

SYLLABLES, TONE, AND VERB PARADIGMS

Studies in Chinantec
Languages 4



Edited by
William R. Merrifield
Calvin R. Rensch

Syllables, Tone, and Verb Paradigms

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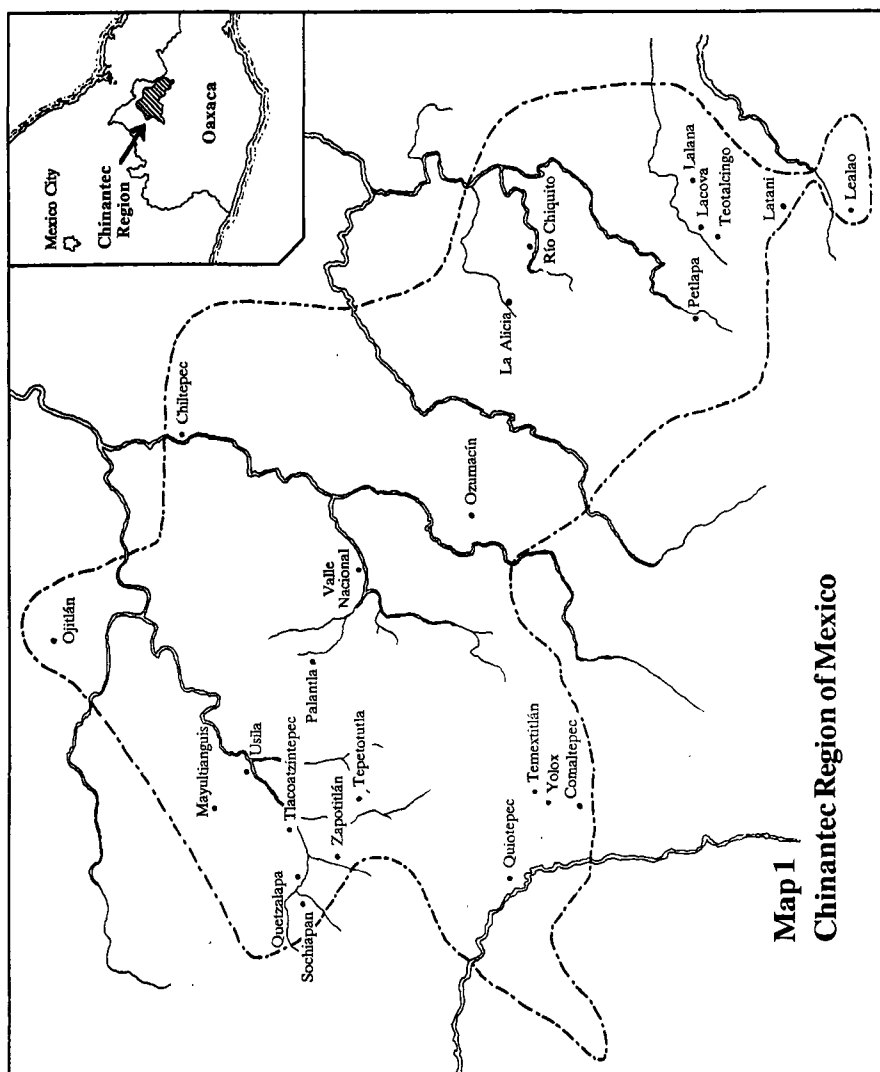
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Editors' Apology

For as long as it has taken to get this collection of Chinantec papers in print, it could have been a festschrift. Rensch began to put the volume together in late 1971 or early 1972, but before their form could be finalized or their number completed he was whisked away one dark, moonless night to an administrative gulag from which pardon may never be granted. After some years of carefully protecting the growing collection of autographs, word was filtered through to him that extradition papers had been signed and that he was to be transferred from his current location somewhere in North Texas to administrative duties which would take him back and forth across Asia in a [futile] attempt to break his academic spirit.

With this knowledge, he began to look for an opportunity to smuggle the manuscripts into safe hands. His chance came at Christmas in 1981 or 1982. He was granted a holiday furlough for a few days and, as it was their custom, the Rensch family shared Christmas dinner with the Merrifield family. This was a long-standing tradition for these two families, begun in the late 1950s, and so aroused no suspicions at the time among the watchful guardians of administrative duty, although it proved to be the last time in recent years that the privilege was granted them.

After the main course had been served and dessert was being readied, Rensch took advantage of an unguarded moment, during which the ever-watchful guardians of administrative duty were arguing over the wishbone, and passed the precious manuscripts under the table to Merrifield. It looked, for a moment, as though long-sought-after and sacrificially collected knowledge of the Chinantec languages would soon be revealed to the academic (free) world.

But Merrifield, alas, was already under administrative house arrest. In spite of repeated starts on putting the manuscripts into shape for

publication during late and early hours, he was forced time and time again to return them to hiding, away from the prying eyes of the administrative hierarchy. But then, these powers made their fatal mistake. They permitted Merrifield to be transferred to the academic publications gulag where, right under their noses, he has finally been able to edit the precious Chinantec autographs for publication.

Long live the Chinantec languages! May their virtues be entoned throughout the land!

William R. Merrifield
Dallas, Texas
October, 1989

Introduction

As indicated in the editors' apology, these studies were all written during the 1970s and would have been usefully published long ago. They were projected to be the first volume in this publication subseries focusing upon Chinantec languages. As it turns out, by the time it became possible to give priority to this project, a workshop on Chinantec syntax was scheduled by the Mexico Branch of SIL at their Catalina, Arizona, center. Five monographs began to take shape during a three-month period which are in various stages of preparation for publication at this time. Two of them have actually appeared in this series, prior to these papers which were written much earlier. The other three monographs are projected to appear during this year and next.

The fact that these papers have been delayed has created some problems, since continuing research has inevitably led to new insights into the structure of Chinantec languages. This is particularly true of Comaltepec and Lealao which have been described in volumes 2 and 3 of this subseries.

This volume contains two contributions relating to Comaltepec Chinantec. The first is a major description of the tone system of that language produced by Anderson, Martínez, and Pace. Since the time of that research, Pace wrote a Master's thesis on Comaltepec verb inflection—the second Comaltepec paper in this volume—but then moved on to work in languages of the Sudan, in East Africa, leaving Anderson to continue Chinantec research. While Anderson has gained new insights into Chinantec phonology since the earlier paper was drafted, systematic work on tone of the sort that brought the original draft together has not been attempted. It has, thus, seemed best to present the original study intact, without forfeiting its integrity as a characterization of the tone patterns of the chief language associate of that period, Isaac Martínez.

Pace's thesis has been revised only slightly for publication here. It is partially repetitious of the later material presented in Anderson's monograph, but Pace's responsibilities in the Sudan have made it difficult to undertake a more vigorous paring back of the material. This partial duplication should not create difficulties for the reader, but will, rather, provide additional factual support of claims made about Chinantec through the examples presented in the two contributions.

There are also two articles relating to Lealao Chinantec, the subject of volume 2 of this subseries, both predating the latter in writing. Rensch's manuscript, placing Lealao data within the context of his comparative work on Proto-Chinantec phonology, was originally drafted in close association with the syllable paper that appears here with it. The syllable paper, however, has received two revisions since that time as a result of Rupp's continuing research in the language. This has required rephrasing of Rensch's paper on two separate occasions as well.

A tone paper on Quiotepec Chinantec, a close cousin to Comaltepec Chinantec, is a third attempt at accounting for this complex phonological system. In two earlier papers, much less was known about Chinantec phonology in general than is now known through extensive research in a dozen languages of the family. The chief point of interest, however, apart from learning more about Quiotepec phonology, may be in the different results obtained by analysis of phonology without reference to grammar—the approach taken in the earlier work by Robbins—from that obtained by a Pikean 'grammatical prerequisites' approach—as was taken in this paper.

The final paper, on Tepetotutla Chinantec, describes Chinantec verbs of motion in a tradition started with similar studies on Mixtec and Zapotec a decade ago. These earlier papers engendered some discussion in the literature of the time, but this one must of necessity be presented as originally drafted, without reference to this discussion if it is to appear at all. In the case of this earlier study of Tepetotutla Chinantec, the monograph being prepared to accompany it will appear subsequent to it, in the near future.

Comaltepec Chinantec Tone

Judi Lynn Anderson, Isaac H. Martínez, and Wanda Pace

Those of us who have had the good fortune and privilege of living and working among the Chinantec people of Oaxaca, after years of study of their language, continue to be very much impressed by the subtle complexity of Chinantec phonology. The interplay of tone, stress, and vowel-length contrasts, patterns of tone sandhi, and complicated tone morphology present a formidable barrier to phonological analysis. This paper¹ attempts to unravel some of these complexities through a detailed discussion of the tone system as it relates to these other factors. After a brief introduction to the structure of the phonological word, the syllable is described, passing over the segments with a minimum of detail in favor of a more thorough discussion of tone, patterns of inflection for person-of-subject and person-of-possessor as they affect phonological structure and tone sandhi. The paper closes with a discussion of problems related to analytical choices the authors made.

¹The language described in this paper is spoken by the approximately 1000 residents of Santiago Comaltepec, Ixtlán de Juárez, Oaxaca, México. The data were collected by JLA and WP during extended field trips to Comaltepec from January 1970 to the present, under the auspices of the Summer Institute of Linguistics. IHM is a native of Comaltepec, and for several years served as principal language associate in the linguistic research of JLA and WP. Although bilingual in Spanish and Chinantec, he cannot be held responsible for errors in this statement. He has, nevertheless, been an indispensable member of the team that has produced it. Calvin R. Rensch gave extensive help in preliminary analysis at a linguistic workshop in the fall of 1970, and William R. Merrifield guided the final stages of analysis as well as the preparation of this paper. This help is gratefully acknowledged.

A Chinantec word consists of one or more syllables, only one of which is stressed—usually the last. The major lexical classes are usually realized as a single stressed syllable, but there are also a substantial number of complex verb and noun stems having a pretonic syllable as well. A handful of verbal prefixes and a few proclitic functors provide further sources for pretonic syllables. *húː^H* ‘word’, *těː^M* ‘I call’, *hmiː^Lsɿ^{HL}* ‘cat’, *kaː^Lhmiː^Lhmiː^H* ‘I melted it’.

Grammatical inflection for person-of-subject (in verbs) or possessor (in nouns) is the source of a posttonic unstressed syllable in that pronouns occur in both a FULL form as stressed syllables and in a REDUCED unstressed form with limited segmental and tonal properties. *lá^{LM} hnä^{LH}* or *lá^{LM}a* ‘I buy it’, *bɿː^L hnä^P* or *bɿː^Li* ‘we throw it’.

There are two kinds of word stress, ballistic and controlled. A ballistic syllable (= syllable with ballistic stress) is characterized by a surge and rapid decay of intensity with a resultant fortis articulation of its consonantal onset and a tendency to loss of voicing resulting in a breathy release toward the end. A controlled syllable displays a more constant level of intensity throughout its duration and is typically longer than a ballistic syllable. Important for our consideration in this paper are tone characteristics which differ between ballistic and controlled syllables; details of these differences are presented in the body of the paper.

A ballistic syllable is marked by an acute accent /´/ over its nuclear vowel. A controlled syllable is unmarked (for the sake of simplifying the notation), but is distinguished from unstressed syllables in a controlled word of more than one syllable as the last syllable marked for contrastive tone.

1. Syllable constituents

The stressed syllable may have the following form: a consonantal onset, prenuclear /i/ or /u/, nuclear vowel, postnuclear nasal, glottal closure, final consonant, and tone. Only the nuclear vowel and tone must occur; other elements are optional. The nuclear vowel may be short or long, oral or nasal.

1.1. Consonantal onsets. Any of sixteen consonants may occur in the syllable onset: labials /p b m/, alveolars /t d c z s r l n/, velars /k g ŋ/, and laryngeals /ʔ h/; /c z/ are affricates [tʃ dʒ]; /r/ is a retroflexed palatal that varies between a spirant [ʃ] and a trill [r̄]; and /h/ is a voiceless counterpart

of the segment it precedes. *pi*^{PH} ‘little (i)’,² *bē*^{PH} ‘ball’, *mí*^H ‘plain’, *tí*^L ‘thin (i)’, *dó*^{LH} ‘maguey sap’, *cí*^H (term of endearment), *zì*^L ‘dog’, *so*^M ‘ascent’, *ro*^L ‘sweet’, *lo*^L ‘rabbit’, *nu*^L ‘grass’, *kí*^{LM} ‘garbage’, *gú*^{LH} ‘owl’, *ñú*^{LM} ‘meat’, *po*^M ‘papaya’, *hí*^L ‘book’.

Laryngeal consonants may occur alone in the syllable onset, as indicated above, or may combine with /m n ŋ l g/ as the first member of a cluster. *ʔmí*^L ‘feces’, *hmí*^L ‘water’, *ʔní*^{LH} ‘rope’, *hniú*^L ‘green beans’, *ʔñión*^{PLM} ‘waist’, *hñan*^{PLMr} ‘he kills’, *ʔle*^L ‘dust’, *hlo*^{PH} ‘pretty’, *ʔgo*^L ‘elegant’, *hgo*^{PL} [x:o^{PL}] ‘rotten’.

Voiced stops /b d g/ are frequently prenasalized. Furthermore, they almost never occur before a nasal vowel, a fact which places them in almost complete complementation with /m n ŋ/, which always occur before a nasal vowel. The two known exceptions that create contrast are *bô*^M ‘corpulent’ and *gô*^L [\$gô] (courtesy modal adverb). Cf. *mó*^{LM} [mô^{LM}] ‘century plant’ and *ñó*^M [ñô^M] ‘went’.³

In words borrowed from Spanish, a few additional consonant clusters occur, such as those with /r/ as second member. In this context, /r/ is a flap. *trén*^{LH} ‘railroad train’, *drē*^M ‘Andrea’.

In a very few lexical items, syllables occur without a consonantal onset. *én*^{PLMr} ‘he feeds (him)’.

1.2. Nuclear vowels. Any of eight vowels may occur as the nucleus of a syllable peak: front unrounded /i e/, back unrounded /ĩ ě/, back rounded /u o/, and low /ä a/. *lí*^H ‘flower’, *he*^{PLM} ‘frog’, *lí*^{PH} ‘circle’, *bē*^{PH} ‘short’, *lu*^L ‘fly’, *ho*^{PLH} ‘maggot’, *zā*^L ‘person’, *ta*^{LH} ‘work’.

Any vowel may be short (as above), or long. *tí*^L ‘thin (i)’, *te*^L ‘white (i)’, *tí*^M ‘foot’, *rē*^L ‘smooth’, *ku*^M ‘money’, *ʔó*^H ‘rotten’, *tā*^{LH} ‘daddy’, *ha*^{nL} ‘one (a)’.

Any vowel may be oral (as above), and any except /ě/ may be nasal. *ʔí*^{LM} ‘stupid’, *ʔé*^{LHr} ‘his uncle’, *hí*^H ‘weasel’, *tú*^{PM} ‘you pour it’, *hmí*^{Lkô}^{PHM} ‘you help him’, *hmi*^{Ltā}^{LM} ‘Macuiltianguis’ (a town name), *kā*^M ‘I charge (money)’.

There is no contrast between oral and nasal vowels after nasal consonants in the syllable onset; all such vowels are phonetically nasal. With postnuclear nasals, the contrast between oral and nasal vowels is extremely marginal. Only a few words are known in which the vowels are

²Verbs (and adjectives) are inflected to agree with the gender of noun subjects or objects. (a) indicates animate gender, (i) inanimate.

³As indicated in these examples, since nasal consonants always precede nasalized vowels, we choose to leave the nasalization unmarked on such vowels in our phonemic notation. The \$ in the phonetic transcription indicates tone perturbation.

clearly nasalised. *ha:n^L* ‘one (a)’, *hɑ:n^L* *ʔi^Lr* ‘he awaits him’, *ʔi:n^L* *ʔi^Lr* ‘he sweats’, *ʔi:n^L* ‘thief’, *pin^{ʔH}* ‘small’ (a), *pín^H* ‘spotted (from Spanish pinto)’.

1.3. Prenuclear /i/ and /u/. Prenuclear /i/ may occur in syllables following any consonantal onset other than a bilabial or /r/, or without a consonantal onset, and may precede the long or short vowels /e a u o/, the back unrounded vowels /i ē/, or low front /ä/.

The sequence /ie/ is infrequent, being attested in few words and following only a limited number of consonants. *dié^{LH}* ‘god’ (from Spanish dios), *ʔie:^L* ‘sun’, *hie^{HM}* ‘where’.

A velar consonant is invariably followed by a nonsyllabic [i] in syllables with /i e/ as nuclear vowel. This is here treated as allophonic. *ki^{LM}* [kɿ^{LM}] ‘garbage’, *gé^M* [gyé^M] ‘seven’ (i), *ne^{ʔM}* [ñyɛ^{ʔM}] ‘father’.

The sequence /ia/ is in near complementary distribution with /ä/, there being contrast only after laryngeal consonants. After an alveolar or labial, only /ä/ is attested; after a velar consonant, only /ia/ is found. *hǎ^{LM}* ‘spider’, *hiǎ^{LM}* ‘cliff’, *ʔǎn^{LM}* ‘very’, *ʔia^{LM}* ‘griddle’, *ʔiǎ:n^L* ‘it sprouts’, *bǎ^{LM}* ‘bunch’, *ʔmä:^M* ‘I guard’, *tǎ:n^L* ‘white (a)’, *ʔlǎ^L* ‘snare’, *nǎ^{LM}* ‘open!’, *kiǎ^{ʔM}r* ‘his’, *giǎ:n^M* ‘twenty (a)’, *ʔniǎ^L* ‘five (i)’.

The sequence /iu/ is attested with all consonantal onsets with which prenasal /i/ is known to occur. In this sequence, unless followed by the postnuclear nasal, /u/ is lowered and rounded to [ö]. *giú^M* [gyó^M] ‘good (i)’, *giún^M* [gyún^M] ‘good (a)’, *hiu^{LH}* [Iyö^{LH}] ‘a little bit’, *hiú:n^{LH}* [Iyú:ŋ^{LH}] ‘child’.

Following an alveolar consonant, when preceding /u/ (without postnuclear nasal), the articulation of /i/ is reduced to its fronting and lowering effects on /u/ and to palatal backing of the consonant. *tiú^{LM}* [tǒ^{LM}] ‘rifle’, *ciu^{ʔLMr}* [tšö^{ʔLMr}] ‘he kisses’, *siú:^{LH}* [šǒ:^{LH}] ‘small deer’, *ʔliu^{ʔLM}* [ʔǒ^{ʔLM}] ‘you lick’, *niú^{LM}* [ñǒ^{LM}] ‘soap’.

The sequence /io/ occurs only before postnuclear nasal. After an alveolar consonant, which has a palatal backing in this context, /i/ is lowered to a quick glide [e]. *ka^L-sion^{LMr}* [ka^Lšeó^Liŋ^M] ‘he got a desire for it’, *niôn^{ʔLMR}* [neõn^{ʔLMR}ŋ^H] ‘night overtakes me’, *kio:n^M* [kio:ŋ^M] ‘four (a)’, *hnió:n^Mr* [ññyó:ŋ^M] ‘there are six of them (a)’.

Prenuclear /u/ may occur following any velar or laryngeal consonant other than /ŋ/, or without a consonantal onset, and may precede any vowel other than /u/. *kue:^L* ‘long (i)’, *guá^{ʔM}* ‘church building’, *huí:^L* ‘village’, *ʔuí^{ʔM}* ‘black (i)’, *guo:^L* ‘hand’, *hué^{ʔLM}* ‘fear’, *kuǎ^{LH}* ‘horse’, *guí:^M* ‘cold’, *ʔuí^{LM}* ‘dish’, *ʔue^{ʔL}* ‘hard’.

1.4. The postnuclear nasal. The nuclear vowel may be followed directly by a postnuclear nasal. Its occurrence is often associated with inflection for animate gender, but it also occurs in forms that appear to be morphologically simple. *pin*^{PH} ‘small (a)’, *giún*^M ‘good (a)’, *huín*^{LM} ‘many’, *gín*^{LM} ‘swing’.

The postnuclear nasal varies in point of articulation from a labial to a velar according to context. It is (somewhat arbitrarily) here considered to be alveolar in its underlying form on the basis of the realization of a chameleon segment which follows it. Specifically, the first-person-singular personal pronoun (§2.1) has a reduced form which is chameleon, taking on the form of a preceding segment (other than /ʔ/). Following the postnuclear nasal, this chameleon is realized as an alveolar nasal. *ka^Lsin*^{PH_R} [ka^Lsinʔ^{LH}ŋ^L] ‘I untied (him)’.

The postnuclear nasal is also alveolar preceding /n/ within the word, or preceding any alveolar consonant across a word boundary. *ka^Lhuén*^{LMne}ʔ ‘the animal was frightened’, *hiú:n*^{LH} *ná:n*^H ‘yellow child’, *hiú:n*^{LH} *ti:n*^{HL} ‘thin child’, *hiú:n*^{LH} *la*^{HL} ‘this child’, *hiú:n*^{LH} *rá:n*^H ‘conceited child’, *hiú:n*^{LH} *ze*^{PHM} ‘sick child’.

Preceding a labial consonant, within the word or across a word boundary, the postnuclear nasal is labial. *pin*^{PHb} [pimʔ^H] ‘he is TINY’, *hiú:n*^{LHb} [iyú:m^{LH}] ‘it’s a CHILD’, *hiú:n*^{LH} *pin*^{PH} [iyú:m^{LH} piŋʔ^H] ‘small child’.

Preceding a velar or laryngeal consonant, or pause, the postnuclear nasal is velar. *hiú:n*^{LH} *kěn*^{PHM} [iyú:ŋ^{LH} kěŋʔ^{HM}] ‘big children’, *hiú:n*^{LH} *gi:n*^H [iyú:ŋ^{LH} gyi:ŋ^H] ‘angry child’, *hiú:n*^{LH} *ʔuín*^{PH} [iyú:ŋ^{LH} ʔwíŋʔ^H] ‘black child’, *hiú:n*^{LH} *ʔí*^{LM} ‘stupid child’, *hiú:n*^{LH} *han*^{PHM} [iyú:ŋ^H Aaŋʔ^{HM}] ‘perverse child’.

Preceding /r/ within a word, the postnuclear nasal assimilates the /r/ and actualizes as a fronted velar with a nonsyllabic high front vocoid onglide. *ní^Lhlén*^{Mr} [nǐ^LLléiŋ^M] ‘he will tremble’, *ʔén*^{LMr} [ʔéiŋ^{LM}] ‘he pulls (him)’, *na:n*^{Lr} [nə:iŋ^L] ‘he begins’, *ní^Lmín*^{PMr} [nǐ^Lmǐiŋ^{PM}] ‘he will pinch (him)’, *ʔñón*^{PLr} [ʔñioiŋ^{PL}] ‘he ties (him) up’.

1.5. Glottal closure. A syllable may be open or checked by /ʔ/ without significant distributional limitations with other segmental elements. *hú^H* ‘mosquito’, *hú^{PH}* ‘pineapple’, *ta^{LH}* ‘work’, *ta^{LM}* ‘honey’.

1.6. Final consonants. Phonologically reduced forms of morphemes are the source of two syllable-final consonants, /r b/. They are phonetically the final elements of stressed syllables, but are grammatically enclitic forms of morphemes which follow the morpheme represented by the stressed

syllable. Attention is here drawn to their morphological status by placing them after the tone notation of the stressed syllable in the phonological representation.

/r/ is a reduced form of the third-person personal pronoun. *ʔiá^Lr* ‘her griddle’, *sĭ^{ʔH}r* ‘his clothing’.

/b/ is a reduced form of the modal adverb *bá^{ʔH}* (affirmation). *să^Lb* *kui^L* ‘there is corn’. It allows a noun to function as a predicate. *kuă^{LH}b* ‘it’s a horse’. Syllable-final /b/ is devoiced in the absence of a preceding postnuclear nasal; following such a nasal, it is assimilated into the latter, which is realized as a labial. (It might be as well to consider this a /p/ to begin with, but it is tentatively treated as /b/ because of its relationship to *bá^{ʔH}*. In first attempts at writing Chinantec, native writers used /b/ for this form.) *hi^Lb* [lip] ‘it’s a BOOK’, *pi^{ʔH}b* [pi^ʔp^H] ‘it’s LITTLE’, *món^{LH}b* [móm^{MH}], it’s Raymond’, *iún^{ʔLM}b* *ză^Lmĭ^L* [iúm^{ʔLM} dză^Lmĭ^L] ‘the woman is OLD’.

/s/ occurs as the final consonant of a syllable in just one word each. /s/ occurs in *huĭs^H* ‘really’, which is likely a phonological and semantic adaptation from Spanish *pues* or *pues sí* ‘indeed’. /s/ occurs only in *hial^{HM}* ‘how?’. The cognates of this word in other Chinantec languages show, however, that it has its source in two syllables, the second of which had /s/ as its consonantal onset (cf. Quiotepec *hiá^{LH}la^L*, Palantla *ʔa^Mla^ʔ*).

1.7. Tone. Because of the interplay of tone with stress and other elements of the syllable, it is convenient to speak of eight types of syllable: the class product of ballistic/controlled, long/short, and open/checked contrasts. With this clarification, the tones may be introduced.

A stressed syllable may occur (1) with any of three simple tones: low /^L/, mid /^M/, or high /^H/; or (2) with any of four tone sequences: two upglides (low-mid /^{LM}/ or low-high /^{LH}/) and two downglides (high-mid /^{HM}/ or high-low /^{HL}/).

Low tone is a low descending tone in all syllable types, with the lowering in pitch being greater in ballistic syllables than in controlled. A long open ballistic syllable with this tone has a slight upglide after the more pronounced downglide. *hi^L* ‘book’, *lă^L* ‘snare’, *hmo^L* ‘grass mat’, *kĭ^L* ‘candle’, *hi^{ʔL}* ‘orange’, *hó^{ʔL}* ‘animal’, *hĭ^{ʔL}* ‘you plow’, *kui^{ʔL}* ‘you are acquainted with it’.

Mid tone is a mid level tone of about the same height regardless of syllable type. *mĭ^M* ‘ask (1s)’, *ʔuĕ^M* ‘dirt’, *ziu^M* ‘earthen jar’, *gĭ^M* ‘hot’, *ka^Lguăⁿʔ^M* ‘you arrived home’, *guă^{ʔM}* ‘church building’, *kă^{ʔM}* ‘we charge (money)’, *ka^Lhĭ^{ʔM}* ‘you plowed’.

High tone is a high level tone of about the same height regardless of syllable type. *lɪ^H* ‘flower’, *húː^H* ‘word’, *hloʔ^H* ‘pretty’, *húʔ^H* ‘pineapple’, *niː^Lhiːʔ^H* ‘you will plow’.

A low-mid tone glide begins low and rises only slightly in pitch, the rise being greater in ballistic syllables than in controlled. An open ballistic syllable with this glide is longer in duration than its controlled counterpart. *ki^LLM* ‘garbage’, *ɲi^LLM* ‘pig’, *hmiʔ^LLM* ‘tomato’, *ɡinʔ^LLM* ‘swing’.

A low-high tone glide begins low and rises sharply, except on a long ballistic syllable where its phonetic characteristics are somewhat unusual. In this context, it begins low and descends sharply before changing direction to rise to a point slightly above that of a mid tone. Though the writers usually perceive the downglide portion of the tone as more prominent, native speakers (including IHM) appear to perceive the tone as an upglide. Syllables are longer than corresponding syllables with other tones, except in open controlled syllables. *li^{LH}* ‘tepejilote palm shoot’, *lɔ^{LH}* ‘prickly pear cactus’, *hiː^{LH}* ‘edible tuber’, *bɛʔ^{LH}* ‘short’, *kaː^Lsiː^{LH}* ‘you sharpened to a point (as in pencil)’.

A high-mid tone glide is a short, shallow glide. In short syllables it rises slightly; in long syllables it falls slightly. In each case, the higher part of the glide approximates the level of high tone, while the lower part is at or slightly above that of mid tone. (Arguments for joining these different glides are given in §4.) *teː^Lɡua^{HM}* ‘earrings’, *niː^Lʔɛ^{HM}* ‘tumpline’, *hmi^Lʔɔː^{HM}* ‘soot’, *ziː^Lmóː^{HM}* ‘flea’, *ʔmeː^Lhe^{PHM}* ‘basket with tumpline’, *siː^Lhuːːⁿʔ^{HM}* ‘you pile it up’, *hmiː^Lʔiː^{PHM}* ‘you take a lot of time to do it’.

A high-low tone glide begins at the level of a high tone and falls rapidly to a point below that of mid tone. *hiː^Lhmi^{HL}* ‘onion’, *hiː^Lböː^{HL}* ‘potato’, *ʔmaː^Lkíː^{HL}* ‘pine tree’, *siː^Lni^{PHL}* ‘grasshopper’, *miː^Lhuːⁱʔ^{HL}* ‘cockroach’, *hmiː^Lɡóː^{PHL}* ‘you deceive’.

2. Person inflection

Inflection for person-of-subject or person-of-possessor affects phonological patterning. Reduced forms of personal pronouns are the source of both posttonic syllables and long checked syllables. Each of the personal pronouns will now be discussed.

2.1. First-person singular. The full form of the first-person singular personal pronoun is *hnä^{LH}* ‘I’. *huɪ^LLM hnä^{LH}* ‘I chew’. In reduced form, it is a syllabic chameleon posttonic segment /r/ (= reduplication). Following a syllable with postnuclear nasal, /r/ is a syllabic nasal. In this context, the postnuclear nasal is elided except in a checked syllable, where elision is

optional. $ni^L\tilde{r}i:n^LH_R$ [$n\dot{i}^L\tilde{r}i^LH\eta^L$] ‘I will sweat’, $ka^Lkian^PM_R$ [$ka^Lk\dot{y}an^?M\eta^L$] \sim [$ka^Lk\dot{y}a^?M\eta^L$] ‘I slept’.

Following a syllable without postnuclear nasal, /r/ takes on the quality of the preceding nuclear vowel. (The tonal properties of /r/ and other posttonic syllables are predictable. This is discussed in §3.2.) $hmi^L\eta i^?HM_R$ [$Mm\dot{i}^L\eta\dot{i}^?HM\dot{i}^H$] ‘I ask (him)’, $zi^?LM_R$ [$dzi^?LH\dot{i}^L$] ‘I will terminate’.

The characteristic voiceless breathiness on an open ballistic syllable is particularly prominent in the transition to /r/. $ka^Ln\acute{o}M_R$ [$ka^L?n\acute{o}^MQ\acute{o}^L$] ‘I got it’.

After the nuclear vowel /ä/, /r/ is [a], which suggests that /ä/ is derivationally related in some way to /ia/ with which it is only marginally in contrast. $ni^Lb\acute{a}^HR$ [$n\dot{i}^Lb\acute{a}^HAa^L$] ‘I will roll’. But cf. $pli\acute{u}^?M_R$ [$?l\dot{i}^?M\acute{o}^M$] ‘I lick’.

/r/ is the source of certain derived syllables as follows: After a controlled open syllable with tone /^M HM/, /r/ is assimilated into the stressed syllable rather than following it as a separate posttonic entity. In the case of a BASIC short syllable, the addition of /r/ results in a long syllable. In the case of a BASIC long syllable, the expected added mora is elided.

- | | | | | |
|-----|--------------------------------|---------------|-----------------------------|-----------------|
| (1) | $m\ddot{i}^M_R$ | \rightarrow | $m\dot{i}^:M$ | ‘I ask’ |
| | ηi^HM_R | \rightarrow | $\eta\dot{i}^:HM$ | ‘I know’ |
| | $\eta\ddot{i}^:M_R$ | \rightarrow | $\eta\dot{i}^:M$ | ‘I answer’ |
| | $s\ddot{i}^Lhu\ddot{i}:n^HM_R$ | \rightarrow | $s\dot{i}^Lhu\ddot{i}:n^HM$ | ‘I stack it up’ |

2.2. First-person plural. The full form of the first-person plural exclusive personal pronoun is $hn\acute{a}^?H$ ‘we (x)’. $?l\acute{e}^:LH$ $hn\acute{a}^?H$ ‘we (x) spoil it’. It has two reduced forms with partially overlapping distributions. It may be $na^?$ after any syllable; it may be $R^?$ after any syllable that has no postnuclear nasal. $ni^Ll\acute{a}^Ha^?$ [$n\dot{i}^Ll\acute{a}^HAa^?$] or $ni^Ll\acute{a}^Hna^?$ [$n\dot{i}^Ll\acute{a}^Hn\acute{a}^?$] ‘we will buy it’, $ni^L?én^Hna^?$ [$n\dot{i}^L?én^Hn\acute{a}^?$] ‘we will criticize (him)’, $hmi^Lk\acute{o}^?HM_R$ [$Mm\dot{i}^Lk\acute{o}^?HM\acute{o}^?H$] or $hmi^Lk\acute{o}^?HMna^?[H]$ ‘we help’, $hg\acute{o}^?Mo^?[M]$ or $hg\acute{o}^?Mna^?[M]$ ‘we choke on it’.

After controlled open syllables with tone /^M HM/, $R^?$ is assimilated into the preceding stressed syllable, thereby giving rise to derived long controlled checked syllables with these tones. As mentioned, these two syllables are always derived, not being attested to as the realization of single morphemes without remainder.

- | | | | | |
|-----|-------------------|---------------|------------------|-------------|
| (2) | $k\acute{a}^MR^?$ | \rightarrow | $k\acute{a}^:?M$ | ‘we charge’ |
| | $h\ddot{i}^:MR^?$ | \rightarrow | $h\dot{i}^:?M$ | ‘we plow’ |

| | | | |
|--|---|---|----------|
| <i>ne^{HM}R?</i> | → | <i>ne:ʔ^{HM}</i> | ‘we see’ |
| <i>hmi^Lŋi:^{HM}R?</i> | → | <i>hmi^Lŋi:ʔ^{HM}</i> | ‘we ask’ |

There is also a full form of a first-person plural inclusive personal pronoun. It is a long ballistic variant of the first singular pronoun with the nonnasal reduced form of the first-person plural exclusive pronoun as posttonic syllables: *hnã:^{LH}R?* ‘we (i)’.⁴ There are no separate reduced forms of this pronoun; reduced exclusive forms are used with either inclusive or exclusive meaning.

There are a few verbs which seem always to have a postnuclear nasal when occurring with the full form of the first-person pronoun, but which may optionally occur without the nasal with a reduced form. *si^Ltĩn^{HM} hnã^{ʔH}* ‘we will gather them’, but also *si^Mtĩ^{HM}[ĩ]ʔ[L]* or *si^Ltĩn^{HM}naʔ[L]*.

2.3. Second-person singular. The full form of the second-person singular personal pronoun is *ʔniu^L* ‘you’, and its reduced form is /ʔ/ which further reduces to \emptyset following a checked syllable. Since final glottal is a normal feature of syllables, this reduced form of the pronoun does not result in a posttonic syllable, but rather is the source of derived checked syllables when the basic syllable to which it is added is open. This is in fact the only source, along with *R?* ‘we’, of long checked syllables.

| | | | |
|---|---|---|---------------------|
| (3) <i>ni^Lhi:^Hʔ</i> | → | <i>ni^Lhi:ʔ^H</i> | ‘you will plow’ |
| <i>ka^Lti:^Mʔ</i> | → | <i>ka^Lti:ʔ^M</i> | ‘you scratched it’ |
| <i>ka^Lhi:^Mʔ</i> | → | <i>ka^Lhi:ʔ^M</i> | ‘you plowed’ |
| <i>kie:^Lʔ</i> | → | <i>kie:ʔ^L</i> | ‘you lay them down’ |
| <i>ʔi:ⁿLʔ</i> | → | <i>ʔiⁿʔ^L</i> | ‘you sweat’ |
| <i>hẽ:n^{LH}ʔ</i> | → | <i>hẽ:nʔ^{LH}</i> | ‘you look at (him)’ |
| <i>si^Lhui:ⁿʔ^{HM}</i> | → | <i>si^Lhui:ⁿʔ^{HM}</i> | ‘you stacked them’ |
| <i>ka^Llu:^{HM}ʔ</i> | → | <i>ka^Llu:ʔ^{HM}</i> | ‘behind you’ |
| <i>hmi^Lgó:^{HL}ʔ</i> | → | <i>hmi^Lgó:ʔ^{HL}</i> | ‘you deceive’ |

There is an unexpected loss of ballistic stress in a short ballistic open syllable with tone glides /^{LM} LH HM/ when the syllable becomes checked by second person inflection. In the case of /^{LH} HM/, this anomaly is partially explained by the lack of a corresponding short ballistic checked syllable with /^{LH} HM/ in the system. In the case of /^{LM}/, a corresponding short

⁴Note that in another context, (i) is also used to designate inanimate gender.

ballistic checked syllable is attested, but its status as a truly basic syllable is marginal in that only a very few simple lexical items are found with this form.⁵

- (4) $ka^L\eta i\acute{u}^{LM}?$ → $ka^L\eta iu^{LM}$ ‘you vomited’
 $ni^Lh\acute{u}^{LH}$ → ni^Lhu^{LH} ‘you will go out’
 $si^Lt\acute{i}n^{HM}?$ → si^Ltin^{HM} ‘you gather’

When second person /ʔ/ is added to a short open syllable with a simple tone /^L M H/, it retains its expected stress pattern and merges with the corresponding checked syllable.

