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SOCHIAPAN CHINANTEC SYLLABLE STRUCTURE

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0. Introduction
1. Syllable onsets
2. Syllable peaks

0. The syllable structures of several Chinantec languages have been described in this journal and elsewhere.¹ This brief state-

¹ Roberto J. Weitlaner, the phonemic system of Chinantec, dialect of Chiltepec, Oaxaca, *Memoirs XXVIO Congreso Internacional de Americanistas, México*, 313-321 (1947); Frank E. Robbins, Quiotepec Chinantec syllable patterning, *IJAL* 27. 237-50 (1961) and Quiotepec Chinantec grammar, *Papeles de la Chinantla IV, Museo Nacional de Antropología, México* (1968); Leo E. Skinner, Usila Chinantec syllable structure, *IJAL* 28. 251-55 (1962); William R. Merrifield, Palantla Chinantec syllable types, *AL* 5.5.1-16 (1963); Calvin R. and Carolyn M. Rensch, The Lalana Chinantec syllable, *Summa Antropológica en homenaje a Roberto J. Weitlaner*, ed. by Antonio Pompa y Pompa, México. 455-63 (1966); David O. Westley, The Tepetotutla Chinantec stressed syllable, *IJAL* 37 (forthcoming 1971).

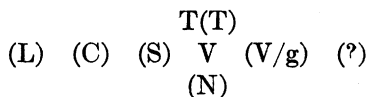
San Pedro Sochiapan is a municipio of the district of Cuicatlan, Oaxaca, and one of the westernmost Chinantec-speaking villages. The dialect is coterminous with the speech of the inhabitants of the village of San Pedro (who number about 1950), plus those of the nearby ranch Retumbadero, though the speech of the inhabitants of San Juan Zautla is completely understood and very similar phonologically. The present inhabitants of San Pedro pertain to two barrios, formerly separated but now joined. There are a few minor phonological differences between the speakers of the two barrios, as well as certain idiosyncrasies in the speech of some individuals which presumably are the result of marriage between natives of San Pedro and speakers from nearby Chinantec towns.

The data for this paper are based on residence in San Pedro from October 1970 to May 1971. I have been greatly helped in my study of Chinantec by the field notes of William and Shirley Rogers who preceded my wife and me in San Pedro, but who were forced to leave the location for health reasons. Several informants have been used, but these data have finally been checked with and represent the speech of Florentino Ramírez Maris-

ment of another sister language thus has as its chief end a broadening of our understanding of the phonological structure of this family of languages for comparative purposes.²

The (Sochiapan) Chinantec (phonological) word is constituted of one or more syllables, only one of which is stressed, usually the last. A great many words, probably a majority, are single, stressed syllables. The structure of stressed syllables is, thus, the focus of this paper. Unstressed syllables differ only in displaying a more limited distribution of phonemes. Stress is described in more detail below.

The essential components of a syllable (apart from stress) are a vowel nucleus and a tone, either of which may be simple or complex. Most syllables also include a consonantal onset. The general structure of the syllable may be diagrammed as follows:



cal, 16 years of age, of the Santa Ana barrio of San Pedro. I am indebted to William R. Merrifield for his help in the analysis and presentation of the material.

² There are two main comparative studies which have been made of the Chinantec languages; Robert Weitlaner and Paul Smith, *Detalles de la fonología del idioma proto-chinanteco, un informe preliminar, Revista Mexicana de estudios antropológicos* 18. 117-23 (1962), and Calvin Ross Rensch, *Proto Chinantec phonology, Papeles de la Chinantla VI, Museo Nacional Antropología, México* (1968). Though data from a wide range of Chinantec languages were used in these studies, particularly the latter, rigorous phonological analysis had been undertaken for only a few of the sources. The ever-growing number of statements of the present type will thus be of great value in further definition of the development of the several Chinantec languages spoken today.

where L is a class of laryngeals, C a class of consonants, S a class of semivowels, V a class of vowels, T a class of tones, and N is nasalization. The laryngeals and consonants together constitute the elements of syllable onsets; the remaining syllable elements constitute the syllable peak.

