋ^L [1] *black (inan.)* *lia·ŋ
[2] *black (an.)* Oj la² [1] U lia³
[1] Tl lya⁴ [1] Ch lya[?] [1] lə[?] [2]
(lyə[?] expected) S lya² [1] Tp lia²
[1] Pa li[?] [1] (lyi[?] expected) lya²
[2] VN lye[?] [1] Oz la[?] [1] Ll lä·³
[1] le[?]n²³ [2] Le lya³ [1] (long
vowel expected) lyéy⁴ [2] Qi
lah[?]23 [1] Co lé·ŋ¹² [1] leŋ[?]12 [2].

685 *lia·ŋ *pick* Pa lyi[?]32 *pick (fruit)*
Ll lä·ŋ³² *pick up with the bill (bird)*
(reflects a syllable with final *ŋ).

686 *liá·ŋ^L *thus* U ai³lia⁴ *how?* Pa
ŋa² lá[?]2 *how?* lá[?]3 té³² *that way,*
true (reflects *a· rather than *ia·)
Ll la[?]3 or lä[?]3 Tl lya[?].

*y

687 *yu· *dig* Oj yi¹ ŋi² U d[?]ei[?]23
(? not expected) Ch ma di gi S
kwa¹yei[?]32 Tp géi[?]32 Pa gyéw³²

(inan.) gyúw² (an.) (reflects *yu·ŋ)
Oz gyu·i Ll yö·³² A yö Le yu·³² Co
í·r¹², í·¹² (in both forms yö· is ex-
pected; the second form may re-
flect a syllable with final *ŋ).

688 *yu· *brown* Ll ku³yö·h³ Qi
kwa⁴yüh¹.

689 *yu·ŋ^H [1] *yu·ŋ^{LH} [2] *yu·ŋ[?] [3]
*yuŋ [4] *old person* Oj hmi²ŋi[?]2a²
grandfather [2] (preconsonantal ?
not expected) U ni³d[?]ei[?]32 *grand-*
father [1] d[?]i[?]32 *old* [3] (less com-
mon term) a³d[?]5 *old* [4] (more
common term) Tl ni²dáw[?]1
grandfather [1] (reflects a syllable
with accent) ca d[?] *old* [4] ŋi dāw
grandfather (reflects *yu·ŋ) gi[?]4 *old*
(reflects *yu·ŋ) Ch ni daw[?] *grand-*
father [1] or [2] ca d[?] *old* [4] M ni
dau[?] *my grandfather* [1] or [2] gyi[?]
old person [3] sa dau *old* (reflects
*yu·) S nyu¹d[?]ei[?]32 *grandfather* [2]
ye[?]3 *old person* [3] d[?] *old* [4] Qe nyi
de[?] *grandfather* [1] or [2] ye[?] *sir* [3]
ca d[?] *old person* [4] Z d[?]ei[?] *old* [3]
Tp gi[?]31 *grandfather* [3] Pa
hi²gyu[?]31 *grandfather* gyu[?]31 *sir* ([2]
if 31 is based on 32) gyuw[?]2 *old*
(reflects *yu·ŋ) VN hmi gyu[?]
grandfather [1], [2] or [3] Oz ta
gyö[?] *grandfather* [1], [2] or [3] ma
gyu[?] *became old* (u rather than ö
probably reflects a syllable with
final *ŋ) Ll yi²³u·[?]2 *grandfather* [1]
(the initial *y was lost in the forms
of Ll through Le—except Lc—long
ago; if its loss had been recent the
vowel would have been fronted to
ö—except in Le—as happened in
Lc) Lc mi yö[?] Le nü⁴u·[?]2

grandfather [1] Qi yüh?⁴² *grandfather* [1] Y yü? *old man* [3] Co yö?²¹ *grandfather* [1].

690 *yu·? *above* Oj tí⁴yi?³¹ U ta⁵-d⁵ei?³² T³p gei?³¹ Pa g³yu?³¹ VN g³yu? Oz g³yö? L¹l yö?³¹ Pe yö? A yö? Le yu? Qi yüh?¹ or yü?¹ (üh expected) Co yö? (long vowel expected).

691 *ya^L *avocado* U ɸ⁴g³u³d³ɸie³ *chinene, a kind of avocado* T¹l gweg³d³yú³ (accent not expected) S kwi¹dyu¹ (tone 2 expected) Qe ku dyu T³p kuig²giog² Pa gu²gyew² *chinela, a kind of avocado* Oz mi gu yo *chinene* L¹l mi³¹ku¹yo.³ Le mi kwi ya Pe mi ku ye To mi ku ye A mi kwi ye Le gu³ya.³ Qi kwo³yiah²³.

692 *ya^L *a kind of bird* T¹l gya²-θay² (vowel reflects pretonic position; tone 3 expected) Pa t³ə³²gyew² L¹l to³yo.³.

693 *ya·ŋ *destroy* L¹l ya·n³² Le ye·y³².

694 *ya·? *shout* Oj ʔya¹ *a shout* (reflects *ʔya rather than *ya·ʔ; may not be cognate) T³p gió^{ʔ32} L¹l yo·?²³ Lc ya? Pe ye? To ye? Le ya·?⁴.

695 *yü·ŋ^L *child, baby* Oj y¹ɸ² U d⁵ɸe¹ɸ³ T¹l d³əw² (tone 3 expected) Ch d³əw M d³ɸ S d³əɸ² Qe d³ɸ T³p g³ɸe¹ Pa g³yéw³ or g³y¹w² (tone 2 expected) VN g³ɸ Oz g³yö L¹l (š³)y³ Le š³y³·y³ Qi y¹uh²⁴² or y¹ü²³ (23 expected although the vowel of the

first form fits the reconstruction better) Co yö.² In most languages the form could reflect a syllable without final *ŋ. However, the vowel reflexes in M and Qe are different from those for *ɸ and in L¹l-Qi the vowels require a final *ŋ even though only Le shows the actual reflex of *ŋ.

696 *yü^L [1] *red (inan.)* *yü·ŋ^L [2] *red (an.)* Oj y¹ɸ³ [1] U d⁵ɸe¹ɸ⁴ [1] T¹l d³əw³⁴ [1] (tone 3 with accent expected) Ch d³əw [1] M d³əw [1] S d³əɸ²³ [1] Qe d³ɸ [1] T³p g³ɸe¹ɸ² [1] Pa g³y³ɸw² [1] g³yö² [2] VN g³ɸ [1] Oz g³yö [1] L¹l yö·h³ [1] y³·hn³ [2] Le y³·y³ [1] y³·y³ [2] (accent is expected) Qi y¹uh³ [1] Co y³·y² [1] y³·ŋ² [2] (ɸ·ŋ expected).

697 *yü·? *suck* Oj y¹ɸ³¹ ʔni² U d⁵ɸe¹ɸ² Ch g¹ɸ (final ʔ expected) M g³y³ɸe¹? S kwa ye¹? Qe kwa ye? T³p g³ɸe^{ʔ32} Pa g³y¹ɸ³² (*inan.*) g³yö^{ʔ2} (*an.*) (reflects a syllable closed by *ŋ) VN g³ɸ? Oz g³yö? L¹l yö·?²³ (ñ regularly replaces y before any nasalized vowel in the speech of some) Le y³·?⁴ Qi y¹ü^{ʔh}³ (Vh expected) Co yö^{ʔr}² (short vowel may be due to accent in checked syllable).

698 *yü·? *cigar* Oj na¹y¹ɸ³¹ U a²d⁵ɸe¹ɸ² T¹l g¹ɸ⁴ Ch g¹ɸ? M g³y³e¹? (nasalization expected) S ye¹ɸ³? Qe ye? T³p ni¹g³ɸe^{ʔ2} Pa g³y¹ɸ³² VN g³ɸ? Oz g³yö? To yö? RC ñö? (see note under L¹l form of *yü·? *suck*; ñ represents a dialect form) A yö? Qi y¹uh^{ʔ42}, y¹ü^{ʔ3} (Vh expected) T¹m

- gü? (nasalization expected in Tm and Co forms) Co yö?² (long vowel expected). This set is probably related to *yü? *suck*.
- 699 *y̥aˀL [1] *y̥u [2] *swell (inan.)* *y̥aˀŋL [3] *swell (an.)* Oj ye² [1] U d̥y̥e³ [1] d̥y̥o³ [3] Tl d̥ew [1] Ch d̥o [1] M d̥o [1] S d̥o² [1] (accent not expected) Qe d̥o [1] *swollen* Tp gi̥o² [1] Pa gy̥ew² [1] gy̥o² [3] VN gy̥u [2] Oz gy̥o [1] Ll y̥o³ (stative *inan.*) [1] si³y̥o³ (active) [2] yaˀn³ (stative *an.*) [3] Pe ya [1] To ri yö [2] A ye [1] Le na ya [1] Qi yḁ²³ [1] Co ye² [1] yḁn² [3] (nasalization expected in both forms, long vowel in the second one).
- 700 *y̥aˀ. *squeeze, wring, grind* Tl d̥o² *squeeze sugar cane* Ch d̥o S d̥o Qe kwa d̥o Tp gi̥o² *twist* Pa gy̥ew³² Ll y̥o³² Le yaˀ³² Co y̥eˀr²¹.
- 701 *y̥aˀŋ I know U d̥y̥a³² hnia⁴ (reflects a short vowel) Tl gy̥o⁴² Ch gy̥o M gi̥ (d̥o expected; may not be cognate) Tp gi̥o²¹ hniá² Pa gy̥aw (reflects a syllable without final *ŋ) VN gy̥e hna.
- 702 *y̥aˀ? *drape, catch* Ll y̥o?³² Le yaˀ?³².
- *r̥
- 703 *r̥aˀL *equal, the same* Oj r̥a² U ku³r̥e³ Ch ku re S ku²r̥e² Tp r̥a² *flat, even* Pa ku²riy² Ll r̥a³ Le re
- Qi r̥a²³ Y r̥a Co r̥a¹ (12 with accent expected).
- 704 *r̥aˀ?L [1] *green (inan.)* *r̥aˀ?ŋ [2] *green (an.)* Oj r̥a²² [1] U re?³ [1] Tl re?⁴ [1] Ch re? [1] M ri? [1] S re?² [1] Tp r̥a²² [1] Pa ri?² [1] re?² [2] VN e? [1] Oz e? [1] Ll r̥a?³ [1] Le re?³ [1] réy?⁴ [2] Qi ri?³ [1] (23 is expected, and probably əh is the expected vowel reflex) Y r̥a? [1] Co r̥aˀ?¹² [1] r̥aŋ?²¹ [2].
- 705 *ru?ŋ *sibling* Oj yi² r̥o?¹a² U a³r̥eŋ?¹ Tl r̥ew?¹ Ch ru? *sibling, cousin* M ru? (reflects a syllable without final *ŋ) S r̥ḁi?²¹ Qe r̥eŋ? Tp ri?³¹ Pa ro?³¹ *younger sibling* VN u? (may reflect a syllable without final *ŋ) Oz ö? Ll u?n² *companion* Le öy?² *companion* Qi rui?³⁴ Y ru? Co ruiŋ?² (long vowel expected).
- 706 *raˀL *tobacco* Oj ro² U ma²ro³ Tl rew³ Ch ro M ma ro S mu ró² (accent not expected) Tp hmi¹rau² Pa r̥aw² VN o Oz mo ö Ll me³ro³ Le ra³ Qi roh²³ Co ro².
- 707 *raˀL *sweet* Oj ro³ U ro⁴ Tl r̥ew³ Ch ro S ró²³ Tp ráu² Pa r̥ow² VN o Oz ö Ll ro-h³ Le rá³ Qi roh³ Co ró².
- 708 *r̥i̥ [1] *r̥i̥ [2] *r̥i̥ŋ [3] *set (hen, on eggs)* Tp r̥aŋ³² [1] Pa r̥e³² [2] or [3] Ll ka²³i̥h³ *set* [2] ka²³i̥h² *embrace (inan.)* [2] ka²³i̥hn²³ *embrace (an.)* [3] Le na³i̥³ *being set on* [2] i̥⁴ [2] Co ri̥² [1].

709 *rɥ.LH [1] *rɥʔ [2] *ruʔ [3]
wash Oj rɔʔ³¹ ʔni² [2] U rɔʔ³ [1] Tl
 rɔw³⁴ (clothes) [1] rawʔ⁴ (fruit,
 meat) [3] Ch rɔw [1] rɥʔ [2] M
 rauʔ [3] S kwa¹rɔʔ³² [1] Qe kwa rɔʔ
 [1] Tp rɔʔ³² [1] Pa rɔw³² [1] rɔʔ³²
 [2] (ɔ expected) Ll ɥʔ³² [2] Le ɥ⁴
 (clothes) [1] ɥʔ³² (dishes) [2] Qi
 rɥʔ⁴² (imper.) [2] Co rɥʔ² [2]
 (long vowel expected) ruʔ² [3].

710 *rɔʔ bear (weight) U rɔʔ⁴ Tl
 rɔʔ⁴ Qe rɔʔ Pa rɔʔ³² Ll ɔʔ²³
 (inan.) ɔʔ²³ (an.) (reflects *rɔʔɥ)
 (the Ll and Le forms reflect a long
 vowel) Le za³rɔʔ⁴ Qi rɔʔ Co rɔʔ².

711 *rɔʔ [1] lie, stretched out (inan.
 when distinguished) *rɔʔɥ [2] lie,
 stretched out (an.) Oj rɔʔ² [1] U
 ta⁵rɔʔ³² ma²hd³ the document will
 be made [1] Tl la²rɔw³⁴ [1] Ch ne
 rɔ [1] S ma rɔ [1] Pa rɔʔ³² [1] Oz ɔ
 [1] Ll rɔʔ³ [1] rɔʔ²³ [2] Le rɔʔ³ [1]
 Qi rɔʔ⁴ [1] rɔʔ⁴ [2] Co rain [2]
 (rɔʔɥ expected).

712 *rɔʔ [1] fly, rise (intr.) *rɔʔɥ [2]
 raise (tr.) Tl rɔw³ [1] rɥ³ leap, jump
 (probably not cognate) Ch ma rɔ
 [1] S ka³rɔʔ²³ [1] Tp rɔʔ² [1] Pa
 rɔw² [1] rɔʔ² [2] Ll rɔʔ³ [1] Le
 rɔʔ³² [2] Co ráʔ²¹ [2] (nasalization
 expected).

713 *rɔʔ get wet Ll ka³rɔʔ² (inan.)
 ka³rɔʔ² (an.) (reflects a syllable
 with final *ɥ) Le ʔ¹rɔʔ²a² hmi³
 (first person plural).

*ʔg

714 *ʔgi [1] ~ *ʔgi^L [2] tear, burst
 Oj ki² ʔni² [2] a⁴ ki² ʔni² [1] U kag³
 [1] Tl kág² [1] Ch kakag [1] ki [2]
 S ka³kai² [1] Tp gág³² [1] Pa gý³²
 [1] gyiw² [2] Oz gi [1] Ll gi³ [1]
 gi³ra² [2] Le ma⁴³gi³ [1] rí⁴gyi³ [2]
 Qi ʔgi⁴ [1] Co siʔgi¹ [1].

715 *ʔgaʔ [1] *ʔga [2] be afraid
 Oj koʔ [1] U koʔ⁴³ [1] Tl koʔ⁴ or
 kóʔ⁴ [1] S koʔ²³ [1] Qe kauʔ [1] Tp
 góʔ³² [1] Pa goʔ³² [1] gəw² fearful
 [2] VN goaʔ [1] goa (first person
 singular) [2] Oz goʔ [1] Ll mi³gəʔ²
 was startled [1] (reflects syllable
 with *ɥ) go³ timid [2] u²³go³
 u²³ʔyö²³ awe (may have developed
 from [2] but reflects short vowel)
 Qi ʔgohʔ³⁴ [1] (h not expected) Y
 ʔgaʔ startling [1] ʔgo awe [2] Co
 ʔgoʔ² [1].

*ʔm

716 *ʔmi^{LH} hearth stones Tl
 ku²még⁴ S ku¹ʔmi³² Pa kəw¹
 ʔmiw³² Ll kɥ² ʔi²³ʔmi² (ʔmi³ ex-
 pected) Le mi kɥ ši mi.

717 *ʔmiʔ stalk, e.g., of corn Tl
 magʔ⁴ (probably reflects stem
 without final *ɥ) Ll ʔmiʔ³ Le
 miyʔ.

718 *ʔmi^L excrement Oj lo²ʔmi³¹a²
 intestines U ti²ʔ³ Tl mag³ Ch ʔmag

- M kwu ma (initial ʔ expected) S ʔmai² Qe ʔmai ca kwa *horse manure* Tp ti¹ʔmíg² (accent not expected) Pa ʔmiy² VN ʔmai Oz ʔmih¹ Ll ʔmi³ Le mi³ Qi ʔmih²³ Co ʔmi².
- 719 *ʔmi·ŋ *new* Oj ʔmi⁴ U ʔu³⁴ Tl meg³⁴ Ch ʔmeg M ʔmi S ʔmai³² Qe ʔmai Tp ʔmi² Pa ʔmiy² VN ʔmiŋ Oz ʔmi Ll ʔmin³²~ʔmihn² Lt mi (iy expected) Qi ʔmih³ (*inan.*) ʔmui³ (*an.*) (uih expected) Co ʔmi² (final ŋ expected). Stems with and without final *ŋ may have alternated. Cf. Qi forms. Tl, Ch, M, Tp, VN, and Ll reflect final *ŋ. Lt and Co reflect no final *ŋ. Others are ambiguous.
- 720 *ʔmi^L *earlier* U ma³ʔu⁴ Tl mág³ Tp ʔmíg² Pa ʔmiy² ʔew² Ll ʔmi·h³ Co ʔmi².
- 721 *ʔmi·ʔ^H *thick* Oj ʔmi¹ (ʔmi^{ʔ1} expected; form may reflect *CV) U ʔu^{ʔ2} (tone reflects *CV·ʔ) Tl meg^{ʔ1} S ʔmi^{ʔ32} (3 expected) Tp ʔmi^{ʔ31} Pa ʔmi^{ʔ1} Ll ʔmi·ʔ² Qi ʔmih^{ʔ32} (42 expected) Co ʔmi¹ (ʔmi·ʔ²¹ expected; form may reflect *CV).
- 722 *ʔmi·ʔ^{LH} *cloth* Oj si¹ʔmi^{ʔ2} U a²ʔu^{ʔ3} Tl még^{ʔ4} (accent not expected) Ch ʔmeg? M ʔmi? S ʔmi^{ʔ3} (32 expected) Tp tsi¹ʔmi^{ʔ2} *diaper* Pa ʔmiw^{ʔ32} VN ʔmai? Oz ʔmi? Ll ʔmi·ʔ³ Le mi? Qi ʔmi^{ʔ3} (ih and 4 expected) Co ʔmi^{ʔ2}.
- The reflexes of *i(?) after *ʔm in U, Tl, Ch, and S are believed to be backed since no nonbacked reflexes are attested. However, it is possible that the backed syllabics really reflect forms with *i rather than *i.
- 723 *ʔmi *sew* Oj ʔmi³ ʔni² U ʔu²³ Tl még² Ch ʔmegs S kwa ʔmi Tp ʔme³² Pa ʔme³² Ll ʔmi²³ Qi ʔmih²⁴ (h not expected) Co ʔmir². This set may be related to *ʔmi·mend.
- 724 *ʔmiʔ^{LH} *sore* Oj ʔmi^{ʔ1} (i and 4 expected) U ʔu^{ʔ43} Tl mág⁴ (final ʔ expected) Ch ʔmag? S ʔma? Tp ʔméʔ³² Pa ʔmi^{ʔ32} VN ʔmei? Ll ʔmi^{ʔ2} scar Qi ʔmi^{ʔ3} Co ʔmi^{ʔ2}.
- 725 *ʔmi^{LH} *mend* Tl mág² (ay and 34 expected) Tp ʔméi³² za² (accent not expected) Pa ʔméy³² (accent not expected) Ll ʔmi³ Co ʔmir² (long vowel expected). This set may be related to *ʔmi sew.
- 726 *ʔmi·ʔ *blink* U ʔmei^{ʔ2} Tl méy^{ʔ2} Tp ʔme^{ʔ2} za² Pa ʔmi^{ʔ2} Ll ʔmi·ʔ²³ Co ʔmi·ʔ¹².
- 727 *ʔme *hide* Oj ʔma¹ ʔni² U si²ʔma³² Tl má² Ch ʔma S ma kwa ʔma co Tp ʔma³² za² Pa ʔma³² Ll ʔme²³ Le ma me Qi ʔmah⁴ (reflects *e) Co ʔméiŋ¹² (reflects *e·ŋ). Tl, Ll, and Co reflect *HL. Tp and Pa reflect *LH. Qi reflects either.
- 728 *ʔme· [1] *ʔme·ʔ [2] *press down* S ʔmu³² [1] Tp ʔmú³² za² [1] Pa ʔmów³² [1] ʔmo^{ʔ32} [2] VN ʔmi? [2] Ll ʔme²³ [1] Co ʔmé·ʔ¹² [2].

- 729 *ʔmé^H *leaf-cutter ant* Oj ʔmo¹
 Tl méw¹ Ch ʔmo S ci²mu²ʔmu¹² Tp
 i¹ʔmú¹ Pa ʔmów¹ Ll ʔmeh² Le me
 Qi ʔmah¹ Co ʔmé¹.
- 730 *ʔmé· *sharp* Oj ʔmo^{ʔ4} (final ʔ
 not expected) U ʔue²³ Tl mó² Ch
 ʔmo S ʔmu³ (does not reflect ac-
 cented syllable) Qe ʔmo Tp ʔmu³
 Pa ʔmo³ VN ʔmi Oz ʔme Ll ʔme²³
 (final h expected) Qi ʔma³ (Vh ex-
 pected) Co ʔmé¹ (long vowel ex-
 pected). Oj, Tl, Tp, Pa, Ll, and Qi
 reflect *^{HL}. U, S, and Co reflect *^H.
- 731 *ʔmeʔ [1] *ʔma·ŋ [2] *thank
 you* Oj li¹ʔma^{ʔ31} [1] U di²ʔma^{ʔ32}
 [1] Tl ti³ma^{ʔ2nu}³ [1] S tya¹ʔma^{ʔ1}
 [1] Tp ti¹ʔmag^{ʔ21} [1] Pa di¹ʔma^{ʔ1}
 [1] Oz ti ʔmaʔ [1] Qi ʔmah⁴mo^{ʔh}²⁴
 [2] Co ʔmá·m¹ba^{ʔ1} [2].
- 732 *ʔmé·^H *mole* U a²ʔma^{ʔ2} Tl
 má^{ʔ1} Ch ʔmaʔ S ʔmá^{ʔ1} Tp
 i¹tə²ʔmi³ (may not be cognate;
 ʔmág^{ʔ1} is probably expected) Pa
 ʔmá^{ʔ1} Oz ča ʔmeʔ Ll ʔme^{ʔ2} Le
 mé^{ʔ1} Co ʔme^{ʔ1} (accent is ex-
 pected).
- 733 *ʔma^L *tree* Oj ʔma² U
 na²ʔma³ Tl ma³ Ch ʔma M ʔma S
 ʔmá² (accent not expected) Tp
 ni¹ʔma² Pa ʔma² VN ʔma Oz ʔma
 Ll ʔmo³ Le ma³ Qi ʔmo³⁴ Y ʔma
 Tm ʔma Co ʔma¹². The following
 set may be related to this one.
- 734 *ʔma^L *manioc* Oj na¹yi²ʔma²
 Tl sai⁴²ma³ Tp sei²¹ʔma² Pa
 sey¹ʔma² Ll mi³¹ i²ʔmo³² (3 ex-
 pected).
- 735 *ʔma *robalo*, a kind of fish Oj
 ʔma¹ U a²ʔma³² Tl ma² Ch ʔma S
 ʔma³² Pa ʔma³¹ Ll ʔmo² Lt ma.
- 736 *ʔmá^{LH} (*fishing*) net Oj ʔma³
 U a²ʔma⁴³ Ch ʔma S ʔma²³ Tp
 tsi¹ʔmá³² Pa ʔmá³² Oz ʔma Ll
 ʔmoh² Lt ma Qi ʔmo³ Co ʔmá²¹
 (length not expected).
- 737 *ʔmaʔ *expensive* Oj ʔmo^{ʔ1} U
 ʔue^{ʔ2} Tl mó^{ʔ1} Ch ʔmoʔ S ʔmu^{ʔ32}
 Tp ʔmu^{ʔ31} Pa ʔmó^{ʔ1} VN ʔmoaʔ
 Oz ʔmoʔ Qi ʔmoh^{ʔ1} (reflects long
 vowel) Co ʔmo^{ʔ1}.
- 738 *ʔma^H *mucous, a cold* Oj
 ʔmo³¹ U ti²ʔue³² Tl mó⁴ Ch lis ʔmo
 S ʔmu¹² (reflects an accented sylla-
 ble) Tp ti¹ʔmu¹ Pa ʔmow¹ Ll ʔmo²
chapping Qi ʔmoh² Co ʔmo¹.
- 739 *ʔma^H *dew* Tp ʔmu³¹ Pa
 hmi¹ʔmow¹ Ll ʔmo². This set may
 be related to *ʔma· *drizzle* and
 possibly to *ʔma^L *ice, hail*.
- 740 *ʔma^L *ice, hail* U o¹ʔue³ Tl
 mew³ Ch ʔmo S ʔmú² (accent not
 expected) Tp ti¹ʔmu² Pa ʔmu² VN
 ʔmo Oz ʔmo Le ma³ Qi ʔmoh²³
 Co ʔmo².
- 741 *ʔma· *drizzle* Oj hmi² ʔmo³¹
fog Ch ʔmo *fog* Tp ʔmu *fog* Pa
 hmi³²ʔmo³ VN hmi ʔmoa *fog* Ll
 ʔmo³ Le ma. This set may be re-
 lated to one or both of the two
 preceding sets.
- 742 *ʔmá^L *tepid* U ʔue⁴ S ʔmu²³
 Pa ʔmó².