- (5) $ni^Lu\acute{i}^{H}?$ → $ni^Lu\acute{i}^{PH}$ ‘you will go up’
 $hmi^Lki\acute{u}^{PH}?$ → $hmi^Lki\acute{u}^{PH}$ ‘you dry it’
 $?n\acute{e}^{M}?$ → $?n\acute{e}^{PM}$ ‘you need it’
 $ka^Lz\acute{a}^{M}?$ → $ka^Lz\acute{a}^{PM}$ ‘you used it up’
 $h\acute{i}^{L}?$ → $h\acute{i}^{PL}$ ‘you burn it’
 $n\acute{i}^{L}?$ → $n\acute{i}^{PL}$ ‘you swallow it’
 $\eta i\acute{u}^{L}?$ → $\eta i\acute{u}^{PL}$ ‘you vomit’
 $h\acute{u}^{L}?$ → $h\acute{u}^{PL}$ ‘you cough’

The second-person plural pronoun has two full forms, $?ni\acute{u}^{PL}$ and $n\acute{a}^{PL}$ ‘you (pl)’. $n\acute{a}^{LM} ?ni\acute{u}^{PL}$ or $n\acute{a}^{LM} n\acute{a}^{PL}$ ‘you (pl) open’. There are no separate reduced forms of this pronoun.⁶

2.4. Third-person. The full form of the third-person personal pronoun is $?i^Lr$ ‘s/he/they’. $hmi^Lgu\acute{a}n^{PL} ?i^Lr$ ‘s/he/they bless(es) (him)’. Its reduced form is /r/ which is phonologically assimilated into the preceding stressed syllable without affecting tone, stress, length, or glottal closure, but which is written in this study as enclitic, by placement after the tone notation of the stressed syllable, in accordance with its grammatical structure. ha^Lr ‘he comes’, $hmi^L?i^{Hr}$ ‘he counts them’, ηi^{Mr} ‘he laughs’, $?\eta iu^{PLMr}$ ‘he ties it up’, $ka^Lk\acute{i}^{PLr}$ ‘he wrapped it’.

⁵Another related matter is the fact that no second person verb is ever realized by a BASIC short controlled open syllable with a tone glide.

⁶For a revised analysis of the second-person plural pronoun, published earlier but postdating this one in writing by more than a decade, see Anderson 1989.

2.5. Animal. There is a third-person pronoun for designating animals the full form of which is $\text{?i}^L\text{-ri}^?M$. It has two phonologically reduced, enclitic forms which are the source of posttonic syllables: $\text{-ne}^?$ following a syllable with a postnuclear nasal, and $\text{-ri}^?$ following a syllable without a postnuclear nasal. Some speakers pronounce the latter form with /e/, but IHM insists it has an /i/. $\text{ka}^L\text{?i}^?n^M\text{ne}^?$ ‘the animal flew’, $\text{ka}^L\text{tu}^?M\text{ri}^?$ ‘the animal defecated’.

3. Tone sandhi

There are two types of tone sandhi, one that operates across any word boundary,⁷ and one that operates only between a stressed syllable and a following pronoun. These two types will be referred to as type one and type two respectively.

3.1. Type one sandhi. In type one sandhi, the following tones change after a change-inducing syllable:

- (6) $/L/ \rightarrow /HL/$,
 $/LH/ \rightarrow /HM/$, and
 $/M/ \rightarrow /H/$ in a ballistic syllable, but
 $/HM/$ in a long controlled syllable.

(The sandhi properties of a short controlled syllable are not known since lexical and syntactic limitations make it inappropriate for it to occur after a change-inducing syllable.)

Tone glides $/HL^H M/$ are seen to be derived by type one sandhi: tones $/L^M H^L M^L H/$ may be considered basic.⁸ Of the basic tones, only $/L^M H/$ are never changed in a change-inducing context.

There are four change-inducing contexts:

⁷It appears necessary to posit another phonological unit—say, a rhythm group—across whose boundary sandhi does not occur. Within this group, type one sandhi operates across word boundaries between such grammatical material as the elements of a noun phrase, a verb and its (following) subject, or subject and following object of the same verb. When a subject or object NP is topicalized and transported to the left of its verb to topicalize it, however, it no longer causes sandhi in the verb following. This kind of limitation on sandhi requires further study.

⁸In bisyllabic nouns the derivation is opaque, giving rise to contrast between a derived tone and its source. ti^Llo^L ‘bag’, $\text{he}^L\text{nu}^?HL$ ‘ranch’, la^Lta^LH ‘always’, $\text{?ma}^L\text{u}^?HM$ ‘cane’.

(7) A preceding posttonic syllable.

| | | | |
|------------------------|---|--|-----------------------|
| <i>kí:^L</i> | → | <i>ni^Llá^H_R kí:^{HL}</i> | ‘I will buy candles.’ |
| <i>lí^{LH}</i> | → | <i>huí^{LM}_R lí^{HM}</i> | ‘I chew palm shoots.’ |
| <i>gé:^M</i> | → | <i>ka^Lkian^{PM}_R gé:^H</i> | ‘I slept yesterday.’ |
| <i>ku:^M</i> | → | <i>ka^Lmí^{PM}_R ku:^{HM}</i> | ‘I asked for money.’ |

(8) A preceding controlled syllable with /^M/.

| | | | |
|-------------------------------------|---|---|----------------------|
| <i>rě:^L</i> | → | <i>so:^M rě:^{HL}</i> | ‘smooth ascent’ |
| <i>hnă^{LH}</i> | → | <i>mĩ^M hnă^{HM}</i> | ‘I ask for it.’ |
| <i>kiá^{PM}_r</i> | → | <i>mĩ:^M kiá^{PH}_r</i> | ‘I ask for his.’ |
| <i>ziu:^M</i> | → | <i>mĩ^M ziu:^{HM}</i> | ‘I ask for the jar.’ |

(9) A preceding syllable with tone /^H/ that is not both short and ballistic.

| | | | |
|--------------------------|---|--|-----------------|
| <i>ʔién^{PL}</i> | → | <i>hiú:^{nLH} ʔién^{PHL}</i> | ‘pretty child’ |
| <i>ʔŋa^{LH}</i> | → | <i>hé:^{LH} ʔŋa^{HM}</i> | ‘in the forest’ |
| <i>bó^M</i> | → | <i>hmi^{LH} bó^H</i> | ‘fat skunk’ |
| <i>ziu:^M</i> | → | <i>gua^{LH} ziu:^{HM}</i> | ‘jar’s handle’ |

(10) A preceding syllable with tone /^{HM}/ that is not both short and ballistic.

| | | | |
|--------------------------|---|---|------------------|
| <i>hiá:^{nL}</i> | → | <i>ʔme^Lhe^{PHM} hiá:^{nHL}</i> | ‘cheap basket’ |
| <i>bě^{PLH}</i> | → | <i>ʔma^Lʔu^{HM} bě^{PHM}</i> | ‘short cane’ |
| <i>té^M</i> | → | <i>hmi^Lʔq:^{HM} té^H</i> | ‘sticky soot’ |
| <i>ʔui:^{nM}</i> | → | <i>ka^Lliú:^{HM} ʔui:^{nHM}</i> | ‘outside Ojtlán’ |

Since all syllables with /^{HM}/ may be considered to be derived from either /^{LH}/ or from /^M/ in a long controlled syllable by type one sandhi, a (10) context is nothing more than a (8) or a (9) context which is itself in a change-inducing context.

Syllables which do *not* cause type one sandhi, then, are those with tones /^L ^H ^{LM} ^{HL}/ or any short ballistic syllable. Neither do long checked syllables cause sandhi, but this is a matter of secondary factors—all such syllables are morphemically complex, and include a final morpheme whose

underlying form is not change-inducing by the above patterns. $hi^M hnä^{PH} \rightarrow hi^M + R? \rightarrow hi^{PM}$ ‘we plow’.

A reduced set of only three level tones /^L ^M ^H/ are found in pretonic syllables. Of these, /^L/ \rightarrow /^H/ in change-inducing contexts.

- (11) $?mi^L ki^{PM} \rightarrow hmo^{PM} R? ?mi^H ki^{PM}$ ‘We iron shirts.’
 $te^L gua^{HM} \rightarrow kua^{LH} te^H gua^{HM}$ ‘Give the earrings.’

3.2. Type two sandhi. Type two sandhi operates between a stressed syllable and a following pronoun in both full and reduced form, but in different ways. The reduced form will be discussed first.

Of the various pronouns, only first person pronouns and the animal pronoun are the sources of syllabic (posttonic) material in their reduced forms. It is therefore only these that are involved in this kind of type two sandhi.

After certain types of syllables, these pronouns take on the tone level of the immediately preceding tone.

(1) This is true following any short ballistic checked syllable with tone /^{LM} ^H/. $ni^L niön^{LMH} R^{[H]}$ ‘night will overtake me’, $ni^L bē^{PH} R^{[H]}$ ‘I will roll it up’, $ni^L ziá^{PH} a^{[H]}$ ‘we will go home, $ka^L huén^{PM} ne^{[M]}$ ‘the animal was frightened’.

(2) It is also true of an arbitrary subset of short, ballistic checked syllables with tone /^M/. Compare the following, in which one of the stems (presumably the first) must be marked to cause this kind of sandhi— $ka^L bē^{PM} R$ [$ka^L bē^{PM} e^M$] ‘I rolled it up’, $ka^L tāt^{PM} R$ [$ka^L tāt^{PM} ā^L$] ‘I applied (liquid)’.

(3) It is further true of all controlled open syllables with tone /^M ^{HM}/. The pronunciation of /r/ with the same level tone as that of the preceding tone, facilitates the assimilation of /r/ into them as has been described in §§2.1-2. $si^M R \rightarrow si^M$ ‘my name is’, $?uē^M R? \rightarrow ?uē^M e?$ ‘we go out’. One might expect this same derivational pattern to exist with other tones in controlled open syllables, but as it turns out, first person inflection is limited to tones /^M ^{HM}/ in such syllables, so that it is not possible to say for sure what might happen there.

The remaining syllable types fall into the same change-inducing and nonchange-inducing sets as in type one sandhi. The posttonic form of the pronouns have a high level tone after a change-inducing syllable, but a level low tone after a nonchange-inducing syllable. $ni^L nū^{LMR} [^H]$ ‘I will hear it’, $hu^{LMR} [^L]$ ‘I chew’, $ku^{LR} [^L]$ ‘we sneeze’, $ka^L hōn^{M} ne^{[L]}$ ‘the animal died’.

Following a checked syllable with tone /^{LH}/, the glide is broken into two level tones separated by the glottal. *nɪ^Lhuiʔ^{LH}_R* [nɪ^Lfiʔ^L_i^H] ‘I will whistle (to him)’.

Of the various syllables that participate in type two sandhi, all cause the full form of the first-person singular personal pronoun to change to *hnä^{HM}* by type one sandhi except the marked subset of short ballistic checked syllables with tone /^M/ . After such a syllable, *hnä^{LH}* is changed to *hnä^M*. *nɪ^Lbéʔ^H hnä^{HM}* ‘I will roll it up’, *ka^Lbéʔ^M hnä^M* ‘I rolled it up’, *niónʔ^{LM} hnä^M* ‘night overtakes me’, *mɪ^M hnä^{HM}* ‘I ask’, *ʔie:n^M hnä^{HM}* ‘I break out (in a rash)’.

4. Discussion

Behind the foregoing description of tone and tone sandhi there lies distributional and phonetic asymmetry which must be discussed if a true picture of Comaltepec Chinantec tone is to be given.

In the first place, the analysis reveals clearly that certain tones may be considered basic and others derived. Taking into consideration the eight kinds of syllables and seven tone configurations (three levels and four glides), there are fifty-six potential combinations of tone and syllable type. Of these, all but ten are attested; but, more significantly, only twenty-two are known to occur as the realization of a single morpheme. None of the twenty-two has a tone downglide or is both long and checked. The long checked syllables are seen to be the result of inflection for person, while the downglides derive from patterns of tone sandhi. A BASIC syllable has a single tone or an upglide, and is either open, or both short and checked (see figure 1).

Not all thirty of the potentially basic combinations are attested. Those not found in the data are

- (a) open controlled with /^H/,
- (b) long with /^{LM}/, and
- (c) long controlled open with /^{LH}/, and
- (d) short ballistic checked with /^{LH}/.

Furthermore, not every instance of a potentially basic syllable is the realization of a single complete morpheme. Specifically, though a long open controlled syllable with mid tone is BASIC in the case of *ziu:^M* ‘earthen jar’, it is DERIVED in the case of *ga:^M* ‘I come’. Similarly, any checked syllable may be derived from second person inflection.

Figure 1. Comaltepec Tone.

| | CV | CV̌ | CV | CV̌ | CV? | CV̌? | CV? | CV̌? | CV? | CV̌? |
|----|-----------------------|----------------------|------------------------|--------------|------------------------|-----------------|-------------------------------|--------------------------------|------|-------|
| H | | BASIC M→H | | BASIC M→H | CV7-? | CV7-? BASIC? | CV-? CV7-? BASIC M→H | CV-? CV7-? BASIC M→H | CV-? | CV-? |
| M | *2nd | BASIC | CV-R CV-R BASIC? | BASIC | CV7-? | BASIC? | CV-? CV7-? BASIC | CV-R? CV-R? CV-? | CV-? | CV-? |
| L | *1st BASIC | BASIC | *1st BASIC | BASIC | CV-? CV7-? BASIC | | CV-? CV7-? BASIC | CV-? | CV-? | CV-? |
| LM | *1st *2nd BASIC | BASIC | | | CV-? CV7-? BASIC | | CV7-? BASIC? | | | |
| LH | *1st *2nd BASIC | BASIC | | BASIC | CV-? CV7-? BASIC | | | | | CV-? |
| HM | *2nd LH→HM | LH→HM | CV-R CV-R M→HM | LH→HM | CV-? CV7-? LH→HM | | | CV-R? CV-R? CV-? M→HM | CV-? | LH→HM |
| HL | *1st *2nd L→HL | *1st *2nd L→HL | *1st *2nd L→HL | L→HL | | | CV7-? | | CV-? | L→HL |

The following information is presented in figure 1: (a) unattested syllables (shaded) (b) BASIC syllables (with problematic ones indicated by question mark), (c) derived syllables (i) by sandhi (LH→HM), (ii) by addition of pronominal endings (-?, -R or -R?), and (d) unattested person inflection (*1st, 2nd).

Of the basic tones, /^L/ would appear to be most stable and free from problems of interpretation. It occurs as the realization of a large number of single complete morphemes in each of the six BASIC syllable types, and it appears with the normal phonetic properties one would expect with each of the combinations of length, stress, and glottal. Furthermore, it uniformly changes to the corresponding syllable pattern with tone /^H/ when placed in a tone change-inducing context, and uniformly never itself serves as such a context.

Passing to tones /^M ^H/: only in ballistic syllables are they stable and free from problems of interpretation. There are many examples of ballistic syllables, all having the expected normal phonetic properties and uniform patterns as regards sandhi—none induce change in a following syllable in type one sandhi—and syllables of this type with mid tone /^M/ are uniformly changed to /^H/ in change-inducing contexts.

Of the four types of controlled syllable, only a short checked one is attested with high tone /^H/ . Single morphemes that are realized by this syllable are few in number, being limited to a handful of nouns and adjectives whose historical source appears to be a corresponding short ballistic syllable, and to verbs inflected for second person subject.

A short controlled syllable with mid tone is always the realization of a first person verb. Though a long controlled syllable with mid tone may be the realization of one of a few simple morphemes, it is anomalous in changing to /^{HM}/ in a change-inducing context, rather than to /^H/ as its ballistic counterpart does. The fact that no long controlled syllable with /^H/ is attested is very likely related to this anomalous sandhi pattern. Controlled syllables with /^M/ are also anomalous in inducing change of tone in a following syllable while ballistic syllables with /^M/ do not.

Upglides occur as single morphemes and are clearly basic, but they have some unexpected phonetic characteristics and limited distribution over syllable types that present problems for interpretation.

As mentioned above, the phonetic characteristics of a long ballistic syllable with /^{LH}/ are anomalous in having a sharp change of direction from a falling to a rising tone. It is grouped as a /^{LH}/ on the basis of the fact that it changes to the corresponding (long ballistic) syllable with /^{HM}/ as other syllables with /^{LH}/ do. It is apparently also the modern reflex of an old long low-high glide. Except in an open controlled syllable, a /^{LH}/ glide is longer in duration than a single tone in a corresponding syllable type. The glide /^{LH}/ is not attested in a long controlled or short ballistic checked syllable.

Up glide /^{LM}/ occurs only in short syllables, although what has been treated as a short ballistic open syllable with this tone is unexpectedly long

and could be considered a long syllable. The comparative picture suggests that old long and short ballistic syllables with low-mid glide have merged in Comaltepec Chinantec. On the other hand, although atypically long for a short ballistic syllable, the corresponding syllable with /LH/ is also longer than expected, and it appears that the analysis of verb tone conjugations will be simplified by considering it a short syllable. To consider it a long syllable would result in changing several other aspects of the analysis. The corresponding /LH/ syllable would also have to be long, as would the corresponding /HM/ syllable to which /LH/ changes. These reinterpretations would, in turn, affect ballistic syllables with /LH/ and /HM/ which are presently considered long, and would very likely force the addition of two additional tone glides to the inventory, each with very limited distribution over syllable types. Such an alternative does not seem felicitous and so has been rejected, even though there are some phonetic facts which support it.

The syllables here analyzed as /HM/ are not a phonetically homogeneous group. Short syllables with this tone are very shallow upglides, while long syllables are downglides. As here analyzed, however, they distribute well across syllable types, and line up well with corresponding syllables which change to /HM/.

A further fact that argues for combining the short upglides with the long downglides as the same tone is that when a short controlled open syllable with this glide receives an extra mora by the addition of the reduced form of the first-person pronoun, it becomes a long downglide of the expected type. *ni^Lmi^{HM} hnä^{LH}* or *ni^Lmi^{HM}* 'I will ask for it', *ni^Lne^{HM} hnä^{PH}* or *ni^Lne^{PH}* 'we will see it'.

The /HM/ glide does not occur as the realization of a single morpheme except when that morpheme occurs in a change-inducing environment.⁹ It does occur, however, as the stressed syllable of bisyllabic morphemes. Though such nouns never change form in modern Comaltepec Chinantec, it is presumed that they represent frozen compound forms in which the pretonic syllable formerly had a change-inducing property.

An alternative analysis could consider /HM/ as merely allophonic, but since the derivation of bisyllabic nouns does not appear to be transparent, a change-inducing feature would seem to be needed in place of the tone contrast. Further study of bisyllabic noun formation is in order to see if patterns of derivation can be uncovered to account for their being realized with tone glide /HM/ in their stressed syllable. As expected, the one distributional gap with this tone over syllable types is in short ballistic

⁹There is a small group of interrogative words that appears to constitute an exception to this statement, e.g., *hie^{HM}* 'where?', *li^{HM}* 'when?'. It may be, however, that these forms, as question words, are morphemically complex.

checked syllables, where no corresponding 'source' with a /LH/ glide is known.

The status of the /HL/ glide is similar to that of /HM/. It occurs only as the tonic syllable of bisyllabic morphemes or as the changed form of a corresponding syllable whose basic tone is /L/. Bisyllabic nouns with this tone are attested with all syllable types except short ballistic open and long controlled checked.

Reference

- Anderson, Judi Lynn. 1989. Comaltepec Chinantec syntax. *Studies in Chinantec Languages* 3, Summer Institute of Linguistics and The University of Texas at Arlington Publications in Linguistics 89. Dallas: Summer Institute of Linguistics and The University of Texas at Arlington.

Comaltepec Chinantec Verb Inflection

Wanda Jane Pace

This paper deals with Comaltepec Chinantec verb inflection. INFLECTION here refers to the tone, stress, and vowel length of the verb root which indicate the various verbal categories. The first section, of the paper is devoted to a general description of the tonal system of the language, along with a discussion of stress and vowel length. The second section presents the several verbal categories, including the affixation which accompanies each one. In the final section the verbs are divided into three classes, and inflectional paradigms are presented for each class.

The main purpose of the paper is to present a corpus of Comaltepec data, particularly concerning the tone and verb systems, in as clear a manner as possible without emphasizing any one theoretical orientation. It is hoped that these data may be of use to others interested in Otoman-guean languages or in tone or verb systems in general.

1. The tone system

1.1. Syllable structure. Tone, stress, and length are considered in this analysis to be constituents of the syllable. Anderson, Martínez, and Pace (this volume) [hereinafter AMP] state: "Because of the interplay of tone with stress and other elements of the syllable, it is convenient to speak of eight types of syllable—the class product of ballistic/controlled, long/short, and open/checked contrasts." These pairs of contrasting syllable characteristics are discussed in more detail below.

Concerning the ballistic/controlled contrast, AMP (4) say: "There are two kinds of word stress: ballistic and controlled. A ballistic syllable (= syllable

with ballistic stress) is characterized by a surge and rapid decay of intensity with a resultant fortis articulation of its consonantal onset and tendency to loss of voicing and breathy release toward the end. A controlled syllable displays a more constant level of intensity throughout its duration and is typically longer than a ballistic syllable.”

In addition to the two kinds of stressed syllables described above, there are also pretonic and posttonic unstressed syllables which occur with a limited number of tone patterns and syllable types. These unstressed syllables are not under consideration in this paper in that the verb root never occurs unstressed. Thus these unstressed syllables are not, in general, affected by inflection (§3.5).

The open/checked contrast refers to the absence (open) or presence (checked) of a syllable-final glottal stop. A checked syllable, whether short or long, tends to be shorter in duration than its open counterpart.

The eight possible syllable types are summarized in (1). The syllable types are symbolized across the top of the chart, and their characteristics marked below them.

(1) Comaltepec syllable types

| | cv | c [˘] v | cv: | c [˘] v: | cv? | c [˘] v? | cv:? | c [˘] v:? |
|-----------|----|------------------|-----|-------------------|-----|-------------------|------|--------------------|
| ballistic | — | + | — | + | — | + | — | + |
| long | — | — | + | + | — | — | + | + |
| checked | — | — | — | — | + | + | + | + |

1.2. Tone patterns. Apart from phonetic variation of tone attributable to difference of syllable type, there are ten phonetic tone patterns. Using a perpendicular line as point of reference, relative height and direction of these patterns can be depicted as follows:¹



All these phonetic patterns can be described as sequences of three tone heights—low (^L), mid (^M), high (^H)—by the two features [hi] and [lo], as indicated in (3).

¹This kind of tone picture is taken from Woo (1969).

(3) Tone patterns and their features²

| | | | | | | | | | | |
|----|---|---|---|----|----|-----|----|----|----|-----|
| | | | | | | | | | | |
| | L | M | H | LM | LH | HLH | MH | HM | HL | HMH |
| hi | - | - | + | -- | -+ | +-+ | -+ | +- | +- | +-+ |
| lo | + | - | - | +- | +- | -+- | -- | -- | -+ | --- |

The distribution of the phonetic tone patterns on eight syllable types is presented in (4). An *x* indicates that the tone pattern on the left occurs on the syllable type named at the head of the column.

(4) Distribution of phonetic tone pattern

| | CV | CV̆ | CV: | CV̆: | CV? | CV̆? | CV:? | CV̆:? |
|-----|----|-----|-----|------|-----|------|------|-------|
| L | x | x | x | x | x | x | x | x |
| M | x | x | x | x | x | x | x | x |
| H | | x | | x | x | x | | x |
| LM | x | x | | | x | x | | |
| LH | x | x | | | x | | | |
| HLH | | | | x | | | | x |
| MH | x | x | | | x | | | |
| HM | | | x | | | | x | |
| HMH | | | | x | | | | x |
| HL | x | x | x | x | x | x | x | x |

Not all ten tone patterns occur on each of the eight syllable types. A HLH tone occurs only on long ballistic syllables, whereas a LH never does. Therefore, these two tones are in complementation based on syllable length. Rule (5) states that a LH rising tone is manifested as a HLH falling-rising pattern when occurring on a syllable which is both ballistic and long. (Here and elsewhere in this paper the form of the rule is meant to be a graphic presentation of the facts rather than a theoretical formula.)

$$(5) \begin{bmatrix} -hi \\ +lo \end{bmatrix} \begin{bmatrix} +hi \\ -lo \end{bmatrix} \rightarrow \begin{bmatrix} +hi \\ -lo \end{bmatrix} \begin{bmatrix} -hi \\ +lo \end{bmatrix} \begin{bmatrix} +hi \\ -lo \end{bmatrix} / \left[\begin{array}{c} \text{---} \\ +bal \\ +long \end{array} \right]$$

MH, HM, and HMH tones all have mutually exclusive distribution. A MH tone occurs on short syllables, HM on long controlled syllables, and HMH on long ballistic syllables. MH and HMH tones have the same distribution as LH and HLH tones, respectively. Thus, HMH may be considered a variant of MH

²The low tone of some of the other Chinantec languages is a falling pattern (Merrifield, personal communication). This is the basis for not analyzing this pattern as a mid-low sequence in Comaltepec.

on the same basis as HLH is a variant of LH. The present analysis follows AMP (24) in considering HM and MH in complementation, because they "distribute well across syllable types, and line up well with corresponding syllables" which change to those patterns, despite their not comprising a "phonetically homogeneous group."³

Rule (6) states that a rising high tone is manifested as a high falling-rising pattern when occurring on a syllable which is ballistic and long, and as a high falling pattern when occurring on a syllable which is controlled and long.

$$(6) \quad \begin{bmatrix} -hi \\ -lo \end{bmatrix} \begin{bmatrix} +hi \\ -lo \end{bmatrix} \rightarrow \left\{ \begin{array}{l} \begin{bmatrix} +hi \\ -lo \end{bmatrix} \begin{bmatrix} -hi \\ -lo \end{bmatrix} \begin{bmatrix} +hi \\ -lo \end{bmatrix} / \begin{bmatrix} \text{---} \\ +bal \\ +long \end{bmatrix} \\ \begin{bmatrix} +hi \\ -lo \end{bmatrix} \begin{bmatrix} -hi \\ -lo \end{bmatrix} / \begin{bmatrix} \text{---} \\ -bal \\ +long \end{bmatrix} \end{array} \right\}$$

After the application of rules (5) and (6), the ten phonetic tone patterns are reduced to seven phonemic tone patterns, whose distribution on the eight syllable types is shown in (7).

(7) Distribution of phonemic tone patterns

| | CV | CV̇ | CV: | CV̇: | CV? | CV̇? | CV:? | CV̇:? |
|----|----|-----|-----|------|-----|------|------|-------|
| L | X | X | X | X | X | X | X | X |
| M | X | X | X | X | X | X | X | X |
| H | | X | | X | X | X | | X |
| LM | X | X | | | X | X | | |
| LH | X | X | | X | X | | | X |
| MH | X | X | X | X | X | | X | X |
| HL | X | X | X | X | X | X | X | X |

Figure (7) reveals that a low-mid tone is conspicuously missing on long syllables, as is high tone on open controlled syllables. Rule (8) states that a low-mid tone occurs only on short syllables.

$$(8) \quad \begin{bmatrix} -hi \\ +lo \end{bmatrix} \begin{bmatrix} -hi \\ -lo \end{bmatrix} \rightarrow [-long]$$

Rule (9) states that a controlled open syllable does not have high tone.

³The name mid-high is chosen for this tone, based on rule (6). This differs from AMP, who use high-mid for this tone.

- (9) $\begin{bmatrix} -\text{bal} \\ -\text{check} \end{bmatrix} \rightarrow [-\text{hi}]$

1.3. Basic and derived tones. AMP point out that of the fifty-six possible combinations of tone and syllable type, only twenty-two occur on grammatically simple one-syllable nouns and verb roots. These are considered basic tone patterns. The twenty-two basic patterns are indicated in (10).

- (10) Basic tone patterns

| | CV | CV̇ | CV: | CV̇: | CV? | CV̇? |
|----|----|-----|-----|------|-----|------|
| L | X | X | X | X | X | X |
| M | | X | X | X | | X |
| H | | X | | X | X | X |
| LM | X | X | | | X | X |
| LH | X | (X) | | X | X | |

It can be seen from the above table that two tones, mid-high and high-low, and two syllable types, cv:? and cv̇:?, are not included in any basic tone patterns. Mid tone on cv and cv? syllable are also excluded from the basic patterns, because only grammatically complex verb roots have been found to occur with those patterns. The pattern with a low-high tone on a cv̇ syllable is enclosed in parentheses because it occurs only on loan words, such as *diē^{LH}* 'god' from Spanish 'dios', *més^{LH}* 'table' from Spanish 'mesa', or *món^{LH}* 'Raymond' from Spanish 'Ramón'.⁴

The remaining tone patterns are derived. They are considered derived because they are due to either grammatical complexity in the word, or phonologically conditioned tone sandhi, or both. All long checked syllables, cv:? and cv̇:?, are the result of inflection for first plural or second singular person. Syllables with mid-high or high-low tones may be the second syllable of a disyllabic word, which is composed of two meaningful units (at least historically if not synchronically). Mid-high tone on a short controlled syllable is a common pattern for functors such as deictic words (*ṗi^{MH}* 'the, that (an)', *ṗe^{MH}* 'the, that (inan)') and interrogative words (*hie^{MH}* 'where?', *li^{MH}* 'when?', *hial^{MH}* 'how?'). Other one-syllable lexical items may have tones mid-high or high-low as a result of phonologically conditioned tone sandhi, as described below.

⁴One word, *lō^{LH}* 'prickly pear cactus', does not appear to be a loan word, as the Spanish word is 'nopal'.

1.4. Tone sandhi. Not all aspects of tone sandhi have yet been analyzed,⁵ but a basic description of the several effects of sandhi is given here. Comaltepec tone sandhi operates across word boundaries as well as within words. It is impeded only by pause or by a syllable having a tone pattern which does not participate in sandhi. In (11) the sandhi-inducing tone patterns (those which cause a change in the tone of the following syllable) are marked by \$.

(11) Sandhi-inducing tone patterns

| | CV | CV̌ | CV: | CV̌: | CV? | CV̌? | CV:? | CV̌:? |
|----|----|-----|-----|------|-----|------|------|-------|
| M | \$ | | \$ | | | | | |
| LH | \$ | | | \$ | \$ | | | |
| MH | \$ | | \$ | \$ | \$ | | | |

In general, it can be stated that controlled syllables are more likely to be sandhi-inducing than ballistic ones, nonlow tones than low ones, and tone sequences than single tones. The nine sandhi-inducing tone patterns, then, are: CV^M, CV:^M, CV^{LH}, CV̌:^{LH}, CV?^{LH}, CV^{MH}, CV:^{MH}, CV̌:^{MH}, CV?^{MH}. For convenience in formalizing tone sandhi rules, a syllable with any one of these sandhi-inducing shapes is given the feature [+perturbing]. Not every tone pattern is affected by sandhi even when following one of the [+perturbing] patterns. Those affected are marked by Y in (12).

(12) Tone patterns affected by sandhi

| | CV | CV̌ | CV: | CV̌: | CV? | CV̌? | CV:? | CV̌:? |
|----|----|-----|-----|------|-----|------|------|-------|
| L | Y | Y | Y | Y | Y | Y | Y | Y |
| M | | Y | Y | Y | | Y | Y | Y |
| LH | Y | Y | | Y | Y | | | Y |

It can be seen that mid-high and high-low are not affected by sandhi. All basic patterns with low, mid, and low-high tones are affected. Some patterns are both sandhi-inducing and affected by sandhi. Figure (13) is a combination of figures (11) and (12). Patterns which are sandhi-inducing are marked by \$, and patterns which are affected by sandhi are marked by Y.

(13) Tone pattern participation in sandhi

| | CV | CV̌ | CV: | CV̌: | CV? | CV̌? | CV:? | CV̌:? |
|----|-----|-----|-----|------|-----|------|------|-------|
| L | Y | Y | Y | Y | Y | Y | Y | Y |
| M | \$ | Y | \$Y | Y | | Y | Y | Y |
| LH | \$Y | Y | | \$Y | \$Y | | | Y |
| MH | \$ | | \$ | \$ | \$ | | | |

⁵See appendix B for a discussion of other kinds of sandhi not treated here.

Figure (13) shows that four tones (low, mid, low-high, and mid-high) are in some way involved in sandhi, and three (high, low-mid, and high-low) are not. Of the four which are involved, mid and low-high tones are both sandhi-inducing, and low tone is only affected by sandhi. The four patterns which are both sandhi-inducing and affected by sandhi are: cv^M , cv^{LH} , $c\acute{v}^{LH}$, and $cv^?LH$.

The effects of sandhi differ depending on the tone pattern of the affected syllable. Table (14) indicates the tones to which affected tones change as a result of sandhi.

(14) Effects of sandhi

| | CV | C \acute{V} | CV: | C \acute{V} : | CV? | C \acute{V} ? | CV:? | C \acute{V} :? |
|----|----|---------------|-----|-----------------|-----|-----------------|------|------------------|
| L | HL | HL | HL | HL | HL | HL | HL | HL |
| M | | H | MH | H | | H | MH | H |
| LH | MH | MH | | MH | MH | | | MH |

All patterns with low tone are changed to high-low tone, and all with low-high tone to mid-high. Those on a controlled syllable with mid tone are changed to mid-high, and those on a ballistic syllable with mid tone are changed to high. Thus, it can be seen that high-low and mid-high tones are the result of tone sandhi—high-low is derived from low, and mid-high from low-high or mid. Rules and examples follow.

Rule (15) states that an underlying low tone is realized as high-low tone following any sandhi-inducing syllable pattern.

(15) $L \rightarrow HL / [+perturbing]$

Examples of the six basic syllable patterns with low tone are given in the first column of (16). In the second column the sample words occur after a word with the sandhi-inducing syllable cv^M ; in the third column they occur after a word with the sandhi-inducing pattern cv^{LH} ; in the fourth column they occur after a word with the sandhi-inducing pattern cv^{MH} . In each case the $[+perturbing]$ syllable causes the low tone of the following word to change to high-low.

| | | | | | | | |
|------|------------------------|------------------------|-------------------------|-------------------------|-------------------------|------------------------|-------------------------|
| (16) | basic forms: | <i>mī:^M</i> | 'I ask for' | <i>kua^{LH}</i> | 'give!' | <i>sī^{MH}</i> | 'is it?' |
| | <i>hī^L</i> | <i>mī:^M</i> | <i>hī^{HL}</i> | <i>kua^{LH}</i> | <i>hī^{HL}</i> | <i>sī^{MH}</i> | <i>hī^{HL}</i> |
| | <i>to:^L</i> | <i>mī:^M</i> | <i>to:^{HL}</i> | <i>kua^{LH}</i> | <i>to:^{HL}</i> | <i>sī^{MH}</i> | <i>to:^{HL}</i> |
| | <i>ŋī^L</i> | <i>mī:^M</i> | <i>ŋī^{HL}</i> | <i>kua^{LH}</i> | <i>ŋī^{HL}</i> | <i>sī^{MH}</i> | <i>ŋī^{HL}</i> |
| | <i>ʔū:^L</i> | <i>mī:^M</i> | <i>ʔū:^{HL}</i> | <i>kua^{LH}</i> | <i>ʔū:^{HL}</i> | <i>sī^{MH}</i> | <i>ʔū:^{HL}</i> |
| | <i>hīʔ^L</i> | <i>mī:^M</i> | <i>hīʔ^{HL}</i> | <i>kua^{LH}</i> | <i>hīʔ^{HL}</i> | <i>sī^{MH}</i> | <i>hīʔ^{HL}</i> |
| | <i>móʔ^L</i> | <i>mī:^M</i> | <i>móʔ^{HL}</i> | <i>kua^{LH}</i> | <i>móʔ^{HL}</i> | <i>sī^{MH}</i> | <i>móʔ^{HL}</i> |

Rule (17) states that an underlying low-high tone is realized as mid-high tone following any sandhi-inducing syllable pattern.

(17) $LH \rightarrow MH / [+ \text{perturbing}] \text{ ______}$

Examples of the four basic syllable patterns with low-high tone are given in the first column of (18). The second through fourth columns show the change of tone pattern when the words follow a sandhi-inducing syllable.

| | | | | | | | |
|------|-------------------------|------------------------|-------------------------|-------------------------|-------------------------|------------------------|-------------------------|
| (18) | basic form | <i>mī:^M</i> | 'I ask for' | <i>kua^{LH}</i> | 'give!' | <i>sī^{MH}</i> | 'is it?' |
| | <i>ŋī^{LH}</i> | <i>mī:^M</i> | <i>ŋī^{MH}</i> | <i>kua^{LH}</i> | <i>ŋī^{MH}</i> | <i>sī^{MH}</i> | <i>ŋī^{MH}</i> |
| | <i>ló^{LH}</i> | <i>mī:^M</i> | <i>ló^{MH}</i> | <i>kua^{LH}</i> | <i>ló^{MH}</i> | <i>sī^{MH}</i> | <i>ló^{MH}</i> |
| | <i>kū:^{LH}</i> | <i>mī:^M</i> | <i>kū:^{MH}</i> | <i>kua^{LH}</i> | <i>kū:^{MH}</i> | <i>sī^{MH}</i> | <i>kū:^{MH}</i> |
| | <i>bēʔ^{LH}</i> | <i>mī:^M</i> | <i>bēʔ^{MH}</i> | <i>kua^{LH}</i> | <i>bēʔ^{MH}</i> | <i>sī^{MH}</i> | <i>bēʔ^{MH}</i> |

Rule (19) states that an underlying ballistic mid tone is manifested as a ballistic high tone following a sandhi-inducing syllable pattern.

(19) $M \rightarrow H / [+ \text{perturbing}] \text{ ______}$
 $[+ \text{bal}]$

Examples of the three basic syllable patterns with mid tone on a ballistic syllable are given in the first column of (20). The second through fourth columns show the change of tone pattern when the words follow a sandhi-inducing syllable.

| | | | | | | | |
|------|-------------------------------------|------------------------|-------------------------------------|-------------------------|-------------------------------------|------------------------|-------------------------------------|
| (20) | basic form | <i>mī:^M</i> | 'I ask for' | <i>kua^{LH}</i> | 'give!' | <i>sī^{MH}</i> | 'is it?' |
| | <i>tū^M</i> | <i>mī:^M</i> | <i>tū^H</i> | <i>kua^{LH}</i> | <i>tū^H</i> | <i>sī^{MH}</i> | <i>tū^H</i> |
| | <i>gē:^M</i> | <i>mī:^M</i> | <i>gē:^H</i> | <i>kua^{LH}</i> | <i>gē:^H</i> | <i>sī^{MH}</i> | <i>gē:^H</i> |
| | <i>kiáʔ^M_r</i> | <i>mī:^M</i> | <i>kiáʔ^H_r</i> | <i>kua^{LH}</i> | <i>kiáʔ^H_r</i> | <i>sī^{MH}</i> | <i>kiáʔ^H_r</i> |

(21) $M \rightarrow MH / [+ \text{perturbing}] \begin{array}{c} \text{---} \\ [-\text{bal}] \end{array}$

| | | | | | | | |
|------|-------------------------|---------------------------------|--------------------------|-------------------------|--------------------------|-------------------------|--------------------------|
| (22) | basic form | <i>mīː^M</i> | 'I ask for' | <i>kua^{LH}</i> | 'give!' | <i>sīː^{MH}</i> | 'is it?' |
| | <i>kuː^M</i> | 'money' <i>mīː^M</i> | <i>kuː^{MH}</i> | <i>kua^{LH}</i> | <i>kuː^{MH}</i> | <i>sīː^{MH}</i> | <i>kuː^{MH}</i> |
| | <i>ziuː^M</i> | 'jug' <i>mīː^M</i> | <i>ziuː^{MH}</i> | <i>kua^{LH}</i> | <i>ziuː^{MH}</i> | <i>sīː^{MH}</i> | <i>ziuː^{MH}</i> |
| | <i>?oː^M</i> | 'papaya' <i>mīː^M</i> | <i>?oː^{MH}</i> | <i>kua^{LH}</i> | <i>?oː^{MH}</i> | <i>sīː^{MH}</i> | <i>?oː^{MH}</i> |

2. The verb system

Every verb root is either active or stative. Active verb stems can be derived from stative verb roots, and vice versa. An active verb occurs with aspect prefixes and may also occur with motion prefixes, whereas a stative verb does not occur with either. Both types of verb are marked for degree of transitivity and gender, and occur with personal pronouns. In addition to affixes, the verb root itself often has different inflectional forms for different verbal categories. Two additional categories involve only affixes. These are aspect-modifying categories and modals.

