# AZTEC STUDIES

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## Phonological and Grammatical Studies in Modern Nahuatl Dialects

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# I
# Phonological and Grammatical Studies in Modern Nahuatl Dialects

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# EDITOR'S NOTE

It has been almost two years since we first approached the S.I.L. field workers whose articles are represented here and suggested that we cooperate in the preparation and publication of phonological and grammatical studies in Nahuatl dialects currently spoken in Mexico. Their articles represent four of the seven Nahuatl dialects in which S.I.L. workers are currently working.

Tentative conclusions from the dialect testing teams now engaged in measuring degree of intelligibility between Nahuatl dialects suggest that we must deal seriously with almost a dozen mutually unintelligible Nahuatl areas of speech. Dialects definition is an obvious necessity if S.I.L. is to accomplish its goals of literacy materials and Bible translation for indigenous peoples. The structural justification, however, for such dialect definition is not to be found exclusively in the testing devices for measuring intelligibility; rather, it is this set of descriptive articles, with others to follow in subsequent volumes, which will provide the phonological and grammatical clues for differentiating modern Nahuatl dialects.

A second and related purpose for publishing sets of articles on related dialects of one language family is to provide the raw materials for a pan-Nahuatl grammar based on "competence," not simply on "preformance." (Chomsky, 1965).

Wolgemuth's study, with its heavy reliance upon phonetic detail, presents the bare outline for what may prove to be the crucial factor in defining phonological differences among Nahuatl dialects, i.e., a laryngeal phonemena manifested as glottal action, vowel length, voicelessness, and the phoneme /h/. Robinson's article sets forth an analysis of phonological levels in Nahuat, using Pike's tagememic model of 1955. Each level of the "phonological hierarchy" is defined in terms of a different prosodic feature. Brewer's study of Tetelcingo Nahuatl, perhaps the most divergent of Nahuatl dialects from the viewpoint of testing intelligibility, is an inventory of verb and noun morphemes and constructions, emphasizing co-occurrence restrictions. The final article by Robinson and Sischo on Michoacán Nahual is especially useful because of the sparsity of data available of the so-called "-l" dialect of Nahuatl, i.e., the /l/ corresponds to the /tl/ in other Nahuatl dialects. The underlying grammatical structure shows surprisingly little difference with that of Puebla (Robinson, 1966) and southern Veracruz (Law, 1966). Our thanks to each field worker who cooperated in making this volume a reality.

Dow F. Robinson
Tlalpan, Mexico
April, 1969.

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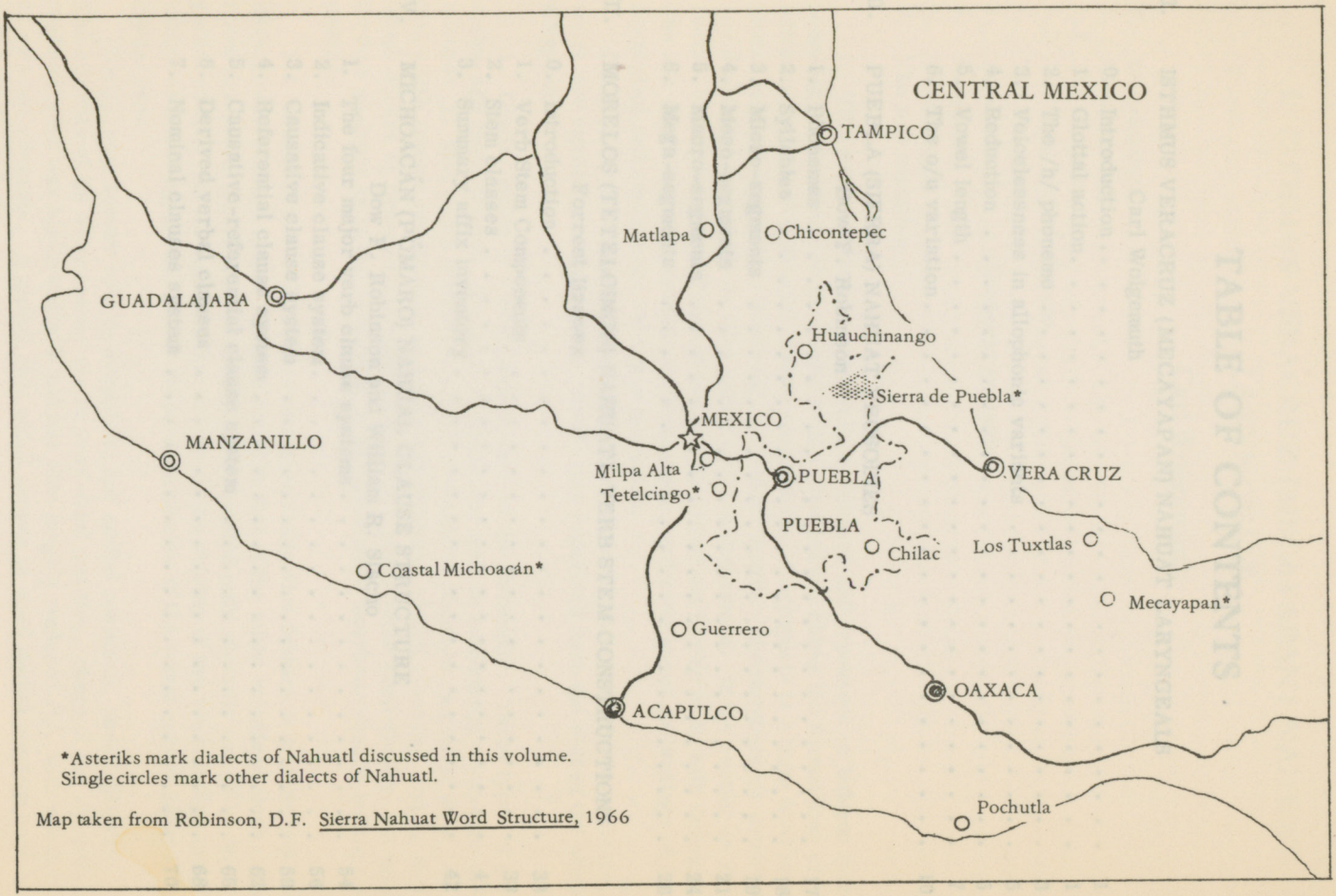


*Asteriks mark dialects of Nahuatl discussed in this volume.
Single circles mark other dialects of Nahuatl.

Map taken from Robinson, D.F. Sierra Nahuat Word Structure, 1966

CENTRAL MEXICO
TAXCO
CUERNAVACA
MEXICO
TEOTIHUACAN
PUEBLA
TLAXCALA
TOLUCA
IXTACCIHUATL
POPOCATEPETL

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# I. ISTHMUS VERACRUZ (MECAYAPAN) NAHUAT LARYNGEALS

Carl Wolgemuth



0. This paper describes some salient features and processes of Isthmus Nahuat[1] phonology. The data are presented with a view toward aiding the formulation of more adequate criteria for Nahuatl dialect comparison. Laryngeals is a term used to cover glottal action, aspiration, devoicing, and vowel length. Morphophonemic processes are discussed especially as they relate to these phenomena. In the section on reduction other phonological processes are described not having to do with laryngeals. The o/u variation is described as subphonemic, and some broad patternings of free fluctuation and conditioned variation are noted.

In the phonemic transcription[2] stress is unmarked when penultimate. Clitics, which are atonic and do not affect stress, are separated from the rest of the word by a hyphen.

1. Glottal action is a prominent feature of the phonology. Three types of glottal action are distinguished, the third of which may well be considered a sub-type of the second: 1) that which actualizes a fully contrastive phoneme, a glottal stop; 2) that which occurs predictably as a junctural feature, glottal closure; and 3) that which occurs as pre-glottalization of /t, č, ȼ/, predictable word-finally, but needing further analysis as to the patterning of its occurrence morpheme-finally within compounds.

1.1 Glottal stop /ʔ/ is a phoneme whose distinctive feature is a clear and complete glottal closure with a duration equal to that of the other voiceless stops. The vowel preceding a glottal stop is clearly articulated until abruptly cut off by the glottal action. No laryngealization occurs in the voicing of the vowel either preceding or following glottal stop. No re-articulation of the vowel occurs after a glottal stop.

Glottal stop occurs only in word-final and medial positions, never initially. The majority of its occurrences are in word-final position, where it has altogether replaced what was historically *k and has also largely replaced /t/, with which it is an optional alternate. A glottal stop which occurs in word medial position contrasts with both /t/ and /k/.

1.1.1 Alternation of /ʔ/ with /t/ occurs in nominative forms in which /-t~-ʔ/ is a stem-formative (sometimes referred to as absolutive) suffix. In most of these forms /-ʔ/ is the more frequently occurring alternate both in slow and rapid speech. ta:gaʔ~ta:gat 'man', siwa:ʔ~siwa:t 'woman', kone:ʔ~kone:t 'child, šo:čiʔ~šo:čit 'flower', to:to:ʔ~to:to:t 'bird'. In a small number of words, all monosyllables, /-t/ occurs about as frequently as /-ʔ/. a:ʔ~a:t 'water', tiʔ~tit 'fire', teʔ~tet 'rock', toʔ~tot 'land snail'.

1.1.2 Glottal stop occurs frequently as a tense suffix in verb paradigms. It carries a high functional load in phonemic contrast with /h/, which also occurs as a verb suffix. The absence of a suffix following the final vowel of the verb stem signals yet another paradigmatic form. When such a form occurs in utterance-final position, it is followed by a predictable glottal closure (see 1.2.2) which differs from both /ʔ/ and /h/. Thus there results a three-way contrast involving glottal stop and two acoustically similar sounds, one of which is subphonemic. kitaʔ 'he saw it', kitah 'they see it', kita 'he sees it'; isaʔ 'he woke up', isah 'they wake up', isa 'he wakes up'.

1.1.3 Glottal stop is a morphophonemic alternate of /k/ in the following sets of words: ikalihtiʔ 'inside his house', ikalihtikmeh 'inside their house(s)' (i- 3rd pers poss sg or pl + -kal bound form of kahli 'house' + ihtiʔ ∞ ihtik 'inside' + -meh pl.), tešoʔ~tešok-ti 'mojarra' a specie of fish, (-ti optional atonic stem formative), čipaktiʔ 'clean', čipaktika:ʔ 'clean water' (a:ʔ 'water'), po:ʔyowi 'it gets smoked', po:kti 'smoke', kiye:ʔmati 'he likes it', (he feels it to be good), ye:kti 'good'.

1.2 Glottal closure is a junctural feature. It occurs 1) preceding syllable-initial vowels and 2) following vowels before silence. It is phonetically similar but not identical to /ʔ/. After short vowels it differs from /ʔ/ in the following ways: Junctural glottal closure is very brief in duration and often lacks complete closure. Glottal stop has a longer duration and is always distinct. After long vowels the difference is difficult to perceive.

1.2.1 Syllable-initial vowels are pre-glottalized both in word-initial and word-medial positions, except when following stops or /h/. onos a:pis-ti [ónos ˈá:pisti] 'there will be hunger', san-ilpitoʔ [saŋˈil̥pítoʔ] 'it is just hanging', noohwi [noˈóhwi] 'my path', taočin [taˈóčin] 'young lady', taihtiʔ [taˈíjtiʔ] 'on the inside', moita [moˈíta] 'he sees himself', ki.akiá [kiˈakʸá] 'he puts it in'. (Syllable division in ambisyllabic CiV is indicated by (.). See section 4.3 for discussion of monosyllabic CiV).

1.2.2 Utterance-final open syllables are followed by a predictable glottal closure. This closure has three freely alternating phonetic patterns distinguished by the quality of the release: 1) non-fricative, 2) fricative, and 3) voiced. The three patterns occur as follows:

1) Non-fricative: The voicing stops at the point of glottal closure, and an immediate non-fricative glottal release is heard. The effect is similar to glottal stop and was often mistakenly transcribed as such in the earlier stages of the author's investigation. ki:sa [kíˑ:saˀ] 'he leaves', mo:to [móˑ:toˀ] 'squirrel'.

2) Fricative: The voicing stops at the point of closure, and an immediate glottal fricative release is heard. The effect is similar to /h/ but differs in that /h/ has

very little friction and never occurs following glottal closure except across word boundaries. [kí:sa'h] [mó:to'h].

3) Voiced: The voicing continues past the point of closure, and a brief nasalized re-articulation of the vowel is heard. This pattern contrasts more clearly with both -V? and -Vh and is often used by the informant when asked to repeat. [ki:sa'a̤] [mo:to'o̤].

1.2.3 In two environments distinction between /?/ and junctural glottal closure ['] is very slight. (Note: ? = fortis, ?̤ = lenis). 1) Following a stressed short vowel the junctural glottal closure is nearly equal to /?/ in sharpness and duration. kipiá [kip$^{y}$á?] 'he has it', kipiá? [kip$^{y}$á?] 'he had it'. 2) Following an unstressed long vowel the sharpness and duration of /?/ are reduced. Eg. kone:? [kóne:?̤] 'a child', ikone: [ikóne:'] 'his child'.

Distinctions which are difficult to hear when words such as the previous examples occur in isolation, are easily heard when the words occur utterance-medially followed by a consonant; in this environment junctural glottal closure does not occur. kipiá noga? [kip$^{y}$á nóga?] 'he has my sandals', kipiá? noga? [kip$^{y}$á? nóga?] 'he had my sandals, kone:? yeh nepa nento? [kóne:? yeh népa nénto?] 'the child that is walking over there', ikone: yeh nepa nento? [ikóne: yeh népa nénto?] 'his child that is walking over there.

1.2.4 Word-final /t,ɸ,č/ occur pre-glottalized. nakat [naka't] 'meat', tit [ti't] 'fire', a:t [a:'t] 'water', okič [óki'č] 'male', ikeč [íke'č] 'his neck', k$^{w}$apatač [k$^{w}$apáta'č] 'flat-sided log' (k$^{w}$a'wood' + patač 'flat object'), kalwi:č [kałwi:'č] 'sooty cobwebs' (kal- 'house' + wi:č meaning obscure), itepoɸ [itépo'ɸ] 'his back', e:lwatoɸ [e:ɬwato'ɸ] 'a skinny person', kočwiɸ [kóčwi'ɸ] 'sensitive plant' (koč- 'sleep' + wiɸ 'thorn').

Root final /ɸ, č/ sometimes occur pre-glottalized within compounds[3]. mokičmati [moki'čmáti] 'he feels manly' (m- reflexive + okič 'male' + mati 'know, feel'), nehmačtaksatiá [nehma'čtaksat$^{y}$á] 'he goes creeping along' (nehmač- 'cautiously' (?) + -taksa 'step' + -ti- connective + -ya 'go').

Root final /ɸ, č/ always occur without pre-glottalization preceding stem-formative -ti and derivational suffix -ti?. okič-ti [ókičti] 'a male', tepoɸ-ti [tépoɸti] 'back' (anat), wiɸ-ti [wíɸti] 'thorn', wiɸti? [wíɸti?] 'thorny', patačti? [patáčti?] 'flattened'.

2.0 The /h/ phoneme is the counterpart of saltillo in classical Nahuatl. It occurs occasionally in syllable onset but predominantly in the coda[4]. /h/ is a clear, voiceless, and almost frictionless aspirate having the quality of the preceding vowel and a characteristic duration equal to that of other continuants. This section notes some patternings in its occurrance, especially in its morphophonemic alternation with other phonemes or sequences of phonemes.