743 *ʔmá^{HL} *death* U ʔuɛ³⁴ S ʔmú³² (23 expected) Pa ʔmów³ (accent not expected) Li ʔmo^{h2} (23 expected) Co ʔmó² (long vowel expected).

744 *ʔma^{ʔH} *market* U he¹ ʔma^{ʔ1} (32 expected) Tl ma^{ʔ4} (tone 1 expected) S ʔma^{ʔ21} (3 expected) Tp ʔma^{ʔ32} (the expected reflex 31 may be a variant) Pa ʔma^{ʔ1} *market stall* Li ʔmo^{ʔ2} Qi ʔmoh^{ʔ42} Co ʔmo^{ʔ21}.

745 *ʔma^{ʔLH} *mojarra, a kind of fish* U a²ʔma^{ʔ3} Tl ma^{ʔ4} Ch ʔma^ʔ S ʔmá^{ʔ2} (32 without an accent expected) Tp i¹ʔma^{ʔ2} Pa ʔma^{ʔ32} Oz ʔmo^ʔ Li ʔmo^{ʔ3} Le ma^ʔ Qi ʔmoh^{ʔ4} Co ʔmó¹² (ʔmo^{ʔ2} expected).

746 *ʔma^{ʔHLH} *pay* Oj hma¹ ʔma^{ʔ31} ʔni² U ma⁴ʔma^{ʔ32} Tl meg²ma^{ʔ42} Ch e ma ʔma^ʔ S ma²ʔma^{ʔ1} Tp ʔma^{ʔ31} Pa ʔma^{ʔ1}.

*ʔn

747 *ʔni^{LH} *three (inan.)* Oj ʔni² U ʔneg³ Ch ʔneg M ʔni (possibly e) S ʔni Qe ʔni (possibly e) Tp ʔni Pa ʔniw³² VN ʔni Oz ʔni (possibly e) Li ʔni³ Le ni³ Qi ʔni³ (tone 4 expected). Most languages use this stem as the second element of the numeral *thirteen*, but a few use the stem *ʔni: Li gi²³ʔni³ Le gya ni.

748 *ʔni^{LH} *corn cob* Oj či¹ʔni³ U a²ʔneg⁴³ Tl nég¹ (tone 3 expected)

Ch ci²neg M ci²ni S si¹ʔni²³ Tp ni¹ʔni³² (the Tp and Pa forms reflect a syllable without accent) Pa ʔniw³² VN ʔni Oz na^ʔni Li ʔnih² Le nani Qi ʔni⁴ (the Qi and Co forms reflect a syllable without accent) Co ʔni².

749 *ʔni¹ [1] *sell (inan.)* *ʔni¹ɲ [2] *sell (an.)* Oj ʔni³¹ ʔni² [1] U ʔnag³ [1] Tl nág⁴ [1] Ch ʔna [1] (ag expected) S ʔnai¹ ʔnu³ [1] Qe ʔna [1] (possibly ə) Tp ʔnag³² [1] Pa ʔnay³² [1] ʔnó³² [2] VN ʔnai [1] Li ʔni²³ [1] ʔniⁿ²³ [2] Qi ʔnih⁴ [1] Co ʔni^{r1} [1].

750 *ʔni^L *widow* Oj ca² mi³ʔni³ U a³ʔnag⁴ Tl ca³ nag Ch ʔyuʔnag S ca²ʔnai²³ Tp ʔio³¹ ʔnág² Pa za²ʔný² Li mi^{h3} ʔni^{h3} Le za³ ní³ *orphan* Qi ca³ ʔnih³ *orphan* Co dia ʔni¹ (tone 2 expected).

751 *ʔni^{ʔH} *chicken* Oj ti²ʔna^{ʔ1} *hen* (i expected) Li ʔni^{ʔ2} Le ni^{ʔ2}.

752 *ʔni^L [1] *ʔnu^L [2] *ʔniu^L [3] *you (sg.)* Oj ʔni² [1] U ʔnei³ [1] Tl nu³ [2] Ch ʔnu [2] M ʔnyu [3] S ʔnu² [2] Tp ʔne² [1] Pa ʔniw² [1] (may reflect a long vowel) VN ʔnyu [3] Oz ʔne [1] Li ʔni³ [1] ʔnó³ [3] To ʔni [1] ʔnó [3] RC ʔnó [3] A ʔnó [3] Le ʔnu³ [3] Qi ʔnü³⁴ [3] Co ʔnó¹² [3].

753 *ʔni^L *war* Oj ʔni² U ʔnai³ Tl nay³ Ch ʔney S ʔnei² (e expected) Qe ʔnai Tp ʔnei² Pa ʔniw² Qi ʔnih²³ Co ʔni².

754 *ʔni^{HLH} *rope* Oj na¹ʔñi³¹ U a²ʔnai³² (tone 1 expected) Ch ʔney S ʔnye Qe ʔnyai Tp siʔne (ei expected) Pa ʔney³¹ (tone 1 expected) VN ʔnei Oz ʔni Lī ʔñi²³² Le fii⁴² Qi ʔnih²⁴². The reflexes of *n, whether or not preceded by *ʔ or *h, are sometimes palatalized in the Oj, S, and Lī languages before *i (or *iu and *ia) and sometimes not. The distributional patterns are quite complex. A few sets, of which this one is a good example, seem to be clearly palatal. Others, such as the other sets here labeled *ʔni, are not palatal and might suggest that there was a contrast of palatal and nonpalatal nasals before *i. In general, however, the distribution of the nasals is such that it would be difficult to distinguish the palatal sets from the nonpalatal ones. Furthermore, it would be awkward to posit a consonantal contrast which could be demonstrated just before one vowel.

755 *ʔni· *break (intr.)* Pa ʔnay³² Lī ʔni²³.

756 *ʔni· *avocado* S kwiʔne Qi kwo⁴ʔnih⁴.

757 *ʔneʔ [1] *ʔniʔ [2] *woodpecker* Oj ta² mi⁴ʔne²⁴ [1] U a¹ma³-ʔne⁵ [1] Tl mané⁷³ [1] Tp i¹me²-ʔné²² [1] Pa bi¹ʔni⁷¹ [2] Lī ʔni⁷³ [2].

758 *ʔna *back* U ʔna²³ Tl na⁴²ceg³ Ch ʔna M maʔna S ʔna Lī me²³ ʔno².

759 *ʔna *break (intr.)* U ra³ʔna³² *cut (stative)* Pa ʔná² (*past*). This set may be related to the one immediately following.

760 *ʔna [1] *ʔna· [2] *ʔnaʔ [3] *piece* U ka³ʔna³² *half (cup, glass)* [1] Tl ná¹ [1] Ch kaʔna *half* [1] S kaʔna piʔ [1] Qe kaʔna *half* [1] Tp ʔnau³¹ [2] Pa ku²ʔna² *a while* [1] ka²ʔnaw³¹ *half* [2] VN ʔnao [2] Lī ʔno³¹ [2] Qi ʔno⁷¹ [3] Co ʔná⁷¹ *piece* [3] kaʔná⁷¹ *half* [3].

761 *ʔnaʔ [1] ~ *ʔniaʔ [2] *look for (inan.)* *ʔnaʔŋ [3] ~ *ʔniaʔŋ [4] *look for (an.)* Oj a⁴ʔno⁷³ ʔni² [1] ʔne⁷² ʔni² [2] a⁴ʔna⁷³ [3] ʔna⁷² ʔni² [4] U ʔno⁷⁴ [1] ʔna⁷³ [3] Tl new⁷⁴ [1] Ch ʔnoʔ [1] S ʔnoʔ [1] Tp ʔno⁷² [1] Pa ʔno³² [1] ʔnew² [2] (the previous two forms reflect a long vowel without glottal closure) ʔna⁷³² [3] ʔnya⁷³² [4] Lī ʔno⁷²³ [1] ʔne⁷²³² [2] ʔna·ʔn³ [3] ʔne·ʔn²³ [4] Co ʔno^{7r2} [1]. There is considerable uncertainty about which if any of the stems should be reconstructed with a long vowel. The first two Pa forms, most Lī forms, and the Co form suggest a long vowel while the others are ambiguous or favor a short vowel.

762 *ʔniú^{LH} *house* Oj si¹ʔñi³ U a²ʔnei⁴³ Tl ní³ Ch ʔnyu M ʔnyu S ʔnyu²³ Qe ʔnyi Z ʔnyi Tp ci¹ʔné³² Pa ʔnyú³² VN ʔnyu Oz ʔne Lī ʔñöh² Le fū Qi ʔnü³ Co ʔnó²¹ (short vowel expected).

763 *ʔnló^{LH} *scorpion* Oj haʔ³ñi³
(initial ʔ expected; perhaps ʔ closing the preceding syllable is a factor) U a¹ʔnei⁴³ Ch ʔnyu S ʔnyu Qe ʔnyi Tp iʔne Pa cyi¹ ʔnyú³² Oz ciʔne Ll ʔñöh² Le ñu.

764 *ʔniu^{HLH} *hunter* U a¹cai³ ʔnai¹
(in this and several other forms the preliminary morpheme means *dog*) Tl cag³ nay⁴² S ci¹ʔnye¹ (ei expected) Qe ci ʔnyai Tp ʔnei²¹ Pa ziy² ʔnew¹ VN zi ʔnui Oz ʔnei Ll ʔñö²³² Le zi ñu Qi cih²³ ʔnüh²⁴² Co di ʔnö¹².

765 *ʔniaʔ *it is necessary* U ʔniaʔ³
(reflects a long vowel) Tl nó^{ʔ2} S ʔnyó^{ʔ3} Tp ʔnió^{ʔ32} Pa ʔnyu^{ʔ32} Ll ʔne^{ʔ2}.

766 *ʔnia· [1] ~ *ʔna· [2] *want* Oj ʔne^{3a2} [1] ʔno³ hna³ [2] U ma²· ʔnie³⁴ [1] ma²ʔno⁵ [2] Tl nyó³ [1] Ch ʔnyo [1] S ʔno [2] Tp ʔnio³ [1] Pa ʔnyu³ [1] ʔno³ hñ² [2] VN ʔno hna [1] Oz ʔno [2] Ll ʔne·h²³ [1] ʔna·hn²³ [2] Qi ʔnah²³ [1] Co ʔné² [1] *it is necessary* (long vowel expected).

767 *ʔnia·ʔ^{HL} *you (pl.)* Oj ʔna²
(the vowel and tone match in spite of the lack of final glottal stop) Tl na^{ʔ4} Ch ʔnaʔ M ʔnyaʔ S ʔnoʔ Tp ʔniaʔ² Pa ʔnyaʔ³² Oz ʔnaʔ Ll ʔne·ʔ²³ Lt ñaʔ Qi ʔnahʔ¹³ (tone 4 expected).

*ʔɲ

768 *ʔɲa^H *tepezcuintle, a wild rodent* Oj ʔɲa¹ U a²ʔɲa³² Tl ɲa² Ch ʔɲa S ʔɲa Tp i¹ʔɲa¹ Pa ʔɲa¹ VN ʔɲa Ll ʔɲo² Le ɲa Qi ʔɲo² Co ʔɲa¹.

769 *ʔɲa^H *forest* U i²ʔna³² (ɲ expected) S ʔɲa¹ Tp ʔɲa¹ Pa ʔwa³ ʔɲa¹ *virgin land* Ll ʔɲo² Co ʔɲa¹.

770 *ʔɲaʔ [1] *ʔɲa·ʔ [2] *ʔɲa· [3] *on the other side* U ʔɲoʔ³ [1] Ch hoʔɲo [3] S tiʔɲoʔ³² [1] Tp ʔɲoʔ³¹ [1] Pa ʔɲoʔ³¹ Ll ʔɲo·ʔ²³² *on the opposite page* [2] ʔɲo·h² [3] Qi ʔɲohʔ⁴² *be on one side* [2].

771 *ʔɲiu^L *bobo, a kind of fish* U a²ʔñi³ Tl ɲi³ Ch ʔnyu M nyu (initial ʔ expected) S ʔnyu² Qe ʔnyi Tp i¹ʔɲi² Pa ʔnyu² VN hwoʔ ɲyu (initial ʔ expected) Oz saʔñu Ll ʔñö³ Le ñu³ Qi ʔñü³⁴ Y ʔnü (ʔɲ expected; the reflexes of *h/ʔɲ before *iu are unpredictable in Y perhaps because of inconsistent recording) Co ʔɲö¹² (iö expected).

772 *ʔɲiuʔɲ *waist* U a²lo³ʔñi^{ʔ2}·i³ *his belt* S ʔnyaʔ (u is probably the expected reflex) Qe ʔnyaiʔ Tp o²¹ʔɲi^{ʔ3} Pa ʔɲyoʔ³ VN aʔɲyuʔ Oz ʔñuʔ Ll ʔñuʔn²³ Qi ʔñui^{ʔ4} Co ʔɲioɲʔ². This set may be related to *ʔɲiu·ʔ *tie up*.

773 *ʔɲiu^L *thick* Oj ʔñi² U ʔñei³ Ch ʔnyi S ʔnye^{ʔ2} Qe ʔnyai Tp ʔɲei

Pa ʔŋyew² **Ll** ʔñu-n³ (reflects a syllable with final *ŋ) **Qi** ʔñüh²³ **Y** ʔñü (initial ? expected).

774 *ʔŋiu- *handful* **U** ʔñei **S** kaʔnye (ei expected) **Pa** kuʔŋyew **Oz** ʔñö.

775 *ʔŋiu- [1] *tie (inan.)* *ʔŋiu-ŋ [2] *tie (an.)* *ʔŋiu-ʔ [3] *tie up* **Oj** ʔi³ʔñi^{ʔ31} ʔni² [3] **U** ʔñei³ [1] **Tl** ʔi³ [1] **Ch** ʔnyui [1] (i expected) **M** ʔnyi [1] **S** maniʔnyei [1] **Qe** laʔnyai [1] **Tp** ʔŋéi² [1] or possibly [2] **Pa** ʔŋyew³² [1] ʔnyo³² [2] **VN** ʔŋyu [1] **Ll** ʔñö-³ [1] ʔñu-n³ [2] ri³ʔñu^{ʔn2} *tied up* [3] (reflects a syllable with final *ŋ) **Le** ga³ñu-⁴³ [1] **Qi** ʔñu¹na² [2] (uh expected) **Co** ʔñi⁶-ʔr¹² [3].

776 *ʔŋlá^L [1] *five (inan.)* *ʔŋiáŋ^L [2] *five (an.)* **Oj** ʔña³ [1] and [2] **U** ʔña⁴ [1] **Tl** ʔyá³ [1] **Ch** ʔnya [1] **M** ʔnya [1] **S** ʔnya²³ [1] **Tp** ʔŋiá² [1] **Pa** ʔŋy² [1] ʔŋyáw² [2] **VN** ʔŋye [1] ʔŋyan [2] **Oz** ʔña [1] **Ll** ʔñeh³ [1] ʔñehn³ [2] **Le** ʔñe [1] ʔñan [2] **Le** ña [1] ñe [2] (final y expected) **Qi** ʔña³ [1] ʔñei² [2] (24 expected in both forms) **Y** ʔñe [1] **Co** ʔŋia¹² [1] (accent expected).

777 *ʔŋiá^{LH} [1] *ʔŋá^{LH} [2] *ʔŋia^{LH} [3] *he himself, he alone* **Oj** ʔñe^{ʔ2} [3] (4 expected) **U** ʔña³ [1] (probably reflects a short unaccented syllable) **Tl** ʔa³ [2] (accent expected) **S** ʔŋa³² [2] (accent expected) **Qe** ʔŋa [2] **Tp** ʔŋiog³² [1] **Pa** ʔŋyéw³ (*first person singular*) [1] (32 expected) ʔŋya^{ʔ32} [3] **Ll** ʔñe-h²

[1] **Qi** ʔña^{ʔ3} [3] **Y** ʔñe^ʔ [3] **Co** ʔa^{ʔr} [3] (ʔŋ expected).

*ʔw

778 *ʔwi^H *Ojúlán, a large Chinantec village* **Oj** k²ʔw^{ʔ31} **U** go³g^{ʔ32} **Tl** ʔi héw¹ gw^{ʔ4} **Ch** ku? ʔw^{ʔg} **S** ku²ʔw^{ʔ3} **Qe** ko ʔ^ʔ **Tp** go²ʔu^{ʔg21} **Pa** gu²ʔw^{ʔy1} **Qi** go⁴ʔw^{ʔh2} **Co** ʔwi-ŋ¹. The nasalized vowels throughout this set are difficult; before *ʔ the expected consonantal reflexes would be nasals. Some of the forms, e.g. that of **Co**, might be derived from *iŋ, but that is not the case with others such as **Qi**. For a discussion of this problem cf. sec. 3.1 of the Introduction.

779 *ʔwi^L [1] *ʔwiŋ [2] *ʔwiʔ [3] *peel* **Oj** ʔwi³ ʔni² *peel it!* [1] **U** ʔue^{ʔ2} [3] (reflects *ə rather than *i) **Tl** gw^{ʔg2} [2] **Ch** na di ʔw^ʔ [2] **S** ma di ʔw^ʔ [2] **Qe** kwa ʔw^ʔ [2] **Tp** ʔu^{ʔg2} [1] **Pa** ʔw^{ʔy2} (*inan. obj.*) [1] ʔw^{ʔe2} (*an. obj.*) [2] **Ll** ʔwi^{ʔ23} [3] **Lt** v^ʔ [1] **Qi** ʔwuih^{ʔ24} [3] (reflects long vowel and final *ŋ) **Co** ʔwiŋ^{ʔ2} [3] (reflects final *ŋ).

780 *ʔwi^{HLH} *oven* **U** a²g^{ʔ2} (reflects initial *w) **Oz** ʔw^ʔ **Ll** ʔw^{ʔh2} **To** ʔ^ʔ this may be a misrecording of ʔw^ʔ) **Lt** v^ʔ **Qi** ʔw^{ʔh242} *temascal, sweat-bath oven*. As in the set at the beginning of this section, the nasalized vowels throughout this set are difficult.

781 *ʔwiʔ^{LH} *peach, orange* U ʔ⁴-
ʔeuʔ³ *orange* Pa ʔwuʔ³² *peach* VN
ʔuʔ *orange* Oz mi ʔwiʔ *orange* Ll
mi³¹ʔwiʔ³ *peach* Le viʔ *peach* Qi
ʔwuʔ⁴ *plum*.

782 *ʔwəŋ^H *kind* Pa ʔwe¹ ziw³² Ll
ʔwəhn² (reflects an accented syllable)
Qi ʔwo² ci³ (does not reflect
*ŋ).

783 *ʔwə^H *ribs* Oj mo²ʔwo¹ S mu²-
ʔwe¹² Qe mo ʔwe Ll ʔwəh² *chest*
Le vo *chest* Qi mo²ʔwo¹.

784 *ʔwə^{HL} *land* Oj ʔwo⁴ U ʔue³⁴
Tl gwé² Ch ʔwe M ʔwi S ʔwe³² (23
expected) Tp ʔuə³ Pa ʔwa³ VN
ʔwə Oz ʔwa Ll ʔwəh²³ Le vó⁴ Qi
ʔwo²⁴ (34 expected) Co ʔwé².

785 *ʔwəŋ^{HL} *low* U ʔue³⁴ (does
not reflect *ŋ) Tl gwé³ (does not
reflect *ŋ; tone 2 expected) Tp ʔuʔ³
Ll ʔwəhn²³ Qi ʔwoi³ (34 expected)
Co ʔwə² (ŋ expected rather than
Y) The tones of the Qi and Co
forms fit the set labeled *below*. The
sets may be related.

786 *ʔwəʔ *figure, letter* Tl gwé²
Tp ʔué² *spotted* Ll ʔwə² Le voʔ.

787 *ʔwə^{HL} *night* U ʔue² Ch i ʔwe
S ʔwá² (accent not expected) Qe
ʔwe cyo nai *midnight* Tp a²ʔuə² Pa
ʔwu² VN ʔwa Oz ʔwi Ll ʔwə²³ Le
vo⁴ Qi ʔwəh⁴ *be night* Y wə (ʔw
expected) Co ʔwə¹².

788 *ʔwə· [1] *ʔwə·ŋ [2] *ʔwə·ʔ [3]
go out, take out (pl. ref.) U si²ʔue⁴

(*inan. obj.*) [1] Ch di ʔwe (*inan.
obj.*) [1] S li ʔwə (*an. obj.*) [2] Qe
ma la ʔwe (*inan. obj.*) [1] Tp
ʔuə³² (*inan. obj.*) [3] Pa ʔwi³²
(*inan. obj.*) [1] ʔwiʔ³² (*inan. obj.*)
[3] ʔwa³² (*an. obj.*) [2] ʔwe² (*intr.*)
[2] Ll ʔwə²³ (*inan. obj.*) [1] ʔwə·n³
(*an. obj.*) [2] ʔwə·n²³ (*intr.*) [2] Le
vo [1] Qi ʔwuh *harvest (inan. obj.)*
[1] (oh expected) Co ʔwəʔr² [3]
(reflects an accented syllable).

789 *ʔwə^{HL} *below* Oj ti⁴ʔwo⁴ U
ʔue³⁴ Tl teg³gwe³⁴ (2 and an accent
expected) Ch ʔwe M ʔwi Pa
ti³ʔwáy³ (accent not expected) VN
ʔwə Oz ʔwa Ll ʔwə·h² (23 ex-
pected) Qi fu⁴ ʔwo³ Co wə² (initial
glottal stop expected). This set may
be related to *ʔwəŋ^{HL} *low*.

790 *ʔwəŋ^{LH} *alone* ʔuə⁵ (*first per-
son singular*) ʔuə⁴³ (*second per-
son*) (this form has the matching
tone) Tl gwé⁴ S ʔwə² (*first person
singular*) Qe ʔwe (*first person sin-
gular*) (does not reflect *ŋ) Ll
ʔwə·hn² (*second person*) Lt və
(*second person*) (voi expected).