2.1. Degree of transitivity. There are three degrees of transitivity: intransitive, transitive, and ditransitive. The verb root is considered to occur with grammatical marking for one or another degree of transitivity in the form of inflectional modification.

Transitive verbs occur with objects; intransitive verbs do not.⁶

- (23) P S
ʔme.^M -n
 hide[^]AI1s 1s
 I am hiding.
- (24) P S O
ʔme.^{LM} -R zä^L
 hide[^]TA1s 1s people
 I am hiding people.

Ditransitive verbs occur with a benefactive; transitive verbs do not.

- (25) P S O
kuë^L -ʔ ku.^M
 give[^]TI2 2s money.
 You are giving money.
- (26) P S B O
kuë^{LM} -ʔ hnä^{LH} ku.^M
 give[^]DI2 2s 1s money
 You are giving me money.

2.2. Gender. There are two genders—animate and inanimate. Gender is bound up with, and cannot be described without reference to, transitivity.

An intransitive verb form is inanimate if it may occur with an inanimate noun as subject, and animate if it may occur with an animate noun as subject.

⁶The following abbreviations are used to designate the form of the verb cited: AI, animate intransitive; II, inanimate intransitive; TA, transitive animate; TI, transitive inanimate; DA, ditransitive animate; DI, ditransitive inanimate; S, stative. Person and number of the verb form are represented by: 1, first person; 2, second person; 3, third person; s, singular; p, plural. Syntactic functions are indicated by P, predicate; S, subject; O, object; B, benefactive object.

- (27) P S
ʔiu^{LH} *hi^L*
 inside^{^SII} book
 The book is inside.

- (28) P S
ʔiu:n^M *zä^L*
 inside^{^SAI} person
 The person is inside.

A transitive or ditransitive verb is inanimate if it may occur with an inanimate noun as object, and animate if it may occur with an animate noun as object.

- (29) P S O
ʔó:^M *zä^L* *ku:^M*
 bury^{^TII} people money
 People bury money.

- (30) P S O
ʔá:n^M *zä^L* *ʔlɛ:^{LH}*
 bury^{^TA3} people corpse
 People bury a corpse.

In comparing inanimate and animate forms above, it can be seen that animate gender is marked in part by the presence of a postnuclear nasal. Gender may also be marked by tone and vowel inflection, as well as by the nasal.

- (31) *sä^L* (SII), *se:n^L* (SAI) ‘exist’
hé:^M (TI), *hé:n^{LH}* (TA) ‘look at’

In a few cases, animate gender also involves the presence of a postnuclear glottal.

- (32) *huä^{LM}* (TI), *huänʔ^{LH}* (TA) ‘fan’

Although all animate verbs have postnuclear nasal, there are also inanimate ones with nasal, indicating that although animate gender implies

the presence of postnuclear nasal, its presence does not necessarily imply animate gender.

- (33) *si:n^M* (TI) 'tear, rip'
hlenʔ^{LM} (TI) 'loosen'
ké:n^{LH} (SII) 'contain'

Rensch (personal communication), in his historical study of Chinantec, posits two postnuclear nasals in proto-Chinantec, one indicating animate gender, the other nonthird person. It remains for further study to show how these two nasals function in Comaltepec Chinantec.

2.3. Person-number. There are seven personal pronouns which may occur as subjects of a verb in either a full or reduced form. Subjects normally follow the verb, but they may occur preceding it to signify subject in focus. If a noun or deictic word occurs as subject, no personal pronoun occurs, unless the subject is in focus position, in which case the reduced pronoun also occurs. In (34) a pronoun is the subject, in (35) a noun is the subject, and in (36) a noun is in the focus position and a reduced pronoun occurs following the verb.

- (34) P S
kó:^L *ʔír^L*
 play^{^TI3 3}
 He/she/they play.

- (35) P S
kó:^L *ha^Llénʔ^L* *hiú:n^{LH}*
 play^{^TI3 PL} child
 The children play.

- (36) S P S
ha^Llénʔ^L *hiú:n^{LH}* *kó:^L* -r
 PL child play^{^TI3 3}
 It is the children who play.

When the personal pronouns are in their normal postverbal position, they undergo a special tone sandhi.⁷ In addition to the pronouns, inflection of the verb root may also indicate person-number (§3).

The full form of the first-singular pronoun is *hnä^{LH}*, and its reduced form is reduplication (R) of the final segment of the syllable (excluding glottal stop).

- (37) *kó:^L hnä^{LH} kó:^L_R 'I play.'*
kanʔ^{LH} hnä^{LH} kanʔ^{LH}_R 'I mix.'

There are two personal pronouns for first person plural: *hnäʔ^H* for exclusive reference (excluding the one spoken to), and *hnä:^{LH}_Rʔ* for inclusive reference (including the one spoken to). There are also two reduced forms of the first plural pronoun: *-naʔ* and *-Rʔ*. They occur without any observed exclusive-inclusive distinction.

- (38) *ko:^M hnäʔ^H (excl), ko:^Mnaʔ 'We play.'*
ko:^M hnä:^{LH}_Rʔ (incl), ko:^M_Rʔ 'We play.'

The *-naʔ* form is perhaps a relic of an earlier version of the pronoun, in that some other Chinantec languages have the vowel *a* where Comaltepec has *ä* in the pronouns. Thus, *a* → *ä* may be a Comaltepec innovation which did not affect the reduced form.

The full form of the second singular pronoun is *ʔniu^L*, and the reduced form is a glottal stop.

- (39) *ko:^L ʔniu^L, ko:^Lʔ 'You play.'*

There are two full forms of the second plural pronoun, *ʔniúʔ^L* and *náʔ^L*, and no reduced form. *náʔ^L* can occur only following the verb, whereas *ʔniúʔ^L* may occur elsewhere as well.

- (40) *ko:^L ʔniúʔ^L 'You (pl) play.'*
ko:^L náʔ^L 'You (pl) play.'

Like *-naʔ* of first plural, *náʔ^L* may be a relic of an earlier version of the pronoun before Comaltepec vowels underwent the *a* → *ä* shift, since some other Chinantec languages have the vowel *a* in the second plural pronoun also.

⁷This is referred to as type two sandhi in AMP and is described fully in that paper (13).

There is only one third person pronoun. Its full form is *ʔír^L*, and its reduced form is *-r*.

- (41) *kó:^L ʔír^L*, *kó:^Lr* 'He/she/they play.'

Number is not marked in third person, although a few verbs have suppletive forms for singular and plural subject.

- (42) *zé^{LM}r* (AI) 's/he goes' *zi^Llí:n^Mr* (AI) 'They go.'
ka^Ltó^{ʔL} (II) 'it fell' *ka^Lhiú^{ʔL}* (II) 'They fell.'

There is an animal pronoun, *ʔi^Lrí^ʔ*, which only occurs following the verb. Its reduced form is *-rí^ʔ*.

- (43) *kó:^L ʔi^Lrí^ʔ*, *kó:^Lrí^ʔ* 'It (animal) plays.'

Other Chinantec languages do not have this pronoun. It may be a relic of an older form of a third-person pronoun, perhaps the object pronoun, since that pronoun is *-rí*. (It is also the only object pronoun in the language.) The older pronoun would have included both animals and people in its reference, as in other Chinantec languages. According to such a view, a newer third-person form came into use, with an associated narrowing of reference of the older form to animals, perhaps under the influence of Zapotec, a neighboring Otomanguean language which has the animal-human distinction. Rensch (personal communication) has, in fact, suggested that the animal-human distinction in Comaltepec is due to borrowing of this grammatical feature from Zapotec, since Comaltepec has had a long history of contact with that language.

2.4. Aspect. Three major aspects occur with active verbs; two minor ones have been observed with only a few verbs. The major aspects are: PROGRESSIVE (P), INTENTIVE (I), and COMPLETIVE (C). All three are marked by inflection of the verb root. In addition, there are prefixes for IMPERFECT (IMPF) and PAST (PST)—*ni^L-* and *ka^L-*, respectively.

- (44) *hmó:^LR* *ta^{LH}*
do[^]TÍPIs work
I am working.

- (45) *ni^L-hmé^H_R ta^{LH} zi^Lʔó^L*
 IMPF-DO[^]TIIIs work tomorrow
 I will work tomorrow.

- (46) *ka^L-hmé^M_R ta^{LM} gé^M*
 PST-DO[^]TICIIs work yesterday
 I worked yesterday.

The two minor aspects are HABITUAL and HODIERNAL PAST. Habitual action is not formally distinguished from progressive action, the progressive form of the verb stem serving both senses, depending upon context, as illustrated in (47) and (48).

- (47) *ʔŋiú^ʔ_{Lr} hŋiu^Lgi^{LH}_r*
 tie[^]TIP3 head[^]hair[^]3
 She is tying (back) her hair.

- (48) *ʔŋiú^ʔ_{Lr} hŋiu^Lgi^{LH}_r la^Lkɔ^L hmí^{LH}*
 tie[^]TIP3 head[^]hair[^]3 each day
 She ties (back) her hair every day.

The prefix *la^L-* (hodiernal past) contrasts with *ka^L-* (past), both occurring with completive forms of the verb stem, as in (49) and (50).

- (49) *ka^L-ŋó^{LM}_r gé^M*
 PST-GO[^]AIC3s yesterday
 He left yesterday.

- (50) *la^L-ŋó^{LM}_r mĩ^Lkũ^ʔ_{LM}*
 HOD-GO[^]AIC3s recently
 He left just a bit ago (earlier today).

2.5. Directional verbs. Motion of the subject of a nonmotion verb may be indicated by prefixation of a reduced form of a motion verb onto the main (nonmotion) verb. These prefixes are referred to as directional prefixes, since they indicate the direction of motion of the subject in relation to the location of the speaker.

The directional prefixes are derived from *gé^M* ‘go’ and *ŋĩ^M* ‘come’. The first sentence of each of the following pairs contains a motion verb, and the second a corresponding directional prefix on a nonmotion verb stem.

- (51) *niːLHR niːLkuɪʔH*
 go^AIII_s Oaxaca
 I am going to Oaxaca.⁸
- (52) *niːL-tʃʔH pɪLM*
 go^IIs-apply^TI_s color
 I am going to go paint.
- (53) *zɛːHna? niːLkuɪʔH*
 go^AIII_p Oaxaca
 We are going to Oaxaca.
- (54) *ziːL-tʃʔHna? pɪLM*
 go^IIP-apply^TI_p color
 We are going to go paint.
- (55) *guoːʔH niːLkuɪʔH*
 go^AII_{2s} Oaxaca
 You are going to Oaxaca.
- (56) *guiːH-tʃʔL pɪLM*
 go^I2-apply^TI_{2s} color
 You are going to go paint.
- (57) *zɛːMr niːLkuɪʔH*
 go^AIII_{3s} Oaxaca
 He is going to Oaxaca.
- (58) *ziːL-tʃʔLr pɪLM*
 go^I3-apply^TI₃ color
 He is going to go paint.
- (59) *gaːLMR huiLM kiːMʔ*
 come^AIII_s road of^2_s
 I am coming to your house.

⁸With directional verbs aspect prefixes may be deleted. Intentive inflection is used with both progressive and intentive meaning. [But see Westley and Merrifield (this volume) where motion verbs are presented as MOMENTARY, disallowing a progressive interpretation. Ed.]

- (60) $ga^L-t\acute{a}^pHR$ $?i^LM$
 come^{1s-apply}^{TI1s} color
 I am coming to paint.
- (61) $há^LMna?$ hui^LM $kí^M?$
 come^{AII1p} road of^{2s}
 We are coming to your house.
- (62) $ha^L-t\acute{e}^pHa?$ $?i^LM$
 come^{I1p-apply}^{TI1p} color
 We are coming to paint.
- (63) ηi^pLM hui^LM $ké^MR$
 come^{AII2s} road of^{1s}
 You are coming to my house.
- (64) $\eta i^L-t\acute{e}^pL$ $?i^LM$
 come^{I2-apply}^{TI2s} color
 You are coming to paint.
- (65) $há^LMr$ hui^LM $ké^MR$
 come^{AII3s} road of^{1s}
 He is coming to my house.
- (66) $ha^L-t\acute{e}^pLr$ $?i^LM$
 come^{I3-apply}^{TI3} color
 He is coming to paint.

Intensive aspect is illustrated above; completive is illustrated below. The past-tense prefix, if present, occurs preceding the directional prefix. (Forms in parentheses are optional.)

- (67) $\eta ó^MR$ ni^Lkuj^pH
 COMP-go^{AICI1s} Oaxaca
 I went to Oaxaca.
- (68) $(ka)-\eta o^L-t\acute{a}^pR$ $?i^LM$
 (PST)-go^{I1s-apply}^{TI1s} color
 I went to paint.

- (69) $\eta\acute{o}^M na?$ $ni^L ku\acute{i}^?H$
 go[^]AIC1p Oaxaca
 We went to Oaxaca.
- (70) $(ka^L)-\eta o^L t\acute{e}^?H na?$ $?i^LM$
 (PST)-go[^]c1-apply[^]T11p color
 We went to paint.
- (71) $g\acute{e}^M?$ $ni^L ku\acute{i}^?H$
 go[^]AIC2s Oaxaca
 You went to Oaxaca.
- (72) $(ka^L)-gi^L t\acute{e}^?L$ $?i^LM$
 (PST)-go[^]c2-apply[^]T12s color
 You went to paint.
- (73) $\eta\acute{o}^M r$ $ni^L ku\acute{i}^?H$
 go[^]AIC3s Oaxaca
 He went to Oaxaca.
- (74) $(ka^L)-\eta o^L t\acute{e}^?r$ $?i^LM$
 (PST)-go[^]c3-apply[^]T13s color
 He went to paint.

The full motion verb may also occur preceding the main verb with the directional prefix. With noncompletive forms, this construction gives a progressive rather than habitual meaning.

- (75) $ni^L H_R$ $ni^L-t\acute{a}^?H_R$ $?i^LM$
 go[^]A111s go[^]T11s-apply[^]T11s color
 I am on my way to paint.
- (76) $\eta\acute{o}^M R$ $\eta o^M t\acute{a}^?H_R$ $?i^LM$
 go[^]AIC1s go[^]C1s-apply[^]T11s color
 I went to paint.

2.6. Aspect modification. A stative or completive verb may occur with a perfect prefix, preceding the completive prefix if present. In a positive sentence the perfect prefix is ni^H- ; in a negative sentence it is mi^L- . In the latter case the past-tense prefix is omitted.

- (77) *nĩ^H-ka^L-ŋó^M_R guáʔ^M ʔmĩː^M*
 PRF-PST-go[^]AIC1s church earlier
 I have already gone to church today.
- (78) *ha^L-mĩ^L-ŋó^M_R guáʔ^M sĩʔ^L la^L*
 NEG-PRF-go[^]AIC1s church moon this
 I have not gone to church this month.

A completive verb may also occur with the imperfect prefix *nĩ^L-* preceding it as an EVIDENTIAL, to reduce the degree of responsibility the speaker accepts regarding the truth of the assertion.

- (79) *nĩ^L-ka^L-lĩʔ^L_r guĩː^{LH}*
 MPF-PST-obtain[^]TAC3 squirrel
 He evidently has obtained (killed) a squirrel.

2.7. Derivation. Active verb stems are derived by prefixing *lĩ^L-* (active) to certain stative verb roots. A derived active stem has intensive and completive forms. In (80), the verb is stative; in (81) and (82), derived active.

- (80) *kuĩː^{Lr}*
 acquainted[^]TIS3
 He is acquainted.
- (81) *nĩ^L-lĩ^L-kuĩː^{Lr}*
 IMPF-ACT-acquainted[^]TII3
 He will become acquainted.
- (82) *ka^L-lĩ^L-kuĩː^{Lr}*
 PST-ACT-acquainted[^]TIC3
 He became acquainted.

Other active verb stems are derived by prefixing *hmi^L-* (causative) to certain stative verb roots. In this case, the derived active stem is causative in meaning and has forms for all three aspects. In (83), the verb is stative; in (84)–(86), derived active.

- (83) *ĩiː^{nLr}*
 able[^]TIS3
 He is able.

- (84) *hmi^L-tí:n^Lr*
 CAUS-able[^]TIP3
 He is learning.
- (85) *ni^L-hmi^L-tí:n^Lr*
 IMPF-CAUS-able[^]TI13
 He will learn.
- (86) *ka^L-hmi^L-tí:n^Lr*
 PST-CAUS-able[^]TIC3
 He learned.

Stative verb stems are derived by prefixing *si^L-* (stative) to certain active verb roots. The first verb of each pair below is active, and the second derived stative.

- (87) *ka^L-?le?L*
 PST-break[^]IIC3
 It broke.
- (88) *si^L-?le?LM*
 STA-break-I13
 It is broken.
- (89) *ka^L-kún?Lr guo:^Lr*
 PST-join[^]TIC3 hand[^]3
 S/he/they married.
- (90) *si^L-kún?Lr guo:^Lr*
 STA-join[^]TIS3 hand[^]3
 S/he/they is/are married.

2.8. Modal adverbs. There are seven modal adverbs. They occur following the verb, in which case the personal pronoun is suffixed to the modal rather than to the verb, and they undergo the same kind of sandhi as pronouns. Only a reduced pronoun may occur with a modal. Modal adverbs occur with verbs in any aspect, except for the adverb *du^M* (volitive), which occurs only with intensive aspect.

- (91) $ni:^{LH}$ $t\acute{u}^{MR}$
 go^{AII1s} REPETITIVE^{1s}
 I am going again.
- (92) $ni:^{LH}$ $t\acute{a}^{MR}$
 go^{AII1s} MOMENTARY^{1s}
 I am going for a little while.
- (93) $ni:^{LH}$ gi^{MR}
 go^{AII1s} AUGMENTATIVE^{1s}
 I am going farther.
- (94) $ni:^{LH}$ bi^{MR}
 go^{AII1s} CONTINUATIVE^{1s}
 I am still going on.
- (95) $ni:^{LH}$ hiu^{MR}
 go^{AII1s} DIMINUTIVE^{1s}
 I am going a little ways.
- (96) $ni:^{LH}$ ba^{MR}
 go^{AII1s} AFFIRMATIVE^{1s}
 Yes, I am going.
- (97) $ni:^{LH}$ du^{MR}
 go^{AII1s} VOLITIVE^{1s}
 I intend to go.

Three modals also occur in other contexts. $t\acute{u}^M$ (REPETITIVE) is the numeral ‘two’. $t\acute{a}^M$ (MOMENTARY) is found in $ka^L t\acute{a}^L$ ‘a little while’. hiu^M (DIMINUTIVE) is an adjective meaning ‘small’, as in $?ma^L hiu^{LH}$ ‘small tree, bush’.

A limited set of two-modal combinations occur, but collocational restrictions are outside the scope of this study.

- (98) $ku\ddot{a}:n^L$ $gi^M hiu^?M$
 $tall^{IIS2}$ $tall^{AUG^{DIM^{2s}}}$
 You are a little taller.

2.9. Summary. Aspect, motion, aspect modification, and derivation are marked by prefixes. Pronouns follow the verb, as do modal adverbs.

Transitivity, gender, person-number, and aspect are further indicated by inflection of the verb root.

The order of the affixes for the various categories is illustrated by the following verb.

- (99) *nĩ^H-ka^L-ŋo^L-hmĩ^L-?mẽ^M tĩ^Mr*
 PRF-PST-go[^]C3-CAUS-sharp[^]TI3 REPETITIVE[^]3
 He has gone to sharpen it again.

3. Verb inflectional paradigms

In this section three classes of verbs are presented along with their inflectional paradigms. The paradigm discussed here is the inflectional material (tone, stress, and length) occurring with a verb root of a particular degree of transitivity and gender to mark the verb for aspect and person-number. Only the three major aspects (progressive, intensive, and completive) are included. Motion is not included. Four person-number categories are normally distinguished by verb inflection: first singular, first plural, second, and third, number being distinguished by inflection only in first person.

A typical verb paradigm is presented in (100), with tense-aspect prefixes and reduced pronominal forms set off by hyphens.

- | | | | |
|-------|-----|--|---------------------------|
| (100) | P1s | <i>kó:^L-R</i> | ‘I am playing’ |
| | I1s | <i>nĩ^L-kó:^{LH}-R</i> | ‘I will play’ |
| | C1s | <i>ka^L-kó^M-R</i> | ‘I played’ |
| | P1p | <i>ko:^M-R?</i> | ‘we are playing’ |
| | I1p | <i>nĩ^L-kó^H-R?</i> | ‘we will play’ |
| | C1p | <i>ka^L-kó^H-R?</i> | ‘we played’ |
| | P2s | <i>kó:^L-?</i> | ‘you (sg) are playing’ |
| | I2s | <i>nĩ^L-kó:^H-?</i> | ‘you (sg) will play’ |
| | C2s | <i>ka^L-ko:^M-?</i> | ‘you (sg) played’ |
| | P3 | <i>kó:^L-r</i> | ‘he/she/they are playing’ |
| | I3 | <i>nĩ^L-kó^M-r</i> | ‘he/she/they will play’ |
| | C3 | <i>ka^L-kó:^L-r</i> | ‘he/she/they played’ |

The inflectional portion of the verb in (100) may be separated from the segmental material and represented in a matrix with columns representing

person-number and rows representing aspect, as in (101). Verb root tone is indicated by a tone symbol, followed by ballistic stress (´), and vowel length (:) when relevant.

| | | | | | |
|-------|-----------|------|-----|-----|-----|
| (101) | play (TI) | 1s | 1p | 2 | 3 |
| | P | L:´ | M: | L: | L:´ |
| | 1 | LH:´ | H:´ | H:´ | M´ |
| | C | M´ | H´ | M: | L:´ |

Second-person completeive form of verbs exhibit the most diversity among verb forms. This form is, therefore, chosen as the citation form for active verbs, and need not be indicated in the matrix.⁹

Some verbs have a different subparadigm for third person, which is indicated by a second citation form in the lexicon.¹⁰ If this second form has low ballistic, low-mid ballistic, or mid ballistic long inflection, that inflection occurs for all third-person aspects. This is illustrated in (102) by the verb ‘take away’, which requires two citation forms.

| | | |
|-------|--|---------------------|
| (102) | <i>hɛʔ^{LM}</i> , <i>hɛʔ^L</i> | ‘take away’ |
| | <i>hɛʔ^{Lr}</i> | ‘he is taking away’ |
| | <i>ni^Lhɛʔ^{Lr}</i> | ‘he will take away’ |
| | <i>ka^Lhɛʔ^{Lr}</i> | ‘he took away’ |

If the second citation form has any inflection other than low ballistic, low-mid ballistic, or mid ballistic long, that inflection occurs for progressive and completeive, but potential is mid ballistic inflection.

| | | |
|-------|--|------------------|
| (103) | <i>ʔmín^{ʔL}</i> , <i>ʔmín^{ʔLM}</i> | ‘pinch’ |
| | <i>ʔmín^{ʔLMr}</i> | ‘he is pinching’ |
| | <i>ni^Lʔmín^{ʔMr}</i> | ‘he will pinch’ |
| | <i>ka^Lʔmín^{ʔLMr}</i> | ‘he pinched’ |

All verbs fall into one of three classes. In the remainder of the section, paradigm matrices for each verb class are presented, followed by a discussion of alternate forms and some observations on the data.

3.1. Class A verbs. In Class A verbs, first vs. nonfirst persons are distinguished in progressive aspect. Third person may also be distinguished.

⁹This was suggested by William Merrifield.

¹⁰See appendix A for a complete listing of the verbs by paradigm number.

The three aspects have different inflectional patterns. Only verbs whose root is not checked by glottal have inflectional forms like those represented by the following two paradigms.

- | | | | | | | | | | | | |
|-------|----|----|----|----|----|--|----|------|----|-----|-----|
| (104) | P1 | M | M | L | LM | | P2 | L:´ | M: | L: | L:´ |
| | | MH | H´ | H´ | M´ | | | LH:´ | H´ | H:´ | M´ |
| | | M´ | H´ | | LM | | | M´ | H´ | | L:´ |

Some verbs have alternate forms for completive, differing from those given in the paradigm. This is especially true of third person, which may have a low tone on a ballistic syllable for completive in P1. This is indicated in the lexicon by [c^L] following the citation form.

- (105) *tá^H* [c^L] ‘prune’
ka^Ltá^Lr ‘he pruned’

Other verbs of both paradigms have a mid tone on a ballistic syllable for third completive. This is indicated by [c^M] following the citation form in the lexicon.

- (106) *kíp^L*, *kâ^L* [c^M] ‘charge’
ka^Lkâ^{rM} ‘he charged’

Some verbs have palatalized forms for certain aspects and persons. Second completive is the form most often palatalized. The nonprogressive forms of first plural or third persons are sometimes palatalized also. The details of this feature of the verb system await further study.¹¹ A verb which undergoes palatalization is indicated in the lexicon by [ɣ] following the citation form.

- (107) *hâ^H* [ɣ] ‘stay’
ka^Lhê^{ɣH} ‘you stayed’
ni^Lhê^{Mr} ‘he will stay’
ka^Lhê^{LMr} ‘he stayed’

Most verbs whose inflection is like P1 and P2 are π verbs (37 out of 41). All forms in P1 are short; P2 has both short and long forms. For progressive aspect, first plural always is a mid tone, and second person a low tone. For

¹¹See Rupp and Merrifield (this volume) for a description of palatalization of verb forms in Lealao Chinantec, and Mugele (1976) for an analysis of vowel shifts in Lalana Chinantec.

intensive nonthird person tone is high, whereas third person tone is nonhigh. For completive, first singular is mid tone on a short ballistic syllable; first plural is the same as intensive; third is the same as progressive.

The following two paradigms are for Class A verbs whose root is checked by glottal. The arrow pointing to the right (§) in first-person progressive indicates a sandhi-inducing syllable.

| | | | | | | | | | | |
|-------|----|------|------|----|----|----|------|------|----|----|
| (108) | P3 | M\$' | M\$' | L' | L' | P4 | M\$' | M\$' | LM | LM |
| | | H' | H' | H | L' | | H' | H' | H | M' |
| | | M' | H' | | L' | | M' | H' | | LM |

In some verbs, the completive aspect form, as well as the progressive aspect form, for first singular is sandhi-inducing. This sandhi-inducing form probably originated historically from a phonological form which normally participates in tone sandhi by changing the tone of the following syllable, but over time it has changed to its present nonsandhi-inducing phonological shape. The sandhi-inducing quality, however, has remained, leading to an example of what Bloomfield (1933:374) describes as an irregular alternation resulting from phonetic change having removed the conditioning factors for the alternation.

In the lexicon the sandhi-inducing completive is indicated by [1s§] following the citation form.

- (109) *béʔ^L* [1s§] 'roll up'
ka^Lbéʔ^{M\$R} 'I rolled up'

First plural of TA verbs may have an alternate form for completive—a low-to-high rising glide rather than the high tone given in the paradigm. For *kunʔ^{LM}*, *kúnʔ^{LM}* 'bite, eat', speakers of the language have pointed out that this form is used when animal is the object, and the form with high tone when a person is the object. It is unclear whether historically other verbs may have had forms based on such a distinction.

The alternate form is marked in the lexicon by [1p^{LH}] following the citation form. (In this particular case it is enclosed in parenthesis, since both forms are possible.)

- (110) *kunʔ^{LM}*, *kúnʔ^{LM}* [(1p^{LH})] 'bite, eat'
ka^Lkunʔ^{LH}naʔ 'we bit, ate (an animal)'
ka^Lkúnʔ^Hnaʔ 'we bit, ate (a person)'

Just as among verbs whose inflection is like P₁ and P₂, some of those whose inflection is like P₃ and P₄ may have alternate third-person completive forms rather than those indicated in the paradigm. A few have a low tone, as in (111).

- (111) *gen*^{P_{LH}}, *gen*^{P_{LM}} [C^L] 'swing'
 ka^L*gén*^{P_{Lr}} 'he swung'

Other verbs have a mid tone for third completive, as in (112).

- (112) *lo*^{P_L}, *la*^{P_{LM}} [C^M, Y] 'bathe'
 ka^L*lâ*^{P_{Mr}} 'he bathed'

Although the majority of the verbs represented by P₃ and P₄ are π verbs (49 out of 69), 15 are TA verbs, whereas P₁ and P₂ represent no TA verbs. The remaining 5 verbs are AI. TA verbs whose inflection is like P₃ usually have a third-person subparadigm with a low-rising tone.

- (113) *huén*^{P_{LH}}, *huén*^{P_{LM}} [1P^{LH}, Y] 'speak to'
 huén^{P_{LMr}} 'he is speaking to'
 ni^L*huén*^{P_{LMr}} 'he will speak to'
 ka^L*huén*^{P_{LMr}} 'he spoke to'

For progressive aspect, first persons are a sandhi-inducing mid tone, and nonfirst persons are a low or low-rising tone. As in P₁ and P₂, intensive is a high tone for nonthird persons, but a nonhigh tone for third person. Completive also has the same characteristics as in P₁ and P₂: mid tone on a short ballistic syllable for first singular, the same as intensive for first plural, and the same as progressive for third.

3.2. Class B verbs. In Class B verbs, only third person is distinguished in noncompletive aspects. Like Class A verbs, the three aspects have different inflectional patterns. Following are the three major paradigms for Class B verbs. None of the Class B verbs are checked by glottal.

- (114) P₅ L' L' L' L'
 H' H' H' L'
 L' H' L'
 P₇ LM' LM' LM' LM'
 LH' LH' LH' M'
 M' LH: LM'
- P₆ M: M: M: M:
 H' H' H' M:
 M: M: M:

Verbs whose inflection is like p7 and whose citation form has low-high ballistic long inflection (which is also the second completive form) usually have low-high ballistic long inflection for completive first singular also, rather than mid ballistic as given in the paradigm. This is indicated in the lexicon by $[\text{1s}^{\text{LH}}]$ following the citation form.

- (115) $\text{sé}^{\text{LH}} [\text{1s}^{\text{LH}}]$ 'leave'
 $\text{ka}^{\text{L}}\text{sé}^{\text{LHR}}$ 'I left'

Some verbs of p6 and p7 have a high tone for the completive of first plural rather than the tones given in the paradigms. This is indicated in the lexicon by $[\text{1p}^{\text{H}}]$ after the citation form.

- (116) $\text{hé}^{\text{M}} [\text{1p}^{\text{H}}]$ 'breathe through mouth'
 $\text{ka}^{\text{L}}\text{hé}^{\text{Hna?}}$ 'we breathed through the mouth'

Alternate third person completive forms with low or mid tone appear in some Class B, as well as Class A, verbs. For example,

- (117) $\text{tó}^{\text{LM}} [\text{C}^{\text{L}} \text{Y}]$ 'write'
 $\text{ka}^{\text{L}}\text{tó}^{\text{Lr}}$ 'he wrote'
- (118) $\text{ʔín}^{\text{LM}} [\text{C}^{\text{M}} \text{Y}]$ 'shoot'
 $\text{ka}^{\text{L}}\text{ʔín}^{\text{Mr}}$ 'he shot'

All of the forms of p5 , p6 , and p7 are ballistic, except for a few citation forms. Most verbs whose inflection is like p5 and p6 are T1 verbs (20 out of 27). About one-half of the verbs of p7 are TA (23 out of 45): 20 of the remaining 22 are T1 . Most of the TA verbs have a third-person subparadigm with different forms than those of nonthird persons. For example, the verb in (119) has inflection like p7 except for third person.

- (119) $\text{ʔán}^{\text{LM}}, \text{ʔá:n}^{\text{M}}$ 'bury'
 ʔá:n^{Mr} 'he is burying'
 $\text{ní}^{\text{L}}\text{ʔá:n}^{\text{Mr}}$ 'he will bury'
 $\text{ka}^{\text{L}}\text{ʔá:n}^{\text{Mr}}$ 'he buried'

For progressive aspect, p5 has low tone on short syllables for all persons, p6 has mid tone on long syllables, and p7 has rising low tone. For intensive, nonthird persons are high tone (like Class A verbs) in p5 and p6 , but low-to-high rising tone in p7 . Some completive aspect forms are like those

for Class A verbs: the mid tone for first singular in P7, the high tone for first plural in P5 and P6, and the same tone as for progressive for third persons in all three paradigms. In third person all forms are the same in P5 and P6, but intensive is mid ballistic inflection in P7.

3.3. Class C verbs. In Class C verbs, third person is distinguished from nonthird. Aspect has different inflectional patterns in third person only. The following two paradigms represent Class C verbs whose root is not checked by glottal.

| | | | | | | | | | | |
|-------|----|----|----|----|----|----|-----|-----|-----|-----|
| (120) | P8 | M: | M: | M: | L: | P9 | LH: | LH: | LH: | LM' |
| | | M: | M: | M: | M' | | LH: | LH: | LH: | M' |
| | | M: | M: | | L: | | LH: | LH: | | LM' |

There are very few alternate forms among verbs whose inflection is like that of P8 and P9. A few, however, have a mid tone for third person completive, such as (121).

| | | | |
|-------|--|-------------------|-------------------|
| (121) | $\tilde{r}i:n^{LH}$, $\tilde{r}i:n^L$ | [c ^M] | 'jump, fly' |
| | $ka^L\tilde{r}i:n^{Mr}$ | | 'he jumped, flew' |

Most verbs whose inflection is like P8 are T1 verbs (14 out of 18). Those of P9 are fairly evenly distributed between A1 (6 verbs), T1 (5 verbs), and TA (5 verbs). Nearly all verbs of both P8 and P9 have postnuclear nasal. All forms are the same except third person, which is always different from nonthird.

The following two paradigms are for Class C verbs whose root is checked by glottal.

| | | | | | | | | | | |
|-------|-----|----|----|----|----|-----|-----|-----|-----|-----|
| (122) | P10 | LH | LH | LH | LM | P11 | LM' | LM' | LM' | LM' |
| | | LH | LH | LH | M | | LM' | LM' | LM' | LM' |
| | | LH | LH | LH | LM | | LM' | LM' | LM' | LM' |

Alternate completive forms do not occur in verbs whose inflection is like P10 and P11. Some verbs of P10, however, have a ballistic syllable for third person intensive. This is indicated by [i3'] following the citation form in the lexicon.

| | | | |
|-------|------------------------|-------|----------------|
| (123) | $r\acute{u}r^{LH}$ | [i3'] | 'wash' |
| | $ni^Lr\acute{u}r^{Mr}$ | | 'he will wash' |

Over half of the verbs whose inflection is like P10 are T1 verb (29 out of 47). 13 are TA, and the remainder are A1 and D1. 4 of the 5 verbs of P11 are A1. All forms of the paradigms are the same, except third person of P10, which is always different than nonthird. About one-third of the verbs of P10 have a third-person subparadigm with low ballistic inflection rather than low-mid as shown in the paradigm.

- (124) *hinʔ^{LH}*, *hínʔ^L* 'rinse'
 hínʔ^{Lr} 'he is rinsing'
 ni^Lhínʔ^{Lr} 'he will rinse'
 ka^Lhínʔ^{Lr} 'he rinsed'

3.4. Verbs with minor paradigms. Principally A1, stative A1, and II verbs have inflectional forms like those represented by minor paradigms. Their citation form is taken from nonfirst completive, since the most diversity of form is found there. First-person completives are always predictable. Thus, completive aspect need not be included in the paradigm.

The following two paradigms are for Class A verbs. Verbs whose inflection is like P12 have roots which are not checked by glottal. Those whose inflection is like P13 have roots which are checked. The completive for first person is always a mid tone, like that of the progressive.

- (125) P12 M: M: L: L: P13 M' M' L' L'
 L' L' L' L' M' M' L' L'

Stative A1 verbs have no aspectual inflection, but their form is the same as that of a progressive-aspect subparadigm. The verb in (126), for example, has inflection like that represented by P13.

- (126) *ʔgóʔ^L* 'fear'
 ʔgóʔ^{M\$R} 'I fear'
 ʔgóʔ^{M\$R?} 'we fear'
 ʔgóʔ^L 'you fear'
 ʔgóʔ^{rL} 'he fears'

II verbs have no distinct person-number forms, but their paradigm is the same as a third-person subparadigm. The verb in (127) has inflection like that represented by P12.

- (127) *kó:M* 'burn'
ko:L 'it is burning'
ni^Lkó^L 'it will burn'
ka^Lkó:M 'it burned'

Like other Class A verbs, those whose inflection is like p₁₂ and p₁₃ have mid tone for first persons. The mid tone of p₁₃ is sandhi-inducing, just as in other Class A verbs whose root is checked by glottal. In contrast to verbs of major paradigms, p₁₂ has a low tone for intensive. There is no different inflectional form for potential of p₁₃.

The following two paradigms are for Class B verbs. Length is not indicated in the paradigms, as the length of the citation form indicates the length of all forms in the paradigm. For example, *lí^L* [y] 'end, able' has all short forms, whereas *ʔí^L* 'resemble' has all long forms.