2.1 Spanish loans:[5] Spanish words ending in a vowel acquire -h in most cases. mače:teh < machete, k$^{w}$e:rah < afuera 'outside', moli:noh < molino 'grinder', kristia:noh < cristiano 'human being/Christian', pa:leh < padre 'priest', ko:lpah < culpa 'sin', sie:rtoh < cierto 'certain'. Exceptions are: pe:lo < perro 'dog',

(contrasts with pe:loh < pelo 'hair'), domi:ngo < domingo 'Sunday' (contrasts with domi:ngoh < Domingo a man's name), ko:šo < cojo 'lame', so:lo 'only', ga:yo < gallo 'rooster', pa:nko < banca 'bench', mante:ka? < manteca 'lard'.

2.2 /h/ alternates with /-was -gas, -skeh/ in certain future tense constructions. Eg. tita:tapohtoskeh ~ tita:tapohtoh 'we will be conversing' (stative), kiči:-was ~ kičí:h 'he will do it', kiwahligas ~ kiwahlíh 'he will bring it'. (See Section III on patterns of reduction.)

2.3 After long vowels syllable-final /s/ of the future and desiderative verb constructions is optionally replaced by /h/ word-finally and before /n/ word-medially. /h/ occurs more frequently than /s/. kihli:s ~ kihli:h 'he will tell him', koni:sneki ~ koni:hneki 'he wants to drink', kipetko:s ~ kipetko:h 'he will bruise it', čolo:sneki ~ čolo:hneki 'he wants to flee'. In Spanish loans syllable final /s/ is in many cases optionally replaced by /h/, reflecting the tendency of [h] to manifest syllable-final /s/ in the southern Veracruz dialect of Spanish. Eg. ma:s ~ ma:h < más 'more', die:s ~ die:h < diez 'ten', ti:sneh ~ ti:hneh < tizne 'soot', o:mbres ~ o:mbreh < hombres 'men'.

2.4 Occurrence of /h/ in preterit tenses and derived forms of verbs correlates with regular loss of stem formatives / -wa ∞ -ya ~ -á/[6]. motalowa 'he runs', motaloh 'he ran', motalohka 'he had run', motalohkeh 'they ran', motalohtinemi 'he goes running around', kita:liá ~ kita:liya 'he puts it', kita:lih 'he put it', kita:lihka 'he had put it', kita:lihkeh 'they put (pret.) it', kita:lihto? 'he has it put', (stative). (See section 5.3.2 for occurrance of vowel augment instead of /h/ with future tense and aspectual suffixes.)

Most verbs not undergoing loss of stem formative do not acquire /h/. kita 'he sees it', kita? 'he saw it', kitaka 'he had seen it', kitakeh 'they saw it', kitato? 'he is seeing it' (stative). (Exceptions: kik$^{W}$a 'he eats', kik$^{W}$ah 'he ate'/'they eat', kik$^{W}$ahkeh 'they ate', kima:ma 'he hauls it', kima:mahkeh 'they hauled it', tamahma 'he goes hunting/fishing', tamahmahkeh 'they went hunting/fishing'.)

In certain verbs the loss of /-wa/ preceding preterite plural suffix is optional; however, /h/ occurs whenever -wa is lost. kikowa 'he buys it', kikowa? 'he bought it', kikowakeh ~ kikohkeh 'they bought it'.

The following forms also demonstrate the correlation between occurrance of /h/ and loss of -wa: kikoya:wa 'he widens it', ikoyahka 'its width' (i- 3rd person possessive prefix + -ka nominalizer suffix); toma:waya 'it gets plump', itomahka 'its thickness'. Where no such loss occurs, no /h/ occurs: weyá 'it grows long', iweyaka 'its length'.

Regarding occurrence of /h/ in place of lost syllables, compare Whorf's comments on Nahuatl of Milpa Alta, in which he notes a correlation in the occurrance of saltillo with what he called weakened moras. (He described saltillo as a combination of glottal action and breath [?h].) "However in many cases it [saltillo] seems to stand in place of a former 'weakened' — where weakened means unstressed, feebly articulated, and usually low-toned — mora, or moras, which moras have retained the elements of length (duration, or prosodic quality), glottal action, and breath, but nearly or quite lost those of oral action and sonancy."[7]

Patterning of co-occurrances of /h/ with certain suffixes, and of /:/ (length) with others, remains open to analysis. (See section 5.3.2)

3.0 Voicelessness is a feature of allophonic variants of vowels and resonants.

3.1 Short vowels in post-stress syllables ending in /h/ optionally occur voiceless. In such cases /h/ is indistinguishable from the voiceless vowel. If the preceding consonant is a resonant it also occurs voiceless when the vowel is voiceless. akanah [akánah+ akáNA] 'nowhere', ayoh [áyuh+ áYU] 'squash', tisih [tísih+ tísI] 'they grind', asíkeh [asíkeh+ asíkE] 'they arrive'.

3.2 Syllable final resonants /l,y,w/ occur voiceless in certain environments. A brief voiced onset optionally precedes the devoicing.

Syllable-final /l/ occurs voiceless in all environments. It has a very light fricative quality following /i/ but almost no friction following other vowels. nopil¢i:n [nopi̥l̥¢i̥:] 'my offspring', a:ɬtepe:ʔ [a:ɬtépe:ʔ] 'village', ilwiʔ [i̥ɬwiʔ] 'fiesta', čakallili:n [čakaɬlíli̥:] 'small shrimp' pl.,' e:lwato¢ [e:ɬwátoɬ¢] 'a skinny person', tayo:l [táyo:ɬ] 'shelled corn'.

3.2.2 Syllable-final /y/ occurs voiceless except when followed by a voiced consonant. Eg. čayca:yi [čaYčá:yi]'centipede', so:tkoy [só:tkuY] 'elbow' (probably borrowed from neighboring Popoluca), kišaygamaka [kišaygamáka] 'he turns a cheek toward him'.

Syllable-final /w/ occurs only word-finally and is optionally voiced. Eg. čoów [čoów ~ čoóW] 'boy!', pi:píw [pi:píw ~ pi:píW] 'Auntie!', hena:rów ~ hena:róW] 'Genaro!'.

(For voiceless variants of these and other resonants as a realization of syllable type RVh see section 4.2)

4. Certain phonemic sequences reduce in normal speech either through loss of a syllable, or alteration of a syllable by fusion of two phonemes into a portmanteau phone. The following are some of the more common types of reduction[8].

4.1 The syllables /ya, wa, wi, ga, gi/ are optionally lost in post-stress position. These sequences occur frequently in verbs and adverbial particles. The result of this type of reduction is word-final stress. kiči:wa~kičí: 'he does it', kimahka:wa~kimahká: 'he lets go of it', kite:gaʔ~kité:ʔ 'he laid it out', kitegiʔ~kitéʔ 'he cut it', kimagaʔ~kimáʔ 'he hit him', mimiliwiʔ~mimilíʔ 'it rolled', moločiwiʔ~moločíʔ 'it shriveled', ompiga~ompí 'around there' (out of sight), neiga ~neí 'around there' (within sight), nihiga~nihí 'around here', kiwahliga~kiwahlí 'he brings it', kitato:ya~kitató: 'he went and saw him', kitako:ya~kitakó: 'he came and saw him'.

4.2 Etic syllable patterns are altered through syllabification of resonants. There is an optional loss of an unstressed short vowel following syllable-initial resonants /l, y, w, m, n/, when the resonant is preceded by a vowel. This type of vowel loss is limited to: open syllables, syllables ending in /ʔ/, and those ending in /h/.

1) An open syllable reduces to a single resonant VRV → VR. šikakili [šikakíli ~šikakíl] 'put it in it', kita-ya [kítaya ~ kitay] 'he already sees it', kikowa [kikówa ~kików] 'he buys it', tami [támi ~tám] 'it ends'.

2) A syllable ending in /ʔ/ reduces to a resonant plus glottal stop VRVʔ → VRʔ. kikowaʔ [kikówaʔ ~kikówʔ] 'he bought it' tamiʔ [támiʔ ~támʔ] 'it ended', ¢aya:niʔ [¢ayá:niʔ ~¢ayá:nʔ] 'it split', tomaʔ [tómaʔ ~tómʔ] 'tomato'.

3) A syllable ending in /h/ reduces to voiceless resonant VRVh → VR (/y/ excepted). nikakilih [nikakílih ~nikakɬ] 'I put it in it' (preterit), kikowah [kikówah ~ kikóW] 'they buy it', kamoh [kámoh ~káM] 'sweet potato', akanah [akánah ~ akáN] 'nowhere', kite:mohtinemih [kite:mohtinémih ~kite:MtinéM] 'they go around hunting it'.

In the reduced forms, the resonant though etically occurring in a syllable coda, retains features corresponding to its original emic position in the onset. These features include 1) full voicing (except when manifesting a sequence including /h/), and 2) full contrast between /m/ and /n/. These features suggest the interpretation that R, Rʔ, and Ṛ constitute a set of portmanteau syllabic resonants in which the presence of a vowel is emically manifested, though contrast in vowel quality is neutralized.

4.3 Syllables are altered through reduction of /iy/ following a consonant[6]. The sequence /iy/ preceding /a/ or /o/ in certain environments reduces to palatalization of the preceding consonant, with accompanying loss of a syllable nucleus.

4.3.1 Reduction of 'stressed' /íy/ results in a shift of stress to word-final position. It involves only the sequence Cíya, which reduces to C$^{y}$á. The full form has two clearly discernable syllable nuclei with stress on /í/, the vowels being separated by a high-front semi-vowel following the pattern VyV common in the language. The shorter form has but one syllable nucleus, and stress occurs on /á/. nikihliya ~ nikihliá [nikihlíya ~nikihl$^{y}$á] 'I tell him', kilpiya ~kilpiá [kiɬpíya ~kiɬp$^{y}$á] 'he ties it', niya ~niá [níya ~n$^{y}$á] 'I go'.

This reduction of stressed /íy/ occurs almost exclusively in the verb system. Word-final /-iá/, wherever it occurs in the data, is the phonemicization arbitrarily chosen to represent the form reduced from /-íya/. (Problems of phonemicization are discussed below.) The reduced form occurs in speech far more frequently than the full form.

/íy/ is not reduced following /h/. kihíya 'he dislikes him'.

4.3.2 Reduction of 'unstressed' /iy/ results in loss of a syllable nucleus but does not affect stress placement since it occurs pre-stress. It is demonstrable as a reduction in the following: piomo:l [p$^{y}$ómo:l] 'chicken gravy' (piyo 'chicken + bound allomorph of mo:hli 'gravy'); pioteksis [p$^{y}$utéksis] 'chicken egg' (piyo 'chicken' + teksis 'egg'); niya:ti ~nia:ti [niyá:ti ~n$^{y}$á:ti] 'I am going to go' (ni- 1st person subject prefix, -ya v. root 'go', /:/ length feature replacing -wi stem formative, -ti incomplete aspect suffix). One word involving /ey/ rather than /iy/ suggests itself as the morphophonemic source for the same type of reduction: tio:pan [t$^{y}$o:pan] 'church' (god-place) (teyo:ʔ 'thunder maker', a legendary being responsible for thunder and lightning, + -pan locative). cf. teo:tl 'god' of classical Nahuatl

Many Cia sequences[9] are phonetically identical to the reduced forms cited above in regard to palatalization of the consonant, but have no known bisyllabic morphopho-

nemic alternates or sources involving /y/. piali [pʸáli] 'greetings!', siawi [sʸáwi] 'he tires', mia:wa [mʸá:wa] 'corn tassle', tiawa:ʔ [tʸáwa:ʔ]~kiawa:ʔ [kʸáwa:ʔ] 'rain', nia:wiš̃tiʔ [nʸa:wi͡štiʔ] 'dark streaked'. (*piyali, *siyawi, and *miya:wa are unacceptable to the informant as alternates. However, cognates of the latter two appear with /y/ in Tetelcingo Nahuatl[10].) Together with the Cia/Cio sequences that can be shown to result from reduction of /iy/ they form a distinct syllable type.

The above CiV sequences are interpreted as single syllables for the following reasons: 1) they have the durational features characteristic of single syllables, and 2) they are reduplicated as single syllables. miahmiakeh 'many many things', miakeh 'many things', motiohtiomati 'he thinks he's big', tio- 'uncle' (bound form), kipiahpiá 'he has many many'.

As a syllable type mono-syllabic CiV contrasts with bisyllabic vowel sequences. In mono-syllabic CiV the V is not preglottalized; in bi-syllabic CVV the second V is preglottalized. (See section 1.2 on junctural glottal closure.)

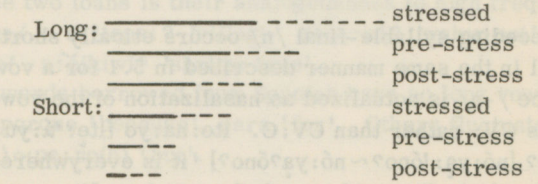
In the traditional phonemicization no distinction is made between mono-syllabic and bi-syllabic sequences. An indication of syllable division is necessary however, to distinguish between minimal pairs[11]. nia:ti][nʸa:ti] 'I am going to go', ni•a:ti [ni'a:ti] 'I am having something to eat/drink'.

5.0 Vowel length is viewed in this paper as a prosodic feature of the syllable nucleus. Every syllable nucleus is either long or short. Contrastive length occurs in all environments, with two limitations noted in 5.3.4. A random sampling of text contains approximately 25% long vowels. Only one word and one bound form found thus far have free variants differing only in vowel length. miso:ta~mi:so:ta 'he vomits', sepan-~se:pan- 'each other'.

5.1 Duration is the diagnostic feature of vowel length. In any given environment long vowels have a characteristic duration of about twice that of short vowels. This is an impressionistic judgment and has not been verified electronically. Vocalic quality is discussed in section 6 and interpreted as not being a diagnostic feature of length.

Environmental factors correlating with etic duration differences are: 1) position in relation to stress, and 2) presence or absence of a post-posed vowel.

1) Greater duration is associated with stress. Both long and short vowels tend to be of greater duration when stressed, lesser when occurring pre-stress, and least when occurring post-stress. The following diagram indicates roughly the relative etic durations as nearly as they can be ascertained from oral and tape recorded data. The dotted line represents the extent of optional variation and serves to illustrate that a stressed short vowel may occur etically longer than an unstressed long vowel.




2) Both long and short vowels tend to be of lesser duration when followed by

another vowel in normal speech. At times length contrast is barely perceptible. Emic contrast however, is retained by occurrence of a more distinct glottal closure following an emically long vowel when it is etically shortened preceding another vowel. kitaahaki:ltih [kita'ahakí:ɬtih] 'he dressed him', ima:a:kayo [ima:'a:káyu ~ ima?a:káyu] 'his arm bone' (lit. 'his arm cane'), taočiːn [ta'óčį:] 'young lady', ikʷa:ohwi [ikʷa:'óhwi ikʷa?óhwi] 'his hair part' (lit. 'his head path'), te: ito:ka:? [té:'itó:ka:? ~ té?itó:ka:?] 'what is his name?'.

Length contrast is neutralized in a stressed syllable which is lengthened for emphasis. er ista:?! [eřʰ'í:---sta:?] 'my how white!'