791 *ʔwi· *at the base of* Tp ʔuig³¹
Pa ʔwu³¹ Ll ʔwi² Y ʔwi Co ʔwi¹².

792 *ʔwi·ʔ^L *close together* Pa ʔuʔ^{2L}
ʔwi·ʔ³.

793 *ʔweʔ^L *hard* Oj ʔwa² U
ʔua³ Tl gwá⁴ (accent not ex-
pected) Ch ʔwaʔ S ʔwa² Tp ʔua²
Pa ʔuʔ² VN ʔweʔ Ll ʔwa·ʔ³ To
ʔweʔ Le ve·ʔ³ Qi ʔwah²³ Y ʔwaʔ
Co ʔwé¹² (long vowel expected).

794 *ʔwe-ʔŋ^L *strong* U ʔuə³ TI gwá⁴ (accent not expected) S ʔwə² Qe wə[?] (initial ? expected) Pa ʔwa² LI ʔwe-ʔn³ Lc ʔwaʔn To ʔwə[?] (Vn expected) A ʔwə[?] (Vn expected) Le véy⁴ (long vowel expected with tone 3 but no accent). This set is probably related to the preceding one.

795 *ʔwa *soft* Oj ʔwa² U ʔua³² TI gwa² Ch ʔwa M ʔwa S ʔwa¹ Tp ʔua¹ Pa ʔwa³¹ VN ʔwa Oz ʔwa LI ʔwo² Le va² Qi ʔwo³ Y ʔwa Co ʔwa¹.

796 *ʔwa· [1] *ʔwa-ʔ [2] *ʔwa-ʔŋ [3] *become tired* Oj e² ka³ʔwo³ hna³ (first singular) [1] e² ka³ʔwo³a² (third person) [2] ka¹³ʔwə³ (second person interrogative) [3] U a⁴ʔue⁴ *he became tired* [1] a⁴ʔuə⁴ *you're tired* [3] TI ta³gwá⁴ [3] Ch ma la ʔwo[?] [2] S ka³ʔwo³² hna¹² *I became tired* [1] ka³ʔwo³² *he became tired* [2] Tp ʔuə¹ *he became tired* [1] (reflects a short vowel followed by *ŋ) Pa ʔó³² (third person) [2] ʔwa³² (second person) [3] VN ka ʔwo hna (first singular) [1] LI ʔwa-ʔn²³ [3] Le ma va (first singular) [1] ma vay[?] (third person) [3] Qi ʔwoh³⁴ [2]. The [2] reflexes of Oj, Ch, S reflect a short vowel.

*ʔI

797 *ʔi^{HLH} *corpse, dead person* Oj ʔi³ (31 expected) TI lag⁴² (tone 2

expected) Ch ʔlag S ʔla¹ Qe ʔlai Tp ʔlag²¹ Pa ʔlay¹ VN ʔlai LI ʔli^{h2} Qi ʔli^{h242} Co ʔli¹².

798 *ʔli-ʔ^H [1] *ugly, evil (inan.)* *ʔli-ʔŋ^H [2] *ugly, evil (an.)* Oj ʔli³¹ [1] (tone 1 expected) ca³ʔli³¹ *devil* [2] U ʔlag³² [1] (all U forms seem to reflect a short vowel) ʔlə² [2] a⁵laj³² *shaman* (may reflect a variant with *i in spite of lack of initial ?) ta²lag³⁴ *bad one* (may be related, but lack of initial and final ? is a problem) TI lə⁴ [2] (tone 1 expected) Ch ʔlag [1] (both Ch forms reflect a syllable without final *) ca ʔlɛ^g *devil, shaman* [2] M ʔli[?] [1] S ʔlai²³ [1] ca ʔli[?] *devil* [2] Qe ca ʔli[?] *devil* [2] Z ʔlai[?] [1] Tp ʔli^{g31} [1] (ʔli[?] expected) Pa ʔlay³¹ [1] (tone 1 expected) ʔlə¹ [2] (seems to reflect *ʔla-ʔŋ and the following form may reflect the corresponding inanimate form *ʔla-ʔ:) za² ʔla¹ *devil* VN ʔli[?] [1] (ai expected) LI ʔli²ⁿ [2] Qi ʔli^{h1} [1] (the Qi and Co forms reflect a syllable with accent) Co ʔli¹ [1] ʔli¹ [2] (this form suggests an alternant with *i; cf. the third U form).

799 *ʔlə-ʔ^{LH} *louse* Oj ʔlə² Ch ʔlag[?] S ʔle[?] *pepeyote* Tp i¹ʔlə² Pa ʔliw³² VN ʔla[?] Oz ča ʔli[?] LI ʔlə³ Lc ʔla²ⁿ (may be a misrecording of ʔlə[?]) To ʔlə[?] Qi hoh³⁴ ʔlə^{h23} (tone 4 expected) Co ho-ʔ lə¹ (long vowel with tone 2 expected; expected preconsonantal ? may not have been recorded because of final ? in preceding word).

800 *ʔla-ʔ *speak* Oj ʔləʔ¹ ʔni² U ʔleʔ² Tl léʔ² Ch ʔliʔ (may be a misrecording of ʔlagʔ) S ʔleʔ³² Pa ʔliwʔ³² VN ʔlaʔ Oz ʔliʔ Ll lö²³ ʔlə-ʔ²³ *chatter*.

801 *ʔla-ʔŋ *craves meat, good food* Pa ʔləʔ² Ll ʔləʔn² (reflects a syllable with accent) Qi ʔləihʔ⁴².

802 *ʔli [1] *ʔliŋ [2] *leap* Oj ʔliʔ² ʔni² [2] U ʔlei⁵ *I shoot by slingshot* [1] S ʔli³² [1] Pa ʔliʔ² [1] ʔle³² [2] Ll ʔli²³ [1] Qi ʔlih²⁴ *shoot arrow, slingshot* [1] (vowel without h expected) Y ʔli [1] *arrow*.

803 *ʔli(?) *sprinkle, splash* Ll ʔliʔ²³ (Ll and Co forms do not agree regarding presence of final *ʔ) Co ʔliʔ². This set may be related to the immediately preceding one.

804 *ʔla *make fall* Tl lá² Ll ʔlo³² Le la³².

805 *ʔlaŋ *bounce* U ʔlaʔ²³ Tp ʔlaʔ³² Ll si³ʔləʔn² (postsyllabic ʔ not expected).

806 *ʔla^L *rock, cliff* U a²kəʔ² ʔlo³ Tl lew³ S ʔlō² (accent not expected) Tp ʔlau² Pa ʔləw² Ll ʔlo³.

807 *ʔla^L *bat* Tp iʔlau² (preconsonantal ʔ expected) Ll ʔlo³ Lt la ŋi.

808 *ʔlá^L [1] ~ *ʔliá^L [2] (*become*) *afternoon* Oj tí⁴ka³ʔlo³ [1] U ta⁵ʔlo⁴ [1] Tl lō² [1] (tone 3 expected) Ch ma ka ʔlo [1] S

ka³ʔlō²³ [1] (accent not expected) Tp ka²ʔláu² [1] Pa ʔya³ʔléw² *tomorrow afternoon* [2] VN ti ka ʔlao [1] Ll mi³ku³ʔlo^{h3} *in the afternoon* [1] mi³rí³ʔlá^{h3} *when it will be afternoon* [2] Le ka³lá³ [1] Qi ka ʔlo³⁴ [1] (tone 3 with oh expected) Co ka²ʔlō² [1].

809 *ʔlá^L [1] ~ *ʔliá^L [2] *get well* (*inan.*) *ʔlá-ŋ^L [3] ~ *ʔlia-ŋ [4] *get well* (*an.*) Tp ʔliō² [4] Pa ʔléw² [2] ʔlúw² [3] ʔlyúw² [4] Ll ka²³ʔlo^{h3} [1] rí²³ʔlá^{h3} [2] ka²³ʔla^{h3} [3] Co (ka) ʔlá-ŋ² [4].

810 *ʔlá-ŋ^L *much* Oj ʔlā³ Tl lyéw³ (reflects a syllable with *ia- rather than *a-ŋ) Tp ʔliō² (reflects *ia- rather than *a-) Pa ʔlúw².

811 *ʔla-ʔ^H *cricket* U a¹ʔlaʔ¹ (32 expected) Tl laʔ¹ *cockroach* Ch haʔ ʔla *cockroach* (final ʔ expected) S ʔlaʔ²¹ *cockroach* (tone 3 expected) Tp i¹ʔlaʔ³¹ Pa cyi¹ʔlaʔ¹ Ll ʔlo^{ʔ2}.

812 *ʔliuʔ *lick* Pa ʔlyuʔ³² Co ʔlōʔ²¹.

813 *ʔlia [1] *ʔliaʔ [2] *push* (*inan.*) *ʔliŋ [3] *ʔliaʔŋ [4] *push* (*an.*) Oj ʔla³¹ ʔni² (*tr. with obj.*) [1] ʔle³¹ ʔni² (*tr. without obj.*) (reflects [1] but with a long vowel) U ʔlia [1] ʔliḡa [3] Tl lá² [1] (reflects *a rather than *ia) Ch di ʔlya [1] M ʔlya [1] S ʔlya [1] Qe la ḡa [3] (preconsonantal ʔ expected) Tp ʔliaʔ² [2] (forms from Tp, Pa except [4], Oz, Ll, and Le reflect a

long vowel) ʔliogʔ² [4] (iʔʔ expected) Pa ʔlyiʔ³² [2] ʔlyaʔ³² [4] VN ʔle [1] ʔlya [3] (ʔlyanʔ expected) Oz ʔlaʔ [2] ʔlyāʔ [4] Ll ʔlä-ʔ²³ [2] ʔle-ʔn³² [4] Le ga³lya-ʔ⁴³ [2] Qi ʔlaʔh³ [2] Y ʔlaʔa [2] (probably reflects *a rather than *ia) Co ʔliaʔr² [2] ʔleŋʔ² [4].

814 *ʔliaʔ *spoil* Pa ʔlyaʔ³² (reflects a syllable closed by *ŋ) Co hmi²-ʔléʔ² (probably reflects a long vowel).

815 *ʔlia^L *dust* Oj ʔle² U o¹ʔlie³ Tl lyew³ Ch ʔlyo M ʔle S ʔlyó² (accent not expected) Qe ʔlyu Tp ʔliog² Pa ʔlew² VN hwi ʔlo Oz wa ʔlö Ll ʔlä³ Le lya³ Qi ʔlah²³ Co ʔle². The following set is probably related: *ʔlia *dirty* Y ʔle Co ʔlia¹.

816 *ʔliaŋ *add on, lengthen* Pa ʔlyów³² Ll ʔlä-n³ Le lyey³.

817 *ʔliá^L *soldier* Oj ʔle³ U a²ʔlie⁴ Tl lyú³ (lyo expected) Ch ʔlyo S ʔlyó²³ (accent not expected) Qe ʔlyu Tp zi²ʔlió² Pa ʔléw² Oz ʔlö Ll za³ ʔlä-h³ Qi ʔlah⁴³ (tone 3 expected) Y ʔla *war* Co ʔlé².

818 *ʔlia-ʔŋ *trim, dress* Pa ʔlyáw³² Le lya-ʔ³² (reflects a syllable without final *ŋ) Co ʔleŋ^{ʔ21} (reflects a syllable with accent).

*ʔy

819 *ʔyi^{HLH} [1] *ʔyi^H [2] *hammock* Oj si¹ʔyi¹ [2] U a²ʔdʔei²³ [2] Tl gi¹ [2] Ch yi [2] (it is possible that the Ch forms reflecting *ʔyi should be written with g rather than y, which would then be like the Ch reflex of *y) S ʔe¹ [2] (12 expected) Qe ʔi [2] Tp ci¹ge³¹ [2] (tone 1 with accent expected) Pa ʔyiw³¹ [2] (tone 1 with accent expected) VN ʔi [2] Oz sa ʔe [2] Ll ʔih² [2] Le ʔi [2] Qi ʔih²⁴² [1] Co ʔi¹² [1]. The second reconstruction in this set and the next could be labeled *ʔyi, but none of the reflexes suggests *i whereas with *hyi some of the Tl and S languages have reflexes which reflect *i in contrast to *i.

820 *ʔyi-ʔ [1] *ʔyi-ʔ [2] *shamed, shy* Oj e² ʔyiʔ^{31a2} [2] U ʔdʔeiʔ¹ [2] Tl gi⁴² [2] (final ʔ expected) Ch yiʔ [2] S ʔeʔ³ [2] Qe ʔyaiʔ [2] Tp giʔ³¹ [2] Pa ʔyiwʔ¹ [2] Ll ʔi-ʔ²³ [2] Qi ʔihʔ³⁴ [1].

821 *ʔyiʔ^{LH} *nose* Oj ʔi¹ʔyiʔ^{3a2} (tone 4 expected; this form reflects a syllable without accent) U ta³ʔdʔeiʔ⁴³ Tl gi⁷⁴ Ch yiʔ S ta²ʔe²³ Qe ʔyeiʔ Tp rə²giʔ³² Pa ʔyeyʔ³² VN ta ʔiʔ Oz ta ʔiʔ Ll ʔiʔ² Le ʔiʔ² Qi ta³ʔiʔ³ Tm ka ʔiʔ Co ta²ʔiʔ¹ (tone 2 expected).

822 *ʔyi^L *heavy* Oj ʔyi² U ʔdʔei³ Tl gi Ch yi M ʔyei Tp gei² Pa ʔyiw²

- VN ʔi Oz mi ʔi Lɪ ʔi³ Le ʔi Qi ʔih³⁴ (23 expected) Co ʔi².
- 823 *ʔya^{LH} *pot* Oj na¹ʔya² U a²-ʔd³ʔa³ *clay griddle* Tɪ gɻ̄ (nasalization not expected) Ch ʔya S ʔya³ (32 expected) Z ʔya *clay griddle* Tɪ ni¹ʔia² *clay griddle* (32 expected) Pa na¹ʔyi³² *clay griddle* VN ʔya Oz wa ʔya Lɪ mi³¹ʔya³ Lc ya ta (? lost in pretonic position) Pe ʔye To mi ʔye RC mi ʔya A mi ʔye Le ya³ Qi ʔya⁴ *clay griddle*.
- 824 *ʔya *sprout* U ʔd³ʔa²³ Tɪ gɻ̄⁴ Tɪ ʔia² Pa ʔyi² Lɪ ʔya³ Co ka ʔya¹². Cf. *ʔyaŋ *produce, finish*.
- 825 *ʔya *prick* Lɪ ʔya Co ʔyar.
- 826 *ʔyaŋ *produce, finish* U a⁴-ʔd³ʔa³ *he climbed (stairs)* Tɪ ʔi⁶ʔ²¹ (*intransitive inanimate*) (reflects *CV?) Lɪ ʔyen²³ Lc mi ʔyan To mi ʔyan A za ʔyan. This set may be related to *ʔya *sprout*.
- 827 *ʔya^H *adze* Qi ʔya¹ Co ʔya¹.
- 828 *ʔya^L *fence* U a²ʔa⁴ (?d^y expected) Qe ʔa (ʔy expected) Lɪ ʔyah³ Pe ʔye To ʔye A ʔye Qi ʔya²⁴ Co ʔya¹².
- 829 *ʔya^{LH} *broom* Oj si¹ʔye³ U a²ʔd³ʔie³ Tɪ gyo⁴ Ch ʔma ci ʔyo? S ʔyo³² Qe ʔyu? Tɪ ci¹ʔia³² (reflects a long vowel) Pa ʔyo³² VN ʔye? (reflects a long vowel) Oz sa ʔya? Lɪ ʔyo² To ʔye? RC ʔya? A ʔye? Le ya²² Qi ʔi³ʔya⁴ Co ʔi¹ʔya²². Cf. *ʔya? *sweep*. The fol-
- lowing forms are probably related to this set: *ʔya? *tax collector* Lɪ ʔyo² To ʔye? A ʔye?
- 830 *ʔya? *Mexico City* Lɪ go²³-ʔyo² Lc go ʔya? Pe go ʔye? RC go ʔya? Le ga? ya?
- 831 *ʔya? [1] *pretty (inan.)* *ʔya?ŋ [2] (*an.*) Oj li¹ʔye²² [1] li¹ʔya³ [2] Tɪ gyo⁴ [1] Ch li ʔyo? [1] M ʔyo [1] (probably a misrecording of ʔyo?) S ʔyo? [1] Tɪ ʔio² [1] Pa li¹ʔyo³¹ [1] VN ʔya? [1] Oz ʔya ma [1] (reflects *CV) Qi ʔya³ [1] ʔyei? [2] Co ʔya²² [1].
- 832 *ʔya^H *hen, female* U a¹ʔd³ʔie²³ (reflects a syllable with accent) Tɪ gyo⁴ Tɪ ʔio³¹ *woman* (21 expected) Pa cye¹ ʔyew¹ *female chicken* (reflects a syllable with accent) Oz cya? ʔya Lɪ tu³ ʔyo² *turkey before she lays eggs* To tu ʔye *small female turkey* Co ʔye¹² (1 expected). The following forms appear to be related: *ʔya- *cow* Oj kwa¹hwi² ʔye³¹ Ch ku hwi ʔyo S kwa hwi ʔyo Qe kwa hwi ʔyu Lɪ kwa²ʔyo-ʔ³ (the Lɪ through Le forms reflect a final *ʔ) Lc kwa ʔya? To kwa ʔye? RC kwa ʔya? A kwe ʔye? Le kwi ya? Qi hoh³⁴ ʔyiah²³.
- 833 *ʔya^H *grandmother* Oj si¹-ʔye³¹a² U si²ʔd³ʔie³² Tɪ ti³gyo¹² Ch di ʔyo S ti ʔyo Qe me di ʔyu Tɪ ci¹ʔio³¹ (21 expected) Pa ci¹ʔyo⁶² (tone 1 without accent expected) Oz ma ʔya Lɪ ši²ʔyo² Lc ši ʔya Pe ši ʔye To ši ʔye RC ši ʔya Le ʔa ya Qi si³ʔyiah²⁻¹².

834 *ʔya.^H *oak* U a²ʔma³ ʔd^ʷie³² Tl mi²gyo¹² Ch ʔma mi ʔyo S ʔma mi ʔyo Tp ʔma² ʔiog³¹ (21 expected) Pa ʔma² ʔyéw¹ (reflects a syllable with accent) Oz ʔma ʔya Ll ʔmo³ ʔyo⁻³ (tone 2 expected) Lc ʔma ʔya Pe ʔmo ʔye To ʔmo ʔye RC ʔmo ʔya A ʔmo ʔye Le kwi ya.

835 *ʔya.^L *sunshine* Oj ʔye² U ʔd^ʷie³ Tl gyu³ Ch ʔyu M ʔye S ʔyu² Qe ʔyu Z ʔyu Tp ʔiog² Pa ʔyew² VN ʔyu Oz wu ʔyo Ll ʔyo⁻³ Pe ʔye To ʔye RC ʔya A ʔye Le ya⁻³ Qi ʔyiah²³ Y ʔye *a day* Co ʔye⁻².

836 *ʔya. *Lacova, a Chinantec village* Ll i²ʔyo⁻³ Lc ñi ʔya Pe i ʔye To ñi ʔye A i ʔye Le ñi ya.

837 *ʔya. *deep* S ʔyo Pa ʔyew¹.

838 *ʔyá.^H [1] *ʔya.^L [2] *custard apple (anona)* Oj hmi¹ʔye² [2] U y⁴di²ʔd^ʷie³ [2] Tl mi²gyú¹ [1] Ch mi ʔyu S mi ʔyu Qe mi ʔyu Tp míg² i¹ʔiog² [2] Pa mi¹ʔyew² [2] Ll ʔyo²kwo⁻⁷³ [1] (accent not possible in pretonic syllable) Pe mi ʔye Le mi ya Qi ʔyiah¹ [1] Co ʔyé.¹ [1].

839 *ʔyá.^H *Chiltepec, a Chinantec village* U ʔd^ʷie²³ Tl gyú¹ Ch ʔyu S ʔyu¹² Tp ʔióg¹ Pa ʔyéw¹ Qi ʔyiah¹ Co ʔyé.¹ *Jacatepec, a different Chinantec village.* This set may be related to the [1] forms of the preceding set.

840 *ʔyá.^{LH} [1] *ya. [2] *day after tomorrow* Oj ʔye² [1] U d^ʷie⁴ [2] Tl

gyó³ [2 ʔ] Ch yo [2] S yo² [2] Qe yu [2] Z gyo [2] Tp ʔióg³ kəy² [1] (32 expected) Pa ʔyéw³ [1] (32 expected) VN ʔyu [1] Oz ʔyu [1] Ll (ʔa.h²³) ʔyo.h² [1] Pe ʔye [1] To ʔyo [1] (e expected) A ʔa ʔye [1] Le ya Qi ʔyia⁴³ [1] (Vh expected) Co ʔyé.²¹ [1]. The Usila to Zapotitlán forms may simply have lost all initial glottal stops rather than have developed from a form without an initial glottal stop since the consonantal reflexes do not fit *y.

841 *ʔya.ʔ^{LH} *jaguar* Oj ʔya^{ʔ2} U a²ʔd^ʷya^{ʔ3} liç²³ *lion* Tl gya^{ʔ4} Ch ʔya^ʔ M ʔya^ʔ S ʔya^{ʔ32} Qe ʔya^ʔ Tp zi²ʔia^{ʔ2} Pa ʔyi^{ʔ32} lí¹ VN ʔye^ʔ li Oz ʔya^ʔ ñi^ʔ *cat that attacks pigs* Ll ʔyo^{-ʔ3} Lc ʔya^ʔ Pe ʔye^ʔ To ʔye^ʔ RC ʔya^ʔ A ʔye^ʔ Le ya^{ʔ3} Qi ʔyiah^{ʔ4} ti² Co ʔyé.^{ʔ12} (tone 2 but no accent expected).

842 *ʔya.ʔ^{LH} *masonry* Oj na¹ʔya^{ʔ2} Tl gya^{ʔ4} S ʔya^ʔ Qe ʔya^ʔ Tp ni¹ʔia^{ʔ2} Pa ʔyi^{ʔ32} Oz (ʔne) ʔya^ʔ Ll ʔyo^{-ʔ3} To ʔye^ʔ RC ʔya^ʔ A ʔye^ʔ Le ya^ʔ Y ʔye^ʔ.

843 *ʔya.ʔ *sweep* Oj ʔya^{ʔ3} ʔni² U ʔd^ʷya^{ʔ3} Tl gyá^{ʔ2} Ch ʔya^ʔ S kwa¹ʔya^{ʔ32} Qe kwa ʔya^ʔ Tp ʔiá^{ʔ2} Pa ʔyi^{ʔ2} Ll ʔyo^{-ʔ32} Lc ʔya^ʔ Pe ʔye^ʔ To ʔye^ʔ A ʔye^ʔ Le ya^ʔ Qi ya^{ʔh} (ʔy expected). This set may be related to *ʔya.ʔ^{LH} *broom*.

*hg

844 *hga·ʔ^L [1] *hɣa·ʔ^L [2]
 *hwa·ʔ^L [3] *rot* U hua^{ʔ3} [3] Tp
 hua^{ʔ2} [3] Oz mihɣa^ʔ [2] Ll ka²³-
 hɣo·ʔ³ [2] Qi hgoh^{ʔ34} [1] Co
 hgó·ʔ¹² [1].

845 *hga·ʔɣ [1] *hɣa·ɣ [2] *baptize*
 (alternant of *sa·ɣ) Tp ka²hɣó²za²
 hmig² [2] Pa hɣó² [2] Ll hɣa·n³ [2]
 Le ma⁴³hɣa·y³⁴ [2] Co hgaiɣ^{ʔ21} [1].

*hm

846 *hmi^L *blood* Oj hmi² yí³ U hɣ³
 dʷeí⁴ Tl hmeg³ M hmi S hmi² (ac-
 cent not expected) Tp hmi² Pa
 hmi² VN hmi Oz wa hma Ll hmi³
 Le hmi³ Qi hmi⁴ (the Qi and Co
 forms reflect *LH rather than *L)
 Co hmi².