The citation form also indicates whether the verb is checked by glottal or not. *huín^{ʔM}* 'lazy', for example, has all checked forms, but *ʔné^M* 'need' has all open forms. All completive forms are the same as the citation form.

- (128) p₁₄ L' L' L' L' p₁₅ M' M' M' M'
 L' L' L' L' M' M' M' M'

In these paradigms the inflectional forms are the same for all persons and for both progressive and intensive aspect. Completive forms are the same as the rest of the paradigm in p₁₅. This is true of p₁₄ also, except for two 11 verbs, *gén^M* 'completed' and *ʔí^M* 'enter', which have mid-ballistic rather than low-ballistic inflection for completive.

Class C verbs with minor paradigms have the same form for all persons and aspects. Therefore one need only know their citation form from the lexicon to know the whole paradigm. Examples are: *niʔ^{LH}* (11) 'open out', *ʔiu:n^M* (AIS) 'inside', and *ʔi:n^{LH}* (TIS) 'want'.

3.5. Disyllabic verbs. Disyllabic verbs have derived stems (§2.7). They may also have derived tones which do not occur on verb roots (§1.3). They do not have different inflectional forms to indicate aspect. Therefore, only one row is given in the paradigm. Person, however, is distinguished. The citation form is taken from second person, which has the most diversity of forms. Thus, second person need not be given in the paradigm.

p₁₆ is for Class A verbs. The inflection for first singular, first plural, and third persons are given.

(129) P16 M M — L'

The citation form indicates the length of all forms, except for third person, which is always short. All nonthird forms of *hmi*^H*kɪu*^{HL} 'toast, dry', for example, are long.

The citation form also indicates whether the forms are checked by glottal or not. For example, all forms of *hmi*^H*ʔɛʔ*^L 'defend', are checked. When the verb is checked, the mid tone of first singular is sandhi-inducing, as in *hmi*^H*ʔɛʔ*^{MSR} 'I defend'. In one verb, *hmi*^L*ui*^{ʔHL} 'smooth, plane', it is also sandhi-inducing in first plural: *hmi*^L*ui*^{ʔMnaʔ} 'we smooth, plane'. This is indicated in the lexicon by [1pʂ] following the citation form.

Regarding the first (pretonic) syllable of disyllabic verbs, if it has a low tone on the citation form, as in *hmi*^L*ui*^{ʔHL} [1pʂ] 'smooth, plane', it has low tone throughout the paradigm. If it has high tone on the citation form, as in *hmi*^H*ʔɛʔ*^L 'defend', the first-person forms have the high tone but nonfirst persons have a low tone.

- (130) *hmi*^H*ʔɛʔ*^{MSR} 'I defend'
hmi^H*ʔɛʔ*^{Mnaʔ} 'we defend'
hmi^L*ʔɛʔ*^L 'you defend'
hmi^L*ʔɛʔ*^{rL} 'he defends'

Class B disyllabic verbs may have a different third-person subparadigm. All other forms of the paradigm, however, are the same as the citation form. A second citation form is given when third-person differs from nonthird. Therefore, one need only know the citation forms from the lexicon to know the entire paradigm. Examples are: *hmi*^L*ʔi*tH 'count', *hmi*^L*gó*^{HL}, *hmi*^L*gó*^L 'deceive', *hmi*^L*ʔmɛ*^H, *hmi*^L*ʔmɛ*^M 'sharpen', *hmi*^L*kɔ*^{ʔMH}, *hmi*^L*kɔ*^{ʔLH} 'help'.

An interesting observation is that the nonthird and third person tones of disyllabic verbs are often two tones which are related in the sandhi system—the nonthird tone being the changed pattern of the third-person tone (cf. 14). For example, high-low is the changed tone of low, as in *hmi*^L*gó*^{HL}, *hmi*^L*gó*^L 'deceive'; high ballistic is the changed tone of mid ballistic, as in *hmi*^L*ʔmɛ*^H, *hmi*^L*ʔmɛ*^M 'sharpen'; mid-high is the changed tone of low-high, as in *hmi*^L*kɔ*^{ʔMH}, *hmi*^L*kɔ*^{ʔLH} 'help'.

Class C disyllabic verbs have the same form for all aspects and persons. Examples are: *hmi*^L*ʔa:n*^M 'hungry', *hmi*^L*ʔin*^{ʔLM} 'rest', and *hmi*^L*guän*^{ʔH} 'bless'.

3.6. Suppletive Verbs. A few common verbs have suppletive forms for each person. Their paradigms are given in full.¹²

| | | | | | |
|-------|--------------------|-------------------------|-------------------------|--------------------------|-------------------------|
| (131) | P17 go (AI) | 1s | 1p | 2 | 3 |
| | P | <i>ní:^L</i> | <i>zé^{LM}</i> | <i>guó^{LM}</i> | <i>zé^{LM}</i> |
| | I | <i>ní:^{LH}</i> | <i>zé^H</i> | <i>guó^H</i> | <i>zé^M</i> |
| | C | <i>ηó^M</i> | <i>ηó^M</i> | <i>gé:^M</i> | <i>ηó^M</i> |
| (132) | P18 go home (AI) | 1s | 1p | 2 | 3 |
| | H | <i>nín^{MS}</i> | <i>zá^{MS}</i> | <i>guün^{LM}</i> | <i>zen^{LM}</i> |
| | P | <i>ηán^{MS}</i> | <i>ηó^{MS}</i> | <i>guën^{LM}</i> | <i>ηán^L</i> |
| | I | <i>nín^H</i> | <i>zá^H</i> | <i>guün^H</i> | <i>zén^M</i> |
| | C | <i>ηán^M</i> | <i>ηo^M</i> | <i>gén^L</i> | <i>ηán^M</i> |
| (133) | P19 come (AI) | 1s | 1p | 2 | 3 |
| | P | <i>ga^{MH}</i> | <i>ha^{MH}</i> | <i>ηi^L</i> | <i>ha^L</i> |
| | I | <i>gá^{LM}</i> | <i>há^{LM}</i> | <i>ηi^{LM}</i> | <i>há^{LM}</i> |
| | C | <i>gá^M</i> | <i>há^M</i> | <i>ηi^M</i> | <i>há^M</i> |
| (134) | P20 come back (AI) | 1s | 1p | 2 | 3 |
| | H | <i>gán^{MS}</i> | <i>hó^{MS}</i> | <i>ηin^L</i> | <i>han^L</i> |
| | P | <i>gán^{LM}</i> | <i>hó^{MS}</i> | <i>ηin^L</i> | <i>han^{LM}</i> |
| | I | <i>gán^{LM}</i> | <i>hó^{MS}</i> | <i>ηin^{LM}</i> | <i>han^{LM}</i> |
| | C | <i>gan^M</i> | <i>ho^M</i> | <i>ηin^M</i> | <i>han^M</i> |
| (135) | P21 eat (TI) | 1s | 1p | 2 | 3 |
| | P | <i>gë^{MS}</i> | <i>ké:^{LH}</i> | <i>kép^L</i> | <i>gë^{LM}</i> |
| | I | <i>dë^{LH}</i> | <i>ké:^L</i> | <i>kë^H</i> | <i>dë^M</i> |
| | C | <i>gë^{MS}</i> | <i>ké:^{LH}</i> | <i>kép^L</i> | <i>gë^L</i> |
| (136) | P22 drink (TI) | 1s | 1p | 2 | 3 |
| | P | <i>gú^{MS}</i> | <i>né^M</i> | <i>ʔú^L</i> | <i>ʔí^L</i> |
| | I | <i>du^{LH}</i> | <i>né^H</i> | <i>ʔu^H</i> | <i>ʔí^L</i> |
| | C | <i>gú^M</i> | <i>né^M</i> | <i>ʔí^L</i> | <i>ʔí^M</i> |

¹²A few of these verbs have the minor aspect HABITUAL (H) mentioned in §2.4.

Among suppletive verbs, completive aspect is most often mid tone. For ‘come’ verbs, potential is usually rising low tone; for others, it often is high tone for nonthird persons and nonhigh for third person, just as for other verbs. ‘Go home’ and ‘come back’ have habitual as well as progressive aspects. Bloomfield (1933:330, 338) points out the tendency of common words to be more conservative, and thus reflect older forms of the language. These suppletive verbs, then, may be important in understanding characteristics of the other verbs in the language.

Appendix A

List of verbs, P1–P16

- (137) P1 AI: *hâ^H* [Y] ‘stay, wait’, *ñî^H* ‘walk’.

TI: *ʔê^H* ‘show, teach’, *ʔé^H* ‘sing’, *gî^H* ‘take out, off’, *giâ^H* ‘place (pl)’, *hî^H* [C3^L Y] ‘burn’, *ʔî^L* [C3^L] ‘read’, *kiɛ^L*, *kâ^L* [C3^M] ‘charge’, *kî^H* ‘dream’, *kû^H* ‘pick’, *kuê^H* ‘give’, *mî^H* ‘ask for’, *ʔmâ^H* ‘save, guard’, *ʔmî^H* ‘sew’, *nâ^H*, *nâ^{LM}* [Y] ‘open’, *hñî^H*, *hñî^{LM}* [Y] ‘close’, *hñâ^H* ‘sow’, *hñiú^H* ‘drag’, *sî^H* ‘clean’, *tâ^H* [C3^L] ‘prune’, *tiú^H* ‘cut, saw’, *guâ^L* [C3^L Y] ‘grind on grinding stone’.

- (138) P2 AI: *kujî^M* ‘run’, *ʔo^M* ‘shout’.

TI: *ʔê^M* ‘kick’, *gî^M* ‘tear’, *hî^M* [C3^M Y] ‘plow’, *hó^{LH}* [Y] ‘break in two’, *ke^L*, *ke^L* ‘place’, *kiú^M* ‘hit with fist’, *hmo^M* [Y] ‘make, do’, *ʔnú^{LH}* ‘sell’, *ʔnó^M* [C3^M Y] ‘obtain’, *nú^M* [C3^M Y] ‘hear, listen’, *se^M* ‘lift up’, *só^M* [C3^M Y] ‘cook’, *ti^M* ‘scratch’, *tó^M* [C3^M Y] ‘bake’, *ú^M* [C3^M Y] ‘defecate’, *ú^{LH}* [C3^M Y] ‘pour out’.

- (139) P3 AI: *gen^{LH}*, *gen^{LM}* [C3^L] ‘swing’, *hú^L* ‘cough’ *lo^L*, *la^{LM}* [C3^M Y] ‘bathe’, *ʔmî^L* ‘blink, wink’.

TI: *bé^L* [C1s\$] ‘roll up’, *bó^L* [C1s\$] ‘pluck, shake’ *ge^{LH}* ‘scatter’, *gen^{LH}* ‘swing’, *guo^{LH}* [Y] ‘pour’, *ʔgi^{LH}* ‘smoke’, *hê^{LM}* ‘shake’, *hî^{LM}* ‘rummage through’, *hî^L* [C1s\$] ‘put into’, *hî^{LM}* [C1s\$ Y] ‘smell’, *hue^{LH}* [Y] ‘say’, *ʔî^L* [Y] ‘sting, inject’, *kiu^{LH}* ‘cut’, *kî^{LM}*, *kî^{LM}* [C3^M Y] ‘put on’, *kó^L* [C1s\$] ‘thin down’, *ko^{LH}*, *ko^{LM}* [C1s\$] ‘play with’, *ʔle^{LH}* ‘push’, *ʔlen^{LH}* ‘push together’, *ʔlí^L* [C1s\$] ‘knock loose’, *ʔliu^{LH}* ‘lick’, *hlí^L* [C1s\$] ‘dissolve’, *ʔmé^L* [C1s\$] ‘press’, *ʔmín^L*, *ʔmín^{LM}* ‘pinch’, *ʔnión^{LM}*, *nión^{LM}* ‘wrap around’, *ʔnó^{LM}*, *ʔnó^{LM}* [C3^M Y] ‘look for’, *ʔñiú^L* ‘tie’, *hñî^L* [C1s\$]

TA: *ṗán^{LM}*, *ṗá:n^M* ‘bury’, *ṗén^{LM}*, *ṗé:n^L* ‘point out, criticize’, *ṗén^{LM}*, *ṗé:n^M* ‘pick’, *hián^{LM}*, *hiá:n^M* ‘lower’, *ṗṗn^{LM}* [C3^M Y] ‘shoot’, *kiá:n^L*, *kiá:n^L* ‘lay down’, *kuē:n^M*, *kuē:n^L* ‘give’, *lén^{LM}* [C3^M Y] ‘buy’, *mán^{LM}*, *ní:n^M* [C1_P Y] ‘see’, *ṗme:n^M*, *ṗmé:n^L* [C1_P^H Y] ‘hide’, *mí:n^M*, *mí:n^L* ‘ask for’, *hmá:n^M*, *hmá:n^L* [C1_P^H Y] ‘make’, *ṗní:n^{LH}*, *ṗní:n^L* [C1_P^H] ‘accuse’, *hná:n^{LH}* [Y] ‘slap’, *hnió:n^M*, *hnió:n^L* ‘drag’, *hnín^{LH}*, *hnín^M* [C1_S Y] ‘enclose’, *sá:n^{LH}* [C1_S^{LH} Y] ‘leave’, *sa:n^M*, *sá:n^L* [Y] ‘baptize’, *sa:n^M*, *sá:n^L* [C3^H Y] ‘cook’, *sa:n^M*, *sá:n^L* [C1_P^H Y] ‘lift up’, *tán^{LM}* [C3^L Y] ‘carry on shoulders’, *tén^{LM}*, *té:n^L* ‘spy on’, *tiún^{LM}*, *tiú:n^M* ‘abandon’.

- (144) P8 AI: *ṗme:n^M* ‘hide’, *ṗi:n^M* [C3^M] ‘answer back’.

TI: *hí:n^M* ‘rotate’, *hui:n^M* ‘break’, *ia:n^M* ‘turn’, *iu:n^M* ‘turn off, out’, *la:n^M* [Y] ‘leave alone’, *hli:n^M* ‘shell’, *na:n^M*, *na:n^L* ‘begin’, *ṗi:n^M* ‘answer’, *ṗo:n^M* ‘own’, *ra:n^M* ‘raise’, *sa:n^M* ‘prune’, *si:n^M* ‘tear, rip’, *ti:n^M* ‘light’, *ṗu:n^M* ‘light’.

TA: *hṗ:n^M* [Y] ‘wait for’, *ṗi:n^M* ‘wake up’.

- (145) P9 AI: *hí:n^{LH}*, *hí:n^L* [Y] ‘argue’, *hú:n^{LH}* ‘lie’, *ṗi:n^{LH}*, *ṗí:n^L* [C3^M] ‘jump, fly’, *ṗí:n^{LH}* ‘pass’, *sí:n^{LH}*, *sí:n^L* [C3^M Y] ‘discuss’, *tiún^{LH}* [Y] ‘fight’.

TI: *ṗé:n^{LH}* ‘pull’, *hiá:n^{LH}*, *hiá:n^M* ‘comb’, *hié:n^{LH}*, *hié:n^M* ‘undo’, *kiá:n^{LH}*, *kiá:n^M* ‘sweep’, *ṗlé:n^{LH}* ‘harm’.

TA: *ṗé:n^{LH}*, *ṗé:n^M* ‘splatter on’, *ṗé:n^{LH}* ‘pull’, *hě:n^{LH}*, *hě:n^M* ‘look at’, *hiú:n^{LH}*, *hiú:n^M* ‘blow on’, *kí:n^{LH}*, *kí:n^M* ‘dream about’.

- (146) P10 AI: *hun^{ṗLH}* ‘squat down’, *kün^{ṗLH}* [C^M] ‘return’, *hmün^{ṗLH}* ‘urinate’.

TI: *ṗan^{ṗLH}*, *ṗán^{ṗL}* ‘transplant’, *bin^{ṗLH}*, *bín^{ṗL}* ‘beat up’, *ṗē^{ṗLH}* [I3] ‘step on’, *gi^{ṗLH}* ‘choose’, *hṗ^{ṗLH}*, *hṗ^{ṗL}* ‘hand over’, *hṗ^{ṗLH}* ‘light, offer, turn’, *hin^{ṗLH}*, *hín^{ṗL}* ‘rinse’, *hu^{ṗLH}* ‘fold over’, *ṗian^{ṗLH}* ‘wrap around’, *ṗin^{ṗLH}*, *ṗín^{ṗL}* ‘accept, receive’, *iu^{ṗLH}* [I3] ‘turn off’, *kan^{ṗLH}*, *kán^{ṗL}* ‘mix together’, *kin^{ṗLH}*, *kín^{ṗL}* ‘hook’, *kí^{ṗLH}* ‘return’, *kun^{ṗLH}*, *kún^{ṗL}* ‘connect’, *kuo^{ṗLH}* ‘step over’, *hli^{ṗLH}* [Y] ‘split’, *ni^{ṗLH}* ‘stretch out’, *ṗni^{ṗLH}* ‘resell’, *hna^{ṗLH}* [Y] ‘pound’, *ran^{ṗLH}*, *rán^{ṗL}* ‘tear loose’, *ru^{ṗLH}* [I3] ‘wash’, *si^{ṗLH}* [Y] ‘untie’, *tṗ^{ṗLH}* [Y] ‘mend’, *ṗuē^{ṗLH}* [I3] ‘take out (pl)’, *ṗuēn^{ṗLH}* ‘husk’, *ṗuín^{ṗLH}* ‘harvest’, *ziu^{ṗLH}* ‘close up’, *ziun^{ṗLH}*, *ziún^{ṗL}* ‘gather up’.

TA: *ṗan^{ṗLH}*, *ṗán^{ṗL}* ‘shout to’, *en^{ṗLH}*, *én^{ṗLM}* ‘feed’, *giun^{ṗLH}*, *giún^{ṗL}* ‘massage’, *hin^{ṗLH}*, *hín^{ṗL}* ‘rinse’, *hṗn^{ṗLH}*, *hṗn^{ṗL}* ‘rotate’, *huān^{ṗLH}*, *huán^{ṗL}* ‘fan’, *hui^{ṗLH}*, *hui^{ṗL}* ‘whistle to’, *iun^{ṗLH}*, *iún^{ṗL}*

‘suck on’, *kuin*^{PLH}, *kuín*^L ‘make run’, *lan*^{PLH}, *lán*^L [Y] ‘bathe’, *hman*^{PLH}, *hmán*^L [Y] ‘mistreat’, *ñi*^{PLH} [Y] ‘answer’, *sín*^{PLH} [Y] ‘untie’.

DI: *mī*^{PLH} [ɪ3] ‘ask for’, *hmo*^{PLH} [Y] ‘tell’.

- (147) P11 AI: *hī*^{PLM} ‘resurrect’, *huín*^{PLM} ‘tire’, *ñián*^{PLM} ‘be late in the morning’, *nión*^{PLM} ‘be late in the evening’.

TA: *hín*^{PLM} ‘meet’.

- (148) P12 II: *ʔa:n*^L ‘rotten’, *ho:*^L [Y] ‘break in two’, *iɛ:*^L ‘swell’, *kó:*^M ‘burn’, *tɯ:*^L [Y] ‘run over’.

AI: *ʔga:n*^L ‘scold, bark’, *ia:n*^L ‘swell’, *kuán*^M ‘grow’, *lá:n*^M [Y] ‘escape’, *hnén*^M ‘be seen’.

TI: *ʔie:n*^L ‘break out with’, *sá:n*^M ‘be baptized with’.

- (149) P13 II: *hiú*^{PL} ‘fall (PL)’, *ʔién*^{PL} ‘pierce’, *kuí*^{PL} [Y] ‘wound’, *rón*^{PL} ‘bear weight’, *sén*^{PL} ‘adhere’, *tín*^{PL} ‘cease’, *tó*^{PL} [Y] ‘fall’.

SAI: *ʔgó*^{PL} ‘afraid of’, *hí*^{PL} ‘alive’, *mín*^{PL} ‘ticklish’, *sín*^{PL} ‘standing’.

STI: *hmé*^{PL} ‘enjoy taste of’.

STA: *ʔgě*^{PL} ‘afraid of’.

AI: *hín*^{PL} ‘hiccough’, *ʔló*^{PL} ‘burp’, *ʔuó*^{PL} ‘weaken’.

TI: *hgó*^{PL} ‘choke on’, *lí*^{PL} [Y] ‘able’, *ñín*^{PL} ‘understand’, *rô*^{PM} [Y] ‘bear weight of’.

- (150) P14 II: *giá*^L ‘used up; drip’, *gén*^M ‘completed’, *ʔi*^M ‘enter’, *li*^L [Y] ‘end, able’, *tá*^L ‘drop’, *ʔuó:*^L ‘soften’.

SAI: *huí:n*^L ‘mischievous’, *ʔi:*^L ‘resemble’.

STI: *kuí:*^L ‘acquainted with’.

STA: *kuí:n*^L ‘acquainted with’.

TI: *ñi:n*^L [Y] ‘be given’.

- (151) P15 II: *ʔié*^M ‘late in the morning’, *ró:*^M [Y] ‘raise up’, *ʔuén*^{PM} ‘prepared (corn)’, *zé*^M ‘go’.

SAI: *bí:n*^M ‘strong’, *gí:n*^M ‘angry’, *huín*^{PM} ‘lazy’, *rá:n*^M ‘sweet-talking’, *té:n*^M ‘endure’.

STI: *ʔné*^M ‘need’.

AI: *ʔlá:n^M* [ɣ] ‘get well’, *rá:n^M* ‘get up’, *zá:n^M* ‘grow old’.

- (152) P16 TI: *hmi^Hʔëʔ^L* ‘defend’, *hmi^Hkiɣ^{HL}* ‘toast, dry’, *hmi^Hʔleʔ^L* ‘damage’, *hmi^Luiʔ^{HL}* [ipʂ] ‘smooth, plane’.

Appendix B

Additional kinds of perturbation

Several kinds of perturbation have been observed which do not fit in the main system of tone sandhi described above. One kind affects the syllable type rather than the tone pattern. It is caused by certain ballistic syllables and affects an open controlled syllable with low tone, causing it to become ballistic. For example, *hmi^L* ‘water’, but *zi^{LM} hmi^L* ‘in the water’. Also, *zä^L* ‘people’, but *kiä^{PM} zä^L* ‘belonging to the people’.

Evidently the effects of sandhi are different on unstressed syllables than on stressed syllables. Rule (15) (§1.4) states that low tone changes to low-high. However, the tone of the imperfect prefix *ni^L-*, when preceded *mi^{LH}-* ‘when’ or *li^{LH}-* ‘where’, is changed to high rather than low high: *ni^Lguó^{PH}* ‘you will go’, but *mi^{LH}-ni^Hguó^{PH}* ‘when you will go’ and *li^{LH}-ni^Hguó^{PH}* ‘where you will go’. Strangely, the past-tense prefix *ka^L-* has not been observed to participate in this kind of sandhi, although it has the same tone as the imperfect prefix *ni^L-*.

Interrogative intonation causes tone sandhi on the first syllable of the sentence. The first syllable is often the question marker *si^{MH}*, but the marker may be dropped, in which case the same tone (^{MH}) occurs on the first syllable of the sentence, if it has the shape cv. For example, *si^{MH} sä^{HL} hmi^L* or *sä^{MH} hmi^{HL}* ‘is there any water?’.

Another conditioning environment for the tone sandhi described in the body of this paper is a verb root with the first singular person marker attached (§2.3). For example, *ŋi^{LH}* ‘salt’, but *ka^Llä^{MR} ŋi^{MH}* ‘I bought salt’. Or *ʔlé^M* ‘soldier’, but *ʔgën^{MR} ʔlé^H* ‘I am afraid of the soldier’.

Appendix C

Residue

A total of 107 verbs have paradigms which are deviant from any presented in this study. Some have forms of two different paradigms; some have forms which differ in stress or length; some have no progressive aspect; some simply have one or more unexpected forms.

Twenty verbs have forms of two different paradigms. *kə^L* [C3^M] ‘take, carry off (T1)’ has nonthird progressive like p1, and nonprogressive and third person like p5. It also has the same form for first-singular progressive as for potential. *sin^{2M}* ‘stand (A1)’ has progressive and first-plural forms like p3, and nonprogressive for all but first plural like p15. *tě^L* [Y] ‘call (A1)’ has nonthird progressive like p6, and nonprogressive and third person like p5. *ká:n^L* [C3^M Y] ‘carry off (TA)’ has noncompletive and third person like p6, and nonthird completive like p7. *ri:^M* ‘embrace (T1)’ has nonthird progressive like p7, and nonprogressive and third person like p2. *kí^H* [Y] ‘pay (T1)’ and *lá^{LM}* [C3^M Y] ‘buy (T1)’ have progressive and third person like p7, and nonthird, nonprogressive like p5. *hě:n^L* [C1p^{LH} Y] ‘have at one’s side (TA)’ has progressive and third person like p8, and nonthird, nonprogressive like p6. *zě^{2L}* ‘find’ has noncompletive like p11 and completive like p13. *mó:^M* [C3^M] ‘care for (T1, TA)’ has first persons like p2, second person like p6, and third person like p5; the homophonous verb *mó:^M* [C3^M] ‘see (T1)’ also has a suppletive form, *ne^{MH}*, for first plural.

Two related verbs, *sí:n^L* [C1p^H] ‘send (away) (T1)’ and *sí:n^L* ‘send (away) (TA)’, are like p6 for nonthird, nonprogressive forms. They have long ballistic syllables with low tone for progressive and third person, which are possibly relics of an extinct paradigm for Class B verbs with that inflection. Third potential is the expected short ballistic syllable with mid tone. Three other verbs have remains of the same extinct paradigm: *zi:n^M* ‘prop up (T1)’ is like p8 but has ballistic, low-tone forms for first singular and second progressive; *zé:n^{LH}* ‘dance (A1)’ is like p9, but has low ballistic forms for third person and progressive; *tá:n^{LH}* [Y] ‘be (someplace) (A1)’ is also like p9 except for low ballistic forms for third person and progressive for all persons but first plural.

Ditransitive verbs are like p4, but some of them have first singular forms like p6: *pe^{2LH}* [C1p^{LH}] ‘show, teach (D1)’ has first singular *pe:^M*; *huí^{2LH}*, *huí^{2L}* [C1p^{LH} C3^M] ‘tell (D1)’ has first singular *huí:^M*; *kuě^{2LH}* ‘give (D1)’ has first singular *kuě:^M*. Also *tě^{2LM}*, *tě^{2L}* [C3^M Y] ‘call (TA)’ has first singular *tě:^M*.

kuēn^{PLH} [C1p^{LH}] ‘give (DA)’ has *kué:n^M* for first singular progressive and completive and first plural progressive.

Nine verbs have forms which differ from the expected form in stress or length. *kī^{PLH}*, *kī^{PLM}* [Y] ‘cry (AI)’, *ku^{PLM}* ‘bite, eat (TI)’, and *nī^{PL}* [C1s^s] ‘swallow (TI)’ are like P3 except the second- and third-person nonintensive forms are controlled. *uí:^M*, *so:^L* [C3^M] ‘ascend (TI)’ is like P6 except for third person, which is a long controlled syllable with low tone. Third intensive is short and ballistic with low tone. The same inflection for third person is present for *sá:^L*, *ke:^L* ‘lie down (AI)’ which has other forms like P5. It also has the suppletive form *tá^{PH}* for first plural. *ʔia^L* ‘boil, raise up (II)’ and *sá^L* ‘exist (II)’ are like P12, but are short syllables. *tén^{PL}* [Y] ‘fall (AI)’ is like P13 except for controlled syllables for second and third progressive. *ʔe^{PL}* ‘break (II)’ and *ro^{PL}* ‘heal (II)’ are also like P13 except for controlled progressive forms.

Some verbs have no progressive aspect, but rather a timeless form (stative or habitual), plus intensive and completive aspects. Such verbs may be equivalent to Fillmore’s (1969:112) momentary verbs in English. Two citation forms are given for these verbs—the first is habitual (H) and the second is for intensive and completive (I/C). Person is not marked.

- (153) SAI: *si^Luú:^{HL}* (H), *si^Luú:^L* (I/C) ‘wounded’.
 AI: *kin^{PLM}* (H), *kín^{PM}* (I/C) ‘fall over’, *hlé:n^L* (I), *hlén^M* (I/C)
 ‘shake’, *hnan^{PLM}* (H), *hnan^{PM}* (I/C) ‘bump’, *siun^{PLM}* (H), *siun^{PM}*
 (I/C) ‘have diarrhea’, *só:n^L* (H), *són^M* (I/C) ‘slip, slide’.
 TI: *hmo^{PLM}* (H), *hmo^{PLH}* (I/C) [Y] ‘arrange, repair’, *zi^{PLM}* (H),
zí^{PM} (I/C) ‘finish’, *zí:n^{LH}* (H), *si^Lhuí:n^M* (I/C) ‘grow (hair)’.

Similar to these are verbs which are stative, but whose derived completive aspect has a different tone. The stative forms are like P12. The potential is the same as the stative, and the completive is a short, ballistic syllable with low tone. Two citation forms are given—the first for stative (s) and the second for completive (c).

- (154) AI: *ʔi:n^L* (s), *ʔín^L* (c) ‘weigh’, *kiq:n^L* (s), *kiqón^L* (c) ‘emaciated’,
kuā:n^L (s), *kuān^L* (c) ‘tall’, *ʔle:n^L* (s), *ʔlén^L* (c) ‘damp’, *lí^Lú:n^L* (s),
lí^Lúín^L (c) ‘accustomed’, *se:n^L* (s), *sén^L* (c) ‘exist’, *si:^L* (s), *sí^L* (c)
 ‘named’, *sí:n^L* (s), *sín^L* (c) ‘shy’.
 TI: *ʔí:n^L* (s), *ʔín^L* (c) ‘commit robbery’, *úí:n^L* (s), *úín^L* (c) ‘able’.

Another 55 verbs have one or more unexpected forms. One half of these are quite similar to other paradigms and are presented according to the

paradigm from which they deviate. The deviant forms follow the citation form. The person and aspect of the deviant form are indicated in parentheses.

- (155) P1 *kə^L* [C3^M Y] ‘carry (T1)’, *lé^{LM}* (P1p), *kié^L* (I3).
- (156) P4 *mǐn^{PLM}* ‘pinch (TA)’, *mǐn^L* (P3), *mǐn^{PLM}* (C3).
- (157) P6 *ŋiú^M* ‘intertwine (T1)’, *ŋiú^{LH}* (I1p), *ŋiú^M* or *ŋiú^H* (C1p).
ŋó^M ‘moan (A1)’, *ŋó^M* (I1p).
- (158) P7 *ʔe:n^M*, *ʔé:n^L* ‘show (TA)’, *ʔé:n^M* (P1s), *ʔén^H* (I1s). *guǐn^{LM}*,
hgá:n^L [C3^M] ‘descend (A1)’, *guǐn^M* (C1p), *hiá:n^L* (I3). *hě:n^L*, *hě:n^M*
 [Y] ‘burn (TA)’, *hě:n^L* (P3). *ʔǐn^{LM}* [Y] ‘shoot’, *ʔǐ:n^M* (C3). *kiq:n^{MH}*,
kiq:n^L ‘hit with fist (TA)’, *kiq:n^L* (P1s), *kiq:n^{LH}* (C1s), *kiq:n^M* (C1p).
kó^L, *kó^L* [C1p^H, C3^M Y] ‘take home (T1)’, *kó^L* (I3). *ní^{LH}* ‘stretch
 (T1)’, *ní^{LM}* (I2). *hnó^{LH}* [Y] ‘pat out (tortillas), slap (T1)’, *hnó^H* (I2).
tán^{LM}, *tá:n^L* [Y] ‘roast (TA)’, *tá:n^M* (C3). *ʔún^{LM}*, *ʔi:n^L* [C3^M] ‘enter
 (A1)’, *ʔún^M* (C1p), *ʔi:n^L* (I3).
- (159) P8 *tě^M* [C3^M Y] ‘take along (TA)’, *tě^L* (I3).
- (160) P9 *hlǐ:n^{LH}* ‘cover up (A1)’, *hlǐ:n^L* (P3).
- (161) P10 *ʔén^{PLH}* ‘step on (TA)’, *ʔén^L* (P3, I). *hun^{PLH}* ‘bend over
 (A1)’, *hún^L* (I3, C).
- (162) P11 *guǎn[?]* ‘arrive home (A1)’, *guǎn^{PM}* (C).
- (163) P12 *guǐ:n^L* ‘sleep (A1)’, *guǐ:n^L* (P1p), *kian^{PM}* (C). *kǐ:n^L* ‘lag behind
 (A1)’, *kǐ:n^M* (I1p). *hnén^M* ‘look at oneself (A1)’, *hně:n^M* (P). *só:n^M* [Y]
 ‘desire (T1)’, *siq:n^L* (C2).
- (164) P13 *si^Lkuǐn^L* [Y] ‘wounded’, *si^Lkuǐn^{PM}* (I1p), *si^Lkuǐn^{PHL}*
 (P2, P3). *té^{PM}* [Y] ‘endure (T1)’, *té^H* (I1s), *té^{PM}* (I1p). *gé^{PM}* ‘finish up’,
ze^L (P3).
- (165) P15 *zí:n^M* ‘be (in a high place) (A1s)’, *zí:n^{LH}* (I1p).
- (166) P16 *hmi^Hʔǐ:n^{LH}* ‘divert attention (TA)’, *hmi^Lʔǐ:n^{LH}* (3). Minor
 paradigm, Class C verb: *ŋan^{PLH}* ‘be born’, *ŋan^{PLM}* (C1s).

- (167) Momentary verbs: $\dot{p}in^{pLM}$, $\dot{p}in^{pM}$ 'hang (AI)', $\dot{p}in^{pL}$ (s1p). $\dot{p}in^{pLM}$, $\dot{p}in^{pM}$ 'float (AI)', $\dot{p}in^{pLH}$ (s1p). $kion^{pLM}$, $kion^{pM}$ 'trip (AI)', $kion^{pLM}$ (11p, c1p).

The remaining 32 verbs have inflectional forms which are fairly dissimilar to any major paradigm.

$\dot{p}i:n^H$ 'be of service (AI)' has the same form for all persons. Similarly, $ui:n^H$ 'bring into being (II)' has the same form for all aspects.

$si:n^L$ 'tear (II)' and $zi^Lhi:n^L$ 'rotate (II)' have the same form for all aspects, as does $guä^L$ 'come, arrive (II)' and its plural counterpart, gue^Lti^L .

$guén^M$ 'arrive (AI)' and $hón^M$ 'die (AI)' have mid ballistic long inflection in progressive and intensive. The active stem of $tí:n^M$ 'endure (SAI)' has mid ballistic inflection in completive.

$\dot{p}i:n^M$ 'sweat, bleed (TI)' has low ballistic long inflection in progressive and mid ballistic in potential. $lí:n^M$ 'be (profession, health) (AI)' has low-mid ballistic inflection in progressive, and mid ballistic long with a palatalized vowel in intensive.

si^Lgi^H 'put on to cook (TI)' has inflection for first singular, high ballistic inflection for first plural (and second), and low ballistic inflection for third.

The full paradigm is given for the remaining verbs, since their large number of deviant forms make them difficult to relate to any of the major paradigms.

| | | | | | | | |
|-------|-----|--|----|----|----|-----|-----|
| (168) | P23 | <i>lā^{LH}</i> [ʏ] ‘buy back (TI)’ | 1s | 1p | 2 | 3 | |
| | | | P | H´ | H´ | H´ | LM´ |
| | | | I | H´ | H´ | H´ | M´ |
| | | | C | L´ | H´ | LH´ | M´ |

| | | | | | | | |
|-------|-----|----------------------|----|--------|----|----|----|
| (169) | P24 | $kiē^L$ 'carry (TI)' | 1s | 1p | 2 | 3 | |
| | | | P | MH | H' | H' | LM |
| | | | I | MH | H' | H' | M' |
| | | | C | $kô^L$ | L | L | LM |

| | | | | | | |
|-------|-----|--------------------------------|----|----|-----|----|
| (170) | p25 | $hē:n^L$ [v] 'take along (TA)' | 1s | 1p | 2 | 3 |
| | | | P | M: | LM' | L: |
| | | | I | H' | H' | M' |
| | | | C | M: | H' | L: |

ηi^H 'know (SAI)': ηi^{MH} , ne^{MH} , ηi^H , ηi^{LM} .

$rā:n^L$ 'lying down (SAI)': $rā:n^M$, $tér^M/tá^M$, $rā:n^L$, $rā:n^L$.

The forms of the following 11 verbs are given in the order: progressive, intensive, completive.

| | | | | |
|-------|--------------------------|-------------------------|--------------------------|---------------|
| (171) | <i>há^M</i> | <i>há^{LM}</i> | <i>há^M</i> | 'come' |
| | <i>ʔí:n^L</i> | <i>ʔín^H</i> | <i>ʔí:n^H</i> | 'bounce, fly' |
| | <i>ké:^M</i> | <i>ké:^M</i> | <i>kó^H</i> | 'cook' |
| | <i>kuán^H</i> | <i>kuán^L</i> | <i>kuán^H</i> | 'grow' |
| | <i>ŋí:n^{LH}</i> | <i>ŋí:n^L</i> | <i>ŋí:n^{LH}</i> | 'allow' |
| | <i>só^L</i> | <i>só^L</i> | <i>hgó:^M</i> | 'ascend' |
| | <i>zé:n^L</i> | <i>zén^H</i> | <i>zé:n^M</i> | 'spin' |

References

- Anderson, Judi Lynn, Isaac H. Martínez, and Wanda Pace. 1989. Comaltepec Chinantec tone. This volume.
- Bloomfield, Leonard. 1933. *Language*. New York: Holt.
- Fillmore, Charles J. 1969. Types of lexical information. In Ferenc Kiefer (ed.), *Studies in syntax and semantics*, 109–37. Dordrecht: D. Reidel Publishing Company.
- Woo, Nancy. 1969. *Prosody and phonology*. Ph.D. dissertation, Massachusetts Institute of Technology.

The Lealao Chinantec Syllable

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Stress, length, nasalization, and tone are prominent features of the Lealao Chinantec syllable, as is true of other Chinantec languages.¹ The syllable is a constituent of the phonological word, a unit constituted of syllables of which only one is stressed.