1. A simple onset may consist of any 14 consonants or one of the two laryngeals. The consonants are labial /p f b m/, interdental /θ d/, alveolar /t c s r l n/, or velar /k ŋ/. The laryngeals are /ʔ h/.

/p t k/ are voiceless stops which vary from unaspirated to slightly aspirated, with a tendency for the stops towards the back of the mouth to be progressively more aspirated. pa²¹ *fat*, ta²¹ *work*, ka¹ *Charles*.

/f b θ d s r/ are spirants. /f/ is quite uncommon, usually occurring only in words adapted from Spanish. /r/ is retroflexed, and slightly voiced. fú²[pú²] *strong*, bá²¹[ba²¹] *co-father*, θa¹ *change*, dí²[dī²] *his, ours*, sī² *fire*, ré²[žé²] *good*.

/c/ is the only affricate, and /l/ a lateral. cá³² [tsá³²] *finished*, li¹³ *flower*.

The nasals /m n ŋ/ are treated by Westley (op. cit.) in neighbouring Tepetotutla as the co-occurrence of stops /b d g/ with nasalization in the syllable onset. This is convenient since nasalization can then be said to occur either in the onset or the peak of the syllable, but never contrastively in both onset and peak of a single syllable since there is no contrast of oral and nasal vowels when the onset consonant is nasal. Peaks tend to be phonetically nasal when a nasal consonant occurs in the syllable onset. In the absence of an oral /g/ in Sochiapan syllable onsets, I have chosen to present the nasal consonants as units. It should be kept in mind, however, that the same limitation does pertain in Sochiapan as occurs in Tepetotutla; viz. nasalization is non-contrastive in syllable peaks when a nasal occurs in the syllable onset. mu³² [mú³²] *bone*, no² [nó²] *rat*, ŋi³ [ŋí³] *chayote*.

Alveolar and velar consonants are palatal-

ized when followed by the semivowel /i/. The palatalized alveolars and following semivowels are realized almost simultaneously with backing of the alveolar and very little palatal transition to the nuclear vowel following. Velar consonants are fronted and have more transitional material between them and the nuclear vowel. tia²¹ [tʰæ²¹] *father*, ci³ [tʰí³] *wind*, sie¹ [še¹] *manioc*, liá^{ʔ2} [lʰé^{ʔ2}] *black*, nia³² [ŋæ³²] *come here*, kia¹ [kʰæ¹] *dirty*, ŋia³² [ŋʰæ³²] *come in*.

The backing of alveolars and fronting of velars in the presence of semivowel /i/ creates a minor problem of interpretation between /n/ and /ŋ/ in a few environments. The two nasals are in clear contrast before the sequences /ia io/. nia³² [ŋæ³²] (*he opens*), ŋia³² [ŋʰæ³²] *come in*, ʔnió³ [ʔŋó³] (*he wants*), ŋio¹ [ŋʰó¹] (*I know*).

They are not in contrast, however, preceding the sequences /ii ie iu/. In these environments the nasal in question is perceived as phonetically more similar to the /ŋ/ than the /n/ of the contrastive environments above, and is thus interpreted as the former. ŋii¹³ [ŋʰí¹³] *bat*, ŋie¹ [ŋʰé¹] (*I am going*), hŋiú² [ŋʰú²] *hair*.

The sequence /ii/ is not in contrast with simple /i/ following alveolars or velars, and /ie/ is not in contrast with /e/ following velars. These combinations are interpreted as including the semivowel since the consonant in these cases has the same phonetic quality as when preceding sequences /ia io iu/ which are in contrast with simple /a o u/ in these environments.³ ci³ [tʰí³] *wind*, sii² [ši²] *paper*, hŋi³ [ŋŋi³] *ink*, kió² [kʰó²] *have value*, ʔŋie¹³ [ʔŋʰé¹³] *rope*.

An alveolar flap /ř/ occurs in words borrowed from Spanish, and in an expletive. a²řó¹ *rice*, řei¹³ (emphasis).

The laryngeals may occur as simple syllable onsets or preceding nasals or the lateral.

³ Within the framework of a generative grammar, this redundancy would be reduced in the underlying feature specification, and supplied for the surface structure by late phonetic rules.