847 *hmi^{LH} *louse* U a¹hɣ³ Tl
 hmeg⁴ (accent expected) M hmi S
 hmi³² VN hmi Ll hmi³ Le hmi³.

848 *hmi^{HL} *river area* Tp hma³ (i
 expected) Pa hmiw³ *river* Ll
 jí²hmíh¹ (< 23) Le šo hmi Co
 hmi^{ʔ2} (? not expected).

849 *hmi^{LH} *rain* Oj hmi³ U o¹hɣ⁴³
 Tl hmég³ M hmi hu S hmi²³ Tp
 hmi³² Pa hmáw³² VN hmi Oz hma

Ll hmih² Le hmi Qi hmi³ ti³⁴ Co
 hmi²¹ (long vowel not expected).

850 *hmi^ʔ *broth* Oj hmi^{ʔ1} U
 o¹hɣ^{ʔ43} Tl hmag^{ʔ1} S hma^ʔ Tp
 hmi^{ʔ31} Pa hmiw^{ʔ31} VN hmai^ʔ Ll
 hmi^{ʔ31} (short vowel expected) Lt
 hmi^ʔ *juice* Qi hmi^{ʔ1} Co hmi^{ʔ1}. The
 tones of the Oj, Tl, Tp, Qi, and Co
 forms reflect *H but suggest a long
 vowel rather than the short vowel
 indicated by the vowel qualities of
 the forms.

851 *hmi^{ʔLH} *tomato* Oj mi³hmi^{ʔ4}
 U ɥ⁴hɣ^{ʔ43} Tl hmag⁴ (accent and
 final ʔ expected) Ch hmag^ʔ S
 hma^ʔ Tp mi²hmi^{ʔ32} Pa hmiw^{ʔ32} VN
 hmai^ʔ Oz mi hmi^ʔ Ll mi²hmi^{ʔ1} (<
 2) Lt mi hmi^ʔ Qi hmi^{ʔ3} Co hmi^{ʔ2}.

852 *hmi^L *water* Oj hmi² U o¹hɣ³
 Tl hmag³ M hma S hmai² Tp hmig²
 Pa hmi^{ʔ2} VN hmai Oz wa hmi Ll
 hmi³ Le hmi³ Qi hmih²³ Co hmi².
 The following forms, which mean
name, apparently belong to the
 same set: U hɣ³ i⁴saí³ Tl hmag³ S
 hmai² Pa hmay¹ (matches the Pa
 form of the following set) VN hmai
 za Ll hmi³fíi³ *surname* (reduced
 reflex due to pretonic position.)

853 *hmi^{HLH} [1] *day* *hmi^{HL} [2]
 by *day* Oj hmi³¹ [1] U hɣ² [1] Tl
 hmag² [1] M hma [1] S hmai¹ [1]
 Tp hmig²¹ [1] Pa hmay¹ [1] ʔi²hmi²
 [2] (iy expected) VN hmai [1] Oz
 hmi [1] Ll hmi^{h2} [1] hmi²³ [2] Lt
 hmi [1] Qi hmih²⁴² [1] Co hmi¹² [1]
 (accent not expected).

854 *hmí-ŋ^L *melt, dissolve* Pa hmó²
Ll hmí-hn³ Co hmí² (does not re-
flect final *ŋ).

855 *hmí-ŋ^H [1] *urine* *hmí-ŋ^{HL} [2]
urate U ɸ³hɸ² [1] hɸ³ [2] Tl
hmag³ hmég²tseg³ [2] (reflects ac-
cented syllable) Tp hmi¹ hmí¹ za²
[1] Pa hmi¹ hmí¹ [1] hmí¹ [2] [2]
(accent not expected) VN hmai
hmai? [1] Ll mi²³hmí² [1] hmí²
[2] Qi hmih¹ [1] Co hmí¹ [1].

The reflexes of *i (?) after *hm
in U, Tl, Ch, and S are believed to
be backed since no nonbacked
reflexes are attested. However, it is
possible that the backed syllabics
really reflect forms with *i rather
than *j.

856 *hmi^H *skunk* Oj hmi¹ U a²hɸ²
Tl hme² S hmi²¹ (1 expected) Pa
hme¹ VN hmi (e expected) Ll hmi²
Qi hmi² Co hmi¹. The following
forms, which mean *onion*, ap-
parently belong to the same set:
*hmi^H [1] or ^L [2] *hmi^L [3] *onion*
Oj yi¹ hmi¹ ka¹ [1] U ɸ⁴d¹a¹ hɸ²
[1] Tp si¹hme² [2] Pa ci¹hme² hɸ²
[2] VN i hmi hɸ²? (e expected) Oz
yu hme Ll mi³¹i³hmi³ ko² [2] Lt hi
hmi Qi ɸ hmi²⁴ [3] Co hi²hmi¹² [3].

857 *hmi^L *father* Oj hmi²a² U
hmai³ (u expected) hɸ³cie³ *priest* Tl
hmay³ Ch hme¹ M hmai S hmé²
(accent not expected) Qe hmai Tp
hmei² Pa ti¹hmiw² VN hmei Ll
hmi³ Le hmi³ Qi hmih³⁴ (23 ex-
pected).

858 *hmi^H *braids* Oj hmi¹ čí¹a² U
a²hɸ²³ Tl hmáy¹ Ch hme¹ S hmei¹²
Qe hmai Tp hméi¹ Pa hméy¹ VN
hmi za hmeiŋ (ŋ not expected) Ll
hmih² Le hmi¹ Qi hmih¹ ɸi² Co
hmi¹.

859 *hmi^{LH} *Chinantec language* Oj
hu¹ hmi² U hau²³hɸ⁴³ Tl haw²
hmáy⁴ Ch hu hme¹ M hau hmei S
hu²hma² (ei expected) Qe hu hmai
Tp hág¹ hmei³² Pa hów¹ hme³²
VN hau hmei Oz hu hmi Ll
hu²³hmi²³² (2h expected; the fol-
lowing form may be a better
match) za³ hmi³² *Chinantec people*
Pe wa hmi To ku hmi RC hwa hmi
Le fa? hmi Qi hmih⁴³ Co hmi²¹.

860 *hmé^L [1] *tasty (inan.)* *hmeŋ
[2] *tasty (an.)* Oj hma⁴ [1] (reflects
*HL; 3 expected) U hmá⁴ [1] Tl
hmá³ [1] S hma [1] Tp hmá² [1] Pa
hmá² [1] hmów³² [2] Ll hmeh²³ [1]
(reflects *HL; 3 expected) hmen [2]
Lt hme [1] Qi hma²⁴ [1] Co hmi¹²
[1] (accent expected).

861 *hme^{LH} *make, do* Oj hmo³¹
?ni² *do it!* a⁴hmo² ?ni² *don't do it!*
(this form provides the matching
tone) U hɸ³ Tl hmó⁴ S hmo
(probably hmu) Pa hmo³² VN hmie
(e is the expected reflex) Oz hmei
(i is probably the third person
marker) Ll hme²³ (3 expected) Le
hme Qi hmah¹ (4 expected) Y hme
Co hmo².

862 *hme-ŋ *mistreat, bother* U
hɸ² [1] Tp hmóg² Pa ku²hmá² Ll

- hme^{?23}. Tp, Pa, and Ll indicate an accent.
- 863 *hme-^{? repair} U h_uɛ^{?2} Tl hméw^{?2} Tp hmóɣ^{?32} Pa hmow^{?32} Ll hme-^{?n³²} Co hmo-^{r²}. U, Tl, Tp, and Co indicate an accent. Pa and Ll reflect a final *ŋ. This set may be related to *hme-^{LH} make.
- 864 *hma^H sowing Pa hmo³² hma¹ Ll hmo² Qi hmo².
- 865 *hma-^{ŋ I hold (an. obj.)} U hma-^{? Tp hmá-^{?21} Pa hma-^{?31} Ll hmə-^{?n³²na²³} Y hma-^{?a I held} Co hma-^{?2a (inan. obj.)}.}
- 866 *hmá-^{ŋ^{LH} pure, nothing but} U hma-^{?3 Tl hma-^{?4 (accent expected)} Tp hmá-^{?32} Ll hmə-^{?n²} Qi hmai-^{?34 (4 expected)}.}
- 867 *hma-^{L petate, woven mat} Oj si¹hmo² U a²h_uɛ³ Tl hmew³ Ch hmo M hmo S hmú² (accent not expected) Qe hmo Tp tsi¹hmu² Pa hmuw² VN hmo Oz sa hmo Ll hmo-³ Le hma-³ Qi hmoh²³ Co hmo-².
- 868 *hmá-^{L [1] *hmá-^{H [2] king, royal} U a²ta³h_uɛ⁴ curassow [1] Tl tá⁴ hméw³ peacock [1] S mi³hmu²³ bishop tá³hmu²³ curassow [1] Qe tá hmo curassow Tp i²hmú² archbishop tá³² hmú² curassow [1] Pa tá³² hmó² curassow [1] ŋi-^{?3 hmó¹ archbishop} [2] Ll hmo-^{h³} [1] hmo-^{h² bird of paradise} [2] Le tá hma crested guan Ql to⁴hmoh³ curassow [1] Co ta hmó² curassow [1].}
- 869 *hmá-^{root} U o¹h_uɛ⁴³ Tl hmó⁴ S hmu² Tp hmú²¹ Pa h_a-^{?32} hmo³¹ VN hmoa Oz hmo ma Ll hmoh² (long vowel expected) Lt hma Qi hmoh¹ Co hmó¹ (long vowel expected). U, Tl, S, and Ll reflect *LH.
- 870 *hmá-^{?^H balsa (tree)} U a²?ma³ hma-^{?32 (reflects syllable without accent)} Pa ?ma² hmá-^{?1} Ll ?mo³ hmo-^{?2}.

*hn

- 871 *hni carry load by load S ca hni Pa hnáw² Ll hni³².
- 872 *hni^{LH} [1] *hni- [2] ~ *hni^{LH} [3] *hni-^{HLH} [4] close Oj hni³¹ ?ni² [4] U si²hneg¹ it is closed [1] hnai¹ close it! [4] Ch hnag close it! [2] S hni [1] Tp ci¹hná¹ fence [1] (32 without accent expected) Pa hnáw³² [1] hnéy³² [4] hne³² to fence [3] VN hnei [4] Ll ri³hni³ closed [1] mi³hni³ he closed it [3] Lt hni [3] or [4] Qi hná⁴ [2] Co hnir² [1].
- 873 *hni^H knee Oj či¹hni²a² (1 expected) U ku²hnei³² (2 expected) Tl mo³⁴ ɸ hni² (accent not expected) M k_u hnyu (i expected) S ku¹hnyi¹ Tp mi²hne²¹ Pa hne¹ VN mähne Oz sahnen Ll hñi² Le luhñi Qi moh⁴ hni² Co mo²hni¹.

874 *hni^{LH} *sow* U hnei³ Tl hni⁴ S hnyi Tp hne³² Pa hne³² Ll hñi³ Co hñir². Cf. *hñi *sow*.

875 *hni(·) *hinder* Tp hné² Pa hne³² Ll ka²³hni-n²³ Co hñiŋ (The Tp and Pa forms reflect a short vowel. The Ll and Co forms reflect a long vowel. The vowel i is expected in the Co form.)

876 *hni^{LH} *cloud* Oj hni² U o¹hñai⁴³ Tl hnáy⁴ Ch hney M hñai S hné² (accent not expected) Qe hñai Tp hnei³² Pa hnew³² (ey expected) VN hnei Oz ?wa hni Ll hñi-h² Le hñí² Qi hñih⁴³ Co hñi²¹.

877 *hna^L *that (over there)* Oj hna² (reflects a short vowel) U a³hno³ Tl hnó² (tone 3 but no accent expected) Pa hnuw².

878 *hna· [1] *hna·? [2] *slap* U ma⁴hno³ [1] S hno? *you slap* [1] (? is marker of second person) Tp hnáu³² [1] Pa hnáu³² [1] hná³² [2] Ll ka²³hno-h³ [1] ka²³hno?²³ [2] Y hno *he pats* [1] hna *pat!* [1] (probably reflects a short vowel) Co hnó-r²¹ [1].

879 *hniu^L *beans* Oj mi³hñi² U u⁴hñai³ Tl hnay³ Ch hney S hnye² Qe hñyai Tp mi²hnei² Pa hnew² VN hñui Oz mi^hni (ö expected) Ll mi³¹hñio-³ Le mi^hñu Qi hñüh²³ Co mi²hnó¹ (tone 2 but no accent expected).

880 *hniu^{HLH} *heartwood* S hnye¹ ?ma² (ei expected) Tp hnei²¹ Pa

hnew¹ ?ma² Ll hñö-?²³² ?mo³ (? not expected). The following set seems to be related to the above: *hniu^{HLH} *kidneys* U u⁴hnei³² (tone reflects *CV·?, but vowel reflects a short vowel) S hnye¹ (vowel reflects *CV·?) Tp mi²hnei³¹za² (tone reflects *CV·?) Ll mi³¹hñöh¹ (*physical*) *heart* (vowel reflects *C^ˈV, but the Ll form cited above fits *CV·? exactly) Co mi²hnó¹ *heart* (tone reflects *H).

881 *hnia^H [1] *hnia^H [2] *hnia·^H [3] *we* Oj hna?¹ [1] U hnia¹ (*inclusive*) [1] hñie³² (*exclusive*) [2] Tl hna?¹ [3] (ny expected) Ch hñya (*exclusive*) [1] hna? (*inclusive*) [3] M hñya? [3] S hno?¹ [3] (tone 1 expected; the entire form may reflect a short syllable) Tp hñiog²¹ (*inclusive*) [2] hñia?³¹ (*exclusive*) [3] Pa hñyaw¹ (*inclusive*) [2] hñyi?¹ (*exclusive*) [3] VN hnoa? [3] Oz hne? [3] Ll hne² (*inclusive*) [1] hne·?³¹ (*exclusive*) [3] (tone 2 expected) Lt hña [1] Qi hñah?⁴² [3] Y hna? (*inclusive*) [3] Co hné?¹ [3] (reflects a syllable with accent). The Oj, Tl, S, and VN forms may reflect *a rather than *i̯a.

882 *hñiá^H [1] *hñiá^L [2] *I* Oj hna³ [2] U hñia⁴ [2] Tl hna¹² [1] (ny expected and probably tone 1 with an accent) Ch hña (ny expected) M hñya S hna¹² [1] Tp hñiá² [2] Pa hñí² [2] VN hña Oz hne Ll hñeh² [1] Le hña Qi hña² [1] (the Qi and Co forms reflect a syllable without accent) Co hñia¹

[1]. The Oj, Tl, S, and VN forms may reflect *ɸ rather than *iɸ.

883 *hniá^L [1] *visible, clear (inan.)*
 *hniag [2] *hnia:ɣ [3] (*an.*) Oj hna²
 [1] (tone 3 expected) U hnia⁴ [1] Tl
 hnyá³ [1] Ch hnya [1] M hnya [1] S
 hna²³ [1] Tɸ hniá² [1] Pa hni² [1]
 hnya² [2] hnyo¹ [3] VN hne [1]
 hnyaɣ [2] Ll hneh³ [1] hnehn³ [2]
 hne-n²³ [3] Ll hña [1] Qi hneih³ [3]
 Tm hna [1]. The Oj and S forms
 may reflect *ɸ rather than *iɸ.

*hɟ

884 *hɟi?ɟ [1] *hɟa?ɟ [2] *kill* Oj
 hɟi¹ ?ni² [1] (hɟ expected) U hɟa?²
 [2] Tl hɟég?² [1] M hɟi? [1] S
 ka³hɟi?³ [1] Tɸ hɟag?³ (*sg. object*)
 [1] Pa hɟó?³² (*tr.*) [1] hɟiy?³² (*in.*,
 may reflect a syllable without final
 *ɟ) VN hɟi? [1] Oz hɟi [1] (final ?
 expected) Ll hɟi?n²³ [1] Le mahɟy?
 [1] (hɟ expected) Qi hɟai?⁴² [2] Co
 hɟaiɟ?²¹ [2].

885 *hɟí^L [1] *hɟi [2] ~ *hɟí^L [3]
become clean, clear Ch makahnyug
 [3] (i expected) S makahnyi? [3] (?
 not expected) Tɸ hɟi² *it is clean* [2]
 Pa hɟiy² (*pres. and past*) [1] hɟi²
 (*prog.*) [2] hɟiyw² (*fut.*) [3] Ll
 ka²³hɟi?hn³ (*past*) [1] ri²³hñi-hn³
 (*fut.*) [3] (both forms reflect a syllable
 with final *ɟ) Le ná⁴hɟi¹ *clean*
 [2] Co hɟi² [1] hdⁱ·² *rinse* [3] (tone
 3 expected in both forms; the Co
 forms alone reflect an oral vowel,

the first *hɟi, the second perhaps
 *hɟi.

886 *hɟi^L *vein* Oj hñi²te?³¹ ?ə¹a² U
 hñi³ Tl hɟi⁽²⁾ (3 expected) Ch hnyi
 S hnyi² Qe hnyi Tɸ ni¹hɟi² Pa hɟyu
 (i expected) Ll hñi³ Le hñi³ Qi
 hñi³⁴ Co hɟi¹².

887 *hɟi [1] *sow (nonfirst person)*
 *hɟ [2] *sow (first person singular)*
 Oj hñi³ ?ni² [1] U si⁵hñi³ *he's going*
to transplant [1] M hnyeⁱ [1] S hɟ
 [2] Pa hɟyu² *we sow* [1] (i ex-
 pected) hɟ³² [2] VN makahɟyi [1]
 Oz hñe [1] Ll hɟn²³ [2] Qi hñi² [1].
 This set is related in some unusual
 way to *hni *sow*, and some of the
 forms listed there could equally
 well be listed in this set as reflect-
 ing form [1].

888 *hɟi? *rubber* U ɸ⁴si¹hñi?⁵ Pa
 cyi²hɟyi¹.

889 *hɟa· (*a*)*rose, went up* (alter-
 nant of *sa·) Tɸ ka²hɟá² Pa
 hɟów² Ll hɟo·h².

890 *hɟa·(?) *choked* (alternant of
 *sa(?)) Pa hɟó² Ll ka²³hɟo?²³ Co
 hyé?r¹² (reflects *hy).

891 *hɟiu^L *hair* Oj hñi² U o¹hñi³
 Tl hɟi³ Ch hnyu M hnyu S hnyu²
 Qe hnyi Tɸ ni¹hɟi² Pa ɟyi¹ cyi²
 hɟyu² *scissors* VN hɟyu Oz wahñu
 Ll hñó³ Le hñu³ Ql hñü³⁴ Y hnü
my hair (hɟ expected) Co hɟiö¹².

892 *hɟiu *rub* Oj hñi³¹ ?ni²
sharpen (imp.) U hñei (reflects

long vowel) Tl hji Ch hnya *grind* (v expected) S hnyu Pa hnyú² *grind* hnyéw³² *sharpen* (reflects syllable with long vowel) Ll hñö³² Qi hñüh²¹² *sharpen* (hñ expected; reflects syllable with long vowel) Co hjiör² *drag*.

893 *hjiú^L [1] *six (inan.)* *hjiú·ŋ^L [2] *six (an.)* Oj hñi³ [1] and [2] U hñei⁴ [1] Tl hji³ [1] Ch hnyi [1] M hnei [1] (hny expected) S hneyi²³ [1] Qe hnyai [1] Tp hjiéi² [1] hnyéw² [1] hnyó² [2] VN hnyu [1] hnyuŋ [2] Oz hñi [1] Ll hñö·h³ [1] hñu·hn³ [2] Le hñu [1] Qi hñü³ [1] (Vh expected; tone 3 does reflect a long vowel) hñui² [2] (Vh expected; tone 3 expected) Y hñü [1] Co hjiú.² [1] (ö expected; may be an animate form).

894 *hjiá [1] *wait (intr.)* *hjiáŋ [2] *wait (tr., an. obj., nonfirst sing.)* *hjaŋ [3] *wait (tr., an. obj., first sing.)* Oj hña³¹ [1] U hña²³ [1] Tl hnyá² [1] Ch hnya [1] S hõna [3] (reflects a syllable with long vowel) Tp ka²hjiá³ [1] hjiog³² [2] (reflects a syllable with long vowel) Pa hji³² [1] hjiá³² [2] hja³¹ [3] (may reflect a *hja stem for *first sing. intr.*) VN hnya [1] Ll hje²³ [1] hjen³² [2] hjen³²na²³ [3] Lc hjan [2] A hjan^a [3] Le ga³hje.² [1] (reflects a syllable with long vowel) hje³² [2] Y hje [1] Co hja² [1] sihe·iŋ¹ [2] (short nasalized vowel expected).

895 *hjiá^{HL} [1] *eight (inan.)* *hjiáŋ^{HL} [2] *eight (an.)* Oj hña⁴ [1]

and [2] U hña³⁴ [1] Tl hnyá² [1] Ch hnya [1] M hnya [1] S hnya³ [1] (23 expected) Tp hjiá³ [1] Pa hji³ [1] hjiaw³ [2] (reflects syllable with long vowel but not final *ŋ) VN hnye [1] hnyaj [2] Oz hña [1] and [2] Ll hñeh²³ [1] hñehn²³ [2] Lc hñe [1] hñan [2] Le hña [1] Qi hña³ [1] (tone fits syllable with long vowel) hñei² [2] (34 expected) Co hjiá³ [1] (tone 2 with accent expected).

896 *hjiá·ŋ [1] *remove oneself (intr.)* *hjiá·ŋ [2] *remove (tr.)* Pa hnyá?², hnyó?³¹ [1] (both of these forms are intr.; the second reflects a syllable without final *ŋ) hnyó?³² (an.) hnyí?² (inan.) [2] (the second form reflects a syllable without final *ŋ) Oz hñu?n [1] Ll hje?n²³ [1] hje?n³² [2] Le hje?³² [1] Co hje?r² [1] (reflects a syllable without final *ŋ).

897 *hjiá· [1] *bless (inan.)* *hjiá·ŋ [2] *bless (an.)* Tp hjió³² *holy* hme²hjió³ *bless* [1] or [2] Pa hnyáw³ *blessed* [1] mi²hnyó³ *bless* [2] VN hõ [1] (may reflect *hja·) Oz hje [1] (reflects short vowel) Ll hje·h² [1] mi³hje·hn² [2] Lc hje [1] Pe hja [1] A hje [1].

898 *hjiá^{HLH} [1] *hje^{HLH} [2] *porcupine* U a⁵hje² [1] Tl hje^w [2] Ch hja [2] (may reflect a short vowel) S hõ [2] Tp i¹hjió¹ [1] *skunk* Pa hnyaw¹ [1] Oz çahö [1] Ll hje·h² [1] Lc hje [1] To hje [1] A hje [1] Lt hakuçi (if cognate, this term probably reflects form [2]).

The nasal seems to have been lost regularly in *h_nia in L1 through Co, as demonstrated in several sets. There are, however, at least two remaining problems: (a) the nasal is preserved everywhere in the set meaning *eight*, perhaps because of its high frequency as a numeral, and (b) two of the sets require the positing of a *h_a variant because of forms without nasals in languages in which the nasal is not regularly lost.