1. Word and syllable

The phonological word is typically just one stressed syllable, although a verb may be realized phonologically as a string of as many as six syllables. The stressed syllable is the last syllable of the word unless the word ends with one of five unstressed person markers. *ma^Mhmé:i^L* 'I did it', *mí^Hmí^M.ʔi^Lzia^Lgiá:^Laʔ^{VH}* 'when we will just about arrive'.²

There are two kinds of stress, ballistic and controlled. A ballistic syllable (marked by an acute accent /´/ over the nuclear vowel of the syllable) is

¹These data were collected during extended periods of residence from 1968 to the 1980s in San Juan Lealao, located about 40 miles northeast of Oaxaca City, Oaxaca, Mexico. In two other nearby towns, Latani and Santa María Yahuivé, there are additional speakers of this language, but at least eighty percent of them reside in Lealao. This analysis was made with the help of Hipólito Pacheco Martínez, Máximo Alonzo Marcial, and Arturo Cruz Pérez, all native speakers of Lealao Chinantec. Calvin R. Rensch, who had learned and analyzed another Chinantec language, directed the early investigation, facilitating the solving of preliminary problems of analysis. He and William R. Merrifield gave valuable suggestions concerning the form of this presentation.

²Tone symbolization here is the same as throughout this volume: high /^H/, mid /^M/, low /^L/, and very high /^{VH}/.

shorter than a controlled one (correspondingly marked by a grave accent /`/), and is characterized by a rapid decrease in loudness and lowering in pitch. *guâ^M* ‘ravine’, *guâ^M* ‘hand’, *ŋiû^H* ‘house’, *ŋiû^H* ‘his house’.

A syllable consists of an optional prenuclear syllable margin, a nucleus, an optional postnuclear syllable margin, and tone. The prenuclear margin may consist of a single consonant, a consonant which is preaspirated, palatalized, or both, or a labialized consonant. Examples follow, but a fuller discussion of details is given below. *li^{VH}* ‘flower’, *hli^H* ‘bench’, *liâ^M* ‘powder’, *hliû:i^{PM}* ‘node’, *guâ^{PH}* ‘molar’.

The syllable nucleus is a vowel to which length or nasalization, or both, may be added. *hu^{VH}* ‘mosquito’, *i^M* ‘extinguish it!’, *kâ^H* ‘dough’, *kû^{VH}* ‘rock’. Either the units /i ?/ or the sequence /i?/ may occur in the postnuclear margin. *guâ^{PM}* ‘church’, *sûi^H* ‘smooth’, *ʔé:i^{PM}* ‘inside’. A single tone or a sequence of two tones occurs on every syllable. *diâ^H* ‘father’, *ŋiû:LH* ‘salty’.

Apart from lack of stress, unstressed syllables differ from stressed syllables only in their relative simplicity. Specifically, consonant clusters (either prenuclear or postnuclear), length, nasalization, and tone sequences are not found in unstressed syllables. *ia^Hâ:i^L* ‘I went to bed’, *gâ:LMa^H* ‘we are immoral’.

With this brief overview of Lealao syllable structure, the remainder of this paper addresses details of the prenuclear syllable margin (§2), the syllable nucleus (§3), the postnuclear margin (§4), and tone (§5).

2. The prenuclear syllable margin

2.1. Simple margins. The prenuclear syllable margin may be simple or complex. A simple margin consists of any one of the following: voiceless stops /p t k ?/, voiced stops /b d z g/ of which /z/ is phonetically an affricate [dz], voiceless fricatives /f s h/, voiced fricative /v/, nasals /m n ŋ/ and approximants /l r/. The stops /p b d/ occur infrequently. The fricatives /f v/ are labiodentals. *pi^{PH}* ‘little’, *tâ^M* ‘ladder’, *kû^H* ‘money’, *ʔû^M* ‘glass’, *bô^M* ‘turtledove’, *dî^M* ‘top’, *zi^M* [dzi^M] ‘dog’, *gâ:LMa^H* ‘we are immoral’, *fî^{VH}* ‘road’, *sâ^H* ‘incline’, *hè^M* ‘spider’, *vó^L* ‘land’, *mè^H* ‘flea’, *nî^M* ‘three’, *ŋû^H* ‘meat’, *li^{VH}* ‘flower’, *rá^M* ‘sweet’.

These seventeen simple onsets may be arranged as in (1) to highlight both symmetry and dissymmetry in the consonantal system of Lealao.

| | | | | | |
|-----|---|---|---|---|---|
| (1) | p | t | | k | ʔ |
| | b | d | z | g | |
| | f | s | | | h |
| | v | | | | |
| | m | n | | ŋ | |
| | | l | | | |
| | | r | | | |

Rensch 1989 and 1990 provide an explanation for the two major dissymmetries in this configuration, relating to /z/ and /v/. Specifically, the source of Lealao /v/ is **(ʔ)w*, which configures with **hw* as the source of Lealao /f/; whereas the sources of Lealao /s z/ are the pair **s* and **z*, respectively, with certain contemporary Chinantec languages showing affricate [tʃ] as the result of **s*, paralleling [dʒ] as the result of **z*.

Subsets of these simple onsets occur in more complex arrangements of three types—palatalized, labialized, or preaspirated—opening the door to alternate phonemicizations. Preaspiration is addressed first.

2.2. Preaspiration. The laryngeal consonants /ʔ h/ were introduced above as two of the thirteen consonants which may form simple, prenuclear syllable onsets. In proto-Chinantec and most contemporary Chinantec languages (Rensch 1989), these two consonants may each occur alone in simple syllable onsets or as the first of two or more consonants in complex syllable onsets. As Rensch 1990 points out, Lealao has lost /ʔ/ in all complex onsets, retaining it only as a simple onset (or as postnuclear in a checked syllable such as *iáʔ^H* ‘broom’). It has also lost /h/ from the sequences **hw*, but it has retained it in clusters with the three nasal consonants /m n ŋ/, the lateral approximant /l/, and the palatal element /i/ (the source of which Rensch labels as **y*).

In the context of a following nasal or approximant, /h/ is the voiceless counterpart of the segment it precedes. *hmâ^M* [Mmâ^M] ‘straw mat’, *hni^{VH}* [Nnɨ^{VH}] ‘splinter’, *na^Lhŋi^{VH}* [nâ^LNŋi^{VH}] ‘clean’, and *hli^H* [hli^H] ‘bench’. When /h/ precedes the palatal element /i/, it is fronted to [ʃ]. *hiá^M* [ʃiá^M] ‘toward’.

2.3. Palatalization. There is a palatal element in Lealao Chinantec (as in all of the Chinantec languages) which occurs preceding the nuclear vowel of the syllable and which is here presented as the final element of certain complex syllable onsets. This element is here transcribed as /i/, although in other discussions of Chinantec it is written as /y/. As mentioned

immediately above, its proto-Chinantec source is considered to be *y in Rensch 1989 and 1990.

This palatal element may occur preceding a syllable nucleus as the sole member of a syllable onset, as in *iáʔ^H* ‘broom’. It may also follow any of the simple consonants /t k d z g s h n ŋ l/ or the preaspirated sequences /hn hŋ hl/, which is to say, it may follow any consonant other than a labial consonant, /r/, or /ʔ/.

There is a range of phonetic realizations of this palatal element, depending upon its specific context. Following /t d l n/, for example, its phonetic influence on a preceding consonant or following vowel is minimal, its primary realization being a vocalic transition between the two which is here represented as [i]. *tià:^M* [tià:^M] ‘white’, *dià^H* [dià^H] ‘father’, *lià:^M* [lià:^M] ‘powder’, *hliù:iʔ^M* [Lliù:iʔ^M] ‘node’, *niù^M* [niù^M] ‘you (sg)’.

Following velars /k g/ and laryngeal /h/, although there is a similar vocalic transition, the consonant which precedes the palatal element is itself also fronted to palatal position. *kiàʔ^M* [tʃ^Hiàʔ^M] ‘chachalaca (*Ortalis vetula*)’, *giá:^L* [dʒiá:^L] ‘seven’, *hiàʔ^H* [ʃiàʔ^H] ‘where?’.

Finally, following /z s ŋ/, the realization of the palatal element is carried primarily by palatalization of the preceding consonant without any significant vocalic transition to the nuclear vowel. *zií:^H* [dʒí:^H] ‘vapor’, *sià^M* [ʃà^M] ‘exists’, *niù^L* [ñù^L] ‘nine’.

There is clear contrast between the simple palatalized onsets /ni ŋi/ as illustrated in *niù^M* [niù^M] ‘you (sg)’ and *niù^L* [ñù^L] ‘nine’; but when a nasal is preaspirated, contrast before prenuclear /i/ is lost. In the single word with /i/ as nuclear vowel there is free variation between *hní:^M* and *hŋí:^M*, meaning ‘cloud’. When /i/ is prenuclear, the palatalized nasal is always [ñ] and interpreted as /ŋi/, as in *hŋiá^M* [Ññá^M] ‘I’ and *hŋiá^L* [Ññá^L] ‘eight’.

In this description of palatalization, the assumption is made that simple consonants occur alone or with a following palatal element. It might alternatively be decided that Lealao has a larger inventory of consonants which include both palatal and nonpalatal pairs. The sequence /ti/, for example, would then be interpreted as /tʲ/. A number of alternatives of this type are listed in (2).

- (2) *tiV* could be interpreted as *tʲV*
kiV could be interpreted as *kʲV*
diV could be interpreted as *dʲV*
ziV could be interpreted as *zʲV* (or as *j*)
giV could be interpreted as *gʲV*
siV could be interpreted as *sʲV* (or as *ʃ*)
hiV could be interpreted as *hʲV*
niV could be interpreted as *nʲV* (or as *ɲ*)
ɲiV could be interpreted as *ɲʲV*
liV could be interpreted as *lʲV*

2.4. Labialization. Velar consonants /k g/ (but not /ŋ/) may also occur followed by a labial element, here indicated as /u/ (but also in the literature as /w/), as a part of the syllable onset. *kuĩː^M* ‘maize’, *guáʔ^{VH}* ‘molar’.

As in the case of palatalization, these sequences could be treated as units /k^w g^w/. Alternatively, in view the known history of Chinantec phonology, Lealao /f v/ could be treated as the palatal sequences /hu u/, respectively; but there seems to be little motivation for this in the treatment of contemporary Lealao Chinantec.

When onsets /ku gu/ are followed by the low front nuclear vowel /e/, unrounding of the lips precedes tongue lowering with the result that a high unrounded segment intervenes between the consonantal margin and the vocalic nucleus, as in *kue^H* [ku̯ie^H] ‘horse’.

3. The syllable nucleus

There are six vowels—the intersection of high versus nonhigh, back versus nonback, with back vowels being rounded or nonrounded, as in (3).

- (3) i ɨ u
 e a o

High vowels are tense, except that /i/ has a lax fronted allophone [ɪ] after /d/ (a rare consonant); /i/ has limited distribution after palatal onsets, occurring only following /si zi/.

Front vowels do not follow /k g ŋ/ except as complex onsets with intervening palatal /i/, which is to say, when a velar consonant precedes a nuclear front vowel, palatalization is invariably present and is, therefore, nondistinctive in this context in a strictly phonological sense. Since palatalization frequently occurs to express certain morphological categories, however, there are clear cases where the presence of palatalization in such

a context is morphologically significant. For example, the inanimate numeral 'five' is *ɲiá^M*. This form appears to be morphologically simple, so that the palatal element is here part of the underlying form of the morpheme. When the animate marker *-i* is postposed to the inanimate form of the numeral, the numeral becomes *ɲiái^M*. Although the sequence /ɲe/ would invariably be [ɲjɛ], with an intrusive palatal transition between the consonant and the nuclear vowel, the inanimate form of the numeral shows that the palatal element is not, in this case, the result of a phonological rule. There is no reason to suppose, on the other hand, that the noun *ɲi^M* [ɲjɪ^M] 'thread' has any such palatal element in its underlying form. The intrusion of [i], in this case, would appear to be the result of a phonetic rule.

High back /u/ does not follow the complex onsets /ku gu/. Low back /o/ occurs infrequently and only after labials /p b f v m/ or laryngeals /h ʔ/. Examples of a variety of nuclear vowels follow: *ɲií^M* 'thread', *kuɿ^M* 'run!', *hɿ^M* 'year', *ɲié^L* 'neither', *kwè^M* 'long', *hè^M* 'spider', *kwì^M* 'maize', *hì^L* 'all', *šì^{PH}* 'tell him!', *zií^H* 'vapor', *ɲiá^M* 'five (inan)', *kuà^M* 'nettle', *hà^M* 'cotton', *ɲiù^M* 'catfish', *hù^M* 'dove', *kuò^M* 'give it to him!', *hó^L* 'but', *ʔó^H* 'tortilla'.

In a stressed syllable, any of the vowels may occur with length. *tà^M* 'banana', *tà^M* 'ladder', *ɲií^{LH}* 'salty', *ɲií^{LH}* 'wake up!'.

Nasalization of the nuclear vowel may also occur in stressed syllables. While not uncommon following voiceless consonants, nasalization is only infrequently found following the voiced consonants /d z g v l r/. *dɿ^M* 'top', *na^Mguɿ^{iM}* 'he is asleep', *vɿ^{VH}* 'oven', *lɿ^M* 'able', *rè^{iLH}* 'pull it up!', *iú^M* 'red', *tà^M* 'bird', *ɲi^{LH}hà^L* 'it will boil'.

Nasalization of vowels is neutralized following nasal consonants /m n ɲ/. Any such vowel is phonetically nasal, as is any unstressed vowel following a stressed nasalized vowel. *ɲií^M* [ɲĩ^M] 'thread', *ɲi^Hguɿ^{VHaH}* [ɲi^Mguɿ^{VHaM}] 'I will get down'.

4. The postnuclear margin

As mentioned above, /i ʔ iʔ/ may occur following the nuclear vowel of a syllable. Such elements are here referred to as elements of the postnuclear margin, but this is for convenience of description only; these elements are phonologically very closely bound to the syllable nucleus. Grammatically, postnuclear /i/ usually marks first- or second-person singular or animate reference. *tí^{iL}* 'my foot', *hù^{iM}* 'deep', *iú^{iM}* 'red (animate)', *ɲé^{iPM}* 'inside'.

In the speech of some older Chinantec people, /n/ occurs following the nuclear vowel /i/ with the same grammatical function as that postnuclear /i/ has after other vowels. *ɲiʔ^L* ~ *ɲiʔn^L* 'my nose', *ɲi^{VH}* ~ *ɲín^{VH}* 'your face', *tíⁱ* ~ *tí:n^L* 'skinny (animate)'.

Controlled syllables ending in postnuclear /ʔ/ tend to be longer in duration than corresponding controlled syllables without postnuclear /ʔ/, so much so that a short checked syllable is perceived to be as long as an unchecked long syllable, as in *guàʔ^M* ‘church’ and *guà:^M* ‘hand’. Ballistic syllables do not show this characteristic in respect to final glottal. As mentioned, syllables with ballistic stress are shortened. It should be noted, however, that final /ʔ/ on a ballistic syllable does apparently prevent the decrease in loudness typical of ballistic syllables. *ziá:^H* ‘lake, pool’, *ziá:^{PH}* ‘other’.

5. Tone

A stressed syllable may carry any of four single tones or one of two tone sequences. Single tones are low, mid, high, and very high—/^L ^M ^H ^{VH}/, respectively. The Chinantec people refer to the higher tones as thin and the lower ones as low. *ŋi^L* ‘my face’, *mè:^L* ‘egg’, *ŋié:^L* ‘neither’, *ví:^L* ‘dish’, *ní:^M* ‘three’, *hmà:^M* ‘grass mat’, *ŋiá:^M* ‘five’, *iú:^M* ‘red’, *ŋü^H* ‘smoke’, *mè:^H* ‘flea’, *ŋiú^H* ‘house’, *kú:^H* ‘tail’, *iü^{VH}* ‘agouti’, *mí:^{VH}* ‘lump’, *ŋü^{VH}* ‘axe’, *ví:^{VH}* ‘oven’.

The tone sequences are a very shallow low-mid rising tone /^{LM}/ and a pronouncedly more steep low-high rising tone /^{LH}/ . These rising sequences occur only on controlled stressed syllables. *mí:^{LM}* ‘medicine’, *mí:^{LM}* ‘new’, *ŋü^{LH}* ‘wake up!’, *ŋü:^{LH}* ‘rope’.

5.1. Tone sandhi. There is one important rule of automatic tone sandhi. High tone /^H/ is replaced by very high tone /^{VH}/ in a long or short nonballistic (i.e., controlled or unstressed) syllable whether alone or in the sequence /^{LH}/ when followed by /^L ^{LH}/ in any syllable or by /^H/ in a ballistic syllable.

- | | | | | |
|-----|---|---|---|----------------------|
| (4) | <i>bâ^H</i> (affirmative) | → | <i>bâ^{VH}</i> <i>ziú^L</i> | ‘good (affirmative)’ |
| | <i>hò:^{LH}</i> ‘look at (it)!’ | → | <i>hò:^{iLVH}</i> <i>gü:^{LH}</i> | ‘Look at the owl!’ |
| | <i>hmè:^H</i> ‘make (it)!’ | → | <i>hmè:^{VH}</i> <i>guá:^H</i> | ‘Make a box!’ |

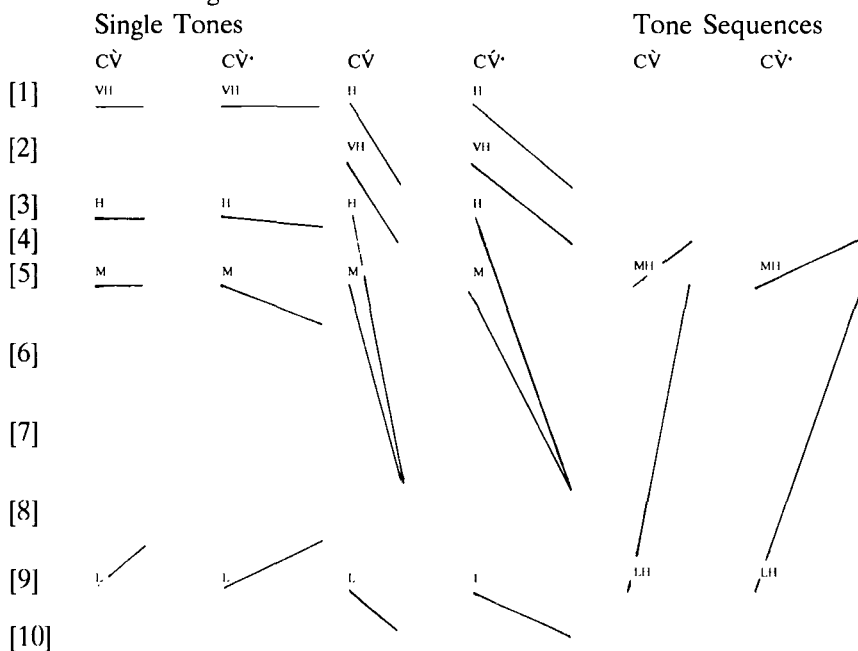
These facts are presented formally in (5) as Rule 1:

$$(5) \quad \text{Rule 1.} \quad H \rightarrow vH / \left[\begin{array}{c} (L) \text{---} \\ - \text{ballistic} \\ \text{vowel} \end{array} \right] + \left\{ \begin{array}{c} \left[\begin{array}{c} H \\ + \text{ballistic} \\ \text{vowel} \end{array} \right] \\ \left[\begin{array}{c} L(H) \\ \text{vowel} \end{array} \right] \end{array} \right\}$$

5.2. Tone variants. In order to describe tone variants, each level variant from high to low is assigned a number on a scale of 1 to 10. A gliding variant is assigned two numbers on this same scale to indicate the levels at which it begins and ends. Ten levels are sufficient to distinguish all Lealao tone variants, but the intervals between these phonetic levels are not equal. The interval between levels 5 and 6, for example, is greater than the interval between levels 4 and 5. The details of tone variants discussed below are presented schematically in Figure 1.

Very high tone /^{VH}/ has a level variant [1], the highest of all tone variants, in both long and short controlled syllables. *fî^{VH}* [fî¹] 'road', *mî^{VH}* [mî:¹] 'lump'. In a long or short ballistic syllable, tone /^{VH}/ has a down-gliding variant [24]. *lî^{VH}* [lî²⁴] 'flower'.

Figure 1. Lealao Chinantec Tone Variants



High tone /^H/ has a level variant [3] in a short controlled syllable. *dià^H* [dià³] ‘sir’. In a long controlled syllable, however, it has a slight down-gliding variant from [3]. *kù:^H* [kù:³⁴] ‘money’.

High tone /^H/ presents a problem for analysis in ballistic syllables. In a wide variety of contexts it is realized as a sharp downglide [37]. *ñiú^H* [ñú³⁷] ‘house’, *zá:^H* [dzá:³⁷] ‘straight’. After a controlled syllable with a basic or derived high tone (by Rule 1 above), however, it is realized as a higher and less sharp downglide [13]. *sü^H ñiú^H* [ši¹ ñú¹³] ‘Is it a house?’, *iù:^{7VH} hñí:^H* [yù:⁷¹ Nñí:¹³] ‘up on the cloud’.

These facts are presented in (6) as Rule 2:

$$(6) \quad \text{Rule 2.} \quad /H/ \rightarrow \begin{cases} [13] / & \left[\begin{array}{c} \text{vH} \\ \text{controlled} \\ \text{vowel} \end{array} \right] & \left[\begin{array}{c} \text{ballistic} \\ \text{vowel} \end{array} \right] \\ [37] \end{cases}$$

This presents a curious situation in which the variants [13] and [37] of high tone /^H/ flank the variant [24] of very-high tone /^{VH}/. An alternative approach might analyze the sequences [13] and [24] as /^{VH}/ and /^H/, respectively, following a controlled high tone, and sequences [24] and [37] as /^{VH}/ and /^H/, respectively, in other contexts. Taking these latter contexts as unmarked, the tones occurring in them would be considered basic tones. The tones would then be morphophonemically reversed (flip-flop) in the marked context of Rule 2.

It is not clear what advantage either of the analyses has over the other. There is, of course, already one rule in which an underlying mid tone becomes high; but since a ballistic high is in all contexts realized at approximately the same relative height (in the first analysis), it has seemed arbitrary to consider it now very-high tone and now high tone.

Mid tone /^M/ has a level variant in a short controlled syllable. *là^M* [là⁵] ‘here’. In a long controlled syllable, mid tone /^M/ (like high tone /^H/) has a gliding variant [56]. *rà:^M* [ra:⁵⁶] ‘tobacco’. In short or long ballistic syllables, tone /^M/ is a downglide [57]. *râ:^M* [rá:⁵⁷] ‘sweet’.

Low tone /^L/ has a shallow rising variant [98] in short and long controlled syllables. *hâ^L* [hâ⁹⁸] ‘foam’. The vowel is faintly laryngealized when the syllable is short; but in a long syllable, the laryngealization is more pronounced, some speakers making a full glottal closure and rearticulation of the vowel. *mê:^L* [mê⁹⁷ɛ⁸]. In short or long ballistic syllables, low tone /^L/ is a downglide [9-10] reaching the lowest point of the ten-point scale. *tû^L* [tû⁹⁻¹⁰] ‘two’, *hmâ:^L* [Mmâ:⁹⁻¹⁰] ‘root’.

The low-mid sequence /^{LM}/ is a very slight upward glide [⁵⁴]. It is only found in short and long controlled syllables. *mī^{LM}* [mī⁵⁴] 'medicine', *mī^{:LM}* [mī^{:54}] 'new'.

The low-high tone sequence /^{LH}/ is a pronounced upglide [⁹⁵]. Like low-mid, low-high only occurs in controlled syllables. As in the case of low tone, the low-high sequence is laryngealized in long syllables, but this laryngealization has not been observed with low-high in short syllables. With both low and low-high, the peak of laryngealization occurs early in long syllables when not closed by glottal; but, when a final glottal is present, the peak of laryngealization coincides with the final glottal. *ŋi^{LH}* [ŋi⁹⁵] 'wake up!', *šëi^{LH}* [šëi⁹⁵] 'grab it!', *là^{LH}* [là^{97a5}] 'mule', *šù^{:LH}* [šù^{:95}] 'edge'.

Any single tone may occur in an unstressed pretonic or posttonic syllable, but not tone sequences. The relative pitch level of each of the tones in unstressed syllables is comparable to that observed in corresponding stressed syllables. *mī^{VH}* *pī^H* 'child', *ʔi^Hkuè^{:ʔLH}* *a^{ʔVH}* 'we (excl) will leave it', *ʔi^Hhmè^{:H}* *a^H* 'we will do it', *hā^Mnī^L* 'now', *ʔi^Lhni^LLu^M* 'you will be locked up', *hŋiú^{:L}* *a^L* 'I am hairy'.

Although a posttonic syllable is not stressed, it may be lexically marked for ballistic stress, thereby providing context for the application of tone sandhi Rule 1. The difference between the two person markers -*á^H* (first singular) and -*a^H* (first plural inclusive) is that although they themselves are both pronounced without stress, the first triggers a tone change in the preceding stressed syllable when the conditions of Rule 1 are met, while the second does not. In the first example that follows, both Rule 1 and Rule 2 apply. *ʔi^Hkuè^{:ʔLH}* *á^H* → *ʔi^Hkuè^{:ʔLVH}* *á^H* [ʔi³kuè^{:ʔ91a13}] 'I will leave it', *ʔi^Hkuè^{:ʔLH}* *a^H* [ʔi³kuè^{:ʔ95a3}] 'we (incl) will leave it'.

References

- Foris, David. 1973. Sochiapan Chinantec syllable structure. *International Journal of American Linguistics* 39.232–35.
- Merrifield, William R. 1963. Palantla Chinantec syllable types. *Anthropological Linguistics* 5.5.1–16.
- Rensch, Calvin R. 1989. An etymological dictionary of the Chinantec languages. *Studies in Chinantec languages* 1, Summer Institute of Linguistics and The University of Texas at Arlington Publications in Linguistics 87. Dallas: Summer Institute of Linguistics and The University of Texas at Arlington.

- . 1990. Phonological realignment in Lealao Chinantec. This volume.
- and Carolyn M. Rensch. 1966. The Lalana Chinantec syllable. In Pompa y Pompa (ed.), *Summa anthropologica*, 455–63. Mexico City: Instituto Nacional de Antropología e Historia.
- Robbins, Frank E. 1968. Quiotepec Chinantec grammar. *Papeles de la Chinantla* 4, Serie Científica 8. Mexico City: Museo Nacional de Antropología.
- Skinner, Leo E. 1962. Usila syllable structure. *International Journal of American Linguistics* 28:251–55.
- Westley, David O. 1971. The Tepetotutla Chinantec stressed syllable. *International Journal of American Linguistics* 37:160–63.

Phonological Realignment in Lealao Chinantec

Calvin R. Rensch

The principal features of the phonological systems of several Chinantec languages have already been described (Foris 1973, Merrifield 1963, Rensch and Rensch 1966, Robbins 1968, Rupp 1989 and 1990, Skinner 1962, and Westley 1971). The Chinantec syllable is typically quite simple in structure. The obligatory constituents are a consonant, a vowel, and a tone; in many morphemes these are the only constituents, and in a few Chinantec languages even the initial consonant is not obligatory. In every language a small set of complex consonantal onsets occurs and vocalic nasalization may occur with the vowel. In contrast to the simple syllable structure, however, the sets of items occurring in the several constituent positions are usually rather large.

The development of Lealao Chinantec¹ from the parent language, Proto Chinantec (Rensch 1968, 1989), is noteworthy because of the creation of a large set of consonantal syllable onsets and the retention of the full system of prosodic features, which contrast with the simple, on the whole rather primitive, vowel system.

In Proto Chinantec the syllable of the shape *CV was opposed by one of the shape *CiV, that is, one in which a high front vowel separated the main vowel from the consonant. The intervening *i was apparently somewhat ambivalent, affecting the nature of both of the adjacent constituents. Some modern Chinantec languages have interpreted it as

¹The synchronic study of Lealao Chinantec has been carried on by James Rupp, who has supplied the Lealao forms cited here.

part of the syllable nucleus along with the main vowel, and even more have interpreted it as part of the nucleus in some environments and part of the onset in others. In Lealao, the intervening *i has uniformly been grouped with the initial consonant, resulting in a series of palatal consonants.² Thus, this feature, which frequently was instrumental in the development of complex vowel systems of up to ten vowels, has in Lealao Chinantec aided in the multiplication of consonants, leaving the vowel system quite simple.

The tone system of the parent language was characterized by at least five tone contrasts, which have been labeled *high, *low, *high-low, *low-high, and *high-low-high. All of the tone systems which have been studied have effected some mergers, simplifying the system at some points; but Lealao seems to have undergone less collapsing of the archaic system than most. The northern languages of Ojitlán and Usila have four- and five-tone systems, respectively. All other languages except Lealao and Tlacoatzintepec Chinantec have fewer tones but have a ballistic accent intimately associated with the tone system.³ The tone contrasts of Lealao and Tlacoatzintepec require a network of four tones as well as a ballistic accent. In addition, some of the differences of tone in Usila and Ojitlán preserve length contrasts of the parent language, but this is almost never the case in Lealao.

In the sections that follow, the development of the system of onsets (§1), nuclei (§2), and prosodic features (§3) will be described.

1. Onset consonants

The onsets of Lealao Chinantec are simple /p t k ʔ b d z g f s h v m n ŋ l r/, preaspirated /hm hn hŋ hl/, palatal /ty ky dy zy gy sy hy ny ŋy ly y/, preaspirated palatal /(hny) hŋy/, and labial /kw gw/.

1.1. Loss of *ʔ from clusters. One of the most sweeping changes that has taken place in Lealao Chinantec is the merger of *ʔw with *w, *ʔy

² It is worth noting that the development in Lealao largely parallels that of Sochiapan in this respect, although the two languages are far apart geographically and in many ways linguistically.

³ Robbins (1968) describes a three-tone system with ballistic accent, but the data from Quiotepec are cited here in terms of an earlier analysis (Robbins 1961) which utilized four tones but no ballistic accent. An even more recent interpretation of Quiotepec tone is found in this volume (Gardner & Merrifield) which retains the basic elements of Robbins 1968.

with *y, and all other *?C clusters with the corresponding *C.⁴ As a result, no clusters of glottal stop plus consonant occur in Lealao Chinantec.

- 1 *?wá:^{HL5} night U ?ue² S ?wá² midnight Tp a²?uá² Pa ?wu² Ll
?wá:²³ Le vo:⁴ Qi ?woh⁴ Co ?wá:¹².
- 2 *wá:^L a long time U ue⁴ Tl gwé⁴ S we²³ Tp uá² Pa wú² Llwa:h³
Le vó:³ Qi woh³.
- 3 *?ya:^L sun, sunshine Oj ?ye² U ?dyie³ Tl gyu³ S ?yu² Tp
?iog²Pa ?yew² Ll ?yo:³ Le ya:³ Qi ?yiah²³ Co ?ye:².
- 4 *ya:^L avocado U u⁴gu³dyie³ Tl gweg³dyú³ S kwi¹dyu¹ Tp kuig²
giog² Pa gu³gyew² Ll mĩ³¹ku¹yo:³ Le gu³ya:³ Qi kwo³yiah²³.
- 5 *?nĩ:^L widow Oj ca² mĩ³ ?nĩ³ U a³?nag⁴ Tl ca³nag S ca²?nai²³
Tp ?io³¹ ?nág² Pa za²?níy² Ll mih³ ?nĩ:h³ Le za³ nĩ:³ orphan Qi
ca³?nĩh³ orphan Co dia ?nĩ:¹.
- 6 *nĩ:^{LH} mushroom Oj mĩ³na¹ U a¹ma³nag⁴³ Tl meg²nág⁴ S ma
na² Tp nĩ³nag³² Pa nay³² Ll nĩ:h² Le nĩ:² Qi nĩh⁴³ Co nĩ:²¹.

1.2. Development of palatal onsets. As mentioned above, the intervening *i of *CiV syllables in Proto Chinantec has combined with the initial *C to form complex palatal onsets in Lealao Chinantec. This palatal *i is expressed phonetically in Lealao in three different ways, namely, (1) as a vocalic transition between certain onset consonants and a following nuclear vowel without significant palatal influence on the onset consonant itself, (2) as a palatalized onset consonant without significant vocalic transition to the following nuclear vowel, and (3) as a palatalized onset consonant with vocalic transition to the following nuclear vowel.

⁴*?w and *?y are the labels given to these clusters in Rensch (1989) and probably reflect the phonetic nature of the clusters even at the earlier Proto Chinantec period. They are the clusters which were labeled *?b and *?z in Rensch (1968) for reasons of distributional economy.

⁵Capital letters following Proto Chinantec reconstructed forms represent reconstructed tones: ^H (high), ^L (low), ^{HL} (high-low), ^{LH} (low-high), and ^{HLH} (high-low-high). Letters before the contemporary language forms represent the names of the languages: Oj (Ojitlán) U (Usila) Tl (Tlacoatzintepec) S (Sochiapan) Tp (Tepetotutla) Pa (Palantla) Ll (Lalana) Le (Lealao) Qi (Quiotepec) Co (Comaltepec). The tones of Lealao are numbered from 4 to 1 to indicate low, mid, high, and very-high where Rupp 1989 and Rupp 1990 use /^L ^M ^H ^{VH}/, respectively. Sequence 32 corresponds to /^{LM}/ and 42 corresponds to /^{LH}/. The high back unrounded Lealao vowel which is represented elsewhere as /i/, is here written as /i/ in conformance with Rensch 1989.

The first type of palatal expression occurs in the case of *tiV → /tyV/ [tiV],⁶ *niV → /nyV/ [niV], and *liV → /lyV/ [liV], where neither the preceding consonant nor the following vowel is significantly influenced phonetically by the intervening palatal element which is realized primarily as the vocalic transition [i] after these consonants.

7 *tia:^L white Oj *te*² U *tie*³ Tl *tyu*³ S *tyó*² Tp *tiog*² Pa *tew*² Ll *tā*:³
Le *tya*:³ [tia:³] Qi *tah*²³ Co *te*:².

8 *niá:^L yellow Oj *ne*³ U *nie*⁴ Tl *meg*³*nyew*³ S *mi*³*nyó*²³ Tp *nio*²³
Pa *néw*² Ll *ne*:^{h3} Le *nyá*:³ [niá:³] Qi *nah*³ Co *né*:².

9 *liá:^L trap Oj *la*³ U *a*²*lia*⁴ Tl *lyá*³ S *lya*²³ Tp *ci*¹*liá*² Pa *li*² Ll *lāh*³
Le *lyá*³ [liá:³] Qi *la*²⁴ Co *liá*¹².

The second type of palatal expression occurs in the case of *ziV → /zyV/ [džV], *siV → /syV/ [šV], and *ŋiV → /ŋyV/ [ñiV], where the onset consonant has palatalized significantly without a significant vocalic transition to the the following nuclear vowel.

10 *zia:^{HLH} grandson Oj *yi*²*če*³¹*a*² U *a*²*tyie*¹ Tl *cyo*⁴² S *cyo*¹ Tp
*zio*²¹ *za*² Pa *zyew*¹ my grandson Ll *jo*:²³² Le *zya*:⁴² [dža:⁴²] Qi
*tyiah*¹² my grandson Co *gie*:^{r12}.

11 *siá:^{LH} rafter Oj *ʔma*² *syá*³ U *a*²*ʔma*³ *sia*⁴³ Tl *ma*³*θyá*³ S *θya*²³
Pa *ʔma*² *cyi*³² Ll *šah*² Le *syá*² [šá:²] beam.

12 *ŋiú:^{HL} nine (inanimate reference) Oj *ñi*⁴ U *ñi*³⁴ Tl *ŋi*² S *ŋyu*²³
Tp *ŋi*³ Pa *ŋyu*³ Ll *ñöh*²³ Le *ŋyú*⁴ [ñú:⁴] Qi *ñü*³⁴ Co *ŋi*^{ó1}.

Similarly, /zy/ [dž] is the development of *z, /sy/ [š] is the development of *s, and /ŋy/ [ñ] is the development of *ŋ when these simple onsets precede *i as a nuclear vowel.⁷

13 *zi:^L wind Oj *či*³ U *tyi*⁴ Tl *ci*³ S *ci*²³ Tp *zi*² Pa *zi*² Ll *jih*³ Le *zyé*³
[džé:³] Qi *tyi*²⁴ Co *gi*¹².

⁶Under obscure conditions, perhaps that of weakened stress, *tiV developed in Lealao as *dyV* rather than the usual *tyV*.

⁷Whether these consonants should be interpreted as /zy sy ŋy/ or simply as /z s ŋ/ in this context is moot since there is no such contrast in Lealao before /i/. The forms /zy sy ŋy/ are chosen here to more clearly reflect the development of the onset consonant in such forms as *zi which result in Lealao [zyi] (see set 13) where *i became /i/ rather than /i/.

- 14 ***si**(:)? be standing Oj *si*²³ *ʔni*² U *sei*²⁴³ Tl *θi*[?] Tp *ci*²³² Pa *ci*²³²
 Ll *ʃi*²³ Le *syi*²³ [ʃi²³] Qi *si*²³ Co *si*²².
- 15 ***ŋi**^H salt Oj *sɪ*¹*ŋi*¹ U *o*¹*ŋi*² Tl *ŋi*² S *ŋyi*¹ Tp *ci*¹*ŋi*¹ Pa *ŋyi*¹ Ll *hwi*²
*ŋi*² Le *ʃi*²⁴² *ŋyi*² [ʃi²⁴² *ŋi*²] Qi *ŋi*² Co *ŋi*¹.

The third type of palatal expression occurs in the case of velar consonants **ki*V → /kyV/ [tʃ^hiV], **gi*V → /gyV/ [dʒiV], and laryngeal **hi*V → /hyV/ [ʃiV], where the onset consonant has palatalized without the loss of a vocalic transition to the nuclear vowel.

- 16 ***kiú**^{LH} coat Oj *ki*³ U *a*²*ki*⁴³ Tl *ki*³ S *kyu*²³ Tp *i*¹*ki*³² Pa *kyú*³²
 Ll *kyōh*² Le *kyú*² [tʃ^hiú²] Qi *tyü*³ Co *kiō*²¹.
- 17 ***giá**^{HL} ten (inanimate reference) Oj *kya*⁴ U *kia*³⁴ Tl *kyá*² S
*kya*²³ Tp *gia*³ Pa *gyi*³ Ll *gyah*²³ Le *gyá*⁴ [dʒiá⁴] Qi *dya*³⁴ Co *gi*¹.
- 18 ***hyi**^L paper, book Oj *mo*³¹ *yi*² U *ma*²*hdyi*³ Tl *si*³ S *mu*¹ *si*² Tp
*si*² Pa *si*² Ll *hi*³ Le *hyi*³ [ʃyi³] Qi *hi*³⁴ Co *ʔma* *hi*¹².