5.2 Vowel length correlates with certain consonant allophones.

5.2.1 The continuants /s, š, h, l/ and flap /ř/, when syllable final before another consonant within words, have a longer duration after short vowels than after long vowels. The sibilants show a lesser degree of lengthening than the nonsibilants; the latter, /h, l/, and /ř/ have a duration approximately equal to that of an entire short syllable when preceded by a short vowel. The lengthened component of /ř/ is aspiration following the single flap. erma:noh [eřʰ:má:noh] 'fellow villager', enfe:rmoh [eŋfé:rʰmoh] 'sick', tamalɸi:n [tamáɬ:ɸį:] 'small tamale', koma:lɸi:n [komá:ɬɸį:] 'small griddle', kihlih [kíh:lih] 'he said it', mi:hli [mí':hli] 'corn field', kosti? [kós:-ti?] 'yellow', pi:sti? [pí':sti?] 'black', košta:lmeh [kuš:ta:ɬmeh] 'cloth bags', a: mo:škʷita? [a: mo:škʷita?] 'green scum'.

5.2.2 Word-final nasal /n/[12] has allophones correlating with the presence or absence of length in the preceding vowel and with the articulatory features of the vowel. Following a long vowel /n/ is realized as nasalization of the vowel, with no distinct tongue closure. Following a short vowel the nasal is realized with light tongue closure and nasalization of the vowel. Voicing tends to stop simultaneously with tongue closure. The point of articulation of the closure varies as follows: after low vowels /a, e/, velar [ŋ]; after high front /i/, alveopalatal [ñ]; after back /o/, alveolar [n]. V:N → V̨: VN → V̨n, n → [ŋ] /a e__ #, n → [ñ*/i__ #, n → [n /o__ #. taye:ka:n [tayé:ca:] 'a nice place', yehame:n [yeháme:] 'they/them', a:yo:ɸi:n [a:yó:ɸį:] 'turtle', a:toto:n [a: tóto:] 'hot water', wehkapan [wehkápaŋ] 'tall', kipehpen [kipéhpeŋ] 'he gathered it', okʷilin [okʷílį̃] 'worm', ite:nɸon [ite:ɸon] 'his beard'.

Within words syllable-final nasals are conditioned in the same manner as word-final nasals, with the following exceptions:

1) If preceded by a short vowel the nasal assimilates to the point of articulation of the following consonant. antisih 'you (pl) grind', ampa:kih 'you enjoy yourselves' anka:wih [aŋká:wih] 'you (pl) remain', enfe:řmoh [eŋfé:řʰmoh] 'sick'.

2) When the nasal is followed by /y, w/ there is no distinct tongue closure. anwa:lkeh [awá:ɬkeh] 'you (pl) came', itanyo [itáyu] 'its notched part', senyowaɬ [seẏówaɬ] 'all night'.

A long vowel preceding syllable-final /n/ occurs etically shortened preceding a syllable-initial vowel in the same manner described in 5.1 for a vowel followed by a vowel. That is, since /-n/ is actualized as nasalization of the vowel, the syllable type CV:n behaves as CV: rather than CV:C. ite:na:yo [ite:'á:yu ~ ite?á:yu] 'his saliva', no:ya:n ono? [nó:ya:'óno? ~ nó:ya?óno?] 'it is everywhere', inó:n iga [inó:'íga ~ inó?íga] 'that is why'. In rapid speech the nasal quality may disappear entirely from vowels such as those in the above examples.

5.3 Length functions contrastively both in the lexicon and the grammar. Pairs of words occur in which length is the only phonemic difference. kitoka 'he follows him', kito:ka 'he buries him/he plants it', kimana 'he cooks it', kima:na 'he stretches it out', kipata 'he changes it', kipa:ta 'he beats/softens it', kipolowah 'they lose it', kipo:lowah 'they swarm around it', kitolowa 'he swallows it', kito:lowa 'he bends it down', kitemowiliá 'he gets it down for him', kite:mowiliá 'he hunts it for him' (kitemowiá 'he gets it down', kite:mowa 'he looks for it'), ista? 'salt', ista:? 'white', čičí:? 'bitter', či:či? 'he (infant) nursed'.

5.3.1 Patterned morphophonemic changes involving length occur in nouns and verbs. In some idiolects the vowel in the final syllable is lengthened in certain noun forms when the word takes a possessive prefix and loses the stem-formative -t∼-?. toma? 'tomato', itoma: 'his tomato', naka? 'meat', inaka: 'his meat', šapo? 'hole', išapo: 'his hole', ɸapo? 'banana', iɸapo: 'his banana'. In other possessed forms this length feature is absent. a:ma? 'paper', iya:ma 'his paper', ilwi? 'fiesta', iyilwi 'his fiesta', šo:či? 'flower', išo:či 'his flower', tet 'rock', ite 'his rock', tit 'fire', iti 'his fire', ohta? 'bamboo', iyohta 'his bamboo'.

5.3.2 In the verb system a length feature correlates with occurrence of future tense and aspectual suffixes when there is a loss of a stem formative suffix -wa ∞ -ya∼-á. kihtowa 'he says it', kihto:h 'he will say it', kihto:to 'he went to say it'; kita:liya∼kita:liá 'he puts it', kita:li:h 'he will put it', kita:li:to 'he went to put it'. Most verb forms not undergoing loss of a stem formative do not acquire the length feature. Eg. kočí 'he sleeps', kočis 'he will sleep', kočito 'he went (somewhere) to sleep', kimaka 'he gives it to him', kimakas 'he will give it to him', kimakato 'he went to give it to him', kika:wa 'he leaves it', kika:was 'he will leave it', kika:wato 'he went to leave it'; Exceptions: kik$^{w}$a 'he eats', kik$^{w}$a:h 'he will eat', kima:ma 'he hauls it', kima:ma:h 'he will haul it', tamahma 'he goes hunting/fishing', tamahma:h 'he will go hunting/fishing'.

The aspect morpheme -to in some of the preceding examples acquires length in the perfective -to:ya, which contrasts with the stative perfective -toya. kikowato 'he went to buy it', kikowato:ya 'he went and bought it', kikowatoya 'he was buying it', kikowato? 'he is buying it'.

5.3.3 Spanish loans normally have one long vowel corresponding to Spanish stress placement. Length remains fixed on that vowel and does not shift with stress when suffixation occurs. me:sah < mesa 'table' (pl: me:sahmeh), kola:l < corral 'fence', šapo:n < jabón 'soap', paša:lowa < pasiar 'take a walk', nase:rowa < nacer be 'born'.

Two Spanish loans have two long vowels each. a:ko:sah < aguja 'needle', a:lpine:l < alfiler pin. A possible explanation for the occurrance of length on the initial vowel in these two loans is their analogousness to high frequency words containing initial /a:/. a:ltepe:? 'village' a:co:mi? 'water pot' a:wayoh 'oak grove' a:ca? 'cane' a:čikiwi? 'shrimp trap'.

A few function words borrowed from Spanish have no long vowels. Eg: de 'of', que 'that', o 'or', porque 'because', para 'for'. Others fluctuate between long and short. Eg: pero(h)∼pe:ro(h) 'but'.

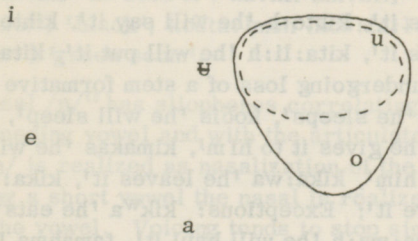
5.3.4 The following limitations are noted in the occurrence of long and short

vowels: 1) Only short vowels occur in clitics. 2) Only long vowels occur in the word-final stressed syllables of a class of adverbials ending in /-n/. ihkó:n (in that way', ihki:n 'in this way', ačó:n 'that much', ačí:n 'this much', alí:n 'a little bit', imaní:n 'quickly', iná:n 'now'. These long vowels contrast with short vowels in analogous environments of stress and syllable final /n/. When stress is shifted they continue to contrast with short vowels in analogous environments. ačo:ntito? 'it stays the same', ihko:npameh 'they are equal', in contrast to iɛontekon 'his head'.

6.0 The o/u variation in the Nahuatl dialects has been a problem of considerable interest to investigators[13]. Data is therefore presented to indicate a patterning of this variation as it relates to vowel length and other phonological factors.

6.1 The /o/ phoneme[14] has a phonetic range which includes [u] at its highest point, approaches [ɔ] at its lowest, and a mid-high[ʉ] at its most central. (See below, chart A)

CHART A




The solid line indicates the approximate range of the /o/ phoneme. Within this range the various phonetic realizations represent a continuum with no discrete break between the higher and the lower. The symbol [u] in the examples given in this section represents the vocalic range roughly included within the dotted line, that is those sounds which are interpreted by speakers of both English and Spanish as being other than [o] and in some way more akin to [u]. The allophones within this range will be referred to as the higher allophones, and the conditioning processes discussed in 6.3 which result in the occurrence of [u] will be referred to as heightening.

6.2 Long /o/ exhibits a pattern of free fluctuation anywhere within the back half of the higher and lower phonetic ranges. čo:ka [čó:ka~čú:ka] 'he cries', to:na [tó:na~tú:na] 'it (the sun) shines', šo:či? [šó:či?~šú:či?] 'flower', kito:lowa [kito:lówa~kitu:lówa] 'he bends it down'.

6.3 Short /o/ exhibits a pattern of conditioned variation related to combined factors of stress and contiguous consonants.

6.3.1 The consonants most consistently occurring contiguous to [u] are /y, š, č, l, m, n, p/. These will be referred to as conditioning consonants. iya:yo [iyá:yu] 'its juice', ko:šo [kó:šu] 'lame', talampoš [talámpuš] (a specie of fish), so:t-

-koy [só:tkuY] 'elbow', kisoloh [kisóluh] 'he ruined it', teyoh [téyuh] 'a rocky place', šošokti? [šušókti?] 'green', yoyotoka [yuyutóka] 'it dribbles', yokayawi [yukayáwi] 'he goes on purpose', nošwiyo [nušwíyu] 'my godchild', moločiwi [molučíwi] 'it shrivels', šolpi? [šúɬpi?] 'it came untied', a:polaki [a:puláki] 'it gets soaked', to:tolsa:wa? [to:tuɬsá:wa?] 'chicken-pox', ko:kočtokeh [ko:kučtókeh] 'they are falling asleep'.

6.3.2 There are varying degrees and kinds of conditioning. The greatest degree of heightening occurs in unstressed positions preceding the alveopalatals /y, š, č/. With the alveopalatals heightening is accompanied by centralization. In stressed positions heightening is usually associated with the occurrence of /l/ following the vowel, or of two contiguous conditioning consonants, one preceding and one following the vowel. Bilabials /m, p/ affect the vowel chiefly through closer lip rounding and usually in co-occurrence with another conditioning consonant contiguous to the vowel. Nasal /n/ appears in the list in syllable-final position only and in co-occurrence with syllable-initial bilabials. The intervening vowel is nasalized and perhaps for that reason merely sounds somewhat closer than its oral counterpart.

The following is a chart of sequences in which the vowel most consistently occurs as [u]. Hyphens indicate syllable divisions within words. Absence of a hyphen before or after a sequence indicates word boundaries except where a single phoneme occurs to the right of a hyphen, in which case that phoneme is the onset of another syllable within the same word. The accent mark (´) indicates stress. The columns are arranged impressionistically in order of degree of vowel heightening perceived in one recorded listing, column 1 being maximum, column 5 minimum. All occurrences of /o/ in this chart are short. (See below, chart B)

CHART B

| 1 | 2 | 3 | 4 | 5 |
|---|---|---|---|---|
| šo-š | noš- | poš- | šól- | -yóm- |
| čo-č | poš- | po-š | kól- | -món- |
| yo-y | mo-š | ko-y | kóš- | -pón- |
| -šoš | mo-y | mo-y | šo-k | -šók- |
| -yoš | -koš- | -mo-l | -yo-m | -yók- |
| -yoh | -koč- | -ko-y | -po-l | -pó-w |
| | -poč- | -po-l | -to-l | -sol |
| | -poš- | -lo-l | -so-l | -so-l |
| | -koš | -šo-l | -ko-l | -ko-m |
| | -hoš | -po-y | -to-y | |
| | -koy | -lo-č | -ɸo-y | |
| | -loh | -mo-y | -ko-y | |
| | -šo? | -yo-k | -po?- | |
| | -yoh | -šo-p | -pon- | |
| | | -kol- | -po | |
| | | -tol- | -ko | |
| | | -yo | -yo | |
| | | -po | | |
| | | -koč | | |

The sequences in this list bear a striking resemblance to those charted by Seiler

and Zimmermann in their study of classical Nahuatl written materials. Only two columns of sequences listed by them are absent here: those ending in s and ¢, kus, pus, tus, mus, ku¢, pu¢, mu¢.

6.3.3 The following deductions may be drawn from the configuration of the chart:

1) Short /o/ is conditioned toward [u] by occurrence contiguous to one or more of the following classes of consonants: alveopalatal, lateral, bilabial, and nasal, listed in order of declining conditioning strength. The phonetic features associated with the conditioning are the following, either alone or in combination: heightening, centralization, closer lip rounding, and nasalization.

2) The degree of conditioning toward [u] correlates with the position of the consonants in relation to the vowel. A preceding consonant exerts less influence on the vowel than a following one. A final consonant in a closed syllable affects the vowel of the nucleus most. Conditioning of the vowel is greatest when it is both preceded and followed by an alveopalatal consonant.

3) The degree of conditioning also correlates with the position of the syllable in relation to stress. The vowel is less prone to phonological conditioning in stressed position than in non-stressed.

Conclusion. The o/u variation has the following correlation with vowel length: Long /o/ tends to fluctuate freely within the back range of the lower and higher allophones. Short /o/ tends toward a pattern of conditioned variation within the entire range of the lower, higher, and central allophones.

## FOOTNOTES

1 Spoken in the municipio of Mecayapan, Veracruz, about 35 miles north and west of the city of Minatitlán. My introduction to Isthmus Nahuat was through personal acquaintance with Dr. and Mrs. Howard Law, who freely shared their data on the language both verbally and in the form of unpublished materials. These materials, together with the Laws' published works, provided an often-consulted body of reference on the phonology, grammar, and lexicon, and are hereby gratefully acknowledged.

Acknowledgment is also given to the National Science Foundation grant GS934 for a computer-processed concordance which made possible ready reference to every morpheme in 85 pages of native text.

My direct contact with native speakers of Nahuat began with a brief field trip to Mecayapan in January 1964 and was continued during a total of 8 months residence there since Sept. 1965. The principal informants during that time were Hipólito Hernández, age 25, Lucio Bautista, age 22, and Genaro González, age 15. This paper was prepared at a workshop of the Summer Institute of Linguistics at Ixmiquilpan, Hidalgo, held from Sept. 1966 through Jan. 1967, with Epifaneo Bautista age 33, as informant, and with the helpful stimulation, guidance and criticism of Dr. Dow Robinson. Suggestions made by Miss Eunice Pike also aided in clarifying certain aspects of the description.