*hw

- 899 hwi^H *dust* Oj hwi¹ U o¹heu² Tl hweg² M ma hu? (final ? of M, Oz, and Le forms not expected) S hwi Tp hui¹ *ground coffee, sugar, flour, etc.* Pa hwu¹ VN hwi Oz hu? Ll hwi² Le fi? ni *salt* Qi fu² Co hwi¹.
- 900 *hwi^{LH} [1] *hwi^{LH} [2] *hwi^g [3] *row, layer* U heu²³ [1] or [2] (3 expected if [1]; 43 if [2]) Tl hwég² [3] S hwó² [2] (accent not expected) Qe hwi [1] Tp hu³ [3] Pa hwu³² *put on top* [1] hwé³ *layer* [3] Ll hwi^{h2} [2] ji²³hwin³¹ *stories (of a house)* [3] Lt fi [1] or [2] Qi fuh⁴³ [2] Co hwi² [1].
- 901 *hwi *cow* Oj kwa¹ hwi² ?ye?³¹ U a¹si² kua³² heu²³ Tl ka²hwég¹ Ch kuhweg ?yo S kwa hwi ?yo Qe kwa hwi ?yu Tp i¹ka¹hui³² Pa ka¹hwu².
- 902 *hwi?^L [1] *hwi?^{HL} [2] *raw* Oj hwi?⁴ [2] U heu?⁴ [1] Tl hwég?³ [1] (accent not expected) S hwi? [1] or [2] Tp huig?³ [2] Pa hwi?³ (*inan.*) [2 ?] hwé?³ (*an.*) (reflects *hwi?^g or perhaps *hwi?^g) Ll ri³hwi?²³ [2] A la hwi? [1] or [2] Le na fi? [1] or [2] Co hwí?¹² [1 ?] (long vowel not expected).
- 903 *hwi^H [1] *hwi?^H [2] *a little* U ka³heu?² [2] Ch ka hu [1] M ka hu [1] S ka hwó? [2] (nasalization not expected) Tp ka²huig²¹ [1] Pa ka²hwu?¹ [2] Ll ka³hwi² [1] (long vowel expected) Qi xuh¹ gi¹ *less* [1] (f rather than x expected).
- 904 *hwi^L *town* Oj he³¹ hwi² U he¹heu³ Tl i²héw¹ (3 expected) Ch hu S hwú² (accent not expected) Qe hu Tp huig² Pa hwi² VN ha hu Oz hwi Ll hwi³ Le fi³ Qi fuh²³ Co hwi².
- 905 *hwi^{HL} *tell (first person singular and second person forms)* Oj hwi² (*first person singular*) U ni¹heu³⁴ hnia⁴ (*first person singular future*) Tl héw⁴ (*second person subject and first person singular object*) Tp huig² hniá² (*first person singular*) (accent not expected) huig?² (*second person*) (the vowels of the second person forms of Tp, Pa, and Ll reflect an open syllable as well as or better than a syllable closed by *?, but the tone of the Pa form reflects a closed syllable) Pa hway?³² (*second person*) Ll hwi?^gn³² (*second person*) Y fi (*first person singular*).

906 *hwi· *poor, wretched* Oj hwi²³ ca² U heu²³ TI héw² Ch hu S hwo²³ wa co Qe hu Tp huí^{g2} Pa hwí^{y2} VN hu LI hwi³² Lt za fiy (reflects final *ŋ) Qi fuh².

907 *hwi·^{HL} *sky* Oj ñi⁴ hwi⁴ U ñi⁴heu⁵ (5 as well as 34 may reflect *^{HL} in an accented syllable) TI ñi³héw³ (2 expected) Ch nyi hu Qe ?nyi hu kwu Tp i²huí^{g3} (accent in Tp and Pa forms not expected) Pa ñyí³ hwí^{y3} (ay expected) VN ñyi hu Co ñi² hwí¹² (tone suggests a long unaccented syllable). The following forms, which mean *hell*, probably belong to the same set: Oj kye hwi U ki⁴heu⁵ (note comments regarding the preceding U, TI, Tp, and Pa forms) TI ki³héw³ Ch ki hu S kyu³hwu² (o expected; tone reflects an unaccented syllable) Qe kyu hu Tp gi³huí^{g3} (mostly an oath) Pa gyo³hwí^{y3} VN gya hu LI gya:h²³ hwi^{h2} (23 expected) A gi hwi Le ja fi.

908 *hwi·ŋ^{LH} *many (an.)* Oj hwi² U heu⁴³ TI hwég³⁴ (TI and S forms reflect an unaccented syllable) S hwú³² (accent not expected) Qe hq Tp huí³² Pa hway³² VN hwiŋ LI hwi·hn² and ²³ (tone of the second form not expected) Le sa fiy Qi fuih² (43 expected) Co hwí·ŋ²¹.

909 *hwi·^L *cockroach* S ci wi? (hw expected) Tp mi¹hui² Pa há² mu¹hwu² Oz tã hwi? LI hwi·³ Lt fi? Co mi²hwi²¹² (reflects accented syllable).

910 *hwi·^{LH} [1] *hwi·ŋ [2] *lazy* Oj lo³¹hwi²⁴ [1] U heu²⁴³ [1] heu²³ [2] TI hwég²³ [2] Ch hu? [1] hwi? [2] (eg expected) S hwi²³ co² [2] Qe hu? [1] Tp huí²³² [2] Pa hwu²³² [1] hwe²³² [2] LI hwi·²³ [1] (reflects unaccented syllable) hwi·n²³ [2] Le kwe³fi² [1] (accent probably expected) fiy²⁴ [2] Qi fui² ca³ [2] Co hwi² [1] hwiŋ² [2].

911 *hwə (length uncertain) *buz-zard* U a¹teu³ hue⁵ TI tu³ hwé² M tu? hwi S tu²hwe³² Z tu fe.

912 *hwá·^{LH} [1] *hwə·? [2] *hwə·ŋ^{HL} [3] *fear, frighten, holy* U hue²⁴³ *fear* [1] heu²³ [3] TI ka³⁴-hwé²tseg³ *he was frightened* [3] (reflects accented syllable) Ch ka hwé [3] (final ? expected) S hwé? co [3] Qe ka hwa? [3] Tp huí² (intr.) [3] huí² (tr.) [3] Pa hwi²³² *doctrine* [2] hwá² (intr.) [3] (accent not expected) LI hwə² *fright* [1] hu·h² hwə²³ *sacred words* [2] (long vowel expected) hwə·n²³ (intr.) [3] Qi fo²³ *fear* [1] hmih²³ foh² *holy water* [2] Co hwə² *fear* [1] hwóin²¹² (intr.) [3] hwóin²¹ (tr.) [3] (the first of the last two forms fits the reconstruction [3] better, but the second agrees with the last LI form in reflecting a long vowel).

913 *hwi·^{LH} *path, way* Oj hwi² U heu³ TI hwég⁴ Ch hu hweg M hu S hwi³² Z fi Tp huí³² Pa hwu³² VN zi hwi (i expected) Oz hwe LI hwi³¹ (3 expected) Le fi¹ (3 expected) Qi

- fu⁴ (i expected) Co hwi² (i expected).
- 914 *hwi [1] *hwiŋ [2] *split* Tp hui³² [1] ku²¹ hui³¹ *loose change* [2] Pa gū³² hwu³² *bifurcation* [1] hwe³² (*intr.*) [2] Oz hwi [1] (e expected) Ll hwin³² [2] ku²hwin²³ *loose change* [2] Le ku fi *loose change* [1] Co hwiŋ² *shave, chop fine* [2] (length not expected). This set may be related to *hwi(ŋ) *break*.
- 915 *hwi [1] *hwi· [2] *whistle* Oj a⁴hwi² ?ni² (*neg. imper.*) [1] or [2] U heu³ [1] or [2] Tl hwég² [1] S hwo²co [2] Qe kwa hwi [1] Tp huig³² za² [2] Pa hwu³² [1] Oz hö [2] Ll hwi²³ [2] Le fi [1] or [2] Qi fih⁴ [2] Co hwir¹ [2].
- 916 *hwi^H *horn of an animal* Oj čil hwi¹ U ma³heu²³ Tl hwég¹tseg³ M hu ha? S hwi¹² Tp mi²huí¹ Pa mu²hwú¹ VN mo hwi Oz na hö (Oz and Ll forms reflect a long vowel) Ll hwi·h² Qi fi¹ Co mo²hwí¹.
- 917 *hwi^H *owner, lord, patron* Oj hwi³na²ri¹ *God* (31 expected) U heu³² Tl héw¹tseg³ (Tl and S forms reflect an accented syllable) Ch ca hu S hwo¹² Tp huig³¹ (21 or 1 expected) Pa hwu¹ (reflects a short vowel) VN hwi Oz hö Ll hwi² Lt fi Qi fih²⁴² *image* (Ql and Co forms reflect *HLH) Y fi Co hwi¹².
- 918 *hwi^L [1]~*hwi^L [2] *ripe, ripen* Oj hwi² U heu³ Tl ma³hew³ Ch ma hu S ma²hwu² Qe ma hu Tp huig² Pa ma²hwiy² VN ma hu [2] Ll
- ri²³hwi³ (*fut.*) [1] ri³hwi³ (*stative*) [2] Le na fi [2] Qi huh²³ *carbuncle* [2] (f rather than h expected) Y fi (*fut.*) [1] Co hwi² [2].
- 919 *hwi·ŋ^{LH} *break* Oj hwi³¹ ?ni² (*imper.*) (2 expected if imperative) U li⁴heü³ *can break* Ch ka hwég S hwi³² Tp hui³² za² Co hwi·ŋ¹² (2 expected). This set may be related to *hwi(ŋ) *split*.
- 920 *hwi·ŋ^{HL} *tough (an.)* Pa hwę² Ll hwjⁿ²³. This set and the following one with uniformly nasalized vowels but oral labials present counter-evidence to the theory that voiced stops were phonetically nasals before nasalized vowels. Cf. sec. 3.1 of the Introduction.
- 921 *hwi^{LH} *chew* Tl hwú³ (4 expected) Tp huig³² za² (accent not expected) Pa hwi³² Oz hö Ll hwi³² Qi fih²¹² (source of 212 is not known) Co hwj^{r21}.
- 922 *hwi·?^{HL} *rust, sap, milk* U heu² *rust* (3 expected) Tl héw⁴ *rust* (accent not expected) S hwi[?] *sap* Tp hwi[?] *rust, sap* (2 expected) Pa hwi[?] *rust* VN hwi[?] *sap* Oz ?wa hö? *milk* Ll hwi[?] *rust, sap, milk* Le fi·? *sap* Qi fi[?] *milk* (reflects short accented syllable) Co hwi·? *rust* hwi[?] *sap, milk* (reflects accented syllable).
- 923 *hwe^L *throw* Oj hwa³ ?ni² hmi² *sprinkle (imper.)* (2 expected in indic.) Ch hwa ?nu Oz hwa Ll hwa³ Qi fa³⁴ ca³.

924 *hwéŋ^L *fan oneself* U a²dy⁴-h^uɛ³ (reflects an unaccented syllable) Tp huá² Juan zⁱ John *is fanning himself* Ll hwen Y fe[?]e (second person) Co hwiár¹² (the Co form and perhaps the Y form do not reflect a final *ŋ).

925 *hwe[?]L^H [1] *hwə[?]L^H [2] *big (inan.)* *hwə[?]ŋ^{LH} [3] *big (an.)* Oj hwo[?] [2] hwí[?] [3] U hue[?] [2] Tl hwe[?] [2] M hwa[?] [1] S hwe[?] [2] Tp ma²huí[?] za² *he is grown up* [3] Pa hwi[?] [2] hwa[?] [3] VN hwe[?] [1] Oz hō[?] [1] Ll hwe[?] [1] (a. expected) Lt mi fe[?] *river* [1] Qi feh[?] [1] (ah expected) Co hwe[?] [1].

926 *hwé[?]L [1] *say* ~ *hwá[?] [2] (*first person singular*) ~ *hwa[?]L [3] (*second person*) Oj hwa[?] ?ni² (*imper.*) [1] (3 expected in indic.) U hua[?] [1] Tl hwá[?] [1] (3 expected) S hwa[?] co [1] Tp huá[?] za² [1] Pa hwí[?] [1] hua[?] [2] VN hwa[?] [2] Oz hwa[?] (*third person*) [2] Ll hwa[?] [1] hwə[?]n²³ [2] hwo[?]ra[?] [3] To hwe[?] [1] Le fa[?] [1] Qi fah[?] [1] fo[?]h² [2] Y fa[?]a (*second person past*) [1] Co hwé[?]r¹² [1] (reflects a syllable without accent) hwa[?]a [2] hwó[?] [3]. Cf. *hwá[?]L^H *speech*.

927 *hwa^L *ash* Oj hwa² U o¹hua³ Tl hwa³ S hwa² Tp ti¹hua³ (2 without accent expected) Pa hwu² VN hwa Oz u hwa Ll hwo³ Le fa³ Qi fo³⁴ Y fa Co hwá¹² (accent not expected).

928 *hwá[?]L^H [1] *hwá[?]ŋ^{LH} [2] *hmá[?]L^H [3] *hmá[?]ŋ^{LH} [4] *fish*

(*first person singular*) S hwo[?] (*third person*) [1] (tone reflects a long vowel) Tp hmá[?] [4] Pa hma[?] [4] Ll hwə[?]n^{32na23} [2] (short vowel expected) Co hma[?]a [3].

929 *hwa^H *trout* U hq⁴hue³² Tl hwó¹ (reflects accented syllable) Qe hu Tp i¹hu¹ *trout, generic word for fish* Pa how¹ VN hwa[?] (? not expected) Ll hwo² Le fa Qi foh² Co hwo¹.

930 *hwa[?]L *pus, rotten* Oj hwa[?] U hua[?] Tl hwa[?] S hwa[?] Qe ?a hwa[?] Z fa[?] Tp hua[?] Pa hwu[?] VN hwa[?] Ll hwo[?] Qi foh[?] Co hwó[?].

931 *hwá[?]L^H *speech* Tp huá[?] doctrine Ll hwo[?] (32 probably expected) Lt fa[?] Qi ti⁴foh[?] *school teacher*. This set may be related to *hwé[?]L ~ *hwá[?] ~ *hwa[?]L *say*.

*hl

932 *hlí^L *hoe* U a²ñi²³ hleg³ ta⁵kq³⁴ Tp ñi¹ hlə² Pa ñy¹ hlíw² *shovel* VN ñyi hlí ?lye[?] Ll ñih² hlí³ Le hle ñi *shovel* (may not be cognate).

933 *hli *bench* Tl hleg¹ Tp ni¹hlə³² Pa hlíw³¹ Ll hlí² Le hlí² Co hlí²¹ (reflects a long vowel).

934 *hli [1] *cover (inan.)* *hliŋ [2] *cover (an.)* Oj hlí³ ?ni² [1] hlí³¹ ?ni²

- [2] U hleg⁴ [1] Tl hlég² [1] hleg [2] S hli [1] Tp hlé² [1] Pa hlíw² [1] hlé² [2] Ll hli³² [1] ku²hlín¹ [2] Le hli³² [1] Qi hlih²⁴ (reflects a long vowel) Co hli² [1] hli-ŋ¹² [2] (both Co forms reflect a long vowel).
- 935 *hli split (*intr.*) Tp ma²hlé² Pa hlíw² Qi hli²h (the Qi and Co forms reflect a syllable with final *) Co hli²r².
- 936 *hli^L comb Oj ho¹hli³ U a²-hleg⁴ Tl hlég³ S hli²³ Tp ni¹hlé² Pa hlíw² VN hli Ll hlih³ Le hli Qi hli²⁴ Co hli¹². This set may be related to the one immediately preceding.
- 937 *hli[?] [1] *hli[?] [2] *hli[?]ŋ [3] *wet* Oj hli[?]¹ *wet* [1] li hli[?] *get wet* (reflects *hli[?]ŋ) U hleg[?]¹ [1] (ag expected; the U, Tl, and Ch forms probably reflect a long vowel) Tl hleg[?]¹ [1] Ch hleg[?] [1] M hli[?] [1] S hli[?] [1] Tp hle[?]² [3] (nasalized vowel expected) Pa hli[?]² *rot* [2] hle[?]³¹ [3] VN gwi ti hli[?] [1] (ai expected) Ll hli[?]²³ [2] (short vowel expected) hli[?]n³² [3] Le hli[?]⁴ [2] Co hli[?]² *thicken water by sprinkling corn dough* [2].
- 938 *hli^L egg Oj mi³hli² U u⁴hlag³ Tl ma hlag³ Ch hlag S hli² Qe hli² Tp mi²hlag² Pa hli² VN hli² Oz mi hli Ll mi³¹hli³.
- 939 *hli^L lemon Oj wi²hli² U u⁴u³-hlag³ Tl mag³ ŋi² hlag³ Ch ŋi hlag.
- 940 *hli^{HLH} knife S mi hla Qi hli¹ hlih²⁴² Co ŋi¹ hli¹².
- 941 *hla[?]H measles Oj hla[?]¹ Ch hle (vowel reflects a vowel closed by *? even though ? is not present) S hle[?]¹ (tone 3 expected) Tp zo²¹ hla[?]³¹ Pa zaw¹ hliw[?]¹ Ll zo-h² hli³ malaria (hla[?]² expected; may not be cognate) Qi hlih[?]²⁴ (hleh[?]⁴² expected) Co hla[?]²¹.
- 942 *hli- La Alicia, a Chinantec village Oz gu hli Ll ku²³hli²³² RC gwa hli.
- 943 *hle- [1] tremble (*inan.*) *hle-ŋ [2] tremble (*an.*) U hle²³ [2] Tp hle³² [2] Pa hlya³² [2] (a rather than ya expected) Ll hle²³ [1] hle-n²³ [2] Le hle-y⁴ [2] Co hle¹² [1] hle-ŋ¹² [2].
- 944 *hla^H broad Tp hle² (hla¹ expected; may not be cognate) Pa hla¹ Ll hlo² Y hla big around Co hla¹.
- 945 *hlaŋ enlarge Ll hlen³² Le bi³hlay³ Co hmi²hla²¹ (final ŋ expected). This set may be related to *hla^H broad.
- 946 *hla[?] timid, stupid Ll za³ hlo[?]³ timid Le za hla[?] stupid.
- 947 *hliu^{LH} [1] crooked (*inan.*) *hliuŋ [2] *hlu[?]ŋ [3] crooked (*an.*) Oj hli² [1] U hli³ [1] Tl hlyú⁴ [1] hlyéw⁴ [2] Ch hlyu [1] S hlyu³² [1] Qe hli [1] Tp hle³² [1] (i expected) Pa hlyu³² [1] hli[?][?]¹ [3] VN hli [1] (hlyu expected; seems to match Tp in reflecting *) Oz hli[?] [1] Ll hli[?]³ [1] hli[?]n³² to bow, curve [2] hlu[?]n³¹

[3] Le na³hlyu³ [1] hlyuy³² *to bow*
 [2] Qi hlui^{ʔ42} [3] Co hlú.²¹ (may
 reflect [3]; if so, hlunʔ expected).

948 *hliaʔŋ *loosen* Pa hlyá^{ʔ2} Qi
 hlaʔh³ (reflects a syllable without
 final *ŋ) Co hlénʔ².

*hy

949 *hyi^L *fire, light* Oj yi² U
 o¹hdʔi³ Tl seg³ Ch seg M si S si²
 Tp si² Pa si² VN hi Oz wahi Ll hi³
 Le ši³ Qi hi³⁴ Co hi¹².

950 *hyiʔŋ *brilliant* Oj yi^{ʔ31} Pa
 si^{ʔ32} Ll ri³hiʔn³¹ Qi hih^{ʔ4} Co há^{ʔ12}
 (the Qi and Co forms do not re-
 flect a final *ŋ). The following
 forms with the same meaning may
 be related but seem to reflect
 *si(ŋ): S maθi Lt jiʔ si. This entire
 set is probably related to the one
 immediately preceding.

951 *hyi^L *paper* Oj mo³lyi² U ma²-
 hdʔi³ Tl si³ S mu¹si² Tp si² Pa si²
 VN mohi Oz muhe Ll hi³ Le ši³ Qi
 hi³⁴ Co ʔma hi¹².

952 *hyi^{HLH} *tuber, like sweet
 potato and yuca* Oj na¹yi²ro³ *sweet
 potato* (31 expected) U o¹hdʔei¹ ro⁴
sweet potato Tl say⁴² Ch ši ro *sweet
 potato* S sye¹ Qe sai Tp sei²¹ Pa
 sey¹ ráw¹ *sweet potato* VN hi o
sweet potato Oz mihi yuca Ll i²ro^{h3}
sweet potato (232 and a long vowel
 expected if in a stressed syllable)

Pe ni ʔni To miñi ʔmo yuca A hi ro
sweet potato Le ši⁴² yuca (long
 vowel expected) Qi hih²⁴² Co hi¹².

953 *hyi-ŋ^{LH} *bathe (another)* Oj yi²
 Tl ség⁴ Ch si S kwası Qe syeı Tp
 se³² Pa se³² Ll hi·n³ A he Le
 ga³ši·n³² (3 expected).

954 *hyuʔ *squat on one's haunches*
 Pa ʔi² syu^{ʔ3} Ll ri³hyu·ʔn³² (reflects
 a syllable with final *ŋ) Le he²
 bi⁴hyu·ʔ³ Co si hyö·ʔr²¹.

955 *hyuʔ *fall (plural subject)* U
 hdʔi^{ʔ2} Tp cí²séi^{ʔ2} Pa syú^{ʔ2} Ll ka²³-
 hyö^{ʔ2} (Ll and Co forms reflect a
 short vowel) Le ga³hyu·ʔ³² Qi
 xüh^{ʔ34} Co hyö^{ʔ2} hñö¹² *fur is shed-*
ding.

956 *hyá^{LH} *cliff* Qi xa³ Y xa Co
 hyá²¹ (short vowel expected). It is
 possible that some of the sets
 labeled *hya... should be labeled
 *hye... in the light of the follow-
 ing variant reflexes: (a) Ll hyaʔ
 and hyöʔ, (b) To hyeʔ and hyöʔ,
 (c) Qi xa and xia, and (d) Co hya-
 and hye.

957 *hya· [1] *lower (inan.)* *hya-ŋ
 [2] *lower (an.)* Oj ya² ʔni² [1] ya³¹
 ʔni [2] U hdʔie²³ [1] hdʔo⁴³ [2] Tl
 syo³⁴ [1] S kwasyo [1] Qe lasau [1]
 (syo expected) Tp si^{ʔ32} *go down*
 [2] Pa syáw³², syéw² [1] syúw² [2]
 VN hyu [1] Oz hyo [1] Ll hyo³²
 [1] hyan³² [2] Pe hye [1] To hye
 [1] A hye [1] Le hya [1] Qi xia²¹²
 [1] (Vh expected) Y xaŋ [2] Co
 hyér² [1].

958 *hya·ŋ *comb (hair)* Pa syow³²,
syúw² Ll hya·n³²

959 *hya·ŋ *cheap* Tp siq³² Pa
syow³² Ll hya·hn²³ Co hya·ŋ¹².

960 *hya·ʔ^L *rotten* S ma²sa^{ʔ2} *it's
going to rot (sy is expected)* Tp
ma²sia^{ʔ2} Pa syi^{ʔ2} Ll ri²³hyo^{ʔ3} Lc
rihya? Pe sihye? To sahyö? (e ex-
pected) A mizahye? Le za³hya·ʔ³
they are rotting Y xo?.

961 *hya·ʔ [1] *hya· [2] *where?* Ll
hya·ʔ³¹ [1] (o expected) Lc hya?
[1] Pe hye? [1] To hye? [1] A hye?
[1] Le hya^{ʔ2} [1] (long vowel ex-
pected) Qi xiah²⁴² [2] Co hye¹ [2]
(long vowel expected).

962 *hyá·ʔ^L *other* Tl syá^{ʔ3} Ch sya?
S sya^{ʔ3} Tp siá^{ʔ2} Pa syí^{ʔ2} VN hye?
Ll hya^{ʔ3} (o expected) Pe hya? (e
expected) To hye? A hya? (e ex-
pected) Le hya? Qi xiah^{ʔ242} (34 ex-
pected) Co hyé^{ʔ12}.

No Consonant

963 *i·ʔ *grind* Tl gwú^{ʔ2} *grind tortil-
la dough (reflects *wi·ʔ)* Tp ?éi^{ʔ32}
Pa yey^{ʔ32} Ll i·ʔ³ *be ground* Le
ʔi⁴i·ʔ³ *is ground, milled.*

964 *é·L [1] *float (intr. inan.)* *é·ŋ^L
[2] *float (intr. an.)* *é·LH (?) [3]

float (tr.) Pa yé² (*inan.*) [1] yá²
(*an.*) [2] Ll si³e·h³ [1] si³e·hn³ [2]
e·³² [3] Le e·³² [3].