Similarly, as in the case of **z*, **s*, and **ŋ*, the velar consonants **k* and **g* and laryngeal **h* have also palatalized preceding the nuclear vowel **i*.

- 19 ***ki**^{LH} trash U *ma*²*ki*³ Tl *meg*²*kég*¹ S *ma*¹*kí*³² Tp *hme*¹*kí*³² Pa
*kyi*³² Le *kyi*³ [tʃ^hi³] Qi *tyi*⁴ Co *ki*².
- 20 ***gi**: tear (verb) Oj *ki*² *ʔni*² Pa *gyiw*² Ll *gi*³ Le *rí*⁴*gyi*³ [rí⁴dʒi³].
- 21 ***hi**:^H bumblebee U *a*²*hai*³² Tl *háy*¹ S *he*²³ Tp *i*¹*hei*¹ hornet Pa
*hey*¹ Ll *hi*² Le *syi*² [ʃi²] Qi *hih*².

1.3. The development of **n*, **ŋ*, **s*, and **h*. The palatalization of **n* and **ŋ*, on the one hand, and **s* and **h*, on the other, before nuclear **i* has resulted in the merger of these two pairs of consonants to /ŋy/ [ɲ] and /sy/ [ʃ], respectively, in this context.⁸

⁸Rupp (1990) reports that *ŋy*V and *ny*V are distinguished by some speakers as indicated above, but not by all; while *hŋy*V and *hny*V are in free variation. In the speech of those who do not distinguish *ŋy*V and *ny*V, the merger which took place before **i* has also taken place before **i*V. Since these mergers involve complete neutralization of /n/ and /ŋ/ in these contexts, the result could as easily be considered /ny hny/ as /ŋy hŋy/, but the fact that [ɲ] represents /ŋy/ for some speakers argues for the latter choice.

- 22 *ni^H face Oj *ñi¹a²* U *ma⁵nei²* Tl *ni²* S *nyi¹* co Tp *zi²ne²¹* za² Pa
ni¹ Ll *ñi²* Le *nyi²* [ñi²] Qi *ni²* Co *ni¹*.
- 23 *ŋi^H salt Oj *sɿ¹ñi¹* U *o¹ñi²* Tl *ŋi²* S *nyi¹* Tp *ci¹ŋi¹* Pa *nyi¹* Ll *hwi²*
ñi² Le *fɛ:²nyi²* [fɛ:²ñi²] Qi *ñi²* Co *ŋi¹*.
- 24 *si(:)? be standing Oj *si²* *ŋni²* U *sei²43* Tl *θi²* Tp *ci²32* Pa *ci²32*
Ll *ʃi:²23* Le *syɛ:²3* [ʃɛ:²3] Qi *si²3* Co *si²*.
- 25 *hi:^H See set 21.

The development of *h → /sy/ before *i, however, apparently occurred only in an oral environment. The result was /h/ when the vowel was nasal or was followed by nasal syllable closure.

- 26 *hj:^H bed, raft Oj *hi³31* U *tag³²* *həi³²* Tl *həy⁴* Tp *ci¹həi¹* Pa *həy¹*
Ll *hi:²* Le *hi:²* Qi *hih²* beam Co *hi:¹*.

Although *s and *h have merged in Lealao before an oral nuclear *i, their development before *iV is not completely parallel. *siV became /syV/ regardless of the quality of the nuclear vowel, but *h became /hy/ only in the context *hiu.

- 27 *siɿ^L copal, incense Oj *si²* U *sɛi³* Tl *θi³* S *θyɿ²* Tp *ce²* Pa *cyɿ²*
Ll *ʃɔ³* Le *syɿ³* [ʃɿ³] Qi *sɿ³⁴* Co *sɔ¹²*.
- 28 *sia See set 11.
- 29 *hiu:?^H armadillo Oj *hi²1* U *a⁵hei²32* Tl *hu²1* S *hu²32* Tp *i¹hi²31*
Pa *hyu²1* Ll *hyö:²* Le *hyi²2* [ʃyi²2] Qi *xüh²42* Co *hyö:²1*.
- 30 *hia(:)^{LH} spider Oj *ha²3* *mi²* *ya¹* U *a¹hia²23* Tl *hyá⁴* S *ci¹ ha* Tp
i¹hia³² Pa *cyi¹hyi³²* Ll *hä:³* Le *he:³* Qi *he⁴* Co *hia²*.

1.4. Loss of *r and *y. Like the nearby language of Lalana, Lealao Chinantec has lost the consonants *r and *y in syllables closed by the nasal. The *r was lost regardless of other features of the syllable. The *y can be shown to have been lost only in the form *yu:ŋ grandfather, in which the presence of final nasal is uncertain.

- 31 *ru:ŋ brother Oj *yi²* *rɔ²1a²* U *a²raɿ²1* Tl *rɛw²1* S *rəi²21* co Tp
rɿ²31 Pa *rɔ²32* younger sibling Ll *u:²n²* companion, spouse Le
ó:y²2 companion Qi *ruih²34* Co *ruiŋ²2*.

- 32 ***yu:**⁷_η^H grandfather Oj *hmi*² *ʔyi*²*a*² U *ni*³*dyei*²*ʔ*³² Tl *ni*²*dáw*²*ʔ*¹
 S *nyu*¹*de*²*ʔ*³² Tp *gi*²*ʔ*³¹ Pa *hi*²*gyu*²*ʔ*¹ Ll *yi*²³*u:*²*ʔ*² Le *nyú*⁴*u:*²*ʔ*² Qi
*yüh*²*ʔ*⁴² Co *yö:*²*ʔ*²¹.

1.5. Development of f and v. One further development has affected the system of syllable onsets of Lealao Chinantec. The Proto Chinantec sequence *hw has been changed to /f/ and the semivowel *w has been changed to a matching /v/, thus adding to the voiceless and voiced fricative series, respectively.

- 33 ***hwi:**^L town Oj *he*³¹ *hwi*² U *he*¹*heu*³ Tl *i*²*héw*¹ S *hwú*² Tp *huig*²
 Pa *hwi*² Ll *hwi:*³ Le *fí:*³ Qi *fuh*²³ Co *hwi:*².
 34 ***wi:**^L vine Oj *či*¹ *wi*² U *dya*¹*gu*³ *ʔua*² S *wú*² Tp *ni*¹*uig*² Pa *wiy*²
 Ll *wi:*³ Le *ví:*³ Qi *wuh*²³ Co *wi:*².

2. Nuclei

The nuclear vowel of the Proto Chinantec syllable was either simple or was modified by one or more of the following elements: (a) nasalization, (b) closure by glottal stop, (c) closure by a nasal consonant.

The system of syllabics of Proto Chinantec was a simple set of paired palatal and nonpalatal syllabics (Rensch 1968, §2.5.):

| | | | | | |
|----------|----|-----|-------------|----|-----|
| palatal: | *i | *iu | nonpalatal: | *ɨ | *u |
| | *e | *ia | | *ə | *a. |

As indicated above, the first part of *iV nuclei became a part of the onset in Lealao Chinantec syllables. Thus, a system of only six simple vowels—*i, *e, *ɨ, *ə, *u, *a—developed at an intermediate stage.

2.1. Split of *ə. The system of syllabics was further modified by a split of the vowel *ə. Following *h or a labial consonant the oral vowel was backed and rounded to create a back vowel /o/. Following other consonants or when nasalized, it was fronted to /e/, which merged with the development of *e. Thus, the resultant Lealao system is /i e ɨ a u o/.

- 35 ***hə:** look Oj *hə*³¹ *ʔni*² U *he*²³ Tl *há*³ *ceg*³ S *hie*¹² Tp *hág*³² *za*²
 Pa *háy*³² Ll *ho:*³² Le *ho:*³² Qi *həh*²³ Co *há:*².
 36 ***ʔwə**^{HL} land Oj *ʔwo*⁴ U *ʔue*³⁴ Tl *gwé*² S *ʔwe*³² Tp *ʔuə*³ Pa *ʔwa*³
 Ll *ʔwəh*²³ Le *vó*⁴ Qi *ʔwo*²⁴ Co *ʔwə*².

- 37 *ʔa sing Oj ʔa¹ ʔni² U ʔe²³ Tl ʔa² S ʔte co Tp ʔa³² za² Pa ʔi^{w32}
za² Ll ʔe²³ Le za³ ʔe⁴ teacher Qi ʔa⁴ ca² Co ʔar².
- 38 *mə: bone Oj na¹mo² U na²u^{e23} Tl mo³⁴ S mu³² Tp ni¹mu³²
Pa mu² Ll me²³ Le me⁴ Qi moh⁴ Co mó¹².
- 39 *mé:^{LH} cane liquor Oj ma² cane Tl mó⁴ S mú² Ll me:h² Le
mé:² liquor distilled from maguey Qi mah⁴³ Co mé:²¹.

2.2. Merger of *i and *ī. The development of *i has merged with that of *ī after *s and *z in Lealao Chinantec. The sequences *si/*zi and *sī/*zī have generally remained distinct, however, since the consonants were previously palatalized to /sy/ and /zy/ before *i in most environments, whereas no such palatalization took place before *ī.

40 *si See set 14.

- 41 *si:^{ʔL} moon Oj si:^{ʔ2} U seg^{ʔ3} Tl θeg^{ʔ4} S θi:^{ʔ2} Tp ci:^{ʔ2} Pa ci:^{ʔ2} Ll
s̄i:^{ʔ3} Le si:^{ʔ3} Qi sih^{ʔ23} Co s̄i:^{ʔ12}.

42 *zi See set 13.

- 43 *zi:^{LH} heart Oj mi:³ci:³a² U u⁴cei⁴³ Tl cég³ S mi:³ci:²³ Tp z̄i:³² Pa
zi^{w32} Ll z̄ih² Le z̄i:² Qi ci:³ Co d̄i:²¹.

2.3. Merger of *i and *iu, *e and *ia. After *h, the nuclei *i and *iu have merged in most environments. After *h and *ʔ, the nuclei *e and *ia have merged.

44 *hi See set 21.

- 45 *hiu: blow (verb) Oj hi² ʔni² U hai²³ Tl hi S h̄ei³² co² Tp h̄ei²
Pa h̄yéw² Ll h̄yö:³² Le ga³si:³² Qi x̄üh²³ Co h̄yö:^{r2}.
- 46 *he^H balsa tree U na²ʔma³ he¹ Tl ma³ he² S ʔma² h̄ie³¹ Tp
ʔma² h̄a¹ Pa ʔma² he¹ Ll ʔmo³ heh² Le m̄i:y^{ʔ3} he² Qi ʔmo³ he².
- 47 *hiá arrive Oj hya²³ ca² U hia²³ Pa hyi³ Ll ri²³h̄ä³ Le ri⁴he³.
- 48 *ʔe: what?, which? Oj ʔe² S ʔe Tp ʔe² Pa ʔe² Ll ʔe:² Le ʔe² Qi
ʔeh²⁴² Co ʔe¹.
- 49 *ʔiá:^{HL} tomorrow Oj ʔye⁴ U ʔie³⁴ Tp ʔióg³ Pa ʔyá² Ll ʔä:h²³
Le h̄a⁴ m̄i¹ ʔe:³.

2.4. Nasalized vowels, final *ʔ, and final *ŋ. The nasalized vowels of Proto Chinantec and the final glottal closure were faithfully preserved in Lealao Chinantec, as they have been quite generally in all the languages. The final nasal element developed as /n/ following the nuclear vowel /i/—at least in the speech of some—as a marker of animate reference; following other vowels the marker of animate reference is /y/ (see §4.3).

50 *tá:^{LH} thorn Oj tɔ² U a²tɔ⁴³ Tl tɔ⁴ S tɔ² Tp nɪ¹təu³² Pa təw³²
Ll tɔ:h² Le tá:² Qi tɔh⁴³ Co tɔ:²¹.

51 *ʔya:ʔ^{LH} jaguar Oj ʔya² U a²ʔdya³ lɪq²³ Tl gya⁴ S ʔya³² Tp
zi²ʔia² Pa ʔye³² Ll ʔyo:³ Le ya³ Qi ʔya⁴ ti² Co ʔye:³¹².

52 *kɪ:ŋ it costs Oj kɪ² U kɛɪ⁴³ Tl kɪ⁴ S kyɛ Tp kɛ³² Pa kyɛ³² Ll
kɪ:hn²³ Le kyɪ:n⁴ Qi tyɪh³ Co kɪ:ŋ²¹.

53 *giá:ŋ^{HL} seven (animate reference) Oj kyɛ⁴ U kɪq³⁴ S kyɔ Tp
giq³ Pa gyow³ Ll gya:hn²³ Le gyá:y⁴ Qi dyai²³.

3. Prosodic features

The prosodic features of Lealao Chinantec are length, ballistic accent,⁹ and tone.

3.1. Length and accent. The features of vocalic length and accent have developed quite regularly from the ancestor language.¹⁰

54 *ta^L reed Oj ma² ta² U a²ʔma³ ta³ S ʔma ta Tp nɪ¹ʔma² ta³²
Pa ʔma²ta² Ll ʔmo³ ta³ Le mɛ:y³ ta³ Qi to³⁴ Co ta¹².

55 *ta:^L banana Oj to² U o¹to³ Tl tew³ S tó² Tp nɪ¹tau² Pa tiw² Ll
to:³ Le ta:³ Qi toh²³ Co to:².

56 *ʔu^{LH} glass, mirror Oj ʔu¹ U a²ʔeu³ Tl ʔú⁴ S ʔu³² Tp nɪ¹ʔi² Pa
ʔi³² Ll ʔu³ Le ʔu³ Qi ʔu⁴.

57 *ʔú^{LH} casserole Oj ho¹wɪ² ʔu² U a²ʔeu⁴³ Tl ʔú³ S ʔu²³ Tp
nɪ¹ʔi³² Pa ʔi³² Ll ʔuh² Le ʔú² Qi ʔu³ Co ʔú:²¹.

⁹Compare Rensch and Rensch (1966:456f) for a somewhat different treatment of a similar phenomenon. For reasons of distribution, the ballistic accent is there analyzed as the postnuclear variant of /h/, which apparently is its source in Proto Otomanguean (Rensch 1976, §9.2.3). Rensch (1968, §2.8) discusses the ballistic accent of Proto Chinantec in relation to the tone system.

¹⁰For an exception to the regularity in the development of vocalic length, see §3.4.

3.2. Tones in open accented syllables. The development of the tone system has been more intricate than that of length and accent with some conditioning of development in terms of the other two features. The development of the tone system was carried out in the most straightforward manner in open syllables bearing the ballistic accent, namely, *H → /1/, *LH → /2/, *L → /3/, and *HL → /4/.

58 *hmí:^H braids Oj hmi¹ čí¹a² U a²hú²³ Tl hmáy¹ S hmei¹² Tp hméi¹ Pa hméy¹ Ll hmi:h² Le hmí:¹ Qi hmih¹ tyí² Co hmí:¹.

59 *hni:^{LH} cloud Oj hni² U o¹hnai⁴³ Tl hnáy⁴ S hné² Tp hnei³² Pa hnew³² Ll hni:h² Le hñí:² Qi hnih³² Co hni:²¹.

60 *rá:^L sweet Oj ro³ U ro⁴ Tl réw³ S ró²³ Tp ráu² Pa ríw² Ll ro:h³ Le rá:³ Qi roh³ Co ró:².

61 *giá:^{HL} seven (inanimate reference) Oj kye⁴ U kie³⁴ Tl kyú² S kyo²³ Tp gio³ Pa gyo³ Ll gya:h²³ Le gyá:⁴ Qi dyia³ Co gié².

This development—in open syllables bearing ballistic accent—was the same whether the syllable included vocalic length or not.

The sequence *HLH developed as tone /1/ in syllables with the ballistic accent, thus merging with the development of *H.

62 *mí:^{HLH} tick Oj sya¹ mi³¹ yi² U a¹si²u² Tl mag² S mai¹ Tp i¹mi^g¹ Pa may¹ Ll mi:h² Le mí:¹ Qi mih²⁴² Co mi:¹².

3.3. Tones in open unaccented syllables. In syllables not bearing the ballistic accent, *H was lowered to /2/, *L and *LH merged as tone /3/, *HL became tone /4/, and *HLH became the sequence /42/.

63 *ʔa:^H mouth Oj ʔo³¹a² U ʔo³² S ʔo³co² Tp mi²ʔo²¹ za² Pa ʔaw¹ Ll ʔo:² Le ʔa:² Qi ʔoh² Co mi ʔo:¹.

64 *kə:^L one (inanimate reference) Oj kə² U kə³ Tl kəw³ S kə² Tp kəu² Pa kəw² Ll kə:³ Le kə:³ Qi kəh²³.

65 *tu:^{LH} defecate Oj ma²tu² U tau³ Tl taw³⁴ Tp tag³² za³ Pa taw³² Ll tu:³ Le ga³tu:³ Qi tuh⁴.

66 *ʔu:^{HL} chili Oj mi² ʔə² U u⁴ʔəu²³ Tl ʔəw⁴ S ʔi² Tp mi²ʔəg² Pa ʔi^w² Ll ʔu:²³ Le ʔu:⁴ Qi ʔuh⁴ Co ʔu:¹².

67 *na:^{HLH} lard Oj no³¹ U o¹no¹ Tl no⁴² S no¹ Tp ti¹no¹ Pa naw¹ Ll no:²³² Le na:⁴² Qi noh²⁴² Co no:¹².

The source of Lealao tone /1/ in syllables with no ballistic accent is unknown at present. It seems to be cognate with the sequence /31/ in Lalana, although the more common correspondence is Lalana /31/ ~ Lealao /21/. In any event, the source of the Lalana /31/ is equally unclear.

- 68 ***hwi**^{LH} path Oj *hwi*² U *heu*³ Tl *hwég*⁴ S *hwi*³² Tp *hu*³² Pa *hwi*³² Li *hwi*³¹ Le *fi*¹ Qi *fu*⁴ Co *hwi*². (The Lalana-Lealao group shows the anomalous 31 ~ 1 correspondence. Were they to reflect *LH, they would both show tone 3.)

3.4. Tones in checked accented syllables. The development of tones in syllables checked by glottal stop is considerably more complex than that in unchecked syllables. In general, *CV:ʔ syllables have become /CVʔ/, and *Cǎ:ʔ syllables have become /Cǎʔ/. At least this is so with the development of *H, *L, and *LH. Long syllables with or without the ballistic accent, however, have remained long with *HL and *HLH. The origin of the long checked syllables apart from *HL and *HLH is not clear.

The tone development in /Cǎʔ/ syllables parallels that of /CVʔ/ syllables as described above in §3.2, namely,

$$\begin{aligned} *C\check{V}:?^H &\rightarrow C\check{V}?^1 \\ *C\check{V}:?^L &\rightarrow C\check{V}?^3 \\ *C\check{V}:?^{HL} &\rightarrow C\check{V}:?^4 \end{aligned}$$

No *Cǎ:ʔ^{LH} syllables have as yet been identified, but rather /Cǎʔʔ/ has developed from *Cǎʔ^{LH} and some *Cǎ:ʔ^H syllables.

- 69 ***?mé:ʔ**^H mole U *a*²?*ma*?² Tl *má*?¹ S ?*má*?¹ Pa ?*má*?¹ Li ?*me*?² Le *mé*?¹ Co ?*me*?¹ (accent expected).

- 70 ***táʔ**^{LH} bee Oj *to*?⁴ U *a*¹?*ma*²?*to*?⁴³ wasp Tl *to*?⁴ (accent expected) S *mu*?⁴ *to*?² (²³ expected) Tp *i*¹?*si*²?*tá*?³² Pa *ta*?³² Li *to*?² Le *tá*?² Qi *to*?³ honey bee Co *ta*?².

- 71 ***siá:ʔ**^H crab U *a*⁴?*sia*?² Tl *θyá*?¹ S *ci*¹?*θyá*?² Tp *i*¹?*ciá*?¹ Pa *cyí*?¹ Li *šo*?² Le *syá*?² Qi *sah*?¹ Co *se*?¹.

- 72 ***má:ʔ**^L mountain Oj *ma*?³ U *a*²?*ma*?⁴ Tl *má*?³ S *ma*?³ Tp *má*?² Pa *má*?² Li *mo*?³ Le *má*?³ Qi *moh*?³⁴ Co *mó*?¹².

- 73 ***?í:ʔ**^{HL} weight, peso Tp ?*éi*?³ Pa ?*é*?³ measure Li ?*i*?²³ Le ?*i*:?⁴ Qi ?*ih*?³⁴ Co ?*i*?¹².

3.5. Tones in checked unaccented syllables. As in unchecked syllables, so in /CVʔ/ syllables *H became tone /2/ and *L and *LH have merged as tone /3/ (see §3.3).

74 *gwa:ʔ^H earth Oj kwaʔ¹ U o¹kuaʔ³² S kwáʔ¹ (reflects accented syllable) Tp guaʔ³¹ lag¹ adobe Pa gwaʔ¹ Li gwo:ʔ² Le gwaʔ² Qi kwohʔ⁴² Co gwo:ʔ²¹.

75 *CV:ʔ^L See set 41.

76 *tu:ʔ^{LH} bag Oj si²tuʔ² U a²toʔ³ ʔu³ cloth bag Ti tyuʔ⁴ S tuʔ³² Tp ci¹tə²miʔ² Pa ci¹tuʔ³² cap Li tu:ʔ³ Le tuʔ³ Qi tuhʔ⁴ Co ti²lo:ʔ².

As mentioned in §3.4, long checked syllables with *HL or *HLH have remained long in Lealao Chinantec, becoming tones /4/ and /42/, respectively.

77 *hwi:ʔ^{HL} rust, sap Ti héwʔ⁴ rust (accent not expected) Pa hwuʔ³² rust Li hwi:ʔ²³ rust, sap Le fi:ʔ⁴ sap Co hwi:ʔ¹² rust.

78 *siu:ʔ^{HLH} edge Tp ceiʔ³¹ Pa cyuʔ¹ hmiy² bank of river Li šö:ʔ²³² Le syu:ʔ⁴².

4. Implications for Proto Chinantec reconstruction

Having described in summary fashion the development of Lealao Chinantec from the parent Proto Chinantec, we turn now to the consideration of possible implications of the Lealao data for the reconstruction of the parent language.

4.1. Reconstructed tone system. Neither of the regular correspondences Le /32/ ~ Li /32/ or Le /1/ ~ Li /31/ is accounted for in the tone system of Proto Chinantec, as currently reconstructed. These correspondences are not widely attested in noun stems, which are the principal base of the original reconstruction. They are frequent, however, in inflected nouns and verbs. It may simply be necessary to posit further tone contrasts. On the other hand, the source may become more clear when the inflection of Proto Chinantec is better understood. It is possible that the tone inflection of the daughter languages is not the result of the substitution of one Proto Chinantec tone for another, but rather of the addition of one tone to another, resulting in tone fusion. If such were to

prove to be the case, the correspondences mentioned above would be the result of such tonal fusion.

4.2. Tone morphophonemics. Tone /2/ in syllables bearing the ballistic accent has a variant which falls sharply, as is characteristic of accented syllables (Rupp 1990). The falling variant of /2/, however, begins at a noticeably higher pitch following a controlled syllable with a basic tone /1/ or tone /1/ derived from tone /2/.

The cognate morphemes in Lalana Chinantec undergo a morphophonemic alternation apparently related to the phonetic shift in Lealao. In most environments, these morphemes have tone /2/ and a syllable-final /h/, which is cognate with the Lealao ballistic accent. These same morphemes, however, have tone /1/ and the final /h/ following /31/, /232/, checked or unchecked long syllables with tone /2/, or short open syllables with tone /2/.

The interchange of pitches, in one case allophonic and in the other morphophonemic, occurs in similar environments in the two languages and may indicate that the parent language, or the language of an intermediate period, had a similar tone interchange. Investigation of the other Chinantec languages at this point may provide further evidence of such an alternation and suggestions regarding its status.

4.3. Syllable-final *ŋ. The nature of the syllable-final consonantal element in Lealao Chinantec has been discussed in §2.4, where it was shown that /y/ follows all vowels except /i/, after which /n/ occurs in at least the speech of some.

The phonological alternation of /-y/ and /-n/ may be interpreted in one of two ways: (a) a single morpheme was marked by a single consonantal element, which was phonetically both palatal and nasal and then was split, or (b) two morphemes with differing functions came to be associated with a common function and to be in complementary distribution.

That there was a single syllable-final consonant (apart from *ʔ) is suggested by the fact that several contemporary Chinantec languages have just one syllable-final element. Lalana marks animate reference by /-n/ and fragmentary evidence from Valle Nacional suggests that /-ŋ/ serves the same function in that language. In addition, vocalic nasalization marks animate reference in several of the northern Chinantec languages. The vowel /-i/ following the main vowel in Quiotepec marks animate reference when the referent itself is not expressed and in Tepetotutla /-i/ follows stems with a nasalized vowel to mark third person when the noun is not expressed.

The evidence from Comaltepec suggests that the second interpretation of the facts of Lealao is the correct one. Comaltepec forms are marked by /-iŋ/ to show third person animate reference. When the animate noun referent is expressed, only /-ŋ/ occurs to mark the animate reference. In other words, STEM + /i/ + /ŋ/ alternates with STEM + ŋ + ANIMATE NOUN. Thus, /-ŋ/ marks animate reference and /-i/ marks animate third person in the absence of the animate noun.

This indicates that Proto Chinantec had at least two morphemes marked by syllable-final elements, a palatal one and a nasal one. Several Chinantec languages retained only one of the two elements. Comaltepec retained both elements as markers of semi-independent morphemes. Lealao retained both elements but in complementary distribution.¹¹

References

- Foris, David. 1973. Sochiapan Chinantec syllable structure. *International Journal of American Linguistics* 39:232–35.
- Gardner, Richard and William R. Merrifield. 1990. Quiotepec Chinantec tone. This volume.
- Merrifield, William R. 1963. Palantla Chinantec syllable types. *Anthropological Linguistics* 5:5:1–16.
- Rensch, Calvin R. 1968. Proto Chinantec phonology. *Papeles de la Chinantla* 6, Serie Científica 10. México: Museo Nacional de Antropología.
- . 1976. Comparative Otomanguean phonology. *Language Sciences Monograph* 14. Bloomington: Indiana University Press.
- . 1989. An etymological dictionary of the Chinantec languages. *Studies in Chinantec languages I*, Summer Institute of Linguistics and The University of Texas at Arlington Publications in Linguistics 87. Dallas: Summer Institute of Linguistics and The University of Texas at Arlington.
- Rensch, Calvin R. and Carolyn M. Rensch. 1966. The Lalana Chinantec syllable. In Antonio Pompa y Pompa (ed.), *Summa Anthropologica en homenaje a Roberto J. Weitlaner*, 455–63. México: Instituto Nacional de Antropología e Historia.

¹¹For a fuller treatment of syllable-final elements, see Rensch (1989 §4.2).

- Robbins, Frank E. 1961. Quiotepec Chinantec syllable patterning. *International Journal of American Linguistics* 27:237–50.
- . 1968. Quiotepec Chinantec grammar. *Papeles de la Chinantla* 4, Serie Científica 8. México: Museo Nacional de Antropología.
- Rupp, James. E. 1989. Lealao Chinantec syntax. *Studies in Chinantec languages* 2, Summer Institute of Linguistics and The University of Texas at Arlington. *Publications in Linguistics* 88. Dallas: Summer Institute of Linguistics and The University of Texas at Arlington.
- . 1990. The Lealao Chinantec syllable. This volume.
- Skinner, Leo E. 1962. Usila Chinantec syllable structure. *International Journal of American Linguistics* 28:251–55.
- Westley, David O. 1971. The Tepetotutla Chinantec stressed syllable. *International Journal of American Linguistics* 37:160–63.

Quiotepec Chinantec Tone

Richard Gardner and William R. Merrifield

This is a revision of Robbins' (1961, 1968) analysis of Quiotepec Chinantec tone. Beyond the brief sketch by Weitlaner (1947) of Chiltepec Chinantec phonology, Robbins' 1961 was the first detailed phonological study of a Chinantec language. These languages have been found to have very difficult phonological systems, chiefly because tone (and other) contrasts have proven to be very difficult to hear with non-Chinantec ears, even after extensive contact with the language.

Several Chinantec languages have been studied since Robbins did his first analysis, and a considerable amount of knowledge has been gathered to improve somewhat upon earlier work. Robbins himself (1968) made a partial revision of his first analysis by introducing into it the concept of two kinds of word stress which has since been found to have relevance for the analysis of tone in related Chinantec languages. In lieu of further opportunity for Robbins to pursue Chinantec research, this study has fallen to his colleagues.¹

A brief examination of both Robbins 1961 and 1968 will suffice to assure the reader of the carefulness of these studies. There were, nevertheless,

¹Gardner began field trips to Quiotepec, Oaxaca, with his family, under the auspices of the Summer Institute of Linguistics in June 1962. He is indebted to a number of men of that town for helping him in the study of their language, among whom are Moisés Villar and Hermenegildo Martínez M. The principal person, whose tone system this paper describes, is Miguel García Martínez, age 17, son of Ramón García Martínez, who was Robbins' principal language teacher for many years. Merrifield began his study of a related language (Palantla Chinantec) in November 1956. He collaborated with Gardner on this analysis and presentation during three week-long periods from November 1973, to May 1974, at the SIL study center in Mitla, Oaxaca.

problems with the final analysis which needed resolution. We think these problems have been covered in the analysis here presented. Before proceeding to the analysis itself, it will be convenient to lay some groundwork in the form of statements about the context of tone—the (phonological) word and the syllable.

1. Word and syllable

A word consists of one or more syllables, only one of which is stressed. Morphemes belonging to major lexical classes (verbs, nouns, etc) are the source of stressed syllables. Most such morphemes are monosyllabic, but a few verbs and nouns have a pretonic syllable. Other pretonic syllables have their source in tense-aspect prefixes, directional prefixes based on motion verbs, and such like. Pretonic syllables only occur with single tones and present no particular difficulty for analysis. Nothing more will be said of them in this paper.

The POSTTONIC SYLLABLE, on the other hand, is of central importance to our problem.² It has its source in reduced (unstressed) forms of personal pronoun subjects (of verbs) and possessors (of nouns) or the affirmation modal *mó^{MH}* (Robbins 1968:41ff, 95f), and may affect the tonal characteristics of a preceding stressed syllable. These syllables will be discussed below in §4, after the basic characteristics of tone in stressed syllables have been introduced in §2 and §3.

There are three other phonological features which need to be discussed in relation to tone: word stress, vowel length, and glottal closure of the syllable.

There are two kinds of word stress, BALLISTIC and CONTROLLED. A ballistic syllable is characterized by a surge and rapid decay of intensity, with fortis articulation of its consonantal onset and tendency to loss of voicing and breathy release of final segments. A controlled syllable displays a more constant level of intensity throughout its duration.

In this paper, a ballistic syllable is marked by an acute accent /´/ over its nuclear vowel. A controlled syllable is unmarked, but is distinguishable from unstressed syllables in a controlled word of more than one syllable as the last syllable marked for contrastive tone. A posttonic syllable has either a higher or a lower tone. Rather than attempting to equate these posttonic tones with the tones of a stressed syllable, the lower of the two is marked by a grave accent /`/ and the higher is left unmarked. *ñi^H* ‘metal’, *lo:^M* ‘skin’, *ñi^Hi* ‘metal (aff)’, *kwi:^Li* ‘I am acquainted with it’, *ñi^Li* ‘he knows’.

²Robbins refers to posttonic material as ‘extensions’ of stressed syllables (1961:228).

In addition to stress, the phonetic characteristics of Chinantec tone differ, depending upon whether the syllable vowel is long or short, and whether the syllable is checked by glottal or is open. It will be convenient to speak of five types of syllable in reference to these features: short ballistic open (C \acute{V}), long controlled [open] (C \acute{V} :), long ballistic [open] (C \acute{V} :), [short] controlled checked (C \acute{V} ?), and [short] ballistic checked (C \acute{V} ?).³ Syllable types are perceived as having different degrees of phonetic length. They may be ranked from shortest to longest as follows: C \acute{V} ?, C \acute{V} , C \acute{V} ?, C \acute{V} :, C \acute{V} :.

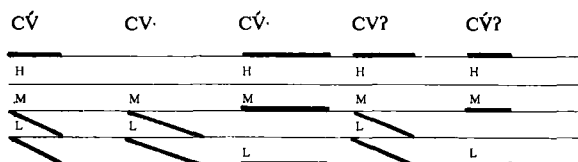
With this background, we now turn our attention more directly to Quiotepec tone.

2. Tones

There are three single tones—low /L/, mid /M/, and high /H/—and four tone sequences—low-mid /LM/, low-high /LH/, mid-low /ML/, and mid-high /MH/. A description of each of these tones follows, beginning with single tones. A series of figures is also provided to aid the reader form a notion of the relationship of tones one to another. They should be taken to represent only schematic representations of perceived norms.

Low tone is attested in all five syllable types. It is a low falling tone, except in a long ballistic or ballistic checked syllable where it is perceived as basically level. *ñi*^L ‘thread’, *ka*^M*ñi*:^L *cá*^M ‘someone answered’, *ni*^L*tyi*:^a^L *cá*^M ‘someone will lie down’, *hi*[?]^L ‘orange’, *kwó*[?]^L ‘church building’.

(1) The three single tones



Mid tone is attested in all syllable types. It is a midlevel downglide, except in a long ballistic or a ballistic checked syllable where it is perceived as basically level. In the long ballistic syllable, the surge of intensity associated with stress is perceived somewhat after the initiation of the

³No consistent attempt is made throughout the paper to note differences in this analysis from that of Robbins, but at this point merely note that Robbins treated the two kinds of checked syllable as long and short rather than as controlled and ballistic, respectively.

3. Tone sandhi

Robbins (1968:18f) speaks of two distinct mid-tone areas, a higher and a lower, but that “any mid tone may be of the same pitch as any other mid in a given context.” His discussion involves several matters, including posttonic material which we shall discuss later in the paper. One thing we do wish to mention here, however, is TONE SANDHI. There is an arbitrary class of morphemes with short ballistic open syllables and mid tone or low-mid glide which optionally change to high tone following any syllable with either of the tone sequences /LH/ or /MH/. In the following examples, morphemes which undergo this tone change are marked by /s/.

- (3) $hlí^M \rightarrow kwó^{MH} hí^M$ ‘give (me) the comb’
 $tú^{Ms} \rightarrow kwó^{MH} tú^H$ ‘give (me) two’
 $lí^H \rightarrow kwó^{MH} lí^H$ ‘give (me) the flower’
 $tyú^{Ms} \rightarrow cú^{MH} tyú^{H}$ ‘good earthen jar’
 $tyú^{Ms} \rightarrow ló^H tyú^H$ ‘good nopal’
 $?mó^M \rightarrow sí^{LH} ?mó^M$ ‘shave down the wood’
 $dyá^{Ms} \rightarrow sí^{LH} dyá^H$ ‘shave down ten’
 $ñí^H \rightarrow sí^{LH} ñí^H$ ‘shave down the metal’
 $tyú^{Ms} \rightarrow šú^{?LH} tyú^{H}$ ‘good armadillo’
 $bó^{Ms} \rightarrow šú^{?LH} bó^H$ ‘stupid armadillo’

The first singular personal pronoun $hná^{MH}$ ‘I’ and the first plural inclusive personal pronoun $hná^{?LH}$ ‘we’ are of syllable types that cause tone sandhi. They do so both in their full forms as well as in their reduced forms as posttonic syllables. Other personal pronouns, none of which is of a syllable type that causes tone sandhi, do not cause sandhi either in their full or reduced forms. $?nú^M$ ‘you’ will represent such pronouns in the following examples. The word $lí^H$ ‘flower’ in (4) has a high tone in its underlying form which is not affected by words which precede it.

- (4) $lí^H \rightarrow kwi^{L} hná^{MH} lí^H$ ‘I am acquainted with the flower’
 $kwi^{L} i lí^H$
 $kwi^{L} hná^{?H} lí^H$ ‘we are acquainted with the flower’
 $kwi^{L} i ? lí^H$
 $kwi^{L} ?nú^M lí^H$ ‘you are acquainted with the flower’
 $kwi^{L} ?i lí^H$

The word *hlí^{fM}* ‘comb’ in (5) has a mid tone which is not affected by a preceding word.

- (5) *hlí^{fM}* → *kwi:^L hná^{MH} hlí^{fM}* ‘I am acquainted with the comb’
kwi:^{Li} hlí^{fM}
kwi:^L hná^{ʔLH} hlí^{fM} ‘we are acquainted with the comb’
kwi:^{Liʔ} hlí^{fM}
kwi:^L ʔnú^M hlí^{fM} ‘you are acquainted with the comb’
kwi:^{Lʔi} hlí^{fM}

The word *tú^{MS}* ‘two (animate)’ in (6), however, has an underlying mid tone which becomes high when preceded by a word which triggers sandhi.

- (6) *tú^{MS}* → *kwi:^L hná^{MH} tú^H* ‘I am acquainted with two’
kwi:^{Li} tú^H
kwi:^L hná^{ʔLH} tú^H ‘we are acquainted with two’
kwi:^{Liʔ} tú^H
kwi:^L ʔnú^M tú^M ‘you are acquainted with two’
kwi:^{Lʔi} tú^M

4. Personal inflection

In this section, each of the personal pronouns is discussed. Each has a full form and two reduced forms: a REGULAR form and an N-FORM. The choice between the two reduced forms is determined by the phonological structure of the preceding syllable which is also classed as a REGULAR or an N-SYLLABLE.