2 This paper assumes the phonemes to be those listed by Law, including, with the exception of /u/, those which he notes as occurring but which do not appear on

his phoneme chart. The phonemes are as follows: consonants /p, t, k, b, d, g, f, s, š, x, l, ř, r̃, $p^w$, $f^w$, $k^w$, č, ɸ, m, n, w, y, h, ʔ/; vowels /i, e, a, o/; supra-segmental phonemes /:/ (vowel length) and /´/ (stress). Wherein the conclusions presented differ from those presented by Law, the difference will be due either to linguistic change during the time interval between the two investigations or to a reinterpretation of the data. Phonemic symbolization of all data in this paper reflects the present analysis. Howard W. Law, "The Phonemes of Isthmus Nahuat", El México Antiguo 8:267-78 (1955); "Morphological Structure of Isthmus Nahuat", IJAL 24:108-29 (April, 1958).

3 As suggested by Seiler, a structural interrelation possibly exists between certain glottal phenomena and accent. Note alternation between /ʔ/ and /k/ in the following tešoʔ ~ tešok-ti 'mojarra', tešokɸi:n 'tiny mojarra' (sg.), tešoʔɸiɸi:n 'tiny mojarra' (pl). Hansjakob Seiler, "Accent and Morphophonemics in Cahuilla and in Uto-Aztecan", IJAL 31:50-59 (1965).

4 It has been proposed by one of my colleagues that /h/ be considered a prosodic feature, a suprasegmental something that happens to be syllable, rather than a segmental phoneme. This suggestion has a certain intuitive attraction in that CV, CV:, C and CVh do indeed differ mainly in their prosidies. Such an interpretation however is complicated by the fact that CVh does not pattern like CV and CV: in that the latter two may be followed by a consonant syllable coda, while /h/ is mutually exclusive with other consonants in the syllable coda. That is, CVhC is not a permissible syllable pattern, while CVC and CV:C are. Both CVh and CV:h occur. In this respect at least /h/ is entirely analogous to the segmental phonemes.

5 Patterns in lexical borrowing are discussed by Law in "Linguistic Acculturation in Isthmus Nahuat", A William Cameron Townsend en el XXV Aniversario del Instituto Lingüístico de Verano, Mexico D.F., 1961, pp. 555-561.

6 For reduction of these stem formatives in Nahuat de la Sierra de Puebla (Zacapoaxtla), see: Robinson Dow.F.: Sierra Nahuat Word Structure, p. 14-16.

7 Benjamin L. Whorf, "Pitch, Tone and Saltillo in Modern and Ancient Nahuatl", unpublished manuscript in Library of American Philosophical Society, Philadelphia, Pennsylvania.

8 Law notes some of these and other types of reduction involving verb prefixes and auxiliaries, classifying them as syntactophonemic changes at the clause level. Howard W. Law, Obligatory Constructions of Isthmus Nahuat Grammar, the Hague, Netherlands; Mouton and Co. 1966.

9 Cie sequences in Spanish loans also fit this pattern.

10 Forrest Brewer y Jean G. Brewer, Vocabulario Mexicano de Tetelcingo, Serie de vocabularios indígenas Núm. 8, Instituto Lingüístico de Verano, Mexico D.F. 1962.

11 The use of y instead of i in the monosyllabic sequences has been suggested. This solution however would not eliminate the need to indicate syllable division in order to show to which syllable the consonant preceding the y belongs. Consonant allophones differ according to position in the syllable.

12 The symbol /n/ is arbitrarily chosen to represent the nasal phoneme in word-final position. The present analysis is that contrast between /m/ and /n/ is neutralized in that environment.

13 Hansjakob Seiler and Günter Zimmermann, "Studies in the Phonology and Morphology of Classical Nahuatl", IJAL 28:243-250 (1962).

14 That the o/u range represents only one phoneme is evidenced in the inability of the naive Nahuatl speaker to perceive or reproduce the distinction between [o] and [u] in Spanish minimal pairs involving those two sounds. Each of the following pairs of Spanish words is pronounced homophonously: oso 'bear', uso (n) 'use', mocho 'deformed', mucho 'much', lona 'canvas', luna 'moon'.

# II. PUEBLA (SIERRA) NAHUAT PROSODIES

Dow F. Robinson

0. Introduction
1. Phonemes
2. Syllables
3. Micro-Segments
4. Meso-Segments
5. Macro-Segments
6. Mega-Segments

0. The penultimate stress pattern for Nahuatl words has been described since the Spanish priests first wrote treatises on the languages of the conquered Aztec peoples[1]. Numerous articles within the past fifty years point out the same phenomena[2]. Hence, the allegedly aberrant patterns of ultimate and antepenultimate stress[3] that regularly occur in Sierra Nahuat[4] (SN) require careful explanation.

The independent functioning of the length and stress is a feature common to the Nahuatl/Nahuat dialects[5]. The length component, sometimes correlated with a change in vowel quality, is reported for Tepoztlan (Morelos)[6], Tetelcingo (Morelos)[7], Texcoco (Valley of Mexico)[8], Milpa Alta (Valley of Mexico)[9], Zacapoaxtla (Sierra de Puebla)[10], Huauchinango (northern Puebla)[11], Matlapa (San Luis Potosí)[12], Huasteco (northern Veracruz)[13], Mecayapan (Isthmus, Veracruz)[14], Los Tuxtlas (southern Veracruz)[15], and Guerrero[16]. Todd (Pipiles of El Salvador) makes no mention of the length phenomena[17]. Boaz in his report on Pochutla Nahuat (coastal Oaxaca), now extinct[18], found no length distinctions. Likewise, for the speakers of Nahual, in coastal Michoacan[19], long and short vowels are not contrastive.

Contrastive pitch which alone accounts for lexical distinctions has been demonstrated only for the Nahuatl dialect of the Valley of Mexico; Whorf reports one such minimal pair[20]. In SN there is a variety of pitch phenomena which is associated with phonological units (syntagmemes) of different lengths, i.e., pitch is associated with syllable-length units (syllables), with phrase-length units (meso-segments), and with clause-length units (macro-segments). The pitch phenomena, according to the hierarchical framework used in this analysis, have at least two functions: (1) They signal lexical structure, and (2) they signal phonological structure.

In SN a small set of particles manifests high pitch and the distinctive pitch of each member of the set remains unaffected by length, stress, intonation or position in the phonological utterance, e.g., nohóon 'that', aačáa 'perhaps', aksáa 'someone'. There are no minimal pairs with this set. Although this set is not in focus in this study, the assignment of high pitch to such particles in no way contradicts the analysis of pitch set forth in this analysis. The lexical significance of pitch is also demonstrated by the contrastive intonation contours described in section 5 as macro-segments.

The pitch phenomena which signal phonological structuring are associated with

(1) length, i.e., long vowels are lower in pitch and have lowering glides, and (2) stress, i.e., stressed vowels are higher in pitch. In both cases the pitch phenomena are part of the prosody being defined, i.e., the definition of duration includes the element of lowering glides and the definition of stress includes the element of rise of pitch. Hereafter, these prosodies are referred to as length and accent prosodies respectively. In addition, there is a pitch phenomenon which signals the nucleus of a phonological syntagmeme, i.e., the meso-segment (see section 4); the high pitch alone signals the nucleus neither length nor accent is structurally relevant at this point.

The following examples show relative pitch levels for vowels which are short or long and for vowels which are stressed or unstressed. Etic pitch is marked from 1 - high, to 5 - low for each vowel.

"iin "šokot, pitches: 2-3 1 4
"iin "koneet, pitches: 2-3 1 4-5
"iin "šoočit, pitches: 2-3 2-3 4
"iin "ooloot, pitches: 2-3 2-3 4-5

It is, therefore, the thesis of this paper that, in addition to length and accent, pitch is structurally relevant in SN. It is relevant to the definition of the prosodies of length and accent; it is relevant to the definition of the nucleus of the meso-segment; it is relevant to lexical contrasts as shown by contrastive intonation contours. In the latter two functions pitch is considered a prosody. There are, then, four prosodies in SN: length, accent, pitch, and intonation.

The prosodies have different domains, i.e., they are relevant to phonological entities of different sizes. The domain of the length prosody is that of vowels; vowels occur both with and without the length prosody. The accent prosody has three manifestations. primary, secondary, and tertiary. The domain of primary accent is the nucleus of the macro-segment, a clause-length systagmeme; the domain of the secondary accent is the nucleus of the meso-segment, a phrase-length syntagmeme; the domain of tertiary accent is the nucleus of the micro-segment, a word-length syntagmeme. The domain of the high pitch prosody is the nucleus of the meso-segment. The domain of the intonation prosody is the entire macro-segment. The prosodies are considered emic, i.e., structurally relevant, but not phonemes[21]. They are "identificational-contrastive" features of the phonological syntagmemes to which they are assigned.

Phonological syntagmemes[22] are constructions which are defined by: (1) internal constituents, i.e., a sequence or clustering of lower level entities, (2) prosodies, and (3) junctural features. Phonemes and prosodies are inventory items, not constructions. The following phonological syntagmemes are posited for SN:[23]

| SYNTAGMEMES | Internal Constituents: | Prosody: | Nucleus: | Juncture: |
|---|---|---|---|---|
| Syllable | Phonemes | none | vowel | . |
| Micro-seg. | Syllables | Accent | ' | - |
| Meso-seg. | Micro-seg. | Pitch-accent | " | + |
| Macro-seg. | Meso-seg. | Intonation-accent | 0 | / |
| Mega-seg. | Macro-seg. | none | 0 | // |

Formulae are used to express the phonological syntagmemes. The upper case symbol to the left of the colon indicates the constituent slot of the syntagmeme; the lower case symbol to the right of the colon indicates the phonological entity which manifests that constituent slot. The colon is read as: is manifested by.

1. This paper assumes as a working basis the description of the segmental phonemes of Sierra Nahuat published previously. Hence, only a structural summary of them is given here. These elements, in turn, provide the inventory for defining higher levels of the phonological hierarchy.

1.1 The phonological features of the 21 consonants, other than the laryngeal /h/, are obstruent and sonorant manners of articulation and labial, dental, alveo-palatal, velar, and labio-velar points of articulation. There is voicing contrast for the stops. Obstruent consonants subdivide as to stop, affricate, and fricative manners of articulation. Sonorant consonants subdivide as to lateral, nasal, flap, trill, and median manners of articulation[24].

| | Labial | Dental | Alveo-palatal | Velar | Labio-velar |
|---|---|---|---|---|---|
| OBSTRUENTS | | | | | |
| Stop | | | | | |
| voiceless | p | t | | k | $k^w$ |
| voiced | b | d | | g | |
| Affricate | | c | č | | |
| Fricative | f | s | š | | |
| SONORANTS | | | | | |
| Lateral | | l | | | |
| Nasal | m | n | ñ | | |
| Flap, Trill | | ř | r̃ | | |
| Median | w | y | | | |
| LARYNGEAL | | | | | |
| Laryngeal | | | | h | |

1.2 Vowels, as manifestants of the nucleus of syllables, cannot be actualized apart from the length prosody and, therefore, are described in terms of the phonological constituents of a three-dimensional system. The eight vowels of SN are defined by: front and back tongue placement, high and low tongue height, and long and short duration correlated with decentralized and centralized vowel quality.

| | Front | | Back | |
|---|---|---|---|---|
| High | ii | i | o | oo |
| Low | ee | e | a | aa |

The inner set is centralized-short (CS); the outer set is decentralized-long (DL).

Each of the eight vowels varies in duration and quality as the prosodies of accent and high pitch are added[25], i.e., each vowel has at least three variants, depending upon its position in the higher level unit. A normal variant occurs just before a syllable which receives primary stress; a shorter variant, more centralized in quality and shorter in duration, occurs in the initial syllable of a polysyllabic stress unit; a longer variant occurs in the syllable which receives primary accent.

The following illustrations show lexical distinctions based on the difference between the centralized-short and the decentralized-long vowels. yehwa yolik 'he was

born', yehwa yoliik 'he is slow'; yehwa motema 'he bathes', yehwa moteema 'he piles it up'; šitokati 'go, chase it!', šiktookati 'go, plant it!'; šiktatiti 'go, burn it', šiktaatiti 'go, hide it'.

2. The syllable is a phonological syntagmeme which is defined by syllable juncture and a clustering of one to three phonemes. The nucleus of the syllable is manifested by any one of the eight vowels. The onset and coda slots are manifested by consonants. Consonant class one manifests the onset; consonant class two manifests the coda. Illustrative material is marked phonologically only in terms of the features which are relevant to the paragraph under discussion, e.g., a discussion and illustration of syllables will include only the phonological diacritics which are relevant to the phoneme and syllable.

2.1 The juncture of two syllables is marked by a slight fade in intensity and by the etic variants of certain phonemes, variants which are definable in terms of assimilation of nasal and assimilation of voicing. The nasal /n/, when it occurs in the coda, assimilates to the point of articulation of the following stop, e.g., /n/ as dental, [kiintahtoh] /kiintahtoh/ 'he told them'; /n/ as velar, [kiiŋkawak] /kiinkawak/ 'he left them'.

The assimilation of voicing is manifested by a devoicing phenomena in both onset and coda slots. /l,w,y/ have voiceless allophones which occur only in the coda slot. [weyi kwoWtak] /weyi kwowtah/ 'large forest', [yek maY] /yek may/ 'right hand', [mi̥ltomat] /miltomat/ 'field tomato'. When /w,h/ manifest coda slots, the voiced phoneme in the onset slot of the following syllable loses its voicing. In effect, every voiced phoneme in the inventory has a voiceless allophone which occurs with this distribution. [mahAmo] /mahamo/ 'Don't!', [kwowMasaat] /kwowmasaat/ 'mountain deer', [tayihYa] /tayihya/ 'he now drank it', [nohNeel] /nohneel/ 'youth', [mahWiiki] /mahwiiki/ 'that he come'.

2.2 Syllabification within a phonological sequence is determined as follows. When two consonants occur in sequence, the first is the coda of the preceding syllable and the second is the onset of the following syllable. When two vowels occur in sequence, each constitutes the peak of a syllable. In a sequence CVCV..., each consonant fills the onset of a syllable. In a sequence VCV...the consonant may fill either onset or coda slot. In normal speech a VCV sequence occurs as V.CV in keeping with the rhythm of the phonological unit. The same sequence in unusually slow speech may occur as VC.V. In such a case the morpheme breaks, corresponding to the morphemes used in compounding, have taken precedence over the normal syllable breaks. The resulting syllable types are the same as listed in the next section. Normal speech: [kii ni tak kaš too lo ko meh]; slow speech: [kiin i tak kaš tool o ko meh] 'He saw fifteen pine trees'.

2.3 There is one emic syllable in SN and is expressed by the formula: $S = \pm O: c_1 + N:v \pm C:c_2$, i.e., an optional onset manifested by consonant class 1, an obligatory nucleus manifested by vowels, and an optional coda manifested by consonant class 2. There are four variants or readings of the one emic syllable; they are listed in order of frequency of occurrence: $c_1v$, $c_1vc_2$, $vc_2$, v, or, respectively, CV, CVC, VC, V.

Consonants are divided into two classes based on their occurrence in onset and coda slots. Class one consists of all consonants and manifests the onset slot: payoh 'shawl', taagat 'man', cikat 'ant', čil 'chile', fieřo 'ugly', kwali 'good', buro 'don-

key', semi 'very', šonakat 'onion', daño 'harm', wehka 'distant'. Consonant class two consists of /t,k,c,č,s,š,l,n,w,y,h/ and manifests the coda slot. kwitat 'dung', tiltik 'black', kipacka 'he squeezes it', ičti 'maguey fiber', kostikkeh 'yellow ones', kwetašpan 'place on skin', noew 'my bean', nomay 'my hand'.