965 *u· [1] *be extinguished, erased
(intr. compl.)* ~ *iu· [2] *be extin-
guished, erased (intr. incompl.)*
*iu·ŋ [3] *extinguish, erase (tr.)* Oj
ka³?u² [1] yi⁴ [2] U ai³ [2] Tl gi³ [2]
?éy³ [3] Ch ma ka gaw [1] nyo gi
[2] S ma ka yei [2] Qe ka yei [2]
Tp ka ag [1] Pa əw³² [1] yew [2]
VN ka u [1] Ll ka²³u·³ [1] ri²³yö·³
[2] yu·n³² [3] Pe yö [2] To mi u [1]
Le ma⁴³u·³ [1] i⁴ [2] Qi d'üh² [2]
Co yö² [2].

966 *a·ŋ^L [1] *á·ŋ^L [2] *three (an.)*
Oj ?q³² (tone 2 expected if [1] and
tone 3 expected if [2]) U q³ [1] Ch
gq S gq²³ [2] (no accent expected)
Qe gaŋ Tp ʔ (might be a mis-
recording of the common q reflex,
but cf. the Pa form) Pa ú² *three*
əw² hnye^{ʔ1} *three of us* [2] VN qŋ
(qŋ expected) Ll a·n³ [1] Lc o (ap-
parently reflects a syllable without
final *ŋ) Le ay³ [1] Qi gaih²³ [1].

967 *á·ŋ^{HL} *two (an.)* Oj ?q⁴ U q³⁴
Ch gq S gq³ (23 expected) Qe gaŋ
Tp q Pa q² *two* ow³ hnye^{ʔ1} *two of
us* (tone 3 expected) VN qŋ Ll
a·hn²³ Lc o (apparently reflects syl-
lable without final *ŋ) Le áy⁴ Qi
gai⁴³ (gaih³ expected) Co gáŋ²
(long vowel expected).

968 *i·ʔ^{HL} *swallow* Ll i·ʔ²³ Le i·ʔ⁴.

[blank]

Appendices

[blank]

Conventions

The following conventions are observed in appendices:

1. The symbol - indicates that no cognate has been identified to show the reflex in the specified environment.
2. The square brackets [] indicate that the enclosed consonant or part of consonant has a null reflex in the given vocalic environment.
3. In Ll-Co, where length is contrastive, no indication of length does not necessarily mean that the vowel is short; it often means that length differences were not noted in the data.
4. The symbol ˇ before a vowel indicates simultaneous palatalization of the preceding consonant, e.g., (s) ˇi indicates ši; (ŋ) ˇö indicates ñö.

[blank]

Appendix A: Reflexes of Proto Chinantec Consonants

	*p	*t	*k	*k ^w		*?	*b	*z
Oj	p	t	k	kw		?	p	c;č(i,iu)
U	p	t	k	ku;k(ɨ,i)		?	p	c;tʲ,(i,ia,ia·); t(ia,ia·?ia·ŋ ia?ŋ)
Tl	p	t	k	kw		?	p	c
Ch	p	t	k	kw		?	p	c
M	p	t	k	kw		?	p	c
S	p	t	k	kw		?	p	c
Qe	p	t	k	kw;k(ɨ,i,e·)		?	p	c
Z	p	t	k	kw;k(ɨ)		?	-	c
Tp	p	t	k	ku;k(e· not ë or e·? but ɛʔ,ɤ but not a)		?	b	z
Pa	p	t	k	kw;k(e·ŋ,e· not ë or e·?,a)		?	b	z
VN	p	t	k	kw;ky(e);k(e·?)		?	b	z
Oz	p	t	k	kw;ky(ë,e·(?);k(ɤ but not a)		?	b	z;ʃ(i,iu)
Ll	p	t	k	kw		?	b	z;ʃ(i,iu)
Lc	p	t	k	kw		?	b	z;ʃ(i,iu)
Pe	p	t	k	kw		?	b	z;ʃ(i,iu)
To	p	t	k	kw		?	b	z;ʃ(i,iu)
RC	p	t	k	kw		?	-	z;ʃ(i,iu)
A	p	t	k	kw		?	b	z;ʃ(i,iu)
Le	p	t	k	kw		?	b	z;ʃ(i)
Qi	p	t	k	kw		?	p	c;tʲ(i,iu,ia(?) t(iã?)
Y	p	t	k	kw		?	b	z;g(i,iu,ia)
Tm	p	t	k	-		-	b	z;g(i,iu,ia (?))
Co	p	t	k	kw		?	b	d;g(i,iu,ia)

	*g	*g ^w	*s	*h
Oj	k	kw	s	h
U	k	ku;k(i,i)	s	h
Tl	k	kw	θ	h
Ch	k	kw	θ	h
M	-	kw	θ	h
S	k	kw	θ	h
Qe	k	kw;k(i,i,a· but not a·?)	θ	h
Z	-	kw	-	h
Tp	g	gu;g(a· but not a·?)	c	h
Pa	g	gw;g(e· not e·? or e, a· but not a·?)	c	h
VN	g	gw	s;cy(i); c(iu,ia)	h
Oz	g	gw;gy(i)	s;č(i); c(iu,ia)	h
Ll	g;ø(V·?)	gw	s;š(i,e,iu)	h;hy(iu)
Lc	g;ø(V·?)	gw	s;š(iu)	h
Pe	g;ø(V·?)	gw	s;š(i)	h
To	g;ø(V·?)	gw	s;š(i,iu)	h
RC	g;ø(V·?)	gw	s;š(i,iu)	h
A	g;ø(V·?)	gw	s	h
Le	g	gw	s;š(i,e)	h;š(i); s(iu)
Qi	g;d(iä,ia·ŋ); d ^y (i,ia)	kw	s	h;x(iu)
Y	g	gw	s	h
Tm	-	gw	-	h;hy(iu)
Co	g	gw	s	h;hy(iu)

	*m	*n	*ŋ
Oj	m	n;ñ(i,iũ,iu?)	ŋ;ñ(i,iu)
U	m;ø(i,ə,a:(?ŋ) but not ă or a?)	n	ŋ;ñ(i,iu)
Tl	m	n	ŋ;ŋw(i ¹ /2 ⁴)
Ch	m	n	ŋ;ny(i);n(iu)
M	m	n;ny(i)	ŋ;ny(i);n(iu)
S	m	n;ny(i)	ŋ;ny/m(i);n(iu)
Qe	m	n;ny(i)	ŋ;ny/m(i);ny(iu)
Z	-	-	ŋ
Tp	m	n	ŋ
Pa	m	n	ŋ;ŋy(i)
VN	m	n	ŋ;ŋy(i)
Oz	m	n	ŋ;ñ(i,iu)
Ll	m	n;ñ(i,e?,iũ?)	ŋ;ñ(i,iu)
Lc	m	n;ñ(i,iũ?)	ŋ
Pe	m	n;ñ(i)	ŋ
To	m	n;ñ(i)	ŋ;ñ(i,iu)
RC	m	n;ñ(i)	ñ(iu)
A	m	n;ñ(i,e?,iũ?)	ŋ;ñ(i,iu)
Le	m	n;ñ(i,e?)	ŋ;ñ(i)
Qi	m	n	ŋ;ñ(i,iu)
Y	m	n	ŋ;ñ(i)
Tm	-	-	ñ(i)
Co	m	n	ŋ

	*w	*l	*y	*r
Oj	w	l	y	r
U	u;ø(ï);g(ï)	l	dʷ;d(uŋ)	r
Tl	gw	l	d;g(uʔŋ,ʷʔ);dy(á not ǎ); gy(a-,ǎŋ)	r
Ch	gw	l	d;g(u,ʷʔ);gy(ǎŋ)	r
M	w;g(ï)	l	d;g(uʔ,ʷʔ)	r
S	w	l	d,y(u,ũʔ,ʷʔ);dy(a)	r
Qe	w	l	d,y(ũʔ,ʷʔ);dy(a)	r
Z	-	l	dʷ	r
Tp	u	l	g;gi(a)	r
Pa	w	l	gy	r
VN	w;ø(ï,ï)	l	gy	ø
Oz	w;ø(ï)	l	gy	ø
Ll	w	l	y (or ñ(Y))	r;ø(i,u,Y?)
Lc	w	l	y	r;ø(i,u,Y?)
Pe	w	l	y	r
To	w	l	y	r;ø(i,u,Y?)
RC	w	l	y (or ñ(Y))	r
A	w	l	y	r;ø(i,u,Y?)
Le	v	l	y	r;ø(i,u)
Qi	w	l	y	r
Y	v	l	y	r
Tm	-	l	g	-
Co	w	l	y	r

	*ʔg	*ʔm	*ʔn	*ʔŋ
Oj	k	ʔm	ʔn; ʔñ(iu)	ʔŋ; ʔñ(iu)
U	k	ʔm; ʔ(i, i except i-ʔ, e- but not e-ʔ, ãʔ, a- but not a-ʔ)	ʔn	ʔŋ; ʔñ(iu)
Tl	k	m	n	ŋ
Ch	k	ʔm	ʔn	ʔŋ; ʔn(iu, ia); ʔny(iu)
M	k	ʔm	ʔn	ʔn(iu, ia); ʔny(iu)
S	k	ʔm	ʔn	ʔŋ; ʔn(iu, ia); ʔny(iu)
Qe	k	ʔm	ʔn	ʔŋ; ʔny(iu) ; ʔn(ia)
Z	-	ʔm	ʔn	-
Tp	g	ʔm	ʔn	ʔŋ
Pa	g	ʔm	ʔn	ʔŋ
VN	g	ʔm	ʔn	ʔŋ
Oz	g	ʔm	ʔn	ʔŋ; ʔñ(iu)
Li	g	ʔm	ʔn; ʔñ(iu)	ʔŋ; ʔñ(iu)
Lc	g	ʔm	ʔn; ʔñ(iu)	ʔŋ
Pe	g	-	ʔn; ʔñ(iu)	ʔŋ
To	g	ʔm	ʔn; ʔñ(iu)	ʔŋ
RC	-	ʔm	ʔn; ʔñ(iu)	-
A	-	ʔm	ʔn; ʔñ(iu)	ʔŋ
Le	g	m	n; ñ(i)	ŋ
Qi	ʔg	ʔm	ʔn	ʔŋ; ʔñ(iu)
Y	ʔg	ʔm	ʔn	-
Tm	-	ʔm	-	-
Co	ʔg	ʔm	ʔn	ʔŋ

	*ʔw	*ʔl	*ʔy	*hg
Oj	ʔw	ʔl	ʔy	-
U	ʔu;ʔ(ɿ)	ʔl	ʔdʏ	-
Tl	gw	l	gy;g(i)	-
Ch	ʔw	ʔl	ʔy;y(i)	-
M	ʔw	ʔl	ʔy	-
S	ʔw	ʔl	ʔy;ʔ(i)	-
Qe	ʔw;ʔ(ɿ)	ʔl	ʔy;ʔ(i but not iʔ)	-
Z	ʔw	ʔl	ʔy	-
Tp	ʔu	ʔl	ʔi;g(i)	-
Pa	ʔw;ʔ(e-ʔ,e-ʔ,a-ʔ but not e-ʔŋ nor a-ʔŋ)	ʔl	ʔy	-
VN	ʔw;ʔ(ɿ)	ʔl	ʔy;ʔ(i)	-
Oz	ʔw	ʔl	ʔy;ʔ(i)	-
Ll	ʔw	ʔl	ʔy;ʔ(i)	-
Lc	ʔw	ʔl	ʔy;ʔ(i)	-
Pe	ʔw	ʔl	ʔy;ʔ(i)	-
To	ʔw	ʔl	ʔy;ʔ(i)	-
RC	ʔw	-	ʔy	-
A	ʔw	ʔl	ʔy;ʔ(i)	-
Le	v	l	y;ʔ(i)	-
Qi	ʔw	ʔl	ʔy;ʔ(i,i)	hg
Y	ʔw	ʔl	ʔy	hg
Tm	-	-	ʔ(i)	-
Co	ʔw	ʔl	ʔy;ʔ(i,i)	hg

	*hm	*hn	*hŋ
Oj	hm	hn;hñ(iu)	hŋ;hñ(i,iu)
U	hm;h(i,i,e but not ë, a but not a-?)	hn	hŋ;hñ(i,iu);h(ia-)
Tl	hm	hn	hŋ
Ch	hm	hn	hŋ;hny(i);hn(iu,ia)
M	hm	hn	hŋ;hny(i);hn(iu,ia)
S	hm	hn;hny(ĩ)	hŋ;hny(i);hn(iu,ia)
Qe	hm	hn;hny(ĩ)	hŋ;hny(i,iu);hn(ia)
Z	-	hn	-
Tp	hm	hn	hŋ
Pa	hm	hn	hŋ;hŋy(i)
VN	hm	hn	hŋ;hŋy(i)
Oz	hm	hn	hŋ;hñ(i,iu-);h(ia-)
Ll	hm	hn;hñ(ĩ,iu)	hŋ;hñ(i,iu);h(ia)
Lc	hm	hn	hŋ;hñ(iu);h(ia)
Pe	hm	hn;hñ(ĩ,iu)	hŋ;hñ(iu);h(ia)
To	hm	hn;hñ(ĩ,iu)	hŋ;hñ(iu);h(ia)
RC	hm	hn;hñ(iu)	hñ(iu)
A	hm	hn	hŋ; h(ia)
Le	hm	hn;hñ(i)	hŋ;hñ(i);h(ia)
Qi	hm	hn	hŋ;hñ(i,iu)
Y	hm	hn	hŋ; h(ia)
Tm	-	hn	-
Co	hm	hn	hŋ; h(ia)

	*hw	*hl	*hy	no consonant
Oj	hw	hl	y	?y(iu)
U	hu;h(i,i)	hl	hd ^v	ø
Tl	hw;h(i but not iŋ,i)	hl	sy;s(i,i)	g;?(iuŋ)
Ch	hw;h(i,i but not iŋ)	hl	sy;s(i,i)	g
M	hw;h(i,i)	hl	s(i)	-
S	hw	hl	sy;s(i,i)	g;y(iu)
Qe	hw;h(i,a but not a?)	hl	sy;s(i,i)	g;y(iu)
Z	f	-	-	-
Tp	hu;h(a but not a?)	hl	si;s(i,i,iu)	ø;?(i)
Pa	hw;h(a but not a?)	hl	sy;s(i,i)	ø;y(i,e,iu)
VN	hw;h(i)	hl	hy;h(i,i)	ø
Oz	hw;h(i,i,e)	hl	hy;h(i,i)	-
Ll	hw	hl	hy;h(i,i)	ø;y(iu)
Lc	hw	hl	hy;h(i)	ø
Pe	hw	hl	hy;h(i)	y(iu)
To	hw	hl	hy;h(i,i)	ø
RC	hw	hl	h(i)	-
A	hw	-	hy;h(i,i)	-
Le	f	hl	hy;š(i,i)	ø
Qi	f	hl	x;h(i,i)	g;d ^v (iu)
Y	f	hl	x;h(i)	-
Tm	f	hl	-	-
Co	hw	hl	hy;h(i,i)	g;y(iu)

Appendix B: Reflexes of Proto Chinantec Nuclear Elements

	*i	*i̥	*ī
Oj	i̥;(h[y])i	i̥	ī
U	eg;(z)ei; (hy)i;(h[w])eu	ɛg;([w]/h[w])u̥	ag;(z)ai;(k ^w)u;(w/?[w]/h[w])eu
Tl	eg	ɛg	ag;(k ^w /g ^w /w/?w)u;(h[w])ew
Ch	eg	ɛg	ag;(k ^w /g ^w /h[w])u;(w/?w)eg
M	i̥;(h[w])u	i̥	i̥;(k ^w /h[w])u
S	ī	i̥	ai/a;(k ^w /g ^w /w/?w/hw)u/o;(?)a/ī
Qe	ī	i̥	ai̥;(k ^w /g ^w /w/?[w]/h[w])u
Z	ī	i̥	i̥;(k ^w)u
Tp	i̥;(t/h/l/hl)ə; (hy)i	i̥	ag;(k)i̥;(k ^w /g ^w /w/?w/hw)ig
Pa	i̥/ɬw;(hw)u;(hy)i	i̥w;(h)i̥; (ŋ/hm)i̥/ɬw	ay/ɬy;(k)i̥
VN	i̥;(hy)i	i̥	ai̥;(k ^w /[w]/h[w])u
Oz	i̥;(h[y])i	i̥;(m/hm)ə	ī
Ll	i̥;(h[y])i	i̥	ī
Lc	i̥;(h[y])i	i̥	ī
Pe	i̥;(h[y])i	i̥	ī
To	i̥;(h[y])i	i̥	ī
RC	i̥;(h[y])i	i̥	ī
A	(h[y])i	-	ī
Le	i̥;(h[y])i	i̥	ī
Qi	i̥;(z)i̥;(hw)u	i̥	ih;(k ^w /g ^w /w/?w/hw)uh;(z)ih
Y	ī	-	i̥;(z)i
Tm	ī	-	i̥;(z)i
Co	i̥;(z)i	i̥	i̥;(z)i̥

	*i̥	*i?	*i̥?	*i?
Oj	ɨ̥;(n)ə	i	ɨ̥;(n)ə	i
U	əg;(k ^w /m/?[m]/ h[m]/w)u̥	ag;(h[w])eu	(n)əg;([m]/h[m]?u̥	eg;(g ^w)u;([w]/ h[w])eu
Tl	əg;(k ^w /w)u̥	ag;(hw)eg	əg	eg;(g ^w)u;(h[w])ew
Ch	əg;(w)ɛg	ag	əg	ag;(g ^w ;h[w])u; (w)eg
M	(?m/hm)ə;(w)u̥	ɨ̥;(h[w])u	(m)ə	ɨ̥;(g ^w /w)u
S	əɨ̥/ə;(k ^w)u̥;(m/ ?m/hm)əɨ̥;(w)u̥/ə	i	ə	ɨ̥;(k)ie;(ʔl)ai; ʔhwu
Qe	ə;(ʔm)əɨ̥;(w)u̥	i	ə	ɨ̥;(h[w])u
Z	-	-	-	(ʔl)ai
Tp	əg/iy;(m/?m/hm/w) ɨ̥g;(h/?n/ŋ/r)əg	ɨ̥;(hw)ig	ɨ̥	i
Pa	əy/iy;(w)iy	i	ɨ̥;(m/hm)iw	iy;(k/ʔl)ay;(ʔ)iw; (g ^w)u/iy;(w/?w/ hw)u
VN	əɨ̥;([w])u̥	ai	əɨ̥	ai;(w/?[w])u;(ʔl)i
Oz	ɨ̥	ɨ̥;(h[w])u	ɨ̥	i
Ll	ɨ̥	i	ɨ̥	ɨ̥
Lc	ɨ̥	-	-	ɨ̥
Pe	ɨ̥	ɨ̥	-	ɨ̥
To	ɨ̥	ɨ̥	-	ɨ̥
RC	ɨ̥	-	-	ɨ̥
A	ɨ̥	ɨ̥	-	-
Le	ɨ̥	ɨ̥	ɨ̥	ɨ̥
Qi	ɨ̥h;(ʔ/w)u̥h	ɨ̥	ɨ̥	ɨ̥h;(w/?w)uh
Y	ɨ̥	-	-	-
Tm	-	-	-	-
Co	ɨ̥	ɨ̥	ɨ̥	ɨ̥;(z)i

	*ɨʔ	*iŋ	*iʔŋ	*ɨŋ
Oj	ɨ:(ʔn)ə	ɨ	-	-
U	ɛg;(k[ʷ]/[m]/ʔ[m]/ h[m]/w)ɸ	əg;(z)əi (ʔl)	əg	əg
Tl	ɛg;(k[ʷ]/w)ɸ	ɛg	ɛg	ɛg
Ch	ɛg	ɛg	-	-
M	ɨ:(w)ɸ	ɨ	-	-
S	ɨ:(kʷ/w)u;(h)ɨɛ; (m)əɨ:(hm)ɔ	ɨ	-	ɨ
Qe	ɨ:(w)ɸ	ə	-	-
Z	ɨ	-	-	-
Tp	ɨ	ɨ	-	ɨ
Pa	ɨ:(ʔm)ɨ/ɨw	ə;(t/h/hl)a; (w/ʔw/hw)e	(kʷ)e;(s)ə	(ŋ)ə;(hm)ɛ
VN	əɨ	(h)iŋ	-	-
Oz	ɨ	-	-	ɨ
Ll	ɨ	in	in	ɨn
Lc	ɨ	-	-	-
Pe	ɨ	-	-	ɨn
To	ɨ	-	-	-
RC	ɨ	-	-	-
A	ɨ	-	-	-
Le	ɨ	iy	-	-
Qi	ɨh;(ʔ)ɸh	ɨ	-	-
Y	-	-	-	-
Tm	ɨ	-	-	-
Co	ɨ	iŋ	iŋ	ɨŋ

	*i?ŋ	*iŋ	*i?ŋ	*iŋ	*i?ŋ
Oj	i	i	i;(hy)i	i	-
U	-	eg;(k ^w)u; (h[w])eɸ	-	ag;(ʔm)ɸ	(m)ɸ
Tl	eg	eg	ag	eg	ag
Ch	eg	eg	-	eg	-
M	i	-	-	i	-
S	i	aɪ;(k ^w /hw)ɸ	i	aɪ	-
Qe	i	aɪ;(k ^w /h[w])ɸ	i	aɪ	-
Z	-	-	-	-	-
Tp	i/ag	i	i	i	-
Pa	ə	aɪ/iɪ;(ʔ)a;(g ^w)e	ə;(w)e; (hy)i	ə;(ʔm)iɪ (?)	-
VN	i	iŋ	-	iŋ	-
Oz	i	i	-	i	-
Ll	iŋ	iŋ	iŋ;(hy)iŋ	iŋ	-
Lc	i	iŋ	i	-	-
Pe	i	iŋ	-	-	-
To	-	-	-	-	-
RC	-	-	-	-	-
A	i	-	-	-	-
Le	iɪ	iɪ	iɪ	-	-
Qi	-	uih	iɪh	ɸi	-
Y	-	(g ^w)ə(?)	-	-	-
Tm	-	-	-	-	-
Co	iŋ	iŋ	iŋ	i	-

	*ə	*ɛ	*ə	*ɛ
Oj	ə;(kʷ/ʔw)ɔ	(n)j/ɔ	ə;(ʔw)ɔ	-
U	e	ɛ	e	-
Tl	ə;(kʷ/ʔw/hw)e	ɛ	ə;(w/ʔw)e	(m)ɔ/ɛw
Ch	ə;(ʔw)e	ɛ	ə;(r/ʔw)e	(m)ɔ
M	(kʷ/ʔw/hw)i	-	ə;(ʔw)i	(m)ɔ
S	ie;(kʷ/ʔw/hw)e	i/ɛ	ie;(w/r)e; (ʔw)a	(m)ɔ
Qe	ə;(kʷ/ʔw)e	ɛ	ie;(r/ʔw)e	(m)ɔ
Z	(hw)e	-	-	-
Tp	ə	ɛ	ag;(w/r/ʔw)ə	(m)ɔ
Pa	iw;(kʷ)i;(ʔw)a	ɔ	ay;iy/i/u;(w)u; (r)iy;(ʔw)u/i/ay	(m)ɔw/ɔw/ɔ
VN	e;(kʷ/ʔw)ə	ɛ	a;(ʔw)a/ə	(m)ɔɔ
Oz	(kʷ/l/ʔw)a	ɔ	i;(ʔw)i/a	(m)ɔ
Ll	e;(t/kʷ/b/l/ʔw)ə	i	ə;(h)ɔʌ	(m)ɛ
Lc	e;(t/kʷ/ʔw)ə	-	ə	(m)ɛ
Pe	e;(t/kʷ/ʔw)ə	-	ə	(m)ɛ
To	e;(t/kʷ/ʔw)ə	-	ə	(m)ɛ
RC	(t/kʷ/ʔw)ə	-	ə	(m)ɛ
A	ə	-	ə	(m)ɛ
Le	e/a;(kʷ/b/ʔw)ɔ	i	o;(r)e	(m)ɛ
Qi	ə;(kʷ/b/ʔw)ɔ	o	əh;(kʷ/w/ʔw)oh	-
Y	-	-	ə	-
Tm	-	-	-	-
Co	ə	a	ə	(m)ɔ