The laryngeal /h/ is the voiceless counterpart of the phoneme it precedes. [?]au² *medicinal herb*, hu¹³ [Uu¹³] *mosquito*, [?]ma² *wood*, [?]nu² *you*, [?]na²¹ *spotted cavy*, [?]laú² *cliff*, hmi² [Mmí²] *blood*, hno²¹ [Nnŋ²¹] *we*, hñí² [Nñí²] *vein*, hlé³ [llé³] *wide*.

Some complex onsets have been introduced from Spanish: /bř tř kř/. [?]a²bří²¹ *April* mĩ²třŋ² *Petrona*, křei²¹ *cross*.

2. There are seven vowels which may occur in simple syllable peaks: high front unrounded /i/, high back unrounded /i/, high back rounded /u/, mid front rounded /e/, mid back unrounded /ë/, mid back rounded /o/, and low central /a/.

i	ĩ	u
e	ë	o
	a	

[?]i²³² (*my*) *nose*, [?]ĩ¹³ (*I*) *inject*, [?]u²¹ (*you*) *drink*, [?]e²² (*his*) *nose*, [?]ë²² *ingernail*, [?]o²³² *cry, shout*, [?]a²² *cracked*.

/ë/ is marginal to the system, occurring only after laryngeals and only in certain idiolects. It is replaced by /ie/ in those idiolects in which it does not occur.

In addition to the seven simple vowels, there are three diphthongs /ei au ie/. The two vowels of each of these sequences are actualized with approximately equal syllabicity. [?]ei²³² *measure*, [?]au²¹ *rotten*, [?]ie²¹ (*you will*) *teach*.

Although /g/ does not occur in syllable onsets, it does occur post-vocally, following /a/ in the absence of nasalization, and following /a ĩ/ in the presence of nasalization. It is a lenis velar spirant in the absence of nasalization, and a velar nasal in its presence.⁴ [?]á^{g2} [θá^{g2}] *nest*, [?]á^{g32} [θá^{g32}] (*he*) *likes*, [?]θ^{g3} [θ^{g3}] *shiny*, hmag² [Mma^{g2}] *water*.

⁴ It would be equally possible to equate post-vocalic /g/ with the vowel /i/, and consider it the second member of diphthongs /aĩ aĩ ĩĩ/. The present interpretation has been chosen because of the consonantal realization of /g/ as [ŋ] in the presence of nasalization and to facilitate comparison with other Chinantec languages which have been analyzed in a similar way.

There are two semivowels, high front unrounded /i/, and high back rounded /u/.⁵ /i/ occurs preceding /i e a u o ei au/. The palatalizing of alveolars and velars when preceding semivowel /i/ was discussed above. Of the vowels that follow, /a/ is most affected by the presence of /i/, it being actualized decidedly more fronted in this environment. tie¹ [tē¹] (*I*) *shave*, tia²¹ [tæ²¹] *father*, ci³ [tší³] *wind*, sie¹ [šē¹] *manioc*, [?]nio³ [ʔnŋ³] (*he*) *wants*, kia¹ [kʰæ¹] *dirty*, ŋio¹ [ŋʰŋ¹] (*I*) *know*.

/u/ occurs following [k h ʔ] and preceding /e ĩ a u o/. kuú² [kwú²] *corn*, kuó²² [kwó²²] *scar*, hui³² [Wwĩ³²] *road*, huá²² [Wwá²²] *rotten*, [?]ue³² [ʔwe³²] *dirt*, [?]ua¹ [ʔwa¹] *soft*.

In the absence of a preceding syllable onset, semivowels are perceived as having somewhat more oral friction than otherwise. ue³² [we³²] (*my*) *mouth*, ui²³ [wĩ²³] *smooth*, ie² [yē²] *tick*, iei²¹³ [yei²¹³] (*you will*) *extinguish*.