With the exception of a single V, which never occurs in isolation, any syllable type may occur in isolation or be preceded and/or followed by another of its own type or any other syllable type. iomiw 'his bone', eyo 'full of beans', etah 'bean field', kitaaliaok 'he still places it', aačaa 'perhaps', aawaat 'oak', aaiit 'who knows', VC: et 'beans', oongakok et 'there's still some beans', esti 'blood', ahkol 'shoulder', et ipa 'it's still a bean', iin 'the', iin aat 'the water', aaksaa 'somebody', iišpan 'upon it', moiišaawia 'he rinsed himself'. CV: -ya 'imperfect', kitaalia 'he placed it', see 'one', seesee 'one by one', seeciin 'a little one', nee aat 'that river', see aaciin 'one little river'. CVC: may 'hand', mostah 'daily', tahko 'half', taaloh 'dirty', iewan 'his beans', mool 'sauce', šaaltaal 'dirty sand', taalaat 'muddy water', kiiniišahsik 'he discovered them', kiinaawih 'he discovered them', kiinaawih 'he rinsed them'.

3. The micro-segment is a phonological syntagmeme which is defined by micro-juncture (-), a clustering of one to six syllables, and the prosody of secondary accent ("), i.e., secondary stress and raised pitch. The tonic slot of the micro-segment is manifested by any one of the four readings of the emic syllable, together with the prosody of secondary accent. The pre-tonic and post-tonic slots of the micro-segment are manifested by one or a series of any of the four readings of the emic syllable. The micro-segment never occurs in isolation. Its status is posited here in terms of its most frequent occurrence, viz, a phonological word-sized unit within a clause. When the micro-segment occurs as one of several units with a phonological word-sized unit (i.e., a compounded stem), its stress is reduced to a tertiary. See the discussion in section four, meso-segments, for further definition of the accent prosody.

3.1 The borders of a MiS are marked by micro-juncture (-) which comprises those features of assimilation of nasal and voicing which also mark the borders of syllables. In addition, there is a fade in intensity at the end of a MiS which is much more marked than the fade at the end of syllables. In any MiS there is a steady crescendo to the point of maximum intensity and high pitch; rapid decrescendo and drop in pitch follows the tonic syllable. The accent and junctural features are constituents of the MiS, constituents that collectively define the MiS.

3.2 There are four emic micro-segments, based on the contrastive placement of accent. (1) Monosyllabic micro-segments have an accent: "taal 'earth', "aat 'water', "et 'beans', "ca 'with'. (2) Most polysyllabic micro-segments receive penultimate accent: "taagat 'man', "yoliik 'he was born', na"nakat 'mushroom', či"kawak 'he's strong', čiči"pika 'it drips'. The basic accent pattern of micro-segments is retained in the compounding processes[26].

(3) An antepenultimate accent pattern occurs when any of the following syllables (post-clitics) is suffixed to a polysyllabic micro-segment: -ti 'nominalizer', -sah 'just', -ok 'still', -ya 'now'. Although these four clitics manifest the features of micro-juncture and, therefore, should invoke the placement of penultimate stress, their occurrence results in a perturbation of accent placement, i.e., an antepenultimate accent pattern: "tepos 'metal', "teposti 'metal', "tepossah 'just metal';

"pajti 'medicine', "pahtiok 'it's still medicine'; "yahki 'he went', "yahkiya 'he's now gone'[27].

(4) Another anomalous accent pattern, that of pre-antepenultimate accent occurs when two such post-clitics are suffixed to a polysyllabic micro-segment: "tepos 'metal', "teposti 'metal', "tepostisah 'it's just metal'; "kikwa 'he eats it', "kikwaya 'he now eats it', 'ki"kwayaya 'he now ate it', 'ki"kwayayasah 'he has just now eaten it'.

3.3 There are four formulae to express the emic micro-segments. For any one formula there are as many variants, or readings, as there are different numbers of unstressed syllables manifesting the pre-nucleus slot. The four formulae are:

MiS-1 + $\pm$PrT:S +N:"S, i.e., micro-segment one consists of an optional pre-tonic slot manifested by any reading of the syllable syntagmeme, and an obligatory nucleus slot manifested by the accent prosody and any variant of the syllable syntagmeme. This formula restricts the number of syllables occurring in either slot to one. There are two possible readings of the formula: "S and S"S.

Examples of "S with all syllable variants occurring in the tonic slot: "aat 'water', "mah 'in order to', "nee 'that', "emeh 'beans'. Examples of S"S with some of the syllable variants occurring in the pre-tonic slot: aa"čaa 'perhaps', no"hoon 'that', aak"saa 'someone'.

MiS-2 = $\pm$PrT:S$^4$ +N:"S +PsT:S, i.e., micro-segment two consists of an optional pre-tonic slot manifested by one to four unstressed syllables, an obligatory tonic slot manifested by the accent prosody and a syllable, and an obligatory post-tonic slot manifested by an unstressed syllable. There are no restrictions as to variants of the syllable syntagmeme occurring in this slot. There are four readings or variants of micro-segment two based on the number of unstressed syllables that occur preceding the accent prosody. Examples of "SS: "taagat 'man', "ooloot 'corn cob', "aačto 'first', "epat 'skunk', S"SS: ki"kisa 'he whistles', ki"mana 'he boils it', ki"ewa 'he raises it', ki"nihtoh 'he told them', mo"ahsi 'it dawned on him'. SS"SS čiči"pika 'it drips', kito"peewa 'he pushes it', tata"išpan 'in front of', taatamantik 'different ways'. SSS"SS: kikaka"laca 'he knocks on it', kiahwa"yoowa 'he makes it itch', kikahka"yawtih 'he deceived him'. SSSS"SS: tacikawas"wiya 'she combs it'.

Although illustrations are not given for the occurrence of every syllable type in every different slot of the micro-segments, this does not imply restriction of syllable types in certain slots of the micro-segments. Any lack of occurrence of syllable types in certain slots is due to a random lack of examples at that point, not to phonological patterning.

MiS-3 = $\pm$PrT:S$^4$ +N:"S +PsT:SS, i.e., micro-segment three consists of an optional pre-tonic slot manifested by one to four unstressed syllables, an obligatory tonic slot manifested by the accent prosody and a syllable, and an obligatory post-tonic slot manifested by two unstressed syllables. There are no restrictions as to syllable variants occurring in any slot. There are five readings, or variants, of micro-segment three, based on the different number of unstressed syllables manifesting the pre-tonic slot. Examples of "SSS: "taagatya 'he's now a man', "ačtoya 'it was first', "pahtikya 'he's now healed', "etahsah 'just a bean field'. S"SSS: a"wakatsah 'just an avacado', ta"piškehok 'he's still a pastor', ta"išpanti 'place out front', ta"aatenti 'along the river's edge'. SS"SSS: kiki"nakaya 'he's now

babbling', tapi"piktiksah 'it's just hard', tahta"kolisti 'sin'. SSS"SSS: kikoko"tocaya 'he's now breaking it', kitaataw"tiyaya 'he's now asking for it', tacoco"nanihsah 'just musicians'. SSSS"SSS: tacikawas"wiyaya 'she's now combing it'.

MiS-4 = $\pm$PrT:S$^4$ +N:"S +PsT:SSS, i.e., micro-segment four consists of an optional pre-tonic slot manifested by one to four unstressed syllables, an obligatory tonic slot manifested by accent prosody and a syllable, and an obligatory post-tonic slot manifested by three unstressed syllables. Examples of "SSSS: "kičiyasah 'he's just now gone to sleep', "nohpaltisah 'it's just cactus', "ahsiyasah 'he's just now arrived'. S"SSSS: ši"kočiyasah 'now just go to sleep!', SS"SSSS: tako"molistisah 'it's just downhill now', kiči"pawtikyasah 'he's just now finished cleaning it'. SSS"SSSS: kičiči"picayasah 'he's just now dripping it'. SSSS"SSSS: kicikawas"wiyasah 'she's just now combing it'.

4. The meso-segment is a phonological syntagmeme which is defined by meso-juncture (+), a clustering of one to three micro-segments, and the prosodies of high pitch and secondary accent ("). The meso-segment accounts for a series of micro-segments contained within one phonological unit, a unit which is longer than a word but less than a clause[28]. Such a unit is formed: (1) when more than one root occurs within one word, i.e., the addition of individual micro-segments or clusters of segments results in a series of stressed units, and (2) when any type of suffixation occurs with a micro-segment, any suffixation except the post-clitics described in section 3. In both cases, the meso-segment is characterized by a secondary accent and high pitch on the nucleus; the other original secondary accents of constituent micro-segments are reduced to tertiary accent ('). The nucleus of the meso-segment is characterized by a secondary accent and high pitch on the nucleus; the other original secondary accents of constituent micro-segments are reduced to tertiary accent ('). The nucleus of the meso-segment is the final micro-segment of the syntagmeme; the penultimate syllable receives the secondary accent and sometimes the pitch; the ultimate syllable sometimes receives the pitch. There is an abrupt break from high to lower pitch after the nucleus, with accompanying rapid decrescendo. The pre-nucleus slot of the meso-segment is manifested by a series of one to three micro-segments.

4.1 The borders of the meso-segment are marked by meso-juncture (+) which includes the following features: (1) aspiration: /t,k/ have aspirated allophones when they occur finally in a meso-segment; glottal: an open syllable occurring in final position in the meso-segment will be closed by a non-phonemic glottal stop; (3) lack of assimilation: in the same way that the borders of micro-segments are marked by assimilation of nasal and voicing, the borders of meso-segments are marked by the absence of these features. The distinctive junctural features of the syllable, (.), the micro-segment, (-), and the meso-segments, (+), are shown in the following examples. The nasal at syllable boundary and micro-segment boundary assimilate to the point of articulation of the following consonants. Monosyllabic units such as "íin 'the', and "tén 'that which', are shown to be meso-segments by the fact that the nasal does not assimilate[29]. On the other hand, the syllable kiin- 'direct object' is shown to be part of the micro-segment, since its nasal does assimilate. Likewise, the disyllabic unit kalan 'outside' is shown to be a component micro-segment of the meso-segment by the fact that its final nasal does assimilate. [iin kaalaat$^h$ kiiŋkwah iin mooyoomeh]

+"íin+"kaaláat+"kiinkwáh+"íin+'moo"yóomeh+ 'the frog ate the flies' (kaalaat 'frog', kiinkwah 'ate', mooyoomeh 'flies'): [iin taagat$^{h}$ ten kiinkalammyowak$^{h}$] +"íin+"taagát+"tén+kiin'kalam-ma"yowak+ 'the man who spread it outside' (taagat 'man', ten 'who', kalam- 'outside', mayowak 'spread').

4.2 There is one emic meso-segment which is expressed by the formula: MeS = ±PrN:'MiS$^{3}$ +N:"MíS, i.e., the meso-segment consists of an optional Pre-Nucleus slot manifested by a series of one to three micro-segments, with tertiary accent, and an obligatory Nucleus slot manifested by one micro-segment which receives both secondary accent and high pitch.

4.21 The structural allo manifestants of the meso-segment are of two general types; type A is that meso-segment whose nucleus receives both high pitch and secondary accent on the same syllable; type B includes those meso-segments which manifest the prosodies on different syllables within the nucleus. For both types A and B, there are as many other allo manifestants as there are different numbers of micro-segments occurring before the nucleus of the meso-segment. Type A meso-segment occurs only in the nucleus of the macro-segment, i.e., the unit on the next high level; type B occurs anywhere else in the micro-segment.

The following abstract representation shows meso-segments types A and B composed of two micro-segments, which, in turn, are composed of two or more syllables. Micro-segment borders are marked by (-); meso-segment borders are marked by (+).

| MESO-SEGMENT TYPE A: | MESO- SEGMENT TYPE B: |
|---|---|
| +'MiS-"MíS+ | +'Mis-"MíS+ |
| +'SS-"ŚS+ | +'SS-"SŚ+ |
| +'SS-"ŚSS+ | +'SS-"SSŚ+ |
| +'SS-"ŚSSS+ | +'SS-"SSSŚ+ |

Any of the emic micro-segments described in section 3.2 may occur in either pre-nucleus or nucleus slots of the meso-segment.

4.22 Examples of meso-segment types A and B, formed by clusterings of micro-segments, are given below. The first example of each allo follows the abstract representation given above; subsequent examples show different numbers of micro-segments manifesting the pre-nucleus of the meso-segment.

Meso-segment type A is the manifestation of the meso-segment when it is final in the unit on the next higher level, the macro-segment. 'pico-"nákat 'pork' (pico- 'pig', nakat 'meat'), 'mil-"tómat 'wild tomato' (mil 'cornfield', tomat 'tomato'), a'waka-"tampa 'beneath the avocado tree' (awaka- 'avocado', -tampa 'beneath'), kiki'naka-"téwa 'he left babbling' (kikinaka 'babble', -tewa 'leave'), kikaka'laca-"táhsi 'he arrived rattling it' (kikakalaca 'he rattles it', -tahsi 'arrive').

The next set of illustrations show the formation of meso-segments by the addition of the post-clitics (see micro-segments numbers three and four in section 32.). 'pico-"nákatsah 'just pork' (piconakat 'pork', -sah 'just'), 'mil-"tómatok 'it's still a wild tomato' (miltomat 'wild tomato', -ok 'still'), a'waka-"támpaok 'it's still beneath the avocado tree', -ok 'still'), kiki'naka-"téwaya 'he left now babbling' (kikinakatewa 'leave babbling', -ya 'now'), kikaka'laca-"táhsiok 'as he arrived he was still rattling it' (kikakalacatahsi 'he arrives rattling it', -ok 'still'); 'yawi-"tépostisah 'it's still just blue metal' (yawi- 'blue', tepos 'metal', -ti 'nominalizer', -sah 'just'), nik'nal-"ítayasah 'I'm just now catching sight of it' (niknalita 'I catch sight of it', -ya 'now', -sah 'just'), kičiči'pica-"téhkoyasah 'he drips it just now as

he arrives' kičičipicatehko 'he drips it as he arrives', -ya 'now', -sah 'just'), kikaka'laca-"táhsiyasah 'he rattles it just now as he arrives' (kikakalacatahsi 'he arrives rattling it', -ya 'now', -sah 'just'). Meso-segment type B is the manifestation of the meso-segment when it is non-final in the macro-segment; the high pitch falls on the last syllable of the meso-segment. Each illustration given in the previous section is repeated here with high pitch on the final syllable; component parts are not labeled. 'pico-"nakát 'pork', 'mil-"tomát 'wild tomato', a'waka-"tampá 'beneath the avocado tree', kiki'naka-"tewá 'he left babbling', kikaka'laca-"tahsí 'he arrived rattling it'; 'pico-"nakatsáh 'just pork', 'mil-"tomatók 'it's still a wild tomato', a'waka-"tampaók 'it's still under the avocado tree', kiki'naka-"tewayá 'he just now left babbling', kikaka'laca"tahsiók 'when he arrived he was still rattling it', 'yawit-"tepostisáh 'it's still just blue metal', nik'nal- itayasah 'I'm already catching sight of it', kićići'pica-"tehkoyasaáh 'he dripped it just now as he arrived', kikaka'-laca-"tahsiyasáh 'he already just rattled it as he arrived'.