	*əʔ	*əʔ	*əʔ	*əʔ	*əŋ	*əʔŋ
Oj	-	-	ə;(hw)o	-	ɨ	-
U	e	-	e	-	ɘ	(s)ɘ
Tl	e	-	e	-	ɛ	-
Ch	-	-	e/ag	-	-	-
M	ɨ	-	ɨ	-	-	-
S	ie	-	e	-	-	-
Qe	-	-	e	-	-	-
Z	-	-	-	-	-	-
ʦp	ə;(ʔw)e	-	ə;(s)ag	(m)ɔg	(ʔw)ɨ	-
Pa	ɨw	-	ɨ/ɨw;(s/ʔl)ɨw; (r)ɨ	-	a;(ʔw)e	(s)a
VN	-	-	a;(b)ai;([r])e	-	-	-
Oz	-	-	ɨ;([r])e	-	-	-
Li	ə	-	ə;(ʔ)oʰ	-	ən	ən
Lc	ə	-	ə	-	-	-
Pe	-	-	ə	-	-	-
To	ə	-	ə	-	-	-
RC	-	-	ə	-	-	-
A	-	-	ə	-	-	-
Le	o	-	e;(ʔ/h)o	-	oy	-
Qi	ə;(hw)o	-	əh;(b)o;(r)ih	-	(ʔw)oi	ə
Y	ə	-	ə	-	-	-
Tm	-	-	(b)ɨ	-	-	-
Co	ə	-	ə	-	-	ə

	*ʔŋ	*ʔʔŋ	*əŋ	*əʔŋ	*ʔŋ	*ʔʔŋ
Oj	-	-	-	ʔ:(hm)ʔ	-	-
U	-	-	(ʔw)ʔ	ʔ	-	-
Tl	-	-	(ʔw)ʔ	-	-	-
Ch	-	-	ʔ	-	-	-
M	-	-	-	-	-	-
S	-	-	(h)ʔʔ:(ʔw)ʔ	-	-	-
Qe	-	-	-	-	-	-
Z	-	-	-	-	-	-
Tp	-	-	-	ʔ:(hm)ʔ	-	-
Pa	-	-	ə/ow/uw;(ʔw)a/e	(s)ʔ:(r)e; (ʔl)ə;(hw)a	-	-
VN	-	-	aŋ	-	-	-
Oz	-	-	ʔ	-	-	-
Ll	-	-	o^an;(ʔw)ə-n	ə-n	-	-
Lc	-	-	a	-	-	-
Pe	-	-	-	-	-	-
To	-	-	an	-	-	-
RC	-	-	-	-	-	-
A	-	-	-	-	-	-
Le	-	-	a:y	ey	-	-
Qi	-	-	aih	-	-	-
Y	-	-	aŋ	-	-	-
Tm	-	-	-	-	-	-
Co	-	-	əŋ	əŋ	-	-

	*j:	*i?	*j?
Oj	i	i	i
U	aj:(ŋ)ej:(k[ʷ]/h[w])u	ai:(ʔy)ei	ej:(h)aj:(ŋ/hŋ)i:(ʔm)u
Tl	ay:(hw)u:(ʔ)ey/ay	i	(y)i:(ʔ/h)ay:(ŋ)i:(ʔm)ag
Ch	ey:(ŋ)i:(ʔ)i/ay	i	i:(ʔm)ag
M	i:(n/ŋ/hm)ej:(hm/hn)aj	ai	aj
S	e:(ŋ/hm)ej:(ʔ)e/i	e	i:(ʔm)a
Qe	aj:(ŋ)ej:(ʔ)aj/ei	ai:(s)e:(ʔy)ei	(ŋ)i:(h)ei
Z	-	-	-
Tr	ej:(hw)ig:(ʔ)ei/e	i	(ŋ)i:(h)g:(ʔm)e
Pa	iw/ey:(h)ey/iw/e:(hw)iy; (n)ey:(ʔn)iw/ey/ay	i:(ʔy)ey	i
VN	ej:(w)i	ei:(ʔ[y])i	(ŋ)i:(ʔm)ei
Oz	i:(n/ʔn)i:([w]/h[w])ö	i	-
Ll	i:	i	i:
Lc	i	i	i
Pe	i	i	i
To	i	i	i
RC	i	-	-
A	-	i	i
Le	i:	i	i
Qi	iʰ	i	i
Y	i	i	-
Tm	i:	i	-
Co	i:	i	i

	*iʔ	*i:ʔ	*iŋ	*iʔŋ
Oj	i	i	i	i
U	ei;(h[w])eu	ei:(ŋ)i	ei	ei
Tl	ay;(p)e;(k)i;(s)ey; (w)u;(h[w])ew	ey;(ʔ/h/ŋ/[ʔ]n)i	i	-
Ch	ey;(p/ʔy)i	i	-	i
M	ei	-	-	-
S	ei;(p)i;(ʔ[y])e;(hw)u	i:(ŋ)yɛ	-	ɛ
Qe	ai;(p)ei	ei:(h)i:(ŋ)/ei	ei	ei
Z	i	i	-	-
Tp	i;(tʔ)ei;(kʷ/w/hw)i	ɛ:(n)ei:(ŋ)i	ɛ;(hw)i	e
Pa	ey/i;(k)yey;(s)i; (ʔy)iw;(ʔw/hw)u	i:(n)ey;(ŋ)yɪ	e	e
VN	ei;(gʷ/hw)i	ei:(m)ɛ	ei	-
Oz	i;(g[w])yö;(h[w])ö	i	i	-
Ll	i	i	in	in
Lc	i	-	-	-
Pe	i	i:(h)ɛ	-	-
To	i	i	-	-
RC	i	i	-	-
A	i	-	-	-
Le	i;(k)yi;(z/s)i	i	i	(s)iy
Qi	ih;(k)ih	ih	-	i
Y	i	i	-	-
Tm	-	-	-	-
Co	i	i	iŋ	iŋ

	*iŋ	*iʔŋ	*i-ŋ	*i-ʔŋ	*i-ŋ	*i-ʔŋ
Oj	i	i	i;(k ^w /hw)ɨ	-	i	-
U	ɛi	ai	ai;(k ^w)ɥ; (h ^w)ɛɥ	-	ɛi;(s)ai	ai
Tl	-	i	ɛy;(hy)ɛg	-	i	i
Ch	i	ɛ;(h)i	i;(k ^w)ɥ; (hw)ɛg	-	-	-
M	-	-	-	-	-	-
S	i	i	i;(hw)ɥ	-	yɛ	-
Qe	ɛi	-	(hy)yɛi; (k ^w)ɔ	-	yɛi	-
Z	-	-	-	-	-	-
Tp	i	ɛ	ɛ;(k ^w /hw)ɨ	-	ɛ	ɛ
Pa	ɛ	ɛ	e	-	ɛ/yɛ	ɛ
VN	iŋ	-	-	-	i;(s)ɛ	-
Oz	-	-	-	-	(s)ɛ	i
Ll	iŋ	iŋ	iŋ	-	iŋ	iŋ
Lc	-	-	-	-	-	-
Pe	-	-	-	-	-	-
To	-	-	-	-	iŋ	-
RC	-	-	-	-	-	-
A	-	-	(hy)e	-	iŋ	-
Le	-	-	iŋ;(s)ɨy	-	yɨy;(s)ɨy	-
Qi	i	-	-	-	iŋ;(k)yih	-
Y	-	-	-	-	-	-
Tm	-	-	-	-	-	-
Co	iŋ	i	i-ŋ	-	i-ŋ	iŋ

	*e	*ɛ	*e	*ɛ
Oj	e;(k ^w /g ^w /hw)a	ɤ	e;(k ^w)o	(?m/hm)ɔ
U	e;(k ^w /g ^w)a	ɤ	e	(h[ŋ])jɛ;(?[m]/h[m])ɥɛ
Tl	e;(k ^w /g ^w)a	ɤ;(hŋ)ɣɤ	ə;(k ^w)o	(h[ŋ])ɛw;(m/hm)ɔ; (?m)ɔ/ɛw
Ch	ie;(k ^w /b/hw)a	ɤ	e;(k ^w)o	(?m/hm)ɔ
M	-	-	(k ^w)o	-
S	ie;(k ^w /g ^w)a	ɛ;(?m/hm)ɤ	e/a;(k ^w)o	(m/?m/hm)ɥ
Qe	e;(k ^w)a	-	(k[^w]/g[^w])u	(m/?m/hm)ɔ
Z	(k ^w)a	-	-	-
Tp	ə;(k ^w /b/g ^w)a	ɛ;(?m/hm)ɤ; (hŋ)iɔg	ag;(k[^w])u	(?m)ɥ;(hm/hŋ)iɔ
Pa	e;(k)ye; (k ^w /g ^w)i;(b)a	ɤ	e/iw;(k[^w]/g[^w])ow/uw	(?m)ɔ/ɔw;(hm)ɔ
VN	(p/g ^w)a;(k[^w])yu; (b)ɛ	-	e;(k[^w])o	(?m)i;(hm)ɛ
Oz	(k[^w]/g[^w])ya; (hw)a	-	e;(k[^w])yo	(?m/hm)ɛ
Ll	e;(k)ye;(k ^w /b/g ^w /hw)a	ɛ	e;(k ^w /g ^w)a	(m/?m/hm)ɛ
Lc	(k ^w)a	-	e;(k ^w)a	(hm)ɛ
Pe	(k ^w)a	-	e;(k ^w)a	-
To	e;(k ^w)a	ɛ	e;(k ^w)a	-
RC	(k ^w)a	-	(k ^w)a	-
A	ə;(k ^w /g ^w /h)e; (hw)a	ɛ	a;(k ^w)ö	(hm)ɛ
Le	e;(t)ye;(g ^w)a	ɤ;(?m/hm)ɛ	e	(?m/hm)ɛ
Qi	e;(k ^w /b/g ^w /hw)a	ɤ	eh;(k ^w)ah	(m/?m/hm)ɤh
Y	(k ^w /b/hw)e	ɛ;(hm)ɤ	e	(hm)ɛ
Tm	-	-	-	-
Co	(k ^w)ia;(b/hw)e; (g ^w)a	ɛ;(hm)iɤ	e	(m/?m)ɛ;(hm)ɔ

	*e?	*ɛ?	*e·?	*ɛ·?
Oj	e	ɛ	(k ^w /ʔw/hw)a	(ʔm)ɛ̄
U	e	ɛ	(p/k ^w /ʔw/hw)a	(ʔm)ɛ̄;(h[m])uɛ̄
Tl	e;(h)ə	ɛ	e;(k ^w /ʔw/hw)a	(ʔm)ɛ̄;(hm)ɛ̄w
Ch	e/i;(ʔ)ie	-	(k ^w /ʔw)a	(ʔm)ɛ̄
M	ai/a	-	e;(hw)a	-
S	ie;(t)ye;(/)e	-	e;(k ^w /ʔw/hw)a	(ʔm)ɛ̄
Qe	e	(k ^[w])u	(k ^w /ʔw)a	(ʔm)ɛ̄
Z	-	-	(ʔw)a	-
Tp	ə;(t)e	ɛ;(k ^[w])ɔ	(p)ə;(k ^w /ʔw/hw)a	(ʔm)ɛ̄g/i;(hm)ɔg
Pa	e;(k)yi	(k ^[w])ɛ̄	e;(p)ə;(k ^w)i/u; (ʔ[w])u;(hw)i	(ʔm/hm)ɛ̄
VN	ai	-	(k ^[w])o;(ʔw/hw)e	-
Oz	e	-	(k ^[w])ya;(h[w])ö	(ʔm)ɛ̄/ɛ̄
Li	e;(k)ye	-	e;(p/k ^w /ʔw/hw)a·	(ʔm/hm)ɛ̄·
Lc	e	-	-	-
Pe	e	-	-	-
To	e;(ʔ)ə	-	(ʔw/hw)e	-
RC	-	-	-	-
A	e;(ʔ)ə	-	(k ^w)ö	-
Le	e;(t)ye	-	(ʔ/[ʔ]w)e;(s) [˘] e; (hw)a	(ʔm)ɛ̄
Qi	e	-	eh;(k ^w /ʔw/hw)ah	-
Y	e	-	(ʔw/hw)a	-
Tm	-	-	-	-
Co	e	-	e·	(ʔm)ɛ̄·;(hm)ɔ·

	*eŋ	*eʔŋ	*eŋ	*eʔŋ	*e-ŋ
Oj	-	(b)ɛ	-	-	(k ^w)a
U	(b)a;(hw)ɛ	-	-	-	ɛ
Tl	ɛ	-	-	-	ɛ;(k ^w)ɔ
Ch	(g ^w)a	-	-	-	(k ^w)ɔ
M	-	-	-	-	-
S	-	(g ^w)a	-	-	-
Qe	-	(g ^w)a	-	-	-
Z	-	-	-	-	-
Tp	ʔ;(b/g ^w /hw)a	(s)ioŋ; (g ^w)a	-	-	ɛ
Pa	a;(b)a;(g ^w)ʔ; (hm)ɔw	(b)a;(g ^w)ʔ	-	-	a
VN	-	-	-	-	(k ^[w])ɔ
Oz	-	(b)a	-	-	-
Ll	en	en	-	-	e-n;(k ^w)a-n
Lc	-	(g ^w)an	-	-	-
Pe	-	-	-	-	-
To	-	-	-	-	-
RC	-	-	-	-	-
A	en	-	-	-	en
Le	ey	(g ^w)ey	-	-	ey
Qi	-	-	-	-	-
Y	-	-	-	-	-
Tm	-	-	-	-	-
Co	-	-	-	-	e-ŋ

	*eʔŋ	*ɛŋ	*ɛʔŋ
Oj	-	-	-
U	(p/ʔw)ʔ	-	-
Tl	(ʔw)ʔ	-	-
Ch	-	(k ^w)ɔ	-
M	-	-	-
S	(ʔw)ʔ	(k ^w)ɥ	-
Qe	(ʔw)ʔ	-	-
Z	-	-	-
Tp	-	-	-
Pa	yow;(g ^w)e;(ʔw/hw)a	(k ^w)ɔ	(hm)ɔw
VN	-	-	-
Oz	-	-	-
Ll	(p/g ^w /ʔw/hw)ɛn	(k ^w)ɛn	ɛn
Lc	(ʔw)a	-	-
Pe	-	-	-
To	(ʔw)ʔ	-	-
RC	-	-	-
A	(ʔw)ʔ	-	ɛ
Le	ya;(ʔw)ey	(k ^w)ɛy	ʔ
Qi	-	-	ɛjh
Y	-	-	-
Tm	-	-	-
Co	-	(ʔw)ɛŋ	-

	*u	*ụ	*ụ̄
Oj	u	ɔ	u;(y)i
U	eu	ẹụ	au;(z)ai
Tl	u	ẹw;(k/ŋ/?n)ụ	aw
Ch	u	ụ	aw;(y)i
M	u; (?eu)	ụ	au;(z)yu
S	u	ụ	ai/ie/u;(h)ai/u;(l)ai;(y)ei
Qe	u	ụ;(t/g/s)ẹụ	eu
Z	u	ụ	i
Tp	i;(t/l)u	(t)ɔ/ị;(s/ŋ)ị;(h)ɔ	ag;(k/g/h)u;(z)ig/ ag;(y)ei
Pa	u;(/?h)i/iw	(t)ɔ/ị;(s)ị;(h)ɔ; (ŋ)ị/ịw	əw/aw/uw/o;(k)ow;(g)u;(h)uw/ əw/o;(l)aw/əw/uw;(y)ew;(ø)əw
VN	u	ɔ	au;(ø)u
Oz	u	ụ	u
Li	u	ụ	u;(y)ȫ
Lc	u	-	u
Pe	u	ụ	u
To	u	ụ	u
RC	u	ụ	u
A	-	ụ	(y)ȫ
Le	u	ụ	ụ̄
Qi	u	ụ	uh;(z/y)üh
Y	u	ụ	u;(z)ü
Tm	-	-	(k)u
Co	u	ụ	u;(z/y)ȫ

	*ɸ·	*uʔ	*ɸʔ	*u·ʔ
Oj	ɔ;(y)j	u	-	u;(y)i
U	au;(y)ɛj	au;(y)i	-	eu;(y)ei;(hy)i
Tl	aw	aw;(ʔ)u;(y)i	(n)aw;(y)j	u;(k)u/aw;(ʔ/g/y)aw
Ch	aw	aw	-	u;(k/y)aw
M	au	au;(y)i	-	u;(y)au
S	ai/iɛ/i;(z/y)aj	ie;(y)e	-	u;(k/y)ie
Qe	ɛɸ	eu;(y)e	-	eu;(y)e
Z	-	(y)ei	-	(h)u
Tp	(k)ag/ɔ;(n)au/ag; (y)ɛj;(r)ag	u;(y)i	(n)ɛ;(y)ɛ	i;(k)ag/i;(h)u/i; (y/hy)ei
Pa	(k)aw/ow;(n)uw/ aw;(y)ɛw;(r)aw	ow/ə;(ʔ)iw	(n)j	u;(k)aw/əw;(ʔ)u/w; (g)i;(h)u/i/o
VN	(n)au;(y)ɸ	au	-	au;(y)u
Oz	(n)ɸ;(y)ö	u	-	u;(y)ö
Ll	ɸ;(y)ö·	u	(n)ɸ	u;(y/hy)ö·
Lc	ɸ	u	-	(y)ö
Pe	ɸ	u	-	u;(y)ö
To	ɸ;(y)ö	u	-	u
RC	ɸ;(y)ö	-	-	-
A	(y)ö	-	-	u;(y)ö
Le	ɸ·	u	-	u·
Qi	uh;(y)üh	u	-	uh;(z/y/hy)üh
Y	ɸ	-	-	(y)ü
Tm	-	-	-	-
Co	ɸ;(y)ö·	u;(y)ö	-	u;(z/y/hy)ö·

	*ɸ·ʔ	*uŋ	*uʔŋ	*ɸŋ	*ɸʔŋ	*u·ŋ	*u·ʔŋ	*ɸ·ŋ	*ɸ·ʔŋ
Oj	ɸ:(y)j	-	(h)ɸ	ɸ	-	ɸ	ɸ	ɸ	-
U	ɸɸ:(y)ɸj	(y)ɸ	ɸɸ:(h)ɸɸ	ɸɸ	-	ɸɸ	ɸɸ	ɸɸ	-
Tl	ɸ:(y)j	(y)ɸ	(z)ɸw:(y)j	ɸw	-	ɸw	ɸw	ɸw	-
Ch	ɸ:(y)j	(y)ɸ	(h)ɸ	ɸ	-	ɸ	ɸ	-	-
M	(y)ɸj	-	-	-	-	-	-	ɸɸ	-
S	ɸ:(y)ɸj	(y)ɸ	(z/h)ɸ	ɸ	-	ɸ>	ɸj	-	-
Qe	ɸɸ:(y)ɸ	(y)ɸ	(z)ɸɸ	-	-	ɸɸ	ɸɸ	(y)ɸ	-
Z	-	-	-	-	-	-	-	-	-
Tp	ɸ:(k)j/ ɸg:(y)ɸ	-	-	ɸ	-	-	j	j	-
Pa	ɸ:(y)ɸ	-	(hl)u	ɸ	-	ow:(y)uw	uw:(r)o	ɸ	ɸ
VN	(y)ɸ	-	-	ɸ	-	-	-	-	-
Oz	(y)ɸ̊	-	-	-	-	-	ɸ̊	-	-
Ll	ɸ:(y)ɸ̊	-	(z/h/hl)un	ɸn	-	u·n	u·n	ɸ·n	-
Lc	-	-	-	-	-	-	-	-	-
Pe	-	-	-	-	-	-	-	-	-
To	(y)ɸ̊	-	-	-	-	-	-	ɸ	-
RC	(y)ɸ̊	-	-	-	-	-	-	ɸ	-
A	(y)ɸ̊	-	-	-	-	-	-	ɸ	-
Le	ɸ·	-	(h)uy	ɸy	-	u·y	oy:(k) uy	ɸ·y	-
Qi	ɸ	-	(hl)ui	-	-	uih	uih	ɸh	-
Y	-	-	-	-	-	-	u	-	-
Tm	-	-	-	-	-	-	-	-	-
Co	ɸ·	-	-	ɸŋ	-	-	uŋ	ɸ·ŋ	-

	*a	*a̤	*ạ
Oj	a	a̤	o;(?y/hy)e;(g ^w /ʔw)o
U	a;(z)ia	a̤	o;(z/y/ʔy/hy)ie;(g ^w /ʔw/hw)e
Tl	a	a̤	o/ew;(g ^w /s)o;(y)u;(r)ew;(ʔy)o/u
Ch	a	a̤	o;(ʔy)o/u
M	a	a̤	o;(ʔy)e
S	a	a̤	o;(y)u;(ʔy)o/u
Qe	a	a̤	o;(k)o/au;(ʔ/z/s/h)au;(g ^w /y/ʔy/h[w])u
Z	a	a̤	o;(ʔy)o/u
Tp	a	a̤	o/au;(g ^w)u;(y)iog;(r/ʔl)au;(ʔ[y])iog/io
Pa	a;(g ^w)i;(ʔy)i; (hw)u	a̤	aw/əw;(k/hw)ow;(g ^w)uw/o;(s)aw/o;(h)aw/ əw/u/o;(l)aw/əw/o;(y)ew;(ʔy/hy)aw/ew/o/iw
VN	a	a̤	ao/oa;(z/[r]/ʔw)o;(g ^w)a;(ʔl)ao;(ʔy/hy)u
Oz	a	a̤	o;([r])ö;(ʔy)a/o/u
Ll	a;(k/b/g ^w /h/ʔw ʔl/hw/hl)o;(l)a/o	o̤	ọ
Lc	(t)a/o;(z/ʔy)a; (b/g ^w /ʔw/hw)o	o̤	o;(y/ʔy)a
Pe	o;(z)a/o;(l)a;(ʔy)e	o̤	o;(y/ʔy/hy)e
To	(t/z)a;(l)a/o;(ʔy)e; (b/g ^w /ʔw/hw)o	o̤	o;(y/ʔy/hy)e
RC	(ʔy)a	o̤	o;(ʔy)a
A	a;(t)a/o;(ʔy)e; (b/g ^w /ʔw/hw)o	o̤	o;(y/ʔy/hy)e
Le	a	a̤	ạ
Qi	o;(z/ʔy/hy)a	o̤	oh;(z)ah;(y/ʔy/hy)iah
Y	a;(z)e	a̤	o;(z)a;(ʔy)e
Tm	(z)a	a̤	o
Co	a;(k)o;(z)ia	a̤	o;(z/y/ʔy/hy)ẹ

	*ạ	*aʔ
Oj	o;(y)ɛ	o;(ʔy)e
U	o;([m]/ʔ[m]/h[m])uɛ;(y)iɛ	o;(z/ʔy)ie
Tl	o/ɛw;(kʷ)u;(s/r)ɛw;(h/ŋ)ɔ	o
Ch	ɔ	o
M	ɔ	-
S	o;(m/ʔm/hm)u	o
Qe	o;(h)au;(n)ɔ/au	o;(z/ʔg)au;(ʔy)u
Z	-	-
Tp	au;(n/ʔn)au/ɔ;(ŋ)ɔ;(y)ioɔ/iɔ;(ʔm/hm)u	o;(t)a
Pa	o;(t)aw;(h)aw/ɔw/ɛw;(n)aw/ɛw/u/ɔ;(y)ɛw;(r)ɔ/ɛw; (ʔm)ɔw/u/ɔ;(hm)uw/ɔ;(ʔn)aw/ɔ;(hn)aw/uw	a;(hw)a
VN	(t/h)ao;(m/n/ʔm/hm)oa/ɔ;(ʔn)ao/ɔ	oa;(ʔy)a
Oz	o;([r])ɔ̃	o;(ʔy)a
Ll	ɔ	o
Lc	-	(ʔy)a
Pe	o;(y)ə	o;(ʔy)e
To	ɔ	o;(ʔy)e
RC	ɔ	(ʔy)a
A	o;(y)ɛ	(ʔy)e
Le	ạ	a
Qi	ọh;(y)iạ	o;(z/ʔy)a
Y	ɔ	(ʔg)a
Tm	-	o
Co	o;(y)ɛ	a;(ʔg)o