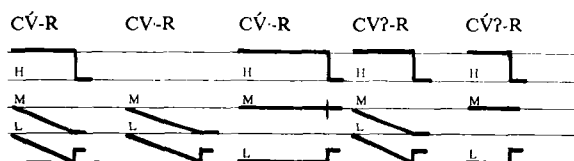
A REGULAR syllable has no segment following the nuclear vowel other than /a/ or glottal. The N-SYLLABLE has a postvocalic /n/ if the nuclear vowel is /i/; otherwise, it has a postvocalic /i/. The postvocalic element occurs with the full form of a pronoun, but chooses the N-FORM of the reduced pronoun and is itself elided. *ni^Ltyín^{ʔLH} hná^{MH}* or *ni^Ltyí^{ʔLH}na* ‘I will choose (a), *ni^Lʔléi^{ʔLH} hná^{MH}* or *ni^Lʔlé^{ʔLH}na* ‘I will push (a)’.⁵

4.1. First-person singular. The full form of the first-person-singular pronoun is *hná^{MH}* ‘I’. The regular reduced form is *R*, a CHAMELEON VOWEL

⁵The n-element is related in most cases, but not all, to inflection for ANIMATE GENDER, marked (a).

that takes on the quality of the preceding nuclear vowel and a tone of about mid height; the *n*-form is *na* with the same tonal characteristics as *R*. After /*L*/, *R* and *na* are realized slightly above the level at which /*L*/ terminates. After /*M*/, it is at the final level of /*M*/ when the latter is a downglide, and holds at the same level as a level /*M*/ after /*H*/, it is a slight step down. These tonal characteristics of reduced pronoun (and similar posttonic material), when following a tone syllable with a single tone, are represented schematically in (7).⁶ *kwi*:*Li* 'I am acquainted with it', *li*?*Li* 'I win', *ka*^{*M*}*tó*?*Lo* 'I put them in', *nó*^{*H*}*Ho* 'I open it', *u*^{*H*}*tyü*:*Mü* 'I dry it', *u*^{*H*}*hi*:*Mi* 'I pay attention to it', *gú*?*Mu* 'I drink it', *ni*^{*L*}*tú*^{*H*}*ü* 'I will leave it', *ni*^{*L*}*tó*:^{*H*}*Ho* 'I will roast it', *ni*^{*L*}*hu*^{*P*}*Hu* 'I will cough', *ni*^{*L*}*kú*?^{*H*}*Hu* 'I will kiss it'.

(7) The three single tones followed by *-R*



The pitch of *R* and *na* holds at the same level of a preceding /*MH*/ sequence. Neutralization takes place, however, between short and long syllables with /*MH*/ when followed by *R*.⁷ This may be represented formally, as Rule 1.

Rule 1. $V^{MH} \rightarrow [+long] / \text{ — } R$

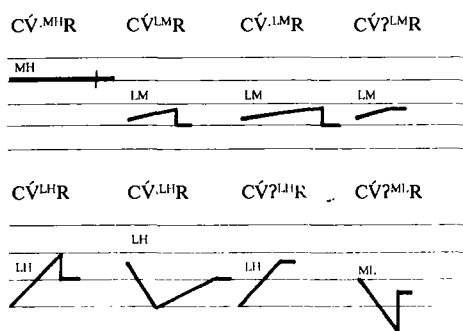
Thus, *hó*^{*MH*} *hná*^{*MH*} or *hó*^{*MH*}*o* 'I stay (at a location)', *ñí*:^{*MH*} *hná*^{*MH*} or *ñí*:^{*MH*}*i* 'I answer', where *hó*^{*MH*}*o* and *ñí*:^{*MH*}*i* are not contrastively different in length. We may think of this change as a natural consequence of the practical difficulty of distinguishing **CV*^{*MH*}*R* from *CV*:^{*MH*}. The grammatical consideration (viz. identity of *R*) appears to have forced coalescence of **CV*^{*MH*}*R* with *CV*:^{*MH*}*R* rather than with *CV*:^{*MH*}.

⁶Pronominal inflection for any particular person of subject or possessor does not occur with all syllable types. Figures showing the tone configurations for posttonic pronominal material are therefore usually not as complete as figure (7), which is the exception since it not only represents the configurations with *R* (first singular), but also those of *R* (affirmation) (see §5).

⁷*na* is not attested after *CV*^{*MH*}.

After /^{LM}/, the pitch of *R* and *na* is realized at a short step down from a C[́] or C[́]: syllable, but it holds at the same level as the pitch of a C[́]? syllable. After /^{LH}/ and /^{ML}/, their pitch is at a mid level. The tonal characteristics of reduced pronouns after syllables with tone sequences are presented graphically in (8). *ka^Mtó^{LM}o* 'I roasted it', *fɛ^{LM}i* 'I chew it', *hmó^{LM}o* 'I repair it', *tó^{LH}o* 'I dump it', *ʔlá^{LH}a* 'I ruin it', *sí^{LM}i* 'I untie it', *hú^{ML}u* 'I cough'.

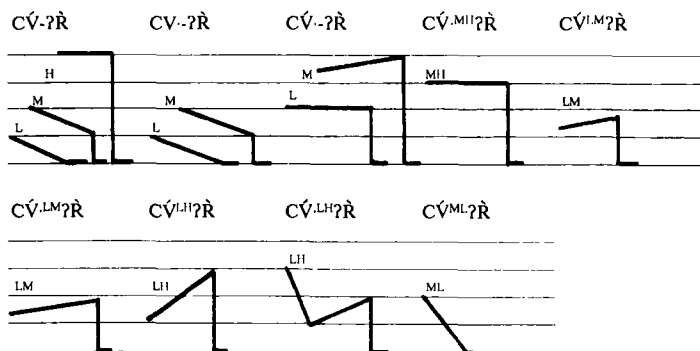
(8) The four tone sequences followed by -*R*



4.2. Second-person singular. The full form of the second-person singular pronoun is *ʔnú^M* 'you'. Its reduced forms are *ʔr̥* and *ʔù* or *nù^{LM}ʔù*. It is atypical among pronouns in having two n-forms that are interchangeable. The pitch of this pronoun is low, as indicated in (9).

Tone /^H/ in a C[́]: syllable starts lower than normal and rises to normal height before dropping to the low pitch of *ʔr̥*.

(9) The tone of posttonic -*ʔr̥*



Rule 2. $? \rightarrow \emptyset / ___?$

The loss of glottal from a controlled checked syllable gives rise to Rule 3 to lengthen the syllable vowel since a short controlled open syllable does not exist in the system, where + marks a syllable boundary. In conjunction with Rule 2, Rule 3 results in the following pairs being neutralized as to syllable type: $ka^Mla^P \rightarrow ka^Mla^L \rightarrow ka^Mla^{:L}P\grave{a}$ 'you bathed', $kwi^{:L}P\grave{i}$ 'you are acquainted with it'; $ku^PM \rightarrow ku^M \rightarrow ku^{:M}P\grave{u}$ 'you kiss it', $ko^{:M}P\grave{o}$ 'you play'.

Rule 3. $\dot{V} \rightarrow [+ \text{long}] / ___ +$

A further rule arises in the case of a syllable with high tone, since a long controlled open syllable is also absent from the system. In conjunction with Rules 2 and 3, Rule 4 results in the neutralization of the following two syllables: $ni^Lpla^H \rightarrow ni^Lpla^H \rightarrow ni^Lpla.^H \rightarrow ni^Lpl\acute{a}.^Hpa$ 'you will push it', $ni^Lfi.^Hpi$ 'you will whistle'.

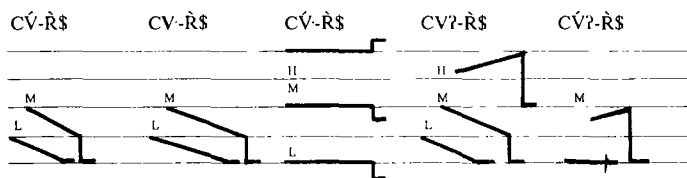
Rule 4. $cv^H \rightarrow$ [ballistic]

The remaining long ballistic syllables have no checked counterpart with which to neutralize. *jé:^Mè* 'you see it', *ka^Mhmá:^{MH}à* 'you did it', *?mí:^{LM}í* 'you mend it', *?lá:^{LH}à* 'you ruin it'.

4.3. Third person. The full form of the third-person pronoun is $\eta^i H d o^H$ ‘he, she, they’. Its reduced forms are \bar{R} and \bar{i} , both normally being realized with a low pitch, as indicated in (10). *kwó^Lò* ‘he gives it’, *nu^L·Lù* ‘he listens’, *ni^Ltyi^L·á^L·à* ‘he will lie down’, *li^Lṹ^Li* ‘he wins’, *ka^Mṹ^Lṹ^L·Lù* ‘he drank it’, *pó^Mò* ‘he hits it’, *tyi^L·á^M·à* ‘he lies down’, *ni^L·Mi^L* ‘he laughs’, *ku^PMù* ‘he kisses it’, *tó^PMò*

'he puts them in', *tyí?LMí* 'he chooses it', *sí?LHí* 'his tongue', *?ú?MLù* 'he drinks it', *fei?L* → *fe?Li* 'he says (a)'.

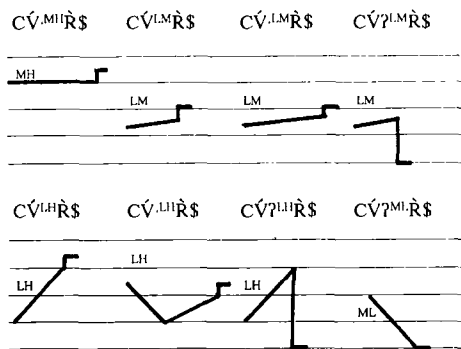
(10) The three single tones followed by *-R\$*



Tone /H/ in a controlled checked syllable starts lower than normal and rises noticeably to normal height when preceding *R\$*. *ho?Hò* [Oo?MH₀L] 'his fist'.

Following an open syllable with a tone sequence, *R\$* has a high pitch, and the surge of intensity which is normally close to the beginning of the preceding tonic syllable is moved from its normal position to the posttonic syllable. *kí?LMí* [kí?LMíM] 'he pays it', *tyí:aLMâ* [tyí:LMâM], 'he arrives', *?núLHù* [?núLHùH] 'his house', *fí:LHí* [fí:MLMíH] 'his boss', *hmí:MHí* [Mmí:HíH] 'his water' (Robbins 1961a). The tonal characteristics of *-R\$* when following a tone sequence are graphically presented in (11).

(11) The four tone sequences followed by *-R\$*



Tones /H LH MH/ do not occur with third-person verbs, but do occur on third-person possessed nouns. Many such nouns have unpossessed forms whose basic tone is different from the tone they bear when possessed. The only third-person possessed noun occurring in a *CV:H* syllable in our corpus is the word for money whose basic unpossessed form is a syllable with /MH/: *kú:MH* money, *kú:H_u* [ku:HúH] 'his money'. The source of this

word in a syllable with a tone sequence is apparently the explanation for $\acute{R}\$$ being articulated with a high tone and stress following this syllable. Note, on the other hand, that although $hmi\acute{:}^M$ 'water' has its source in a syllable without a tone sequence, its third-person possessed form $CV\acute{:}^{MH}$ displays the shift of stress and raising of tone of the posttonic syllable (last example in paragraph above) expected in an open syllable with a tone sequence.

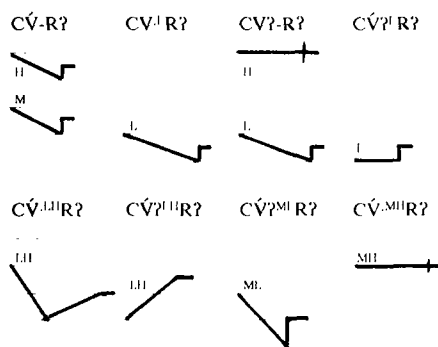
Following those syllables which do not cause the tone of $\acute{R}\$$ to rise, it has essentially the same level of pitch as second person $\acute{R}\acute{}$. Following a checked syllable, these two pronouns are difficult to distinguish, but the application of Rules 2 and 3, which elide the first of two contiguous glottals and lengthen a CV syllable, effectively maintains a surface distinction between the two. $li\acute{?}^L\acute{i}$ 'he wins', $li\acute{?}^L \rightarrow li^L \rightarrow li\acute{:}^L\acute{i}$ 'you win'.

4.4. First-person inclusive plural. The full form of the first-person plural inclusive pronoun is $hná\acute{?}^{LH}$ 'we (in)'. Its reduced forms are $R\acute{?}$ and $ná\acute{?}^{LH}$. The latter is an atypical n-form in that it is not a posttonic syllable, but tonic, only reduced in the sense that it has lost an /h/ and affects preceding n-syllables in the same manner as other reduced n-forms. $féi\acute{?}^{LH} \rightarrow fé\acute{?}^{LH} ná\acute{?}^{LH}$ 'we (in) talk (a)'.

$R\acute{?}$ 'we (in)' occurs with fewer syllable types than R 'I', but otherwise shares the same tonal properties as the latter, including the applicability of Rule 1. $kwi\acute{:}^Li\acute{?}$ 'we (in) are acquainted with it', $tyi^Mi\acute{?}$ 'we (in) take it out', $lá\acute{:}^{LH}a\acute{?}$ 'we (in) buy it', $\tilde{n}\acute{i}^{MH} \rightarrow \tilde{n}\acute{i}\acute{:}^{LM}i\acute{?}$ 'we (in) know', $\eta\acute{i}\acute{:}^{MH}i\acute{?}$ 'we (in) answer'.

The tonal characteristics of $-R\acute{?}$ are graphically presented in (12).

(12) Tonic syllables followed by $-R\acute{?}$



Although /^H/ is ordinarily a level tone in a C[́]V syllable, it falls sharply (in the same manner as /^M/ in this syllable type) when preceding the inclusive pronoun. *ŋí^Hi?* [ŋí^{HM}i?M] 'we (in) laugh'.

R? is lost completely following CV[́]*?*. *tyü[?]^H hná[?]^{LH}* or *tyü[?]^H* 'we (in) kiss it'.

The glottal of a C[́]V^{LH} syllable is elided before *R?*, and /*r*/ is laryngealized. *fá[?]^{LH}a?* 'we (in) say'.

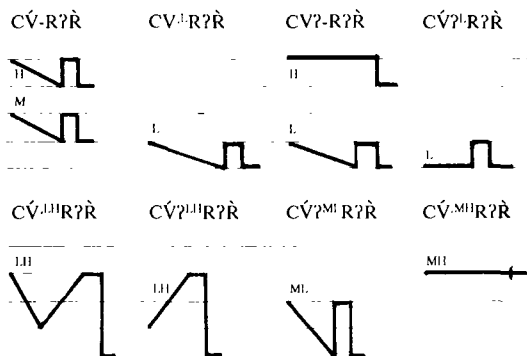
The glottal of other checked syllables tends to very lenis realization before *R?*; and in these contexts also, /*r*/ is laryngealized. *lí[?]^Li?* 'we (in) win', *ka^Mlí[?]^Li?* 'we (in) won', *nú[?]^{ML}ü?* 'we (in) soil it'.

4.5. First-person exclusive plural. The full form of the first-person plural exclusive pronoun is *hná[?][?]* 'we (ex)'. Its reduced forms are *R?**?* and *ná[?]^Hà*. All three forms appear to be derived from corresponding forms of the inclusive pronoun by addition of the reduced form of the third person pronoun. Like *ná[?]^{LH}* 'we (in)', *ná[?][?]* is only reduced in the sense of having lost an /*h*/, and in the effect it has on a preceding n-syllable. *féi[?]^{LH}* → *fé[?]^{LH} ná[?]^Hà* 'we (ex) talk (a)'.

The tonal characteristics of *R?**?* are the same as those of /*r* *?*/; viz., the pitch of /*r*/ is from mid to high, and that of /*?*/ is low. Rule 1 applies before *R?**?*, its /*r*/ is laryngealized after a checked syllable, and the glottal of the latter is elided with tone /^{LH}/ or is otherwise lenis. Tone /^H/ in a C[́]V syllable is a downglide before *R?**?*, as it is before *R?*. *kwi[?]^Li?* 'we (ex) are acquainted with it', *ni^Llí[?]^Li?* 'we (ex) will win', *ka^Mlí[?]^Li?* 'we (ex) won', *kyi^Mi?* 'we (ex) take it out', *ni^Ltyi^Hi?* 'we (ex) will take it out', *ni^Ltyü[?]^Hü?* 'we (ex) will kiss it', *ni^Llá[?]^{LH}a?* 'we (ex) will buy it', *fá[?]^{LH}a?* 'we (ex) will say it', *ka^Mnú[?]^{ML}ü?* 'we (ex) soiled it', *ka^Mhó[?]^{MH}* → *ka^Mhó[?]^{MH}o?* 'we (ex) stayed (in a location)', *yí[?]^{MH}a?* 'we turn around'.

The tonal characteristic of *R?**?* are presented in (13).

(13) Tonic syllables followed by *R?**?*



4.6. Second-person plural. The full form of the second-person plural pronoun is $?n\acute{a}p^{ML}$ 'you (pl)'. Its two reduced forms are $?R?$ and $?n\grave{a}?$. They have the same tonal characteristics as $?R?$ except for the addition of a final glottal (10). Rules 2, 3, and 4 apply in the context of $?R?$, and then its first $/\eta/$ is elided by Rule 5. $hl\acute{i}L\grave{i}?$ 'you (pl) cover it', $kwi:L\grave{i}?$ 'you (pl) are acquainted with it', $ka^M?na^L \rightarrow ka^M?na^L \rightarrow ka^M?na:L\grave{a}?$ 'you (pl) looked for it', $ka^Ml\acute{i}r^L \rightarrow ka^Ml\acute{i}r^L\grave{i}?$ 'you (pl) won', $hi:M\grave{i}?$ 'you (pl) plow', $?i:M\grave{i}?$ 'you (pl) hang it up', $tyi^M \rightarrow tyi^M \rightarrow tyi:M\grave{i}?$ 'you (pl) cry', $ka^Mt\acute{a}r^M \rightarrow ka^Mt\acute{a}r^M\grave{a}?$ 'you (pl) put them in', $ka^Mki^H\grave{i}?$ 'you (pl) paid it', $ni^Lh\acute{e}:H\grave{e}?$ 'you (pl) will see it', $ni^Llo^H \rightarrow ni^Llo^H \rightarrow ni^Llo:H \rightarrow ni^Ll\acute{o}:H\grave{o}?$ 'you (pl) will bathe', $ni^Ll\acute{o}^H \rightarrow ni^Ll\acute{o}^H\grave{o}?$ 'you (pl) will put them in', $t\acute{u}^{LM}\grave{u}?$ 'you (pl) leave it', $?m\acute{i}:LM\grave{i}?$ 'you (pl) mend it', $s\acute{a}^{LH}\grave{a}?$ 'you (pl) lift it', $?l\acute{a}:LH\grave{a}?$ 'you (pl) ruin it', $s\acute{i}^?LH \rightarrow s\acute{i}^{LH}\grave{i}?$ 'you (pl) untie it', $h\acute{u}r^{ML}\grave{u}?$ 'you (pl) cough', $ka^Mhm\acute{a}:MH\grave{a}?$ 'you (pl) made it'.

Rule 5. $? \rightarrow \emptyset / \text{ ____ } \grave{V}?$

5. Modals

Robbins (1968:90ff) describes six mode suffixes which may be postposed to verbs and inflected for person. Each is discussed briefly below, but we begin with the affirmative mode which is of most relevance for tone analysis. Robbins (41ff) speaks of "focus forms" of words, shown by posttonic material of the same sort found in reduced forms of pronouns and by modal particles which are reflected for person.

Without attempting here to go into all of the syntactic ramifications of this modal, suffice it to say that almost any linguistic form can be affirmed by one of three forms: R , \acute{o}^{MH} , or $m\acute{o}^{MH}$. \acute{o}^{MH} and $m\acute{o}^{MH}$ appear to be regular and n-forms, respectively, and R (which is homophonous with the regular reduced form of $hn\acute{a}^{MH}$ 'I') may substitute for either without changing the meaning, as far as we know.

R (affirmation) has all the phonological characteristics of R 'I', and occurs on a greater variety of syllable types than the latter, viz. all syllable types, as reflected in (7) and (9). Note, however, that R (AFFIRMATION) does not occur within the same phonological word with the reduced form of any pronoun. A few examples of R will suffice to illustrate all syllable types. $p\acute{o}Lo$ 'dove (AFF)', $g\acute{o}^{LM}o$ 'bad (AFF)', $hn\acute{a}^{MH}a$ 'I (AFF)', $?i\acute{e}:H\grave{e} hn\acute{a}^{MH}$ 'chicken (AFF) of mine' (but $?i\acute{e}:H\grave{e}$ 'my chicken'), $?l\acute{a}:Ma$ 'soldier (AFF)', $j\acute{e}:M\grave{e} ?n\acute{u}^M$ 'you see (AFF) it', $ka^Ml\acute{a}:LHa hn\acute{a}^?LH$ 'we (in) bought (AFF) it'.

Any of the preceding forms may be replaced without change of meaning (that we are aware of) by the same tonic and pretonic material and an

inflected form of \acute{o}^{MH} (affirmation): $po^L \acute{o}^H$, $g\acute{o}^{LM} \acute{o}^H$, $hn\acute{a}^{MH} \acute{o}^H$, $\acute{p}\acute{e}^H \acute{o}^M$, $\acute{p}\acute{l}\acute{a}^M \acute{o}^H$, $\acute{j}\acute{e}^M \acute{o}^H \acute{p}\acute{o}$, $ka^M \acute{l}\acute{a}^L \acute{o}^H \acute{p}\acute{l}^H$.

Where person-of-possessor or subject is marked, an inflected form of \acute{o}^{MH} may be used (as in the preceding examples), or the citation form \acute{o}^{MH} may occur followed by a full pronoun. $\acute{p}\acute{e}^H \acute{o}^{MH} hn\acute{a}^{MH}$ 'chicken (AFF) of mine', $\acute{j}\acute{e}^M \acute{o}^{MH} \acute{p}\acute{n}\acute{u}^M$ 'you see (AFF) it', $ka^M \acute{l}\acute{a}^L \acute{o}^{MH} hn\acute{a} \acute{p}\acute{l}^H$ 'we (in) bought (AFF) it'.

An n-syllable may in similar fashion be inflected by either R or $m\acute{o}^{MH}$. $ka^M \eta\acute{i}^M \rightarrow ka^M \eta\acute{i}^M \acute{p}\acute{l}\acute{a}^M \acute{c}\acute{a}^M$ or $ka^M \eta\acute{i}^M m\acute{o}^{MH} \acute{p}\acute{l}\acute{a}^M \acute{c}\acute{a}^M$ 'the soldier laughed (AFF) at the people', $ka^M \eta\acute{i}^M m\acute{o}^H \acute{c}\acute{a}^M$ 'he laughed (AFF) at the people'.

\acute{o}^{MH} and $m\acute{o}^{MH}$ follow the same pattern of person inflection:

| | | |
|----------------------|---|--|
| (14) first singular: | \acute{o}^L | $m\acute{o}^L$ |
| second singular: | $\acute{o}^H \acute{p}\acute{o}$ | $m\acute{o}^H \acute{p}\acute{o}$ |
| third person: | \acute{o}^H | $m\acute{o}^H$ |
| first inclusive: | $\acute{o} \acute{p}\acute{l}^H$ | $m\acute{o} \acute{p}\acute{l}^H$ |
| first exclusive: | $\acute{o}^L \acute{h}\acute{o} \acute{p}\acute{o}$ | $m\acute{o}^L \acute{h}\acute{o} \acute{p}\acute{o}$ |
| second plural: | $\acute{o} \acute{p}\acute{m}\acute{l}$ | $m\acute{o} \acute{p}\acute{m}\acute{l}$ |

The other five modals described by Robbins have the same phonological characteristics as \acute{o}^{MH} and $m\acute{o}^{MH}$, except that three of them are seen to be related to full forms that occur elsewhere in the grammar of the language: $g\acute{i}^{MH}$ (augmentative), du^H (volitive), $g\acute{o}^M$ (unitary) from $k\acute{o}^M$ 'one', $\acute{s}\acute{u}^{MH}$ (diminutive) from $\acute{s}\acute{u}^{MH}$ 'little', and $\acute{t}\acute{a}^L$ (momentary) from $\acute{t}\acute{a}^M$ 'short while'. They all have the same tone conjugation as \acute{o}^{MH} and $m\acute{o}^{MH}$, and can occur together in sequences of two or three with the limitation that only the last of a string may be inflected for person. Robbins (90ff) presents a variety of illustrations; our purpose here is merely to put into the record our interpretation of their phonological structure.

In §4.1 where we discuss the first-person-singular pronoun, we introduced Rule 1 which has the effect of lengthening a $C\acute{V}^{MH}$ syllable to $C\acute{V}^{MH}$ before a posttonic syllable with /R/. This rule holds for any verb followed by a first singular, first plural inclusive, or first plural exclusive pronoun, and for any morpheme followed by a reduced form of R (affirmation). When a possessed noun is realized by a $C\acute{V}^{MH}$ syllable, however, a different, not fully understood mechanism, bleeds Rule 1. In short, although the possessed noun is realized as a $C\acute{V}^{MH}$ syllable when followed by the full form of a pronoun, it is realized as a different syllable when that same pronoun is reduced to a posttonic element. $\acute{p}\acute{n}\acute{u}^{MH} \acute{p}\acute{i}^H d\acute{o}^H$

or $?n\acute{u}^{LH_i}$ 'his house', $?i^{MH} ?i^H d\acute{o}^H$ or $?i^{LH_i}$ 'his tortillas'. The same situation is true with some of the modals whose form is CV^{MH} preceding a full pronoun but different otherwise. In the course of examining the tone paradigms of several hundred verbs, no such shift of tone corresponding to a change from full to reduced form of a following pronoun has been observed. A verb is realized by the same syllable type whether a following pronoun is in full or in reduced form.

References

- Robbins, Frank E. 1961. Quiotepec Chinantec syllable patterning. *International Journal of American Linguistics* 27:237–50.
- . 1961a. Palabras nasales sin vocales fonéticas en el chinanteco de Quiotepec. In Benjamin F. Elson and Juan Comas (eds), *A William Cameron Townsend en el vigésimoquinto aniversario del Instituto Lingüístico de Verano*, 653–56. México.
- . 1968. Quiotepec Chinantec grammar. *Papeles de la Chinantla* 4, Serie Científica 8. México: Museo Nacional de Antropología.
- Weitlaner, Roberto J. 1947. The phonemic system of Chinantec, dialect of Chiltepec, Oaxaca. *Memorias del XXVIº Congreso Internacional de Americanistas*, primera sesión, México, 313–21.

Moving and Arriving in the Chinantla

David O. Westley and William R. Merrifield

This paper describes the syntactic and semantic structure of Chinantec¹ verbs of motion and arrival. The study was inspired by a series of lectures presented by Charles J. Fillmore at the SIL Jaime Torres Bodet Linguistics Study Center in Mitla, Oaxaca, Mexico, in the fall of 1970, and by a subsequent manuscript on deixis (Fillmore n.d.). The primary aim of the paper is to understand a few Chinantec verbs, but we trust that this product of our study will also be useful as input to the study of similar systems in other languages as well.

We have found two of Fillmore's (1969:110) neologisms particularly apt, and will use them frequently throughout the paper: PLA 'place of the locutionary act' and TLA 'time of the locutionary act'. Close attention to these and other factors of the speech act itself are indispensable for understanding Chinantec verbs of motion and arrival.

The following scheme will be used to diagram representations of real-life situations appropriate to the use of particular verbs of motion and arrival. Consider the following figures:

¹Chinantec is here represented by the language spoken in Santa Cruz Tepetotutla, a village of 800 inhabitants located 70 air miles north of Oaxaca City, México. Fieldwork was begun in this language by DOW in March 1968. WRM, who has studied a related Chinantec language since October 1956, collaborated in this study as linguistic consultant. The orthography employed is that of Westley (1971) except that /m n ŋ/ are used for the nasalized stops, /z/ is used for the voiced affricate, and /L M H/ are used for tone.



Each horizontal line in these figures represents a time line at a particular point in space. By convention, the lower of two lines in a diagram will represent time at PLA. Any imaginary point along a time line represents a given point of time, with successive points to the right representing successively later points in time at the particular place represented by the line.

The vertical line represents TLA.

A diagonal line represents the motion of an AGENT through time and space, and a dot at one end of a diagonal (redundantly) represents the arrival of an agent at his GOAL. A dotted diagonal indicates motion not specifically signalled by a verb, but which is necessarily implied by the limitations time and space impose upon us. Sentences (1a) through (3a) are appropriate to the situations represented in the corresponding figures.²

More complex situations involving more than two points in space can easily be represented by adding additional time lines. At least three time lines are needed, for example, to represent a situation appropriate to the sentence 'He came as far as Denver'. In this paper, we have not tried to elaborate diagrammatically on all possible situations appropriate to the use of each verb. We limit ourselves to two time lines per diagram and rely on prose to give a fuller understanding of the semantic content of the verbs.

All object inflection within this paper is inanimate. The bringing and taking verbs can also be inflected for animate object as well, usually with a change of initial consonant but following the basic tone-stress pattern.

(1a) He left yesterday for Bangkok.

(2a) They will come over for a visit next week.

(3a) I go there often.

²WRM attended a weekly seminar led by Ivan Lowe at the 1972 session of the Summer Institute of Linguistics of the University of Oklahoma in which applications of (mathematical) topology to linguistic problems were explored. The diagrams used here were developed after that seminar, and although Dr. Lowe may not recognize it (or want to take any responsibility), the seed thoughts for their development were probably planted by him.

1. Momentary verbs

Chinantec verbs of motion and arrival are **MOMENTARY** verbs (Fillmore 1969:112). They view activities as either accomplished or not; never as though in progress. With verbs of arrival this means that an **AGENT** has already arrived at **TLA** or that he is yet to arrive. With verbs of motion it means that motion has been initiated at **TLA** or that it is yet to be initiated. This limitation is nontypical of many Chinantec verbs and requires some clarification.

In general, active verbs may be inflected for any of three aspects, referred to in Chinantec studies as **PROGRESSIVE**, **INTENTIVE**, and **COMPLETIVE**, as in (4) to (6), respectively.

- (4) *lóʔ^{LM} za^M tẽ^Mnẽ^L*
 bathe[^]_{P3 3} now
 He is bathing right now.

- (5) *lóʔ^L za^M ʔyóg^L*
 bathe[^]_{13 3} tomorrow
 He will bathe tomorrow.

- (6) *ka^M-lóʔ^M za^M zyóg^M*
 PST-bathe[^]_{C3 3} yesterday
 He bathed yesterday.

nẽ^M-lóʔ^M za^M ma^Mʔmíg^M
 HOD-bathe[^]_{C3 3} earlier
 He bathed earlier today.

Aspectual inflection involves, among other things, stress-tone inflection, and completive stems occur with one or two tense prefixes, *ka^M-* indicating past time in general and *nẽ^M-* indicating hodiernal past time of the same day as **TLA**.

The perfective prefix *ma^M-* may occur with progressive, intensitive, or completive stems, as in (7).

- (7) *ma^M-lóʔ^{LM} za^M*
 PRF-bathe[^]_{P3 3}
 He is already bathing.

ma^L-ló^{ʔL} za^M

PRF-bathe[^]_{I3} 3

He is already going to bathe.

ma^M-ló^{ʔM} za^M

PRF-bathe[^]_{C3} 3

He has already bathed.

PROGRESSIVE aspect is an inflectional category—one of three such categories which form a paradigm, as illustrated above. Semantically, however, it is not one; it has at least two different meanings. In (4) it has a truly progressive meaning because of the presence of the word *tě^Mně^L* 'right now'. In (8), however, the meaning of the so-called progressive is better termed ITERATIVE. This sentence can be uttered appropriately when the person referred to is lying 'high and dry' in his hammock.

(8) *hma^L-ka^M-ʔni^{LM} hmīg^{MH} ló^{ʔLM} za^M*

each-three day bathe[^]_{P3} 3

He bathes every other day.

A verb of motion or arrival may be inflected for any of the three inflectional categories, but it is never interpreted as semantically progressive. The PROGRESSIVE form of such a verb is always interpreted either as PERFECTIVE or ITERATIVE, as in (9) and (10), respectively.

(9) *ma^Mʔmīg^M gwa^{LM} hniā^M*

earlier arrive[^]_{P1s} 1s

I arrived (here) a while ago.

(10) *hme^Hlī^{LH} zyóg^{LM} hniā^M*

occasionally arrive[^]_{P1s} 1s

I arrive (there) occasionally.

In a leave-taking situation, the intensive form is used until motion is initiated (11), and the progressive with perfective prefix as soon as motion is begun (12). As soon as a person has left *PLA* and is out of sight, the completive is used even though he is known to be yet a long way from his destination (13).

- (11) *néʔ^{MH} hniá^M ʔyóg^L*
 go[^]_{I1s} 1s tomorrow
 I will go home tomorrow.
- (12) *ma^M-ŋáʔ^{LM} hniá^M ka^Mba^{LH}*
 PRF-go[^]_{P1s} 1s compadre
 I am already going home, compadre.
- (13) *ka^M-ŋáʔ^L za^M*
 PST-go[^]_{C3} 3
 He went home.

2. Singular verbs

Most Chinantec verb stems may occur with either singular or plural agents, with first-person singular agents being distinguished inflectionally from first plural agents, but with no such differences for second- or third-person agents. INTENTIVE forms of the verb *lóʔ^{LM}* ‘bathe’ serve to illustrate the typical situation, as in (14)–(17).

- (14) *lóʔ^{MH} hniá^M*
 bathe[^]_{I1s} 1s
 I will bathe.
- (15) *lioʔ^{LH} hniaʔ^{LH}*
 bathe[^]_{I1p} 1p
 We will bathe.
- (16) *loʔ^{LH} ʔne^M*
 bathe[^]_{I2} 2s
 You (sg) will bathe.
- loʔ^{LH} ʔniaʔ^M*
 bathe[^]_{I2} 2p
 You (pl) will bathe.
- (17) *lóʔ^L za^L*
 bathe[^]_{I3} 3
 He/she/they will bathe.

A few verbs have suppletive stems to distinguish singular and plural agents. Verbs of motion and arrival are of this sort, and the stems which occur with singular agents are introduced first. Two such verbs indicate motion towards and motion away from PLA. A second pair indicate arrival at and arrival away from PLA.³ These four verbs are introduced first.

2.1. *gwǎ^{LM}* ‘arrive at NONBASE toward PLA’. The person-aspect paradigm of this verb is represented in (18).⁴ PROGRESSIVE forms are always interpreted as perfective. Since a truly ‘progressive’ interpretation is not possible, the overt presence of *ma^M*- (perfect) is not required, so that the prefix may be suppressed without change of meaning. An arrival at PLA early in the same day as TLA is particularly appropriate to the use of the perfective (= progressive) form of this verb. INTENTIVE forms are interpreted iteratively or as forecasting a future arrival. COMPLETIVE forms report an arrival prior to TLA. Sentences (19) through (21) are appropriate to the situations represented in the corresponding figures.⁵

(18)

| | 1s | 2 | 3 |
|---|-------------------------|-------------------------|-------------------------|
| P | <i>gwǎ^{LM}</i> | <i>gwǎ^{PM}</i> | <i>gwǎ^{LM}</i> |
| I | <i>gwǎ^H</i> | <i>gwǎ^{PM}</i> | <i>gwǎ^M</i> |
| C | <i>gwǎ^L</i> | <i>gwǎ^{PL}</i> | <i>gwǎ^L</i> |

(19) *gwǎ^{LM}* *za^M* *ma^Mʔmǐg^M*
 arrive[^]P3 3 earlier
 He arrived (here) earlier today.

ma^M-gwǎ^{LM} *tǝ^{LM}*
 PRF-arrive[^]P3 teacher
 The teacher has arrived (here).

ka^M-gwǎ^L *za^M* *zyóg^M*
 PST-arrive[^]C3 3 yesterday
 He arrived (here) yesterday.

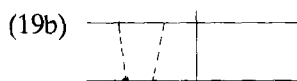
³The concept BASE is explained in §3.

⁴Person-aspect paradigms are presented in the form of a matrix. Columns from left to right present first-, second-, and third-person forms, respectively. Rows from top to bottom present progressive, intentive, and completive forms, respectively.

⁵Both (19a) and (19b) are appropriate to any of the sentences of (19).

- (20) $gwá^M$ za^M $ně^L$
 arrive^{^13} 3 today
 He will arrive (here) today.

- (21) $gwá^M$ za^M $hme^{H\bar{L}H}$
 arrive^{^13} 3 occasionally
 He arrives (here) occasionally.



2.2. $zyóg^{LM}$ 'arrive at NONBASE away from PLA'. The person-aspect paradigm of this verb is presented in (22). PROGRESSIVE forms of this verb are used only iteratively. Inasmuch as the arrival is away from PLA and the observance of the interlocutors, a perfective use of this verb is not appropriate. INTENTIVE forms forecast a future arrival; completive forms an arrival prior to TLA. Sentences (23) through (25) are appropriate to the situations represented in the corresponding figures.

- | | | | |
|------|-------------|--------------|-------------|
| (22) | 1s | 2 | 3 |
| P | $zyóg^{LM}$ | $zyóg^{PLM}$ | $zyóg^{LM}$ |
| I | $zyóg^{MH}$ | $zyóg^{PMH}$ | $zyóg^{MH}$ |
| C | $zyóg^L$ | $zyóg^{PL}$ | $zyóg^L$ |

- (23) $hme^{H\bar{L}H}$ $zyóg^{LM}$ za^M he^{PLH}
 occasionally arrive^{^P3} 3 Barrio
 Only occasionally does he arrive (there) at Barrio.

- (24) $zyóg^{MH}$ za^M he^{PLH} $?yóg^L$
 arrive^{^13} 3 Barrio tomorrow
 He will arrive (there) at Barrio tomorrow.

- (25) ka^M - $zyóg^L$ za^M he^{PLH} $cī^{PM}$ mayo
 PST-arrive^{^c3} 3 Barrio month May
 He arrived (there) at Barrio in May.