4.23 The following examples show allos of the meso-segment based on the different number of micro-segments manifesting the pre-nucleus slot. "MíS: "toonal 'sun'; 'MíS"MíS: 'toonal-"tékit 'daytime work' (tekit 'work'); 'MiS'MiS"MíS: ki'wehka-toh'toka-ti"némi 'he followed far off' (wehka 'distant', tohtoka 'he follows', -tinemi 'travel'); 'MiS'MiS'MiS"MíS: či'kawka-'mowka-'kistew-ti"wéci 'he left hurriedly with great fear' (čikaw- 'great', mow- 'fear', kistew- 'leave', -tiweci 'in a hurry').

4.24 The following examples show allos of the meso-segment based on suffixation of non-stressed syllables. Monosyllabic meso-segments become disyllabic with suffixation of unstressed syllables: "míl 'cornfield', "mílpa 'cornfield' place "milméh 'cornfields'. Disyllabic meso-segments become multisyllabic with suffixation of unstressed syllables; there is, however, the reduction of secondary accent to tertiary accent for all except the final accent of the meso-segment. "kíta 'he sees it', 'ki"táya 'he saw it', 'kita"tóya 'he was seeing it; "tókat 'spider', 'to"kámeh 'spiders'; ki"čiwa 'he does it', ki'či"wáti 'he goes to do it'; šaša"wáka 'it rustles', šaša'wa"káya 'it was rustling'; kikaka"láca 'he rattles it', kikaka'la"cáki 'he comes to rattle it'.

Monosyllabic meso-segments, when suffixed by monosyllabic meso-segments follow the regular pattern of reduction of accent to tertiary for all accents except the final one. The penultimate micro-segment manifests tertiary accent; the ultimate micro-segment is the nucleus of the meso-segment and manifests the secondary accent and high pitch. This pattern is quite limited in occurrence; the micro-segment -cin 'honorific' is the only one found to occur in this pattern. "mil 'cornfield', 'mil-"cín 'cornfield', "táal 'earth', 'taal-"cín 'earth (hon)', i"táalpan 'his land', i'taalpan-"cín 'his land'.

The first of two micro-segments joined by -ti- loses its final syllable; the accent moves back one syllable: ta"páni 'it breaks', ki'tapan-ti"némi 'he travels around breaking things' (ki- 'object', tapan- 'break', -tinemi 'travel around'), kiči"páwa 'he cleans it', ki'čipaw-ti"wéci 'he cleans it in a hurry' (čipaw- 'cleans', -tiweci 'hurry').

The first of two micro-segments joined by -ka- loses its final syllable; that lost syllable is replaced by -ka- and there is no perturbation of stress. či"káwa 'it's strong', či'kawka-"síwaat 'mature woman' (siwaat 'woman'), "mówi 'he's afraid,

kis"téwi 'he leaves', čiˀkawka-'mowka-kis"tewkeh čiˀkawka-'mowka-kis"tewkeh 'they left with great fear').

5. The macro-segment is a phonological syntagmeme which is defined by macro-juncture (/), a clustering of one to eight meso-segments, the prosody of primary accent ($^0$), and an intonation contour. The primary accent is phonetically louder than lesser accents and occurs only on the penultimate syllable of the macro-segment. The nucleus of the macro-segment is the final meso-segment of the syntagmeme. The pre-nucleus slot is manifested by a series of one to eight meso-segments, each of which has a secondary accent. The intonation contour overlays the entire macro-segment.

5.1 The borders of the macro-segment are marked by the same features that mark borders of meso-segments, i.e., aspiration of /t,k/ and glottal closure of open syllables which occur finally in the macro-segment. In addition, there is a fade in intensity, a slow down in timing, and a pause - all of which mark the border of a macro-segment.

5.2 There is one emic macro-segment which is expressed by the formula: MaS = $\pm$PrN:"MéS$^8$ +N: MeS $\pm$I:1-9, i.e., an optional pre-nucleus slot manifested by one to eight meso-segments with secondary accent and high pitch, an obligatory nucleus slot manifested by a meso-segment with primary accent, and an obligatory intonation slot manifested by one contour from the inventory of nine contours.

There are as many allo manifestants of the emic formula as there are different numbers of meso-segments manifesting the pre-nucleus slot of the macro-segment. The upper case letter which appears between the final segmental item and the juncture marker of the macro-segment indicates the particular intonation contour overlaying the syntagmeme. The four allo-manifestants of the macro-segment formula are shown in the following examples: MeS, kiˀčičin-$^0$tiwic F/ 'he comes smoking' (čičin- 'smoke', -tiwic 'comes', F final; "MéS$^0$MeS, ˀhwan-"cín+kiˀihti-ta$^0$powah F/ 'john split it open' (hwan 'john', -cin 'hon', ihti- 'middle', tapowa 'open'); "MéS"MéS$^0$MeS, 'mahtakti-o"moméh+ˀko"yoméh+ta'sʷah-'tan-ti$^0$nenkeh F/ 'twelve elders did the bride asking' (mahtaktiomomeh 'twelve' wehka 'distant', koyomeh 'respected elders', tasʷahtan- 'bride-asking', -tinenkeh 'they visited around'); "MéS"MéS"MéS$^0$MeS, "seesáh+'taaga-"konéet+ˀčoloh-ti"weci+a'nal-$^0$aat F/ 'just one boy hurried over to the other side' (seesah 'just one', taaga- 'man', koneet 'child', čoloh 'fled', -tiweci 'in a hurry', analaat 'other side').

Although the usual number of secondarily stressed units of a macro-segment is three, sometimes four, the occurrence of certain monosyllabic stressed units, like the article "íin 'the', and the connective "wán 'and', raises the number of possible meso-segments within a macro-segment to six or seven. There are rare instances of a macro-segment containing up to eight meso-segments, specifically when a speaker is presenting a list of items, e.g., "íin+"taagát+"kiinkʷá+"tomát+"owáat+"kafén+"wán+$^0$taškal F/ 'the man ate tomatoes, sugar cane, coffee, and tortillas (iin 'the', taagat 'man', kiinkʷa 'ate', tomat 'tomato', owaat 'sugar cane', wan 'and', taškal 'tortillas').

5.3 The intonation slot of the macro-segment is manifested by one of the nine intonation contours. These nine contrastive contours are posited by focusing on five levels of pitch and four points within the contour where the pitch is manifested.

Pitch levels: 1, very high; 2, high; 3, mid; 4, low; 5, very low. The points within the contour are: initial syllable, area just before the nucleus, nucleus, and post nucleus. The following inventory sets forth the pitches for each contour together with the meaning that is indicated by the presence of that contour in a macro-segment.

| Name | Pitches | Symbol |
|---|---|---|
| Sequence | 3-3-2-1 | S |
| Courtesy | 3-1-1-1 | C |
| Reproof | 3-3-3-2 | R |
| Threat | 2-3-5-3 | T |
| Finality | 3-3-2-4 | F |
| Demonstrative | 3-2-1-4 | D |
| Question | 1-2-4-5 | Q |
| Vocative | 1-1-1-4 | V |
| Parenthetical | 3-3-3-4 | P |

Sequence Intonation: The pitches 3-3-2-1 indicate that this is a non-final macro-segment; the speaker will continue on. The numbers over the micro-segment in brackets correspond to the pitches which define the contour. [s$^{3}$e kiiht$^{3}$it$^{2}$ap$^{1}$owa] /"sé+ki'ihti-ta$^{0}$powa S/ 'One opens it up'. Another variant of the Sequence Intonation occurs when the ultimate syllable manifests a pitch glide which starts at the same pitch as the penultimate syllable, drops and rises again. Such a variant occurs when the final vowel of the macro-segment is long or when the final vowel is lengthened by the future tense marker. [ wa$^{3}$an ihkoon yehwa amo mick$^{3}$ahkay$^{2}$awaas$^{2-3-1}$ ] /"wáan+"ih-kóon+"yehwá+"amó+mic'kah-ka$^{0}$yawaas S/ 'and then he will not deceive you'.

Courtesy Intonation: The pitches 3-1-1-1 indicate that the speaker understands and agrees with what has been said and, at the same time, is manifesting extreme courtesy. The entire range of pitch is shifted to a high level; pitch distinctions, however, based on stress or long vowels are maintained. The pitch of the initial syllable may be either a 2 or 3. [m$^{2}$elaan tiyon šol$^{1}$aalp$^{1}$aan] /"meláan+ti"yóh+šo$^{0}$laal-'paan C/ 'Really, you are going to market'. k$^{W}$ali dios kimonekiltiya /k$^{W}$alí+"diós+kimo'nekil-$^{0}$tiya C/ 'Surely that is what God wants.'

Final Intonation: The pitches 3-3-2-4 indicate that the speaker has finished this particular phonological stretch of speech, or that he has reached the end of a discourse or conversation. [se$^{3}$ kik$^{W}$i see mil$^{3}$tom$^{2}$at$^{4}$] /"sée+"kik$^{W}$í+"sée+'mil-$^{0}$tomat F/ 'one obtains a field tomato'.

Demonstrative Intonation: The pitches 3-2-1-4 indicate that the speaker is excitedly pointing out something to someone. [s$^{3}$ikita n$^{2}$ee k$^{0}$oow$^{1}$at$^{4}$] /si"kitá+"née+$^{0}$koowat D/ 'look at that snake!'.

Question Intonation: The pitches 1-2-4-5 indicate that either a question is being asked or that there is complete disbelief at what has been previously stated. In the latter sense, the situation is set up in which the hearer must either agree or disagree with what is being said. In the illustration below the meaning may be either complete doubt that the other person is going to market or the meaning may be that the other person is being questioned as to whether or not he is going to market. [ t$^{1}$ionyowi šo$^{2}$laalpa$^{4}$an mosta$^{5}$] /tioon"yowí+šo"laal-'páan+$^{0}$mosta Q/ 'Are you, sir, going to market tomorrow?', or, 'Are you, sir, really going to market tomorrow?'.

Reproof Intonation: The pitches 3-3-3-2 indicate that the speaker is admonishing

and/or warning another person. Its' usual occurrence is within a family situation when the parent is repeating to a child for the fourth time what type of conduct is expected of him. The difference between this contour and Sequence lies not only in the starting point of the rising glide but also in the measured, deliberate timing which attends the Reproof intonation. There is, in addition, a quietness in the speaker's voice. [ tooni nimicnawati] /"tooní+nimic-'na$^{0}$wati R/ 'What did I tell you?'.

Threat Intonation: The pitches 2-3-5-3 indicate that the speaker is unusually disturbed; he shouts at someone. Violence of action is implied. [ ick$^{W}$iinti ] /'ic-$^{0}$k$^{W}$iinti T/ 'Dog!' (meaning, 'Dog!, look what you've done'). [piiiii ] / $^{0}$pili T/ 'Child!' (meaning, 'Child!, get out of here'). Each or all of the syllables may be lengthened to twice or three times the normal duration.

For each of the macro-segments described above, S,C,R,T, the rising glide from the penultimate to the ultimate syllable is the most important of the identificational features of the contour. Other features are those of voice quality, timing, and intensity. All of these features together constitute the rhythm that is peculiar to each macro-segment.

Vocative Intonation: The pitches 1-1-1-4 indicate that the speaker is calling someone; the utterance may be just a name or an entire utterance. The syllables may receive extra duration. There is a rapid drop in pitch over the final syllable. [ peedrooh] / pedroh V/ 'Peter!' (meaning, 'Peter, I'm calling you!'). [ tiyooweeeh ] /ti$^{0}$yoweh V/ 'Let's go!'. [ tiyooweeeh yiikiiinciiin] /ti"yowéh+'yi$^{0}$kiin-'ciin V/ 'let's go, right now!'.

For each of these latter four macro-segments, F,D,Q,V, the falling glide from the penultimate to the ultimate syllable is the most important identificational feature, that which sets apart this group of macro-segments from the first four macro-segments. Each macro-segment, however, does have its own peculiar rhythm, that is, a pattern of timing, intensity, voice quality, and pitch variations. The overall intonation contour plus these latter features together define the individual intonation contour.

Parenthetical Intonation: The pitches 3-3-3-4 indicate that the speaker is giving an explanation of something said before and that the explanation is not an integral part of the story or conversation. [ ičaan wehka aanalaat ] /"ičáan+"wehká+ 'aa$^{0}$nal-'aat P/ 'by the way, his home is far across the sea'. (the P intonation indicates the phrase, 'by the way').

6. The mega-segment is a phonological syntagmeme which is defined by mega-juncture, (//), and a clustering of one to twenty macro-segments. The nucleus of the mega-segment is manifested by one of the four macro-segments Final, Demonstrative, Question, and Vocative; the pre-nucleus of the mega-segment is manifested by the macro-segments Sequence, Courtesy, Reproof, and Threat. The mega-segment has the same junctural features as the macro-segment; the features marking the nucleus are the same ones that mark the nucleus of the macro-segment. The phonological distinctiveness of the mega-segment, therefore, is based on a distributional criterion, i.e., one set of macro-segments occurs only in the pre-nucleus, the other set occurs only in the nucleus. The mega-segment often includes a stretch of speech equivalent to a paragraph or one complete text.

The following text is accounted for in its totality by the phonological structure

set forth in this study. There are 375 phonemes, 165 syllables, 88 micro-segments, 74 meso-segments, 19 macro-segments, and 10 mega-segments.

1. "qák+"sée+ki"piyá+ta$^{0}$tašis S/
   When+ one+ has + cold,

2. "sée+"kiqí+"sée+'mil-$^{0}$tomatF//
   one +takes+ one+field tomato.

3. "sée+kite"wacá+'teć-"ín+$^{0}$tekolF//
   One +dries it + in the+ live coals.

4. "qák+"qaalí+te$^{0}$wayikya S/
   When+ well+ dried out,

5. "sée+ki'ihti-ta$^{0}$powa S/
   one +splits it open,

6. "wán+"sée+kite'li"liyá+"istát+ta$^{0}$qećol F//
   and + one+sprinkles it+ salt + ground.

7. "wán+"komó+$^{0}$ongak S/
   And + if +there is any,

8. "sée+ki'teki"liyá+te"pi-'cín+re$^{0}$fino F//
   one +sprinkles it with + a little + whiskey.

9. "wán+no"hóon+ih"kóon+"qalí+to$^{0}$toktik S/
   And + that +in this way+well+heated,

10. ki"naméh+"sée+kiih$^{0}$yowiis S/
    as much as+one+can withstand,

11. "sée+mo'ohši"liyá+"teč+"sée+i$^{0}$toskak F//
    one +anoints himself+in+ one's+throat.

12. "wán+"qalí+"sée+mokemi"lowá+'ka-"sée+$^{0}$tasal F//
    And +well + one+wraps up +with a +cloth.

13. "wán+"sée+mo"tekáh+"sée+$^{0}$koči F//
    And + one+lies does+one+sleeps.

14. "wán+ih"kóon+"nimán+"sée+nen$^{0}$kenti F//
    And +in this way+soon+one+recovers.

15. 'o-"sée+"pahtí+'kači-$^{0}$niman F//
    Or one +recovers+sooner.

16. "qák+'amo-"ongák+'mil-$^{0}$tomat S/
    When+are none +field tomato,

17. "nóo+'qal-"tiyáas+"ín+'ši-$^{0}$tomat S//
    also+ is useful +the +green tomato,

18. 'den+mo"nekí+"kači+'to$^{0}$halmeh S/
    for which+is needed+more+days,

19. 'o-"kačí+"yolíik+"sée+$^{0}$pahti F//
or more + slowly+ one+gets better.