	*aʔ	*aːʔ	*aːʔ
Oj	ɔ	a	ʔ
U	ɔ;([m]/ʔ[m])uɛ	a	ʔ
Tl	ɔ;(ʔn)ɛw	a	ʔ
Ch	ɔ	a	ʔ
M	ɔ	a	ʔ
S	ɔ;(ʔm)u	a	ʔ
Qe	(h)ʔu;(r)ɔ	a	ʔ
Z	-	a	-
Tp	ɔ;(h)ʔ;(ʔm)u	a;(z/y)o	ʔ;(k[ʷ])ɔ
Pa	ɔ;(h)ʔ;(ʔn)ʔw	a;(k[ʷ]/h[w])u;(z/ʔ[w])o; (gʷ)i/a;(ʔy/hy)i	ʔ;(k[ʷ])ɔ
VN	(h)ʔɔ;(ʔm)ɔʔ	oa;(kʷ/gʷ/hw)a;(ʔy/hy)e	(m)ɔʔ
Oz	ɔ	a;(k[ʷ])ya	(k[ʷ]/s/m/ʔm)ɔ;(h/hŋ)ʔ
Li	ɔ	o	ɔ
Lc	-	o;(y/ʔy/hy)a	ɔ
Pe	-	o;(y/ʔy/hy)e	ɔ
To	-	o;(y/ʔy/hy)e	ɔ
RC	-	o;(ʔy)a	ɔ
A	-	o;(ʔy/hy)e	ɔ
Le	ʔ	a	ʔ
Qi	ɔ	oh;(z)ah;(ʔy/hy)iah	ɔh
Y	-	o;(z)a;(ʔy)e	ʔ
Tm	-	-	-
Co	ɔ;(h/ʔn)ʔ	o;(z/ʔy/hy)e	ɔ

	*aŋ	*aʔŋ	*aŋ	*aʔŋ	*a:ŋ	*a:ʔŋ
Oj	-	ʔ	ʔ	ʔ	ʔ	ʔ
U	ʔ	ʔ	ʔ	ʔ	ʔ;(z)jʔ	ʔ
Tl	ʔ	ʔ	ʔ	ʔ	ʔ	ʔ
Ch	ʔ	ʔ	ʔ	ʔ	ʔ	ʔ
M	-	ʔ	-	-	-	-
S	ʔ	ʔ	ʔ	ʔ	ʔ	ʔ
Qe	ʔ	-	ʔ	ʔ	ʔʔ	-
Z	-	-	-	-	-	-
Tp	ʔ	ʔ	ʔ	ʔ	ʔ	ʔ
Pa	a;(z/h/l)ʔ	ʔ	ʔ	ʔ	ow/uw/o;(s)ʔ; (ø)ow/əw/u/ʔ	ʔ;(ʔw)a
VN	-	ʔ	ʔŋ	-	ʔŋ	a
Oz	-	ʔ	ʔ	ʔ	-	-
Ll	ən;(ʔy)en	ən	ən	ən	a:n	a:n
Lc	an	-	ʔan	ən	an	-
Pe	(g ^w)an	-	-	-	a	-
To	(ʔy)an	-	-	-	-	-
RC	-	-	-	-	-	-
A	(z/ʔy)an	-	ən	ən	-	-
Le	ay	-	ʔy	ʔy	a:y;(y)e:y	ay
Qi	-	(ʔy)ei	ʔi	ʔi	aih;(z)eih	(g ^w)oih; (z)eih
Y	-	-	ʔŋ	ʔ	aŋ	-
Tm	-	-	-	-	-	-
Co	-	(z)e	ʔŋ	ʔŋ	a:ŋ;(z)e:ŋ	-

	*a·ŋ	*a·ʔŋ
Oj	ə	ə
U	ɔ;(kʷ)ɛ	([m])ʉɛ
Tl	ɔ;(kʷ)ʉ	-
Ch	ɔ	-
M	-	-
S	ɔ	-
Qe	-	-
Z	-	-
Tp	ɔ	(ʔm)ʉ
Pa	ɔ	ə
VN	(y)ɛ	-
Oz	-	-
Ll	ə·n	ə·
Lc	-	-
Pe	-	-
To	-	-
RC	-	-
A	-	-
Le	-	-
Qi	ə·h	-
Y	-	-
Tm	-	-
Co	ə·ŋ	-

	*iu	*iʉ	*iu·
Oj	i	i	i
U	ei;(k)i	ei;(ŋ/?ŋ/hŋ)i	ai
Tl	i;(t/k)yu/i;(hl)yu	i	ay;(k/h/ø)i
Ch	yu	yʉ	i;(s)ey
M	yu	yʉ	i
S	yu	yʉ	ei
Qe	i;(t)yu	yʉ;(s)ei	ei;(s)ai
Z	yu	yʉ	-
Tp	i;(z)e	(k/s/?n)ei;(ŋ/?ŋ/hŋ)i;(hn)ei	ei
Pa	yu;(z)yo	yʉ/yʉ;(ŋ/?n/?ŋ/hŋ)yʉ	yu/yew/ew
VN	yu	yʉ	(h)ui
Oz	(t)ʉ;(k)ye;(z/s)˘u;(hl)ö	ei;(s/?ŋ/hŋ)˘ʉ	ö
Ll	(t)ö;(k)yö;(z/s)˘ö	ö;(s/ŋ/?ŋ /hŋ)˘ö	ö·
Lc	ö	(s/ŋ/?ŋ)˘ö	ö
Pe	ö	(ŋ/?ŋ)˘ö	ö
To	ö	(s/ŋ/?ŋ)˘ö	ö
RC	ö	(ŋ/?n)˘ö	ö
A	ö	ö;(?n)˘ö	ö
Le	yu;(z)˘u	(s/n/ŋ/?n/?ŋ)˘ʉ	yu;(s)˘u;(ø)i·
Qi	yü;(t/z)ü	(s/ŋ/?n)ü	üh;(h)˘üh
Y	yü;(t)ü	(?n/?ŋ)ü	(h)˘ü
Tm	yu	-	-
Co	ö;(k/?/z)iö	(s/?n)ö;(ŋ/?ŋ/hŋ)iö	ö;(k)iö;(h)yö·

	*iɥ·	*iuʔ	*iɥʔ	*iu·ʔ
Oj	i	-	(ŋ)i	i
U	ai;(k/ŋ/?ŋ/hŋ)ɛi	(s)ai	(ŋ)ɛi	ei
Tl	ay;(ŋ/?ŋ/hŋ)i	(s)ay	(ŋ)yɥ	ay;(t)yu/i;(k)i
Ch	ɛy;(k/hŋ)i	(s)ey;(k)i	(ŋ)yɥ	yu
M	(k)yɛi;(n)ai;(ʔŋ)i;(hŋ)ɛi	(k)i	(ŋ)yɥ	yu
S	(s/n)ɛi;(k/?ŋ/hn/hŋ) yɛi;(ʔn)yɛ	(s)e;(k)yei	(ŋ)yɥ	yu
Qe	ai;(k)yɛi;(ʔŋ/hn/hŋ)yai	ai;(k)ye	-	ei/e/i
Z	(n)ɛi	-	-	-
Tp	(s/n/ŋ/?ŋ/?n/hn/hŋ)ɛi	-	ɛ;(ŋ)i	i;(s)i/ei
Pa	ɛw;(k/ŋ/?ŋ)yiw/yɛw; (s)yɛw	yu/ye	(ŋ)yɛ	yu;(k)yew/yu
VN	ɥi;(k/?ŋ/?ŋ/hŋ)yɥ	-	(ŋ)ɥi	u/yu;(h)ui
Oz	(k)yɛ;(n)ö;(ŋ)yɥ; (ʔn)ɛi;(ʔŋ) ö;(hŋ)i	-	-	ö
Ll	ö;(s/?ŋ)˘ö	ö	(ŋ)˘ö	ö
Lc	ö	-	-	-
Pe	ö	-	-	ö
To	ö;(s)˘ö	-	-	ö
RC	ö	-	-	-
A	(s)ö	-	-	ö
Le	˘ɥ·	yu	(ŋ)yɥ	yu;(s/h)˘u·
Qi	(ŋ/?ŋ)˘üh	-	(ŋ)˘ü	üh;(k)yüh; (h)üh
Y	(k)yü	-	(ŋ)˘ɥ	yü;(h)˘ü
Tm	-	-	-	-
Co	ö;(ŋ/?ŋ/hŋ)iö	ö	-	ö;(k)iö;(h)yö

	*iꞱ·ʔ	*iuŋ	*iuʔŋ	*iꞱŋ	*iꞱʔŋ
Oj	ĩ	-	-	-	-
U	əi:(ŋ)əĩ	-	-	-	(ʔŋ)ĩ
Tl	əy:(ŋ)əw	(ʔ)yɔ:(hl)yəw	-	-	-
Ch	əy	-	-	-	-
M	-	-	-	-	-
S	yə	(k)yꞱ	-	-	-
Qe	yəĩ	-	-	-	yəĩ
Z	-	-	-	-	-
Tp	ə:(ŋ)ĩ	-	-	-	ĩ
Pa	yɔ/yꞱ:(s/ŋ/ʔn)yꞱ	yuw;(z)yow	-	(k/ŋ)yɔ	yɔ
VN	yꞱ,Ʇĩ	yuŋ	-	(k/ŋ)yꞱŋ	yꞱ
Oz	ə:(ʔŋ)˘Ʇ	-	-	-	˘Ʇ
Ll	ö:(s)˘ö	(t/hl)ön;(ʔ)yun; (z)˘un	-	(k/ŋ)yꞱn	˘Ʇn
Lc	ö	-	-	-	Ʇn
Pe	-	(ʔ)ön	-	-	-
To	-	-	-	-	-
RC	-	-	-	-	-
A	ö	(z)˘un	-	-	-
Le	(s)˘Ʇ·	yuy	-	(ŋ)˘Ʇy	-
Qi	-	(ʔ)yui	-	(k)yꞱĩ	˘Ʇĩ
Y	-	-	-	-	-
Tm	-	-	-	-	-
Co	iö:(s)ö·	iuŋ	-	-	iöŋ

	*iu·ŋ	*iu·ʔŋ	*iɸ·ŋ	*iɸ·ʔŋ
Oj	-	-	-	-
U	-	-	(k)i	-
Tl	(ø)ɛy	-	-	-
Ch	-	-	-	-
M	-	-	-	-
S	-	-	-	-
Qe	-	-	-	-
Z	-	-	-	-
Tp	ɛ	-	-	-
Pa	(t)yuw	(k)yuw	(k/s)yɔ	-
VN	yʊŋ	-	yɸŋ	-
Oz	-	-	-	-
Ll	u·n	yu·n	(k)yɸ·n	-
Lc	-	-	-	-
Pe	-	-	-	-
To	-	-	-	-
RC	-	-	-	-
A	-	-	-	-
Le	u·y	-	-	-
Qi	(h)˘uih	-	yɸjh	-
Y	(h)yun	-	-	-
Tm	-	-	-	-
Co	-	-	iɸ·ŋ	-

	*ia	*iä
Oj	ya;(z) [˘] a;(l/?l)a	yä;(/?n/hn)ä;(/?η/hη) [˘] ä
U	ia;(z) [˘] a	iä;(/?η/hη) [˘] ä
Tl	ya	yä
Ch	ya	yä
M	ya	yä
S	ya;(z)i	yë;(hn)ä;(/?η/hη)yä
Qe	ya	yä;(hn)ä
Z	ya	(hn)ä
Tp	ia	iä
Pa	yi	yj;(hn)j
VN	(z/l/?l)e;(g)ya;(s/h)ye	ë;(hn)ä;(/?η/hη)yë
Oz	(t/l)a;(g)ya;(s) [˘] a	(k)yë;(n/hn)ë;(/?η/hη) [˘] ä
Ll	yä;(t/h/l)ä;(z/s) [˘] a	(n/hn/h[η])ë;(/?η/hη) [˘] ä
Lc	ya;(z) [˘] a;(l)a	ë;(k)yë;(/?η/hη) [˘] ä
Pe	ya;(z) [˘] a;(g)ye	ë;(/?η/hη) [˘] ä
To	ya;(z/s) [˘] a;(l)a	ë;(k)yë;(/?η/hη) [˘] ä
RC	(g)ya	(/?η/hη) [˘] ä
A	ya;(z) [˘] a;(s/l)a	ë;(k)yë;(/?η/hη) [˘] ä
Le	ya;(z/s) [˘] a	yä;(n/?η/hn/hη) [˘] ä;(h[η])ë
Qi	(t/s/l)a;(g)ya	(/?η/hn/hη) [˘] ä
Y	(z/g)ye;(s/h/l/?l)e	(/?η) [˘] ä;(h[η])ë
Tm	(s)a	(hn)ä
Co	ia	(k)ië;(/?η/hb/hη)iä

	*ia·	*ia·
Oj	ye;(t/s/l/?l)e;(z)˘e	ɛ;(k)j
U	ie	iɛ
Tl	yew/yo;(t/k/g)yu;(s)yo/yo	(n)yɛw;?nyɔ
Ch	(t)yu;(s/l/?l)yo;(g)yo/yo	yɔ
M	(t/g/?l)i;(k/z)ye;(s)ya	(n)j
S	yo;(s/g)yo/yo	(n)yɔ
Qe	yu	(n)yɔ
Z	(?)o	-
Tp	iog/io	(n/?n)ioɔ;(/?ŋ/hn/hŋ)ioɔ
Pa	yaw/yew/yo;(z)yew; (l)yo/yaw/ew;(?l)ew	yɔ/ɛw;(n)ɛw/yɔ/yɛw;(/?ŋ)yɛw;(hn/hŋ)yɛw
VN	(t)ye;(/?/?l)o;(g)ye/yo; (s)ye/yo;(l)ya	(n)yɔ;(h[ŋ])ɔ
Oz	ö;(k)yu;(g)ye;(z/s)˘o	ö
Ll	ä;(k/g)yä;(z/s)˘o	ɛ;(k)yɛ;(/?ŋ)˘ɛ
Lc	a;(k/g)ya;(z/s)˘a	ɛ
Pe	a;(g)ye;(z/s)˘a	ɛ;(h[ŋ])ɛ
To	a;(k/g)ye;(z/s)˘e	ɛ
RC	a;(g)ya;(z/s)˘a	ɛ
A	a;(k)i;(z)e;(g)ye	ɛ;(k)j
Le	ya;(/?/h)e;(z/s)˘a	(t)yɛ;(/?/h[ŋ])ɛ;(z)˘ɛ
Qi	ah;(k/z/g)yiah;(h)eh	ɛh;(k)yɛh
Y	a;(k/z/g)ye	ɛ
Tm	-	-
Co	e;(k/z/g)ie	ɛ

	*iaʔ	*iəʔ	*iaʔ	*iəʔ
Oj	e;(k)i	(ʔŋ)ʔe	ya;(z)ʔa;(l)a	ə;(s)yə
U	ie	iɔ	ia;(z)a	iə
Tl	yo	-	ya	(ʔn/hn)ə;(s)yə
Ch	yo	-	ya	(ʔn/hn)ə;(s)yə
M	ye	-	ya	(ʔn/hn)yə
S	yo	(ʔn)yɔ	ya	(ʔn/hn)ɔ;(s)yə
Qe	yu	-	ya	(s)yə
Z	-	-	a;(l)ya	-
Tp	io	iɔ	ia	iə
Pa	(k/g)ya;(z/l)yo; (s)yu	(n)yɔ;(ʔn)yɔ; (ʔŋ)yə	yi	yj;(ʔn)yə
VN	e	-	e;(z/s/l)ye	(hn)ɔə
Oz	ö	-	a;(z)ʔo;(s)ʔa	(ʔn)ə;(hn)e
Ll	yä;(k)ye;(z/s)ʔo; (l)ä	e	ä;(k)ya;(z/s)ʔo	(s)ʔe;(ʔn/hn)e
Lc	a;(z)ʔa	-	a;(z/s)ʔa	-
Pe	e;(z)ʔe	-	a;(z/s)ʔa	(s)ʔe
To	a/e;(z)ʔe	-	a/ye;(z/s)ʔe	(s)ʔe;(hn)e
RC	-	-	(l)a	-
A	a/e;(k)i;(z)e	-	a;(s)e	(s/ʔn)e
Le	ya;(z)ʔa	(ʔ)e	ya;(z/s)ʔa	(s/ʔn)ʔa
Qi	ya;(z)ʔa;(hl)a	(k)yə;(ʔŋ)ʔa	ah;(k)ʔiah;(z)ʔia	(ʔn/hn)əh
Y	ye;(s)e	(ʔŋ)ʔe	a	(hn)ə
Tm	-	-	-	-
Co	ia	-	e;(k/z)ie	(s/hn)e

	*iaŋ	*iaʔŋ	*iaŋ	*iaʔŋ
Oj	yə	(z)ʔə	(ʔŋ/hŋ)ʔə	(ʔn)ə
U	iə	(z)ə	-	-
Tl	yə	(z)yə	-	-
Ch	yə	(l)yə	-	-
M	-	-	-	-
S	yə	yə	-	-
Qe	yə	-	-	-
Z	-	-	-	-
Tp	iə	iə	(hŋ)iə	-
Pa	yə;(g)yaw	yow/yo;(z)yə; (l/ʔl/hl)ya	(ʔŋ)yəw; (hn/hŋ)yə	(ʔn/hŋ)yə
VN	(z)yə;(g)yaŋ	-	yəŋ	-
Oz	(s)ʔə;(l)yə	-	(hŋ)ʔə	(hŋ)ʔn
Ll	(k)yen;(z/s)ʔen; (l)en	an;(z)ʔen;(l)en	(ʔŋ)ʔen;(hn/ h[ŋ])əŋ	(ʔn/h[ŋ])əŋ
Lc	(g)yan;(s)ʔan	(z)an	(ʔŋ)ʔan;(h[ŋ])əŋ	-
Pe	-	-	-	-
To	(s)ʔan	-	-	-
RC	(s)ʔen	-	-	-
A	(s)an	-	(hn)əŋ	-
Le	(g)ye;(s)ʔey	(z)ʔa;(l)yey	([ʔ])ŋ)ʔə	(hŋ)əy
Qi	(g)yei;(s)ei	-	(ʔŋ/hŋ)ʔəi	-
Y	(s)eŋ	-	-	-
Tm	-	-	-	-
Co	-	(l/hl)eŋ	-	([ŋ])ə

	*ia:ŋ	*ia:ʔŋ	*ia:ŋ	*ia:ʔŋ
Oj	(t)ʔ;(g)yʔ	(t)ʔ	-	-
U	iʔ;(k)iʔ;(z)ʔ	iʔ	-	(ŋ)iʔ
Tl	yʔ;(t)ʔ	(t)o	-	-
Ch	-	-	-	-
M	-	-	-	-
S	yʔ	-	-	-
Qe	yʔ	-	-	-
Z	-	-	-	-
Tp	iʔ;(k)iʔ	iʔ	iʔ	-
Pa	yuw/yʔ;(t)yʔ; (g)yow/yuw; (s/ʔl)yow	yʔ;(z/l/ʔl)yaw; (s)yuw	yʔ	yʔ;(hŋ)yʔ
VN	yŋ;(g)yŋ/yuŋ;(s)yaŋ	-	-	-
Oz	(k)yʔ	-	-	-
Ll	e:n;(ʔ/ʔl)ä:n; (g)ya:n;(z/s)ʔa:n	e:n;(z/s)ʔa:n	yʔ:n; (hn/h[ŋ])ʔn	yʔ:n;(ŋ)ʔa:n
Lc	(g)yan	-	-	-
Pe	-	-	-	-
To	-	-	-	yʔ
RC	-	-	-	-
A	-	-	-	-
Le	ye:y;(g)ya:y;(s)ʔey; (ʔ/l/ʔl)ey	-	-	-
Qi	aih	-	(hn)ʔih	-
Y	(g)yŋ	eŋ	-	-
Tm	-	-	-	-
Co	e:ŋ	(z)a:ŋ	(h[ŋ])ʔe:ŋ	-

[blank]

Appendix C:
Reflexes of Proto Chinantec Prosodic Elements

	*CV	*CV?	*CV·	*CV·?	*C'V	*C'V?	*C'V·	*C'V·?
*H								
Oj	1		31	1	1	1	1	1
U	2	2	32	32	23	2	23	2
Tl	2;42*		4;12;í	1	í	í	í	í
S	1		3	3	12	32	12	í
TP	1;21*		21;1	31;21*	í	í	í	í
Pa	1		1	1	í	í	í	í
Ll	2	2	2	2	2h	2	2h	2
Le	2		2	2	í		í	í;2
Qi	2		2	42	1	1	1	1
Co	1		1	21	í	1	í	í
*L								
Oj	2		2	2	3	3	3	3
U	3		3	3	4	4	4	4
Tl	3		3	4	3	3	3	3;2
S	2		2	2	23	23	23	3
Tp	2		2	2	2		2	2
Pa	2		2	2	2	2	2	2
Ll	3		3	3	3h	3	3h	3
Le	3		3	3	3		3	3
Qi	34		23	23	24	23	3	34
Co	12		2	12	12	í	2	12

*Regular reflex that occurs in Tl and Tp in obligatorily possessed nouns.

	*CV	*CV?	*CV.	*CV:?	*C'V	*C'V?	*C'V.	*C'V:?
*HL								
Oj		2	2	2	4		4	4
U		3	23	3	34		34	5
Tl		4	4	4	2		2	3
S		23	2	2	23		23	
Tp		2	2	2	3		3	3;3
Pa		2	2	32	3		3	3;3
Ll		2	23	23	23h		23h	23
Le			4	4	4		4	4
Qi		4	4	4	34		3	
Co		12	12	1	2;1		2	12

	*LH							
Oj	2	3	2	2	3	4	2	4
U	3	3	3	3	43	43	43	
Tl	4	4	4;34	4	3	4;4	4	3;4
S	32	32	32	32	23	23	2	
Tp	32	32	32	2	32	32	32	
Pa	32	32	32	32	32	32	32	
Ll	3	2	3	3	2h	2	2h	
Le	3	2	3	3	2	2	2	
Qi	4	4	4	4	3	3	43	
Co	2	2	2	2	21	2	21	

	*CV	*CV?	*CV·	*CV·?	*C'V	*C'V?	*C'V·	*C'V·?
*HLH								
Oj			31	31			31	
U			1	32			2	
Tl			42	42			2	
S			1	1			1	
Tp			21;1	31			21;1	
Pa			1	1			1	
Ll			232	232			2h	
Le			42	42			í	
Qi			242				242	
Co			12				12	

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This *Chinantec Etymological Dictionary* inaugurates a subseries of SIL and UTA Publications in Linguistics which focuses upon the Chinantec languages of Mexico, one of the major branches of the important Otomanguean stock of tone languages of Mesoamerica. The Chinantec languages comprise fourteen languages spoken by an excess of 60,000 people who reside in the northeast quadrant of the southern Mexican State of Oaxaca.

In the Etymological Dictionary, Dr. Rensch provides an updated version of his *Proto Chinantec phonology* (1983) and presents, in more complete fashion, the extensive etymological evidence which underlies his Proto Chinantec reconstructions. It, thus, forms an important companion to his *Comparative Otomanguean phonology* (1976).

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