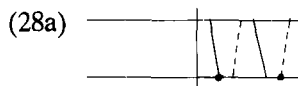
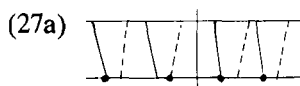
2.3. *ha^M* ‘move to NONBASE toward PLA’. The person-aspect paradigm of this verb is presented in (26). It is composed of three suppletive stems, one for each of the three persons.

| | | | |
|------|-------------------------|-------------------------|------------------------|
| (26) | 1s | 2 | 3 |
| P | <i>gyo^{LM}</i> | <i>ɲeɾ^M</i> | <i>ha^M</i> |
| I | <i>gyo^{LH}</i> | <i>ɲeɾ^{LH}</i> | <i>hyá^L</i> |
| C | <i>gyo^L</i> | <i>ɲeɾ^L</i> | <i>há^I</i> |

PROGRESSIVE forms of this verb are always interpreted iteratively, intensive forms as future, iterative or not. Compare sentences (27) and (28) with the corresponding figures.

- (27) *hma^Lka^M·ɾni^{LM}* *hmǝ^{MH}* *ha^M* *za^M*
 each-three day come[^]P3 3
 He comes every other day.

- (28) *ɾliǝ^M* *ɾáɪ^M* *hyá^L* *za^M*
 many times come[^]I3 3
 He will come many times.

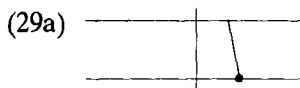


The completive form of this verb competes with and is often replaced by the completive form of *gwa^{LM}* ‘arrive at NONBASE toward PLA’. Evidently, once the motion toward PLA is complete and the arrival accomplished, the verb which focuses on the arrival is considered more appropriate than that which focuses on the motion related to the arrival.

There is a context, however, in which the completive form of *ha^M* is appropriate. A locative word collocated with a verb of motion can have semantic reference to the point of origin of the motion, its SOURCE, or to its point of destination, its GOAL. The difference between SOURCE and Goal

is not marked syntactically, and only the context can provide the information required to distinguish the two. Thus, out of context, a sentence like (29) has two interpretations. It may mean that PLA is the town of Barrio, and that the speaker states an intention to return there on the morrow, or PLA is some other NONBASE than Barrio, and the speaker states an intention to return to the NONBASE PLA from Barrio on the morrow.⁶

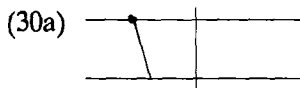
- (29) *gyo^{LH} hniá^M hɛʔ^{LH} ʔyóg^L*
 come[^]_{11s} 1s Barrio tomorrow
 I will return (here) to Barrio tomorrow *or*
 I will return (here) from Barrio tomorrow.



The completive form of *ha^M* is used to indicate motion prior to TLA toward PLA from a named SOURCE, but it is otherwise replaced by the completive form of *gwá^{LM}* to indicate motion prior to TLA toward PLA (with attending arrival). Paired sentences with a completive form of each of these verbs, as in (30), are particularly appropriate.

- (30) *ka^M-gyo^L hniá^M hɛʔ^{LH} zyóg^M*;
 PST-come[^]_{C1s} 1s Barrio yesterday
 I came from Barrio yesterday;

ma^M-nei^M ka^M-gwá^L hniá^M.
 PRF-dark PST-arrive[^]_{C1s} 1s
 I arrived (here) after dark.

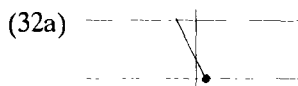
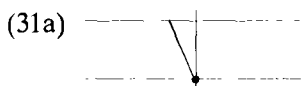


⁶The 'dot' in diagrams (29b) and (30a) indicate SOURCE rather than GOAL.

With the perfective prefix *ma^M-*, the completive stem of this verb is particularly appropriate to a situation where an AGENT arrives at PLA at TLA. The third-person stem is anomalous in this regard, however, in having a fourth inflected form, *há^{LM}*, with stress-tone inflection typical of a progressive form and yet different from *ha^M*.⁷ It is used as a perfective, with or without the overt presence of *ma^M-* (perfect). Sentence (31) is appropriate as an opening greeting upon arrival at the home of an acquaintance. Sentence (32) may be used when someone is in view and approaching PLA.

- (31) *hniá^M ma^M-gyo^L ka^Mba^{LH}*
 1s PRF-COME ^C1s compadre
 I have come, compadre.

- (32) *za^M ma^M-há^{LM} mag^{LH}*
 3 PRF-COME ^P3 mother
 Someone is coming, mother.



2.4. *zó^{LM}* ‘move to NONBASE away from PLA’. The person-aspect paradigm of this verb is comprised of a bewildering collection of five suppletive stems, all occurring with singular agents. A sixth stem is used with a first-person plural agent, and is introduced at this point because of its probable inflectional relationship to *zó^{LM}*, the third-person stem. The various stems are presented in (33)⁸ and (34).

- | | | | | |
|------|-------------------------|-------------------------|-------------------------|------------------------|
| (33) | 1s | 1p | 2 | 3 |
| P | <i>nei^{LM}</i> | <i>záu^{LM}</i> | <i>góg^{LM}</i> | <i>zó^{LM}</i> |
| I | <i>nei^{LH}</i> | <i>zau^{LH}</i> | <i>gog^{LH}</i> | <i>zó^L</i> |
| C | — | — | — | — |

⁷Pace (this volume, §2.4 and §3.6) reports a similar minor pattern for Comaltepec Chinantec which suggests that *ha^M* is actually HABITUAL while *há^{LM}* is the true PROGRESSIVE form of this verb.

⁸In matrices of four columns, the first plural forms are presented as the second column, between first singular and second-persons.

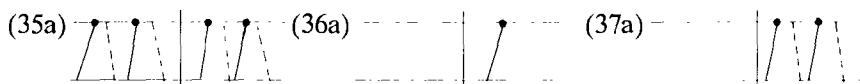
- (34)
- | | | |
|------------------------|---------------------|----------------------|
| 1s | 2 | 3 |
| P $\eta\acute{o}^{LM}$ | $zy\acute{o}g^{PM}$ | $\eta\acute{o}^{LM}$ |
| I ——— | ——— | ——— |
| C $\eta\acute{o}^L$ | $zy\acute{o}g^{PM}$ | $\eta\acute{o}^L$ |

PROGRESSIVE forms of (33) are always interpreted iteratively, intensive forms as future, iterative or not. Sentences (35) through (37) and the corresponding figures illustrate these uses.

- (35) $hme^{Hj}LH$ nei^{LM} $hni\acute{a}^M$ $i^Hkw\ddot{i}r^{PM}$
 occasionally go^{1s} 1s Oaxaca
 Only occasionally do I go to Oaxaca.

- (36) zau^{LH} $hnia^{LH}$ $i^Hkw\ddot{i}r^{PM}$ $?y\acute{o}g^L$
 go^{11p} 1p Oaxaca tomorrow
 We will go to Oaxaca tomorrow.

- (37) $hma^Lka^M-?ni^{LM}$ $hm\ddot{ig}^{MH}$ $z\acute{o}^L$ za^M
 each-three day go¹³ 3
 He will go every other day.



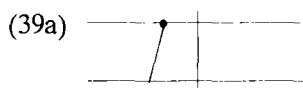
The intensive forms of (33) may occur with ma^M - (perfect), and are then synonymous with the progressive forms of (34) which are always interpreted perfectly, with or without the overt presence of ma^M - (perfect). Any of these forms are appropriate to a leave-taking situation, as in (38).

- (38) ma^M-nei^{LH} $hni\acute{a}^M$
 PRF-go^{11s} 1s
 I am going now.
- $ma^M-\eta\acute{o}^{LM}$ $hni\acute{a}^M$
 PRF-go^{11s} 1s
 I am going now.



A third-person completive form of (33) is illustrated in (39), and is perfectly acceptable to the situation represented in the accompanying diagram. Because of the requirement that first- and second-person be present at the intersection of PLA and TLA,⁹ however, first- or second-person completive forms of this verb are only rarely heard¹⁰—usually being replaced by the completive form of ηe^{MH} , which is introduced immediately below.

- (39) ka^M - $\eta\acute{o}^L$ za^M hwi^{LM} $m\acute{a}^M$
 PST-go^{C3} 3 road mountain
 He went to the mountain.



2.5. ηe^{MH} 'move to GOAL away from PLA and return away from GOAL'.
 The person-aspect paradigm of this verb, presented in (40), is limited to completive aspect forms which are interpreted as straight past when occurring with tense prefixes, and otherwise as perfective, with or without the overt presence of ma^M - (perfect). It is further defective in comparison with the other verbs introduced in that it is appropriately used whether the GOAL is a BASE or a NONBASE. Sentences (41) and the corresponding figure illustrate the use of this verb. Comparison of the figure with (39a) gives an indication of the similarity of this verb with the situations which would be appropriate to the use of the completive form of $z\acute{o}^{LM}$ with first- or second-person agent. Since a return to PLA from GOAL is required for a first- or second-person, the situation becomes isomorphic with that represented in (41a), thus providing motivation for the use of ηe^{MH} in place of $z\acute{o}^{LM}$ in such contexts.

⁹As Fillmore has noted, there are situations in which first- and second-persons may not be located at precisely the same points in space, thus complicating the definition of PLA. We have not addressed ourselves to such situations in this paper.

¹⁰They are acceptable in subordinated temporal clauses such as $hme^{II}ka^M\eta\acute{e}^L$ $hni\acute{a}^M$ 'After I have gone, ...'.

- (40)
- | | | | |
|---|---------------|----------------------|---------------|
| | 1s | 2 | 3 |
| P | _____ | _____ | _____ |
| l | _____ | _____ | _____ |
| C | ηe^{MH} | $\eta e^{\gamma LH}$ | ηe^{MH} |

- (41) ηe^{MH} $hniá^M$ $i^Hkwĩ^{\gamma M}$
 go[^]C1s 1s Oaxaca
 I have been to Oaxaca.

$ma^M-\eta e^{MH}$ $hniá^M$ $i^Hkwĩ^{\gamma M}$
 PRF-go[^]C1s 1s Oaxaca
 I have been to Oaxaca.

$zyó^g^M$ $ka^M-\eta e^{MH}$ $hniá^M$ $ha^H-kyó^L$
 yesterday PST-go[^]C1s 1s at-of[^]1s
 I went home (and came back) yesterday.

- (41a)
-

3. The concept BASE

A small set of Chinantec verbs may be inflected to indicate that an action is not, in some sense, a first-time action. The pairs of (42) are typical.

- (42)
- | | | | | |
|------------|----------|--------|--------------------|--------|
| hmo^{LM} | make, do | versus | $hmóg^{\gamma LM}$ | repair |
| $?me^{LM}$ | sew | versus | $?méi^{LM}$ | mend |
| $?ag^{LM}$ | set | versus | $?ág^{\gamma LM}$ | reset |

This inflectional category has been termed ECHO (Merrifield 1968:30f). With verbs of motion and arrival, it gives the idea of BASE, a place to which an agent tends to return when his day's work or his journey is over—his home, his home town, his home State, etc., depending upon the order of magnitude of the distance traversed.

Each of the verbs introduced above, with the exception of ηe^{MH} as mentioned, is matched by a corresponding inflected form indicating that the GOAL of the motion or arrival is the agent's BASE. Since the phonological realization of this category is complex and remains unanalyzed, we list the full paradigms of the corresponding inflected forms. Their distribution with

aspects in each case, however, matches that of the corresponding uninflected form, and requires no further comment.

- (43) $gw\acute{a}p^{LM}$ arrive at BASE toward PLA

| | 1s | 2 | 3 |
|---|---------------------|---------------------|---------------------|
| P | $gw\acute{a}p^{LM}$ | $gw\acute{a}p^{LM}$ | $gw\acute{a}p^{LM}$ |
| I | $gw\acute{a}p^M$ | $gw\acute{a}p^M$ | $gw\acute{a}p^M$ |
| C | $gw\acute{a}p^L$ | $gw\acute{a}p^L$ | $gw\acute{a}p^L$ |

- (44) $zy\acute{a}p^{LM}$ arrive at BASE away from PLA

| | 1s | 2 | 3 |
|---|---------------------|---------------------|---------------------|
| P | $zy\acute{a}p^{LM}$ | $zy\acute{a}p^{LM}$ | $zy\acute{a}p^{LM}$ |
| I | $zy\acute{a}p^{MH}$ | $zy\acute{a}p^{MH}$ | $zy\acute{a}p^{MH}$ |
| C | $zy\acute{a}p^L$ | $zy\acute{a}p^L$ | $zy\acute{a}p^L$ |

- (45) $h\phi p^M$ move to BASE toward PLA¹¹

| | 1s | 2 | 3 |
|---|-----------------|-----------------------|-------------------|
| P | $gy\phi p^{LM}$ | $\eta\acute{e}p^{LM}$ | $h\phi p^M$ |
| I | $gy\phi p^{MH}$ | $\eta\acute{e}p^{MH}$ | $h\eta y\phi p^L$ |
| C | $gy\phi p^L$ | $\eta\acute{e}p^L$ | $h\phi p^L$ |

- (46) $z\acute{a}p^{LM}$ move to BASE away from PLA

| | 1s | 1p | 2 | 3 |
|---|-----------------------|----------------------|---------------------|-----------------------|
| P | $n\acute{e}p^{LM}$ | $z\acute{a}u p^{LM}$ | $gw\acute{a}p^M$ | $z\acute{a}p^{LM}$ |
| I | $n\acute{e}p^{MH}$ | $z\acute{a}u p^{LH}$ | $gw\acute{a}p^{LH}$ | $z\acute{a}p^L$ |
| C | — | — | — | — |
| P | $\eta\acute{a}p^{LM}$ | | $zy\acute{a}p^M$ | $\eta\acute{a}p^{LM}$ |
| I | — | | — | — |
| C | $\eta\acute{a}p^L$ | | $zy\acute{a}p^M$ | $\eta\acute{a}p^L$ |

¹¹The third-person stem of this verb has a fourth inflected form $h\phi p^{LM}$ which corresponds exactly to the extra form of ha^M (§2.3).

4. DIRECTIONAL prefixes

Most Chinantec verbs may occur with a phonologically reduced form of a motion verb as a DIRECTIONAL prefix which indicates the direction of motion by an agent prior to the performance of the action indicated by the main verb. Compare the sentences of (47) in which the prefix *o^L-* of the second indicates motion of the agent to, with attending arrival at, PLA prior to performing his search.

- (47) *ka^M-ʔnioʔ^M za^M kwig^{MH}*
 PST-look[^]c3 3 firewood
 He looked for firewood.

ka^M-o^L-ʔnioʔ^M za^M kwig^{MH}
 PST-go[^]c3-look 3 firewood
 He came and looked for firewood.

The person-aspect paradigm of directional prefixes is presented in (48). The stress-tone pattern of the verb stem which follows a directional prefix, though complex and yet unanalyzed, is presumably derivable from automatic morphophonemic rules.¹² A small sample of illustrative sentences with the verb *lóʔ^{LM}* 'bathe' is presented in (49).

- (48) *ha^M-* move toward PLA
- | | | | | |
|---|----------------------|-----------------------|----------------------|-----------------------|
| | 1s | 1p | 2 | 3 |
| P | <i>i^M</i> | <i>ha^M</i> | <i>i^M</i> | <i>ha^M</i> |
| 1 | <i>i^H</i> | <i>ha^H</i> | <i>i^H</i> | <i>ha^L</i> |
| C | <i>o^L</i> | <i>o^L</i> | <i>o^L</i> | <i>o^L</i> |

zi^M- move away from PLA

| | | | | |
|---|----------------------|-----------------------|----------------------|-----------------------|
| | 1s | 1p | 2 | 3 |
| P | <i>i^M</i> | <i>zi^M</i> | <i>o^M</i> | <i>zi^M</i> |
| 1 | <i>i^H</i> | <i>zi^H</i> | <i>o^H</i> | <i>zi^L</i> |
| C | <i>i^L</i> | <i>i^L</i> | <i>i^L</i> | <i>i^L</i> |

¹²Since this research was undertaken, Rupp (1989:15) has determined for Lealao Chinantec that "regardless of the aspectual inflection of the directional prefix, the [verb stem which follows] has the inflection (in almost all cases) of the corresponding nondirectional, same-person completive form of the root." If this proves to be true of Tepetotutla Chinantec, the morphophonemic hypothesis can be discarded.

i^H- move away from PLA and return

| | 1s | 1p | 2 | 3 |
|---|-----------------------|-----------------------|-----------------------|-----------------------|
| P | _____ | _____ | _____ | _____ |
| I | _____ | _____ | _____ | _____ |
| C | <i>i</i> ^H | <i>i</i> ^H | <i>i</i> ^H | <i>i</i> ^H |

- (49) *ka*^M-*lió*?^{LH} *hnia*?^{LH}
 come[^]P1p-bathe 1p
 We come and bathe [iteratively].

i^H-*lió*?^L *hniá*^M
 go/come[^]I1s-bathe 1s
 I will go/come bathe.

zi^L-*lió*?^M *za*^M
 go[^]I3-bathe 3
 He will go and bathe.

ka^M-*o*^L-*lió*?^M *?ne*^M
 PST-come[^]C2-bathe 2s
 You came and bathed.

ka^M-*i*^H-*lió*?^{LH} *hnia*?^{LH}
 PST-go&come[^]C1p-bathe 1p
 We went and bathed (and returned).

5. Plural agents

There are a small number of Chinantec stems which always occur with a directional prefix. These stems are called DIRECTIONAL stems (Merrifield 1968:24). They occur with only a subset of directional prefixes, and they are always pseudodirectional in meaning. Examples are presented in (50).

- (50) *ka*^M-*i*^L-*ga*?^{LH} *za*^M
 PST-go[^]C3-fall[^]down 3
 They fell down.

zi^M-*bi*^{LH} *?wě*^L
 go[^]P3-shake ground
 The ground is quaking.

ka^M-i^L-kó^L kwīg^M
 PST-go[^]c3-grow corn
 The corn grew.

The plural forms of verbs of motion and arrival—those which occur with plural agents—are based on three suppletive, directional stems. They always occur with a directional prefix, but are otherwise atypical of other directional stems or other verbs occurring with directional prefixes in that they occur with a larger paradigm of prefixes based both on verbs of motion and verbs of arrival. The plural forms match one-for-one the inflectional patterns for aspect and base of the singular verbs with two exceptions: (1) there is only one paradigm for the verb meaning to move away from PLA, and (2) there is a separate inflected form for the verb indicating round trip motion when the GOAL is the agent's base. The full paradigms are presented in (51), with the citation form of the corresponding singular-agent verb.

(51) *gwə^{LM}* arrive at NONBASE toward PLA

| | 1p | 2p | 3p |
|---|--------------------------------------|--------------------------------------|------------------------------------|
| P | <i>o^Mnáu^{LM}</i> | <i>o^Mnóʔ^{LM}</i> | <i>o^Mlě^M</i> |
| I | <i>o^Hnáu^{MH}</i> | <i>o^Lnóʔ^{LM}</i> | <i>o^Hlě^M</i> |
| C | <i>o^Lnáu^{LM}</i> | <i>o^Lnóʔ^{LM}</i> | <i>o^Llě^M</i> |

zyóg^{LM} arrive at NONBASE away from PLA

| | 1p | 2p | 3p |
|---|---------------------------------------|---------------------------------------|-------------------------------------|
| P | <i>zi^Mnáu^{LM}</i> | <i>zi^Mnóʔ^{LM}</i> | <i>zi^Mlě^M</i> |
| I | <i>zi^Hnáu^{LM}</i> | <i>zi^Hnóʔ^{LM}</i> | <i>zi^Hlě^M</i> |
| C | <i>zi^Lnáu^{LM}</i> | <i>zi^Lnóʔ^{LM}</i> | <i>zi^Llě^M</i> |

ha^M move to NONBASE toward PLA

| | 1p | 2p | 3p |
|---|---------------------------------------|---------------------------------------|-------------------------------------|
| P | <i>ha^Mnáu^{LM}</i> | <i>ha^Mnóʔ^{LM}</i> | <i>ha^Mlě^M</i> |
| I | <i>ha^Hnáu^{MH}</i> | <i>ha^Hnóʔ^{MH}</i> | <i>ha^Llě^M</i> |
| C | <i>ha^Lnáu^{LM}</i> | <i>ha^Lnóʔ^{LM}</i> | <i>ha^Llě^M</i> |

$z\acute{o}^{LM}$ move to NONBASE away from PLA

| | 1p | 2p | 3p |
|---|---------------------------------|---------------------------------|-----------------------------|
| P | $z\acute{i}^M n\acute{a}u^{LM}$ | $o^M n\acute{o} \acute{p}^{LM}$ | $z\acute{i}^M l\acute{e}^M$ |
| I | $z\acute{i}^H n\acute{a}u^{MH}$ | $o^H n\acute{o} \acute{p}^{LM}$ | $z\acute{i}^L l\acute{e}^M$ |
| C | $i^L n\acute{a}u^{LM}$ | $i^L n\acute{o} \acute{p}^{LM}$ | $i^L l\acute{e}^M$ |

ηe^{MH} move to NONBASE away from PLA and return toward PLA

| | 1p | 2p | 3p |
|---|------------------------|---------------------------------|-----------------------|
| P | _____ | _____ | _____ |
| I | _____ | _____ | _____ |
| C | $i^H n\acute{a}u^{MH}$ | $i^H n\acute{o} \acute{p}^{MH}$ | $i^H l\acute{e}^{LH}$ |

$g w \acute{a} \acute{p}^{LM}$ arrive at BASE toward PLA

| | 1p | 2p | 3p |
|---|--------------------|------------------------------|--------------------|
| P | $o^M n\acute{o}^L$ | $o^M n\acute{o} \acute{p}^L$ | $o^M l\acute{e}^L$ |
| I | $o^H n\acute{o}^L$ | $o^H n\acute{o} \acute{p}^L$ | $o^H l\acute{e}^L$ |
| C | $o^L n\acute{o}^L$ | $o^L n\acute{o} \acute{p}^L$ | $o^L l\acute{e}^L$ |

$z y \acute{a} \acute{p}^{LM}$ arrive at BASE away from PLA

| | 1p | 2p | 3p |
|---|-----------------------------|---------------------------------------|-----------------------------|
| P | $z\acute{i}^M n\acute{o}^L$ | $z\acute{i}^M n\acute{o} \acute{p}^L$ | $z\acute{i}^M l\acute{e}^L$ |
| I | $z\acute{i}^H n\acute{o}^L$ | $z\acute{i}^H n\acute{o} \acute{p}^L$ | $z\acute{i}^H l\acute{e}^L$ |
| C | $z\acute{i}^L n\acute{o}^L$ | $z\acute{i}^L n\acute{o} \acute{p}^L$ | $z\acute{i}^L l\acute{e}^L$ |

$h \acute{o} \acute{p}^M$ move to BASE toward PLA

| | 1p | 2p | 3p |
|---|-----------------------------|--|-----------------------------|
| P | $h\acute{a}^M n\acute{o}^L$ | $h\acute{a}^M n\acute{o} \acute{p}^L$ | $h\acute{a}^M l\acute{e}^L$ |
| I | $h\acute{a}^H n\acute{o}^H$ | $h\acute{a}^H n\acute{o} \acute{p}^{MH}$ | $h\acute{a}^L l\acute{e}^L$ |
| C | $h\acute{a}^L n\acute{o}^L$ | $h\acute{a}^L n\acute{o} \acute{p}^L$ | $h\acute{a}^L l\acute{e}^L$ |

$z\acute{a}l^{LM}$ move to BASE away from PLA

| | 1p | 2p | 3p |
|---|------------|-------------|------------|
| P | zi^Mno^L | $o^Mno^?L$ | zi^Mle^L |
| I | zi^Hno^H | $o^Hno^?MH$ | zi^Lle^L |
| C | i^Lno^L | $i^Lno^?L$ | i^Lle^L |

ηe^{MH} move to BASE away from PLA and return toward PLA

| | 1p | 2p | 3p |
|---|-----------|-------------|-----------|
| P | _____ | _____ | _____ |
| I | _____ | _____ | _____ |
| C | i^Hno^H | $i^Hno^?MH$ | i^Hle^L |

6. Bringing and taking

There are a number of inflectionally related stems which indicate the movement of an object by an agent, and which translate readily by the English verbs 'bring' and 'take'.

6.1. There is, first of all, a stative¹³ stem which simply indicates the transporting of an object (or objects) without indicating the direction of motion. This stem may collocate with a verb of motion in paired sentences as in (52) and (53).

- (52) nei^{LM} $hni\acute{a}^M$ $m\acute{a}^?M$. $ky\acute{a}^{MH}$ $hni\acute{a}^M$ $\eta i^Ht\acute{a}g^M$ $ky\acute{o}^L$.
 go[^]P1s 1s mountain carry[^]S1s 1s machete of[^]1s
 I go to the mountain, and I carry my machete.

- (53) ka^M - gyo^L $hni\acute{a}^M$ $m\acute{a}^?2$. hme^H - $ky\acute{a}^H$ $hni\acute{a}^M$
 PST-come[^]C1s 1s mountain IMPF-carry[^]S1s 1s
 I came from the mountain, and was carrying

$\eta i^Ht\acute{a}g^M$ $ky\acute{o}^L$.
 machete of[^]1s
 my machete.

¹³A stative stem may occur with ma^M - (perfect) or hme^H - (imperfect), but does not otherwise occur with aspectual inflection as do active stems (Merrifield 1968:22f). A more complete definition can be found in Rupp 1989:5, 12ff.

The stative form may be inflected to indicate that the object being carried is being returned to BASE, as in (54).

- (54) ka^M - $gwá^L$ za^M . hme^H - kyo^M za^M $\eta i^H tág^M$.
 PST-arrive^here^C3 3 IMPF-carry^S3 3 machete
 He arrived home (here), carrying (his) machete.

The stative paradigm of this verb, inflected for first singular, first plural, second, and third-person agents, and for NONBASE and BASE, respectively, is given in (55).

- (55) $kyá^{LM}$ carry to NONBASE
- | | | | | |
|---|------------|------------|------------|------------|
| | 1s | 1p | 2 | 3 |
| S | $kyá^{MH}$ | $kyá^{MH}$ | $kyá^{LH}$ | $kyá^{LM}$ |
- kyo^M carry to BASE
- | | | | | |
|---|------------|------------|------------|---------|
| | 1s | 1p | 2 | 3 |
| S | kyo^{MH} | kyo^{MH} | kyo^{LH} | kyo^M |

6.2. There is also an active stem which may be inflected for BASE as well. The active stem places more emphasis on taking or bringing an object to a GOAL, although the direction in relation to PLA is not marked. The person-aspect paradigms for NONBASE and BASE, respectively, are presented in (56) and (57). The pattern of palatalization and vowel change for part of the paradigm is a regular pattern for many Chinantec verbs. Examples are given in (58) and (59).

- (56) $ká^M$ carry to NONBASE
- | | | | | |
|---|-----------|---------|------------|--------|
| | 1s | 1p | 2 | 3 |
| P | $ká^{MH}$ | $kyá^M$ | $ká^{?M}$ | $ká^M$ |
| I | $ká^{LH}$ | $kyá^H$ | $ká^{?H}$ | $ká^M$ |
| C | $ká^L$ | $kyá^H$ | $kyá^{?M}$ | $ká^L$ |

- (57) $kó^M$ carry to BASE
- | | | | | |
|---|------------|------------|-------------|---------|
| | 1s | 1p | 2 | 3 |
| P | $káu^{LM}$ | kyo^M | $káu^{?MH}$ | $kó^M$ |
| I | $káu^{MH}$ | kyo^{LH} | $káu^{?LH}$ | $kó^M$ |
| C | $káu^L$ | kyo^{LH} | $kyo^{?M}$ | $káu^L$ |

- (58) *gyo^{LH} hniá^M. kə^{LH} hniá^M ŋi^Htág^M.*
 come^{^11s 1s} carry^{^11s 1s} machete
 I will come, and will bring (along) a machete.
- (59) *nei^{LH} hniá^M. kə^{LH} hniá^M ŋi^Htág^M.*
 go^{^11s 1s} carry^{^11s 1s} machete
 I will go, and will take (along) a machete.

6.3. Neither the stative nor the active forms of this verb indicates the direction of motion in relation to PLA. The active stem, however, may occur with directional prefixes which do. Curiously enough, when occurring with directional prefixes, there are nonpalatal forms of the stem to indicate that the motion of the agent and the object are simultaneous and in the the same direction, and palatal forms to indicate that after initial motion by the agent in one direction, he returns in the opposite direction with the object. The full paradigm of this verb with directional prefixes is presented in (60) through (71).

- (60) *ha^Mkə^{LM}* come carrying to NONBASE¹⁴

| | 1s | 1p | 2 | 3 |
|---|-------------------------------------|--------------------------------------|--------------------------------------|--------------------------------------|
| P | <i>i^Mkə^{MH}</i> | <i>ha^Mkə^{MH}</i> | <i>i^Mkə^{ʔLH}</i> | <i>ha^Mkə^{LM}</i> |
| I | <i>i^Hkə^H</i> | <i>ha^Hkə^H</i> | <i>i^Hkə^{ʔMH}</i> | <i>ha^Lkə^{LM}</i> |
| C | <i>o^Lkə^{MH}</i> | <i>o^Lkə^{MH}</i> | <i>o^Lkə^{ʔLH}</i> | <i>o^Lkə^{LM}</i> |

- (61) *zi^Mkə^{LM}* go carrying to NONBASE¹⁵

| | 1s | 1p | 2 | 3 |
|---|-------------------------------------|--------------------------------------|--------------------------------------|--------------------------------------|
| P | <i>i^Mkə^{MH}</i> | <i>zi^Mkə^{MH}</i> | <i>o^Mkə^{ʔMH}</i> | <i>zi^Mkə^{LM}</i> |
| I | <i>i^Hkə^H</i> | <i>zi^Hkə^H</i> | <i>o^Hkə^{ʔMH}</i> | <i>zi^Lkə^{LM}</i> |
| C | — | — | — | <i>i^Lkə^{LM}</i> |

¹⁴First- singular- and second-person progressive and intensive forms of this verb and of that in (63), (66), and (69), also occur with the prefix *ha-* rather than *i-*, apparently on the analogy of plural motion verbs (§5).

¹⁵This verb and that of (64), (67), and (70), have alternate third-person progressive forms with *i^M-* which are interpreted as PERFECTIVE, with or without the overt presence of *ma^M-* (perfect).

- (62)
- $i^Hk\grave{a}^{LM}$
- go carrying to NONBASE and return

| | 1s | 1p | 2 | 3 |
|---|-------------------|-------------------|---------------------|----------------------|
| P | _____ | _____ | _____ | _____ |
| I | _____ | _____ | _____ | _____ |
| C | $i^Hk\grave{a}^H$ | $i^Hk\grave{a}^H$ | $i^Hk\grave{a}^?MH$ | $i^Hk\grave{a}^{LM}$ |

- (63)
- $ha^Mky\grave{a}^M$
- come and take to NONBASE

| | 1s | 1p | 2 | 3 |
|---|--------------------|---------------------|---------------------|---------------------|
| P | $i^Mky\grave{a}^L$ | $ha^Mky\grave{a}^M$ | $i^Mky\grave{a}^?M$ | $ha^Mky\grave{a}^M$ |
| I | $i^Hky\grave{a}^L$ | $ha^Hky\grave{a}^H$ | $i^Hky\grave{a}^?M$ | $ha^Lky\grave{a}^M$ |
| C | $o^Lky\grave{a}^L$ | $o^Lky\grave{a}^H$ | $o^Lky\grave{a}^?L$ | $o^Lky\grave{a}^M$ |

- (64)
- $zi^Mky\grave{a}^M$
- go and bring to NONBASE

| | 1s | 1p | 2 | 3 |
|---|--------------------|---------------------|---------------------|---------------------|
| P | $i^Mky\grave{a}^L$ | $zi^Mky\grave{a}^M$ | $o^Mky\grave{a}^?M$ | $zi^Mky\grave{a}^M$ |
| I | $i^Hky\grave{a}^L$ | $zi^Hky\grave{a}^H$ | $o^Hky\grave{a}^?M$ | $zi^Lky\grave{a}^M$ |
| C | _____ | _____ | _____ | $i^Lky\grave{a}^M$ |

- (65)
- $i^Hky\grave{a}^{LH}$
- go and return, bringing to NONBASE

| | 1s | 1p | 2 | 3 |
|---|--------------------|-----------------------|---------------------|-----------------------|
| P | _____ | _____ | _____ | _____ |
| I | _____ | _____ | _____ | _____ |
| C | $i^Hky\grave{a}^L$ | $i^Hky\grave{a}^{LH}$ | $i^Hky\grave{a}^?M$ | $i^Hky\grave{a}^{LH}$ |

- (66)
- $ha^Mk\phi^L$
- come carrying to BASE

| | 1s | 1p | 2 | 3 |
|---|-----------------|------------------|----------------|---------------|
| P | $i^Mk\phi^{MH}$ | $ha^Mk\phi^{MH}$ | $i^Mk\phi^?MH$ | $ha^Mk\phi^L$ |
| I | $i^Hk\phi^H$ | $ha^Hk\phi^H$ | $i^Hk\phi^?MH$ | $ha^Lk\phi^L$ |
| C | $o^Lk\phi^L$ | $o^Lk\phi^{MH}$ | $o^Lk\phi^?LH$ | $o^Lk\phi^L$ |

- (67)
- $zi^Mk\phi^L$
- go carrying to BASE

| | 1s | 1p | 2 | 3 |
|---|--------------|------------------|----------------|---------------|
| P | $i^Mk\phi^L$ | $zi^Mk\phi^{MH}$ | $o^Mk\phi^?MH$ | $zi^Mk\phi^L$ |
| I | $i^Hk\phi^H$ | $zi^Hk\phi^H$ | $o^Hk\phi^?MH$ | $zi^Lk\phi^L$ |
| C | _____ | _____ | _____ | $i^Lk\phi^L$ |

- (68)
- $i^Hk\phi^M$
- go taking to BASE and return

| | 1s | 1p | 2 | 3 |
|---|--------------|--------------|----------------|--------------|
| P | _____ | _____ | _____ | _____ |
| I | _____ | _____ | _____ | _____ |
| C | $i^Hk\phi^H$ | $i^Hk\phi^H$ | $i^Hk\phi^?MH$ | $i^Hk\phi^M$ |

- (69)
- $ha^Mky\phi^L$
- come and take to BASE

| | 1s | 1p | 2 | 3 |
|---|---------------|-------------------|----------------|----------------|
| P | $i^Mky\phi^L$ | $ha^Mky\phi^{LH}$ | $i^Mky\phi^?M$ | $ha^Mky\phi^L$ |
| I | $i^Hky\phi^L$ | $ha^Hky\phi^{LH}$ | $i^Hky\phi^?M$ | $ha^Lky\phi^L$ |
| C | $o^Lky\phi^L$ | $o^Lky\phi^{LH}$ | $o^Lky\phi^?M$ | $o^Lky\phi^L$ |

- (70)
- $zi^Mky\phi^L$
- go and bring to BASE

| | 1s | 1p | 2 | 3 |
|---|---------------|-------------------|----------------|----------------|
| P | $i^Mky\phi^L$ | $zi^Mky\phi^{LH}$ | $o^Mky\phi^?M$ | $zi^Mky\phi^L$ |
| I | $i^Hky\phi^L$ | $zi^Hky\phi^{LH}$ | $o^Hky\phi^?M$ | $zi^Lky\phi^L$ |
| C | _____ | _____ | _____ | $i^Lky\phi^L$ |

- (71)
- $i^Hky\phi^M$
- go and return, bringing to BASE

| | 1s | 1p | 2 | 3 |
|---|---------------|------------------|----------------|---------------|
| P | _____ | _____ | _____ | _____ |
| I | _____ | _____ | _____ | _____ |
| C | $i^Hky\phi^L$ | $i^Hky\phi^{LH}$ | $i^Hky\phi^?M$ | $i^Hky\phi^M$ |

The paradigms of (61), (64), (67), and (70) are defective in first- and second-person completive forms since the presence of these agents at the intersection of PLA and TLA makes the situations which would underlie their use more appropriate to the use of (62), (65), (68), and (70), respectively. Their sources are indeed different, the prefixes of the first set being associated with $z\phi^{LM}$ 'move to NONBASE away from PLA' while those of the second are associated with ηe^{MH} 'move to GOAL away from PLA and return away from GOAL'.

References

- Fillmore, Charles J. 1966. Deictic categories in the semantics of 'come'. *Foundations of Language* 2:219–27.
- . 1969. Types of lexical information. In Kiefer (ed.), *Studies in syntax and semantics*, 109–37. Dordrecht: D. Reidel Publishing Company.
- . n.d. Toward a theory of deixis. ms.
- Kuiper, Albertha and William R. Merrifield. 1975. Diuxi Mixtec verbs of motion and arriving. *International Journal of American Linguistics* 41:32–45.
- Merrifield, William R. 1968. Palantla Chinantec grammar. *Papeles de la Chinantla* 5, Serie Científica 9. Museo Nacional de Antropología, México.
- Pace, Wanda Jane. 1990. Comaltepec Chinantec verb inflection. This volume.
- Rupp, James E. 1989. Lealao Chinantec syntax. *Studies in Chinantec languages* 2, Summer Institute of Linguistics and The University of Texas at Arlington Publications in Linguistics 88. Dallas: Summer Institute of Linguistics and The University of Texas at Arlington.
- Westley, David O. 1971. The Tepetotutla Chinantec stressed syllable. *International Journal of American Linguistics* 37:160–63.

Syllables, Tone, and Verb Paradigms

Studies in Chinantec Languages 4

Publications in Linguistics 95

This fourth volume of Chinantec studies differs from the first three in the series in being a collection of studies in which eight authors treat four distinct Chinantec languages. Lealao and Comaltepec Chinantec, represented in volumes 2 and 3 are here represented by two additional studies each. Whereas the earlier monographs focussed on syntax, four of these studies are phonological (one historical and three synchronic); two grammatical studies present data concerning the difficult verb paradigms of Comaltepec Chinantec and verbs of motion and arrival for Tepetotutla Chinantec, a language scheduled to receive more extensive treatment in a volume projected for this series in the near future.

Previous historical work by Rensch in Chinantecan and more generally in Otomanguean is furthered here by his study of the way Lealao fits into the Chinantecan picture and three synchronic phonologies from Comaltepec, Lealao, and Quiotepec begin to fill out our understanding of this interesting family of tone languages. The continuing documentation of the structure of Chinantec languages in this subseries should provide an invaluable resource for the development of our view of language in general.

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