## FOOTNOTES

1 The literature is far too extensive to be exhaustively covered here. A few of the early grammars are: Fr. Andrés de Olmos, Grammatica et Lexicon Linguae Mexicanae, Totonacae, et Huaxtecae, México, 1555-60, 2 vols; Alonso de Molina, Arte de la Lengua Mexicana, México, 1571 (facsimile edition, Madrid, 1945); Antonio del Rincón, Arte Mexicana, México, 1595; Horacio Carochi, Compendio del arte de la lengua mexicana, (written in 1645, edited by Ignacio de Paredes and published in Mexico in 1759). See also, Rubio, Angel. De la Obra Cultural de la Antigua España, Panamá, 1939, for philological works of the 16th, 17th and 18th centuries.

2 Footnotes 5-19 present a listing of phonological descriptions of contemporary as well as classical Aztec dialects. For bibliographies of Aztec language and culture, see: Croft, Kenneth. "Six Decades of Nahuatl: A Bibliographical Contribution", IJAL 19:57-73 (1953); and Wolf, Hans. "Bibliography of Bibliographies of North American Languages Still Spoken", IJAL 13:268-73 (1947). Angel María Garibay K., Llave del Nahuatl, Editorial Porrua, S.A., México, 1961. See P. 121 ff for bibliography of grammars of Nahuatl, ancient as well as modern.

Other recent articles which refer more directly to grammar rather than phonology are: Croft, Kenneth, "Matlapa Nahuatl II: Affix List and Morphophonemics", IJAL 19:274-70 (1953), and "Matlapa Nahuatl III: Morpheme Arrangement", IJAL 20:37-43 (1954); Key, Harold, "Stem Construction and Affixation of Sierra Nahuat Verbs", IJAL 26:131-145 (1960); Law, Howard, "Morphological Structure of Isthmus Nahuat", IJAL 24:108-129 (1958) and Obligatory Construction of Isthmus Nahuat Grammar. The Hague, Netherlands: Mouton & Co., 1966; Pittman, Richard S., A Grammar of Tetelcingo (Morelos) Nahuatl, Language Dissertation 50, Supplement to Language 30 (1954); Robinson, Dow F., Sierra Nahuat Word Structure. Hartford Studies in Linguistics, No. 18. Hartford Seminary Foundation: Hartford, Conn., 1966.

For comparative work see: Hale, Kenneth, "Internal Diversity in Uto-Aztecan I", IJAL 24:101-7 (1958) and "Internal Diversity in Uto-Aztecan: II", IJAL 25:114-121 (1959); Voegelin, C.F. and F.M., and Hale, Kenneth, "Typological and Comparative Grammar of Uto-Aztecan: I (PHONOLOGY) I.U.P.A.L., Memoir 17 (1962).

3 McQuown reports this phenomena in the speech of another town of the same dialect, i.e., Nautzontla which is about 10 air miles north of Xalacapan. See, McQuown, Norman A., "La Fonemica de un dialecto Olmeca-Mexico de la Sierra Norte de Puebla", El Mexico Antiguo 6:61-72 (1942): "El acento tónico cae en la preponderancia de la formas en la penúltima. No obstante, en buen número de formas se registró acento antepenúltima y en unas cuantas acento en la última". (p. 66).

4 Materials for this paper were gathered in field trips to the barrio of Xalacapan, municipio of Zacapoaxtla, Puebla, Mexico, under the auspices of the Summer Institute of Linguistics, during the years 1958-62. For early drafts of the paper I am indebted

to H. A. Gleason, Jr., and William Samarin of the Hartford Seminary Foundation, and to Joseph Grimes and Howard Law of the Summer Institute of Linguistics. I am indebted to Miss Eunice Pike of the Summer Institute of Linguistics for the methodological techniques. This paper represents a complete re-working of previous drafts and was completed at a linguistic workshop conducted at the Centro Lingüístico Manuel Gamio, Ixmiquilpan, Hidalgo, Mexico, September-December 1966. Principle informant was Ubenceslao Valerio of Xalacapan.

5 The dialect under study comprises an area of roughly 100 square miles with a population of at least 100,000 in the Sierra Norte de Puebla. These Nahuat speakers live within an area bounded by the cities of Tesiutlan, Zautla, Tetela de Ocampo and Cuetzalan. Zacapoaxtla lies approximately in the center of the dialect. All illustrative words, phrases, and clauses are from texts, conversation, and paradigmatic materials gathered in the immediate vicinity of Zacapoaxtla.

6 Rojas, Mariano J., Manual de la Lengua Nahuatl. Jose Donaciano Rojas, Av. Rep. del Salvador Núm 136, México D.F., 1927. "El acento agudo (´)...se encuentra en la penúltima sílaba de las palabras que terminen en consonante, y rara vez en intermedias de dicción". He recognizes the feature of length by showing that the line"... (¯) colocado sobre una vocal es larga, como si la letra que carga fuese duplicada". (pp.2.).

7 Pittman, R.S., "The Phonemes of Tetelcingo (Morelos) Nahuatl", A William Cameron Townsend en el XXV Aniversario del I.L.V. pp. 643-651. "...words are distinguished by penultimate stress. The only exception I have noted is that of the enclitic -ka ..." (p. 644) "The 'long' vowels ā, ie, ī, u are thus designated because the feature of vowel length is more or less general in Nahuatl and there are many regular alternations between them and their 'short' counterparts in the grammar, particularly in reduplication. However, in Tetelcingo, the term does not easily fit since the distinction between them and the short vowels is more of quality than of quantity". (p. 647-8). See also, Brewer, Forrest & Jean G., Vocabulario Mexicano de Tetelcingo, Vocabularios Indígenas, Núm 8, Instituto Lingüístico de Verano, México, D.F., 1962, p. 252.

8 Cortes, Hunt. Apuntes Grammaticales Sobre el Idioma Mexicano. (Editorial Mexihcayotl. Sociedad Pro-Lengua Nahuatl "Mariano Jacobo Rojas"). Mexico, 1951. Hunt (p.34) qualifies the rule of penultimate stress with the following "siendo poquísimas las sílabas que tienen acentuadas la antepenúltima u otra sílaba, y estas tan solamente con el saltillo o acento odiótico". He adds 17 rules covering the use of the 'saltillo' some of which mention the effect of stress. In addition, he gives 27 rules covering long and short vowels. Padre Hunt's work represents the Texcoco dialect around 1900.

For comments on the pitch/stress/length phenomena in "mexicano clásico", see Barrett, Westbrook. "The Phonemic Interpretation of 'Accent' in Father Rincón's 'Arte Mexicana'", General Linguistics 2:22-28 (1956); Bright, William. "'Accent' in Classical Aztec", IJAL 26:66-8 (1960). Bright states, "We have seen that length plays a more important role than stress in Aztec". "The picture which is suggested

for classical Aztec is thus one in which pitch and stress play no contrastive role within the word, although low tone on a long vowel is associated with word-final position". See Seiler, Hansjakob ' Zimmerman, Günter. "Studies in the Phonology and Morphology of Classical Nahuatl". IJAL 28:243-50 (1962) in which the authors attempt an analysis of the orthographic alternation between /o/ and /u/ based on syllable structure and the occurrence of specific phonemes in onset and coda slots of closed syllables. See also, Angel Maria Garibay K. ibid. Vowel length is discussed under "los grupos vocálicos", p. 20; see p. 31 for stress.

9 Whorf, Benjamin L., "The Milpa Alta Dialect of Aztec, with notes on the classical and Tepoztlan dialects", in Linguistic Structures of Native America. C. Osgood, ed., VFPA, New York, 1946. (pp. 367-397) "MA has a stress accent with associated pitch difference. Words over one syllable have primary accent on the penult". (369) In Section 2.2. (p. 370) Whorf speaks of secondary accents and unaccented syllables, the secondary accents being louder than unaccented syllables but not quite so loud as primary accent. He goes on to mention some of the modifications of vowels in terms of stress and timing. Vowels are "inherently (morphophonemically) either short or long and these lengths are maintained in actualization regardless of position in the word". (370) For a comparison of prosodic features in speech forms of Tepoztlan and Milpa Alta, see Whorf's "Pitch Tone and the "Saltillo" in Modern and Ancient Nahuatl", unpublished manuscript in Library of American Philosophical Society, Philadelphia, Penna. Material for that article was collected in Mexico in the winter of 1930.

10 Key, Harold & Mary, "The Phonemes of Sierra Nahuat", IJAL 19:53-56 (1953). Key states that the length difference does not involve a phonemic difference in vowel quality. My interpretation of the phenomena is that both duration and quality are involved in the distinction between long and short vowels. See Section 1.2.

McQuown, Norman A., Ibid. "En cuanto a la elusiva cantidad vocálica que se puede notar en otros dialectos mexicanos, aquí no se hizo registro alguno de este fenómeno". (p.66)

11 Brockway, Earl. "The Phonemes of North Puebla Nahuatl", Anthropological Linguistics 5: No.2, 14-18 (1963). "Vowel phonemes are divided into two groups: short and long". Although he recognizes some differences in vowel quality he states that "The distinction between short and long vowels in this dialect is generally quantitative...rather than qualitative". (p.15). "Stress usually occurs on the penultimate syllable and coincides with high pitch in intonation contour". (p.14).

12 Croft, Kenneth, "Practical Orthography for Matlalpa Nahuatl," IJAL 17:32-36 (1951). See Section 1. for vowel length and Section 3.2. for two degrees of stress. He posits secondary stress in terms of position within the phrase.

13 From investigations made by the author while engaged in government reading campaigns among Nahuatl speakers of the Huasteca de Veracruz y Hidalgo. Such minimal length pairs as 'to burn' and 'to hide', 'foot' and 'moon', hold equally for the Huas-

teca and Zacapoaxtla. There is the accompanying change in vowel quality as reported in Section 1.2 of this paper.

14 Law, Howard W., "The Phonemes of Isthmus Nahuat", El Mexico Antiguo, Tomo Viii, Diciembre de 1955, pp. 267-278.

"/·/ is vocalic augment; it increases either the length or the tenseness ( or both) of the vowels. Stress is phonemic. It is unmarked when it occurs on the penult of the word unit; it is marked by an acute accent when it occurs on a different syllable of the word unit. Enclitics and proclitics are unstressed". p. 273.

15 Hasler, Juan A., "Fonemas del Náhuat de los Tuxlas", Estudios de Cultura Nahuatl, Vol. II, Universidad Nacional Autónoma de México, México, 1960. pp. 129-37. "Existe la cantidad vocálica fonemática...El Acento cae mecánicamente en la penúltima sílaba, menos en algunos casos predicables". p. 130.

16 McQuown, Norman, A., "La Fonemica de un Dialecto Nahuatl de Guerrero", El Mexico Antiguo 5:221-32 (1941). See p. 226-7.

17 Todd, J. G., Notas de Nahuatl de Nahuitzalco. (Private Publication) San Salvador, El Salvador, 1953. See p. 11, "Se puede considerar que la regla sea que los nombres, adjetivos, adverbios, pronombres, prepocisiones, llevan acento de pronunciación en la penúltima sílaba".

18 Boaz, Franz. "El Dialecto de Pochutla, Oaxaca", IJAL, 1:9-44 (1917). The data collected from a word list made about 1888 by Sr. Dr. Antonio Peñafiel, and from some elderly men and women of the area in 1912. Boaz notes, "Creo que no hay vocales largas en Pochutla". (p. 10); and "El Acento cae casi siempre en la última sílaba". He goes on to describe some words which have penultimate stress. (p.13).

19 By personal communication with the S.I.L. analyst, William Sischo, who works among the 1500 speakers of mexicano in coastal Michoacan. He states that in the utterances where the high-back vowel is long for Zacapoaxtla area (see Key's dictionary), the vowel in Michoacan is [u]; otherwise the /o/ is manifested. But this does not hold rigidly. An intersection of phonemes occurs since an /o/ under word stress is sometimes [o] and sometimes [u]; likewise, the /u/ under word stress is sometimes [u] and sometimes [o]. In other utterances there is clear contrast for the [o] and [u].

20 Whorf reports pitch contrast based on the minimal pair ka 'by', 'with' and ká 'is'. See both articles of fn-9.

For evidence of contrastive pitch in Uto-Aztecan, see Grimes, Joseph E., "Huichol Tone and Intonation", IJAL 25:221-232 (1959), Section 0.1, and footnote 3. For other Middle American languages described as having structurally relevant pitch with light functional load, see Pike, K. L. and Warkentin, M. "Huave: A Study in Syntactic Tone with Low Lexical Functional Load", in "A William Cameron Town-

send" Mexico, D.F. 1961, p. 627; and Pike, K. L. "Phonemic Pitch in Maya," IJAL 12.82-8 (1946).

21 The model used in this article is based on that set forth in these three discussions: Pike, K. L., Language in Relation to a Unified Theory of the Structure of Human Behavior. See especially Volume 2, Chapter 9. Crawford, John C., Totontepec Mixe Phonotagmemics. Grimes, Joseph E., ibid. For a discussion of "phonemic but not phonemes", see Pike, ibid, chapter 9, pp. 63-66, especially Solution 'C'.

22 See, Longacre, R. E. "Prolegomena to Lexical Structure", Linguistics 5 (May) 1964. This is the source for the use of phonological syntagmeme in the description of S. N.

23 I am indebted to H. A. Gleason, Jr., for suggesting the terms micro-, meso-, and macro- and mega-.

24 Asterisks indicate consonants assimilated into SN through borrowing from Spanish.

25 Monolingual Spanish speakers of the area who learn Nahuat usually omit any distinction between CS and DL vowels. Their vowels are all decentralized and short.

26 In grammatical terms, any morpheme of two or more syllables has penultimate stress and that stress will be retained in compounding. A free morpheme of one syllable has stress. Bound morphemes of one syllable do not have stress.

27 In contrast to SN, Law (fn 14) states the proclitics and enclitics do not alter the stress of the word. See page 273 of his article. Furthermore, the stress-perturbing syllables of SN act, in the Huasteca dialect, like any other ordinary syllable, viz., the placing of penultimate stress accompanies any new combination of affixes and roots.

28 The MeS corresponds, in about 90% of the utterances, to grammatical word; the Sequence intonation covers in almost 100% of the utterance a grammatical clause.

29 There is some indeterminacy for monosyllables like /iin, wan/ as to their status as MiS or MeS. Those which have the features of MeS juncture and never occur within other phonological compounds below the level of a MeS are considered MeS.

# III. MORELOS (TETELCINGO) NAHUATL VERB STEM CONSTRUCTIONS

Forrest Brewer



0. A recent monograph[1] describes briefly the grammar of the Tetelcingo Nahuatl dialect but does not include a description of stem structure. This paper presents a preliminary description of such structure for verbs.

A study[2] of nearly 1400 Nahuatl verb stems shows more than one-third of them to be single roots (monomorphemic),[3] approximately one-seventh to be root plus verbalizer), and one-fifth to be particle root plus verb root.

A root is defined as a monomorphemic member of an open-end major morpheme class. A stem is defined as either a root or a ploymorphemic member of an open-end major morpheme class. V indicates a verb root, N indicates a noun root, L indicates a locative root, and P indicates a particle root. Vs, Ns, Ls, Ps indicate a verb stem, noun stem, locative stem, and particle stem, respectively.

Major stem classes for Tetelcingo Nahuatl are four in number: verbs, nouns, locatives, and particles. The formal features which distinguish these classes structurally are discussed below[4]. (See 2.)

1.1 The morphemic composition of verb stems is of the following types:

1) a single V root, as -saka 'carry' in the sequence (173 + V), ki-saka 'he carries it'; or as koči 'sleep' which may occur as a verb without affixes in which case the actor is third person and the tense is present, (V) koči 'he sleeps'.

2) root plus affixes:

N + 721, $k^{W}$aw- 'stick' + -wi 'verbalizer' (>-$k^{W}$ahwi 'beat with a stick'), as in the sequence (173 + Va + 231) ki-$k^{W}$ahwi-a 'he beats him with a stick'; or

V + 722, wiksi 'cook' + -ti 'transitivizer' (>-wikšiti 'cook'), as in the sequence (173 + Vs + 231), ki-wikšiti-a 'she cooks it'; or

724 + V $C_1V_1$- 'reduplication stem formative' + -$k^{W}$a 'eat' (>-$k^{W}$ak$^{W}$a 'chew'), as in the sequence (173 + Va), ki-$k^{W}$ak$^{W}$a 'he chews it'.

3) two or more roots:

V + V koči 'sleep' + -ihta 'see' (>-kočihta 'see in one's sleep'), as in the sequence (173 + Vs) ki-kočihta 'he dreams it'; or

N + V tla:l- 'dirt' + aki 'enter', as in the sequence (173 + Vs + 231), ki-tla:laki-a 'he sticks it in the ground'; or

P + V, -ci:n 'bottom' + -teki 'cut', as in the sequence (173 + Va), ki-ci:nteki 'he cuts it at the base'; or

P + P + V, a:- 'water' + i:hyo:- 'breath', 'air' + miki 'die', as in the sequence (Va), a:i:hyo:miki 'he drowns'.

4) two or more roots plus affixes:

P + V + 722, yek- 'well' + wiksi 'cook' + -ti 'transitivizer' (> -yekwikšiti 'cook well-done', as in the sequence (173 + Vs + 231), ki-yekwikšiti-a 'she cooks it well-done'; or

P + 111 + V, i:š- 'eye' + $C_1V_1h$- 'reduplication' + -kaya:wa 'deceive' (> -i:škahkaya:wa 'deceive'), as in the sequence (173 + Va), k-i:škahkaya:wa 'he deceives him'; or

P + 111 + P + 721, ci:n- 'bottom' + $C_1V_1h$- 'reduplication' + tlaškal- 'tortilla' + -o 'verbalizer' (> -ci:ntlahtlaškalo 'apank'), as in the sequence (173 + Va + 231), ki-ci:ntlahtlaškalo-a 'he spanks him'.

5) two or more roots plus a connective:

V + 725 + V, tlaciwi 'be lazy' + -ka: 'stem formative' + -ma:wa 'infect' (> -tlacihka:ma:wa 'infect with laziness'), as in the sequence (173 + Vs), ki-tlacihka:ma:wa 'he influences him to be lazy'; or

V + 725 + P + V, mawi 'fear' + -ka: 'stem formative' + yek- 'well' + -a:na 'grab' (> -mahka:yeka:na 'flee in fear'), as in the sequence (173 + Vs), ki-mahka:yeka:na 'he flees in fear from him'.

1.2 There are a number of single-root stems that terminate in -ni or -na, -wi or -wa. These final syllables are not regarded as morphemes for this dialect since their function is ambiguous and uncertain.

The simple stem containing the syllable -ni may be intransitive, for example, (V) $k^wala:ni$ 'he gets angry'; it may be both transitive and intransitive, for example, (V) cili:ni 'it rings' and (173 + V + 231) ki-cili:ni-s 'he rings it', 'he makes it ring'.

The simple stem containing the syllable -na may be intransitive, for example, (V) tena 'he groans'; it may be transitive, for example, (173 + V) ki-mana 'she pats it' (tortilla).

The simple stem containing the syllable -wi may be intransitive, for example, (V) siyawi 'he tires', 'he gets tired'; it may be transitive, for example, (173 + V + 231) ki-pale:wi-a 'he helps him'; it may be both transitive and intransitive, for example, se:wi 'it goes out' (fire) and (173 + V + 231) ki-se:wi-a 'he extinguishes it' (fire).

The simple stem containing the syllable -wa may be intransitive, for example, (V) se:wa 'it is cold'; it may be transitive, for example, (173 + V) ki-te:ne:wa 'he mentions him'; it may be both transitive and intransitive, for example, (V) pi:na:wa 'he is embarrassed' and (173 + V) ki-pi:na:wa 'he embarrasses him'.

There are a few instances, however, where -ni contrasts with -na and -wi with -wa. Examples: (V) caya:ni 'it splits', (173 + V) ki-caya:na 'he splits it'; (V) koto:ni 'it rips', (173 + V) ki-koto:na 'he rips it; (V) toma:wi 'it gets fat', (173 + V) ki-toma:wa 'he fattens it'; (V) ši:pe:wi 'it peels', 'he divests', (173 + V) ki-ši:pe:wa 'he peels it', 'he divests him'.

Some single-root stems which contain -wi as the intransitive form of the verb, e.g. tepi:cawi 'it hardens', have the transitive form as follows, (173 + V + 231)

ki-tepi:co-a 'he hardens it'. Further examples: (V) poliwi 'it is lost', 'it gets lost', (173 + V + 231) ki-polo-a 'he loses it'; (V) patlačiwi 'it gets covered', (173 + V + 231) ki-patlačo-a 'he covers it'.

There are 528 examples of single-root stems.

1.3 The combinations of components that comprise verb stems occur in the following sequence patterns:

1) (Root or stem) + 721 'verbalizer', or root + root + 721 'verbalizer', or Spanish infinitive + 721 'verbalizer'

2) (Root or stem) + 722 'transitivizer', or root + (root or stem) + 722 'transitivizer, or root + 721 'verbalizer' + 722 'transitivizer'.

3) (Root or stem) + 723 'causative'

4) 724 'reduplication' + (root or stem), or 724 'reduplication' + root + 721 'verbalizer'

5) 726 'stem formative' + (root or stem)

6) 121 'unspecified goal' + (root or stem), or 121 'unspecified goal' + root + root, or 121 'unspecified goal' + root + root + root

7) 121 'unspecified goal' + (root or stem) + 211 'second goal', or root + root + 211 'second goal'

8) (Root or stem) + (root or stem)

9) Root + root + (root or stem)

10) Root + 725 'stem formative' + (root or stem)

1.3.1 (Root or stem) + 721 'verbalizer', or root + root + 721 'verbalizer', or Spanish infinitive + 721 'verbalizer'

L + 721, -teč 'beside', 'against' + -ti 'verbalizer', as in the sequence (132 + Va + 231), mo-tečti-a 'he makes it his own'. This is the only example of this combination.

N + 721, kapoc- 'black' + -e:wi 'verbalizer', as in the sequence (Va), kapoce:wi 'it gets black'. Or, pah- 'medicine' + -wi 'verbalizer', as in the sequence (173 + Va + 231), ki-pahwi-a 'he fumigates it'. There are 40 examples of this combination.

P + 721, tlakin- 'clothing' + -ti 'verbalizer', as in the sequence (173 + Va + 231), ki-tlakinti-a 'he dresses him'. Or, a:- 'water' + -ti 'verbalizer', as in the sequence (Va + 231), a:ti-a 'it melts'. There are 38 examples of this combination.

La + 721, -yo:lipa 'in the heart' [< N + L yo:loh- 'heart' + -pan 'place'] + -ti 'verbalizer', as in the sequence (173 + Vs + 231), ki-yo:lipanti-a 'he heralds it'. Or, i:špa 'in front of', 'in the presence of' [< P + L i:š- 'eye' -pan 'place'] + ti 'verbalizer', as in the sequence '173 + Vs + 231), k-i:španti-a 'he reveals it'. Or, -ma:k 'in the hand' [< P + 731, -ma: 'hand' + -k 'place of'] + -ti 'verbalizer', as in the sequence '173 + Vs + 231), ki-ma:kti-a 'he delivers it to him'. These three are the only examples of this combination.

Ns + 721, tlak$^{w}$al- 'food' [< 121 + V + 713, tla- 'unspecified goal' + -k$^{w}$a 'eat' + -l 'nominalizer'] + -ti 'verbalizer', as in the sequence (173 + Vs + 231), ki-tlak$^{w}$alti-a 'she feeds him'. This is the only example of this combination.

P + N + 721 pil- 'child' + a:wil- 'toy' + -ti 'verbalizer', as in the sequence (Vs + 231), pila:wilti-a 'he plays with the child', 'he baby sits'. This is the only example of this combination.

P + P + 721 i:š- 'eye' + teneš- 'lime' + -e:wi 'verbalizer', as in the sequence (Vs), i:šteneše:wi 'he has a cataract'. Or, i:š- 'eye' + a:- 'water' + -wi 'verba-

lizer', as in the sequence (173 + Vs + 231), k-i:ša:wi-a 'he washes his face'. There are six examples of this combination.

P + P + P + 721, $k^{w}$a:- 'head' + con- 'hair' + a:- 'water' + -wi 'verbalizer', as in the sequence (132 + Vs + 231) mo-$k^{w}$a:cona:wi-a 'he washes his own head with water'. This is the only example of this combination.

Spanish infinitive + 721, pensar 'to think' + -o 'verbalizer' (> -pensa:ro 'think'), as in the sequence (173 + Vs + 231), ki-pensa:ro-a 'he thinks it'. Or, recibir 'to receive' + -o verbalizer, as in the sequence (173 + Vs + 231), ki-resibiro-a 'he receives it'. Or, merecer 'to merit' + -o 'verbalizer' ( > -meresiero 'merit'), as in the sequence (173 + V + 231), ki-meresiero-a 'he merits it'. Or, costar 'to cost' + -ewi 'verbalizer', as in the sequence (Vs), costa:rewi 'it costs' (such and such amount). Or, servir 'to serve' + -ewi 'verbalizer', as in the sequence (Vs), serfirewi 'it is useful', 'it will serve'. Or, valer 'to be worth' + -ewi 'verbalizer', as in the sequence (Vs), vale:rewi 'it's worth' (such and such amount). There are 102 examples of this combination. There are more examples that could be included for Nahuatl speakers who have more contact with the Spanish language.

1.3.2 (Root or stem) + 722 'transitivizer', or root + (root or stem) + 722 'transitivizer', or root + 721 'verbalizer' + 722 'transitivizer' V + 722, či:či: 'suck' (nurse) + -ti 'transitivizer', as in the sequence (173 + Vs + 231), ki-či:či:ti-a 'she suckles him'. Or, pala:ni 'rot' + -lti 'transitivizer', as in the sequence (173 + Vs + 231), ki-pala:nalti-a 'it rots it'. There are 45 examples of this combination.

Vs + 722, tla:lo- 'get dirty' [< N + 721, tla:l- 'dirt' + -o 'verbalizer'] + -:ti[4] 'transitivizer', as in the sequence (173 + Vs + 231), ki-tla:lo:ti-a 'he gets him dirty'. There are five examples of this combination.

P + V + 722, yek- 'well' + wiksi 'cook' + -ti 'transitivizer', as in the sequence (173 + Vs + 231), ki-yekwikšiti-a 'she cooks it well-done'. Or, yek- 'well' + te:mi 'fill' + -li 'transitivizer', as in the sequence (173 + Vs + 231), ki-yekte:mili-a 'he fills it full'. These two are the only examples of this combination.

P + Vs + 722, tepos- 'iron' + tla:lo- 'get dirty' [< N + 721, tla:l- 'dirt' + -o 'verbalizer'] + -:lti 'transitivizer', as in the sequence (173 + Vs + 231), ki-tepostla:lo:lti-a 'it rusts it'. This is the only example of this combination.

N + 721 + 722, či:l- 'hot pepper' + -o 'verbalizer' + -:ti 'transitivizer', as in the sequence (173 + Vs + 231), ki-či:lo:ti-a 'she seasons it with hot pepper'. Or, kal- 'house' + -o verbalizer + -:ti 'transitivizer', as in the sequence (173 + Vs + 231), ki-kalo:ti-a 'he lodges him'. These two are the only examples of this combination.

P + 721 + 722, i:š- 'eye' + -o 'verbalizer' + -:ti 'transitivizer', as in the sequence (173 + Vs + 231), k-i:šo:ti-a 'he takes care of him', 'he keeps an eye on him'. Or, tlapal- 'dye' + -o 'verbalizer' + -:ti 'transitivizer', as in the sequence (173 + Vs + 231), ki-tlapalo:ti-a 'she dyes it'. These two are the only examples of this combination.

1.3.3 (Root or stem) + 723 'causative'.

V + 723, -či:wa 'do', 'make' + -lti 'causative', as in the sequence (173 + Vs + 231), ki-či:walti-a 'he makes him do it'. Or, -tolo 'swallow' + -:lti 'causative', as in the sequence (173 + Vs + 231), ki-tolo:lti-a 'he makes him swallow it'. There are 15 examples of this combination.

Vs + 723, -tlapolo 'lose things' [< 121 + V, tla- 'unspecified goal' + -polo 'lose']

+ -:lti 'causative', as in the sequence (173 + Vs + 231), ki-tlapolo:lti-a 'he errs, he makes a mistake'. Or, -tlana:miki 'meet things' [< 121 + V, tla- 'unspecified goal' + -na:miki 'meet'] + -ti 'causative', as in the sequence (132 + Vs + 231), mo-tlana:mikti-a 'he puts the pieces together' (e.g. of the broken griddle). Or, -tlalna:miki 'remember things' [< 121 + V, tla- 'unspecified goal' + -ilna:miki 'remember'] + -ti 'causative', as in the sequence (173 + Vs + 231), ki-tlalna:mikti-a 'he reminds him'. These three are the only examples of this combination.

1.3.4 724 'reduplication' + (root or stem), or 724 'reduplication' + root + 721 'verbalizer' 724 + V, $C_1V:_1$- 'reduplication' + -no:ca 'call' [ > -no:no:ca 'converse'], as in the sequence (173 + Vs), ki-no:no:ca 'he talks to him'. Or, $C_1V_1h$- 'reduplication' + -no:ca 'call' [> -nohno:ca 'negotiate marriage'], as in the sequence (173 + Vs), ki-nohno:ca 'he negotiates for the hand of his daughter'. There are 37 examples of this combination.

724 + Vs, $V_1h$- 'reduplication' + -a:mati 'know water' [<P + V, a:- 'water' + -mati 'know'], as in the sequence (Vs), aha:mati 'it gets wet'. Or, $C_1V_1h$- 'reduplication' + -tlahto 'say something' [< 121 + V, tla- 'unspecified goal' + -ihto 'say'] (> tlahtlahto- 'talk'), as in the sequence (Vs + 231), tlahtlahto-a 'he talks'. There are six examples of this combination.

724 + P + 721, $C_1V_1$- 'reduplication' + soki- 'mud' + -wi 'verbalizer', as in the sequence (173 + Vs + 231), ki-sosokiwi-a 'he gets it muddy'. This is the only example of this combination.

Some stems appear