With the exception mentioned above that there is no contrast of oral and nasal peaks after nasal consonants in the syllable onset, virtually any combination of segments may occur in the presence or absence of nasalization. [?]lé²² *lice*, hla²¹ *angry*, [?]ĩ³ *tortilla*, [?]ĩ²³ (*you*) *drank*, θo³ *steep*, θŋ¹ *grass*, kué²³² (*he*) *gives*, cié³ *bear*, thé¹ *type of bird*, [?]lé²³ (*he*) *touches*, ná³ *three*, pñe²¹ *short*, cié³ (*he*) *has a fever*, [?]liá² *many*.

The syllable peak may be open, or it may be checked by glottal. There seem to be no significant limitations of occurrence of final glottal with other elements of the syllable. [?]la²¹ *cricket*, há²³ *animal*, hñí²¹³ *horse whip*, có²² *trunk (of tree)*, hē²³ *ravine*, thiá²² *chewing gum*, θĩ^{g22} *wrinkled*.

Stressed syllables are either ballistic (marked by an acute accent over the nu-

⁵ These segments are labelled as 'semivowels' distinct from 'vowels' but symbolized with vowel symbols to show that the difference between semivowels and vowels is essentially only a difference in distribution within the syllable, and that the underlying feature specification is probably the same for both.

clear vowel) or controlled (unmarked).⁶ Ballistically stressed syllables are characterized by an initial surge and rapid decay of intensity with a resultant fortis articulation of the consonantal syllable onset. Controlled syllables display a more evenly controlled decrease of intensity. Ballistic syllables are also shorter in duration than controlled syllables. ha^{?1} *basket*, há^{?1} *fly, bug*, ?ma² *paralytic*, ?má² *wood*, ma^{?3} *elbow*, má^{?3} *mountain*, iɛi^{?32} (*he*) *sucks*, iɛi^{?32} *cigarette*.

There are three simple tones: high /¹/, mid /²/, and low /³/, and three tone sequences, two upglides /²¹ ³²/ and one downglide /¹³/. All Chinantec stressed syllables have one of the simple tones or one of the three tone sequences.

Stress contrasts (ballistic vs. controlled) are limited in the presence of tone sequences. The sequences /¹³ ²¹/ are perceived as ballistic in unchecked syllables, but as controlled in checked syllables. The sequence /³²/, however, occurs in both ballistic and controlled syllables, whether or not the syllable is checked. In the case of /¹³ ²¹/, where no stress contrast is found, stress is predictable and therefore left unmarked. ?na¹ (*I*) *sell*, ?ná¹ *cut*, ?ma² *paralytic*, ?má² *wood*, kua³ *river*, kuá³ *deer*, ?ma²¹ *fish*, ta³² *ladder*, má³² *food*, li¹³ *flower*, ma^{?1} *liver*, má^{?1} *face*, ka^{?2} *lizard*, ká^{?2} *parasitic, vine*, ma^{?3} *elbow*, má^{?3} *mountain*, ?ma^{?21} *plaza*, iɛi^{?32} (*he*) *sucks*, iɛi^{?32} *cigarette*, mi^{?27}iq^{?13} *grandmother*.

⁶ See footnote 1 for several articles in which these features of Chinantec phonology have been discussed.

The simple tones are typically level in pitch and roughly a step and a half apart (in terms of a musical scale) in normal unemotional speech. Exceptions are that mid tone descends in pitch slightly when occurring with controlled stress, and low tone descends markedly when occurring with ballistic stress unless the syllable is checked, in which case the low tone is level. The sequences are perceived as roughly spanning the distance in pitch between the levels for which each is named.

Tone and stress are areas of Sochiapan Chinantec phonology in which dialectal differences are particularly prominent. The present analysis includes the largest number of contrasts of tone and stress that have been found to occur in the language. Individual speakers vary in the tone and stress patterns they give individual words, and some speakers lack certain contrasts. For example, though many speakers pronounce words like kua^{?13} *soil* and ?au^{?13} *rotten* with a /¹³/ tone sequence, other speakers who have the /¹³/ sequence in their idiolects nevertheless pronounce these words with ballistic stress and with a simple high tone, kuá^{?1}, ?aú^{?1}. At least one speaker does not have a contrast between ballistic and controlled unchecked syllables in the presence of tone /²/. Undoubtedly there are many such differences in pronunciation by individual speakers of the language which further study will bring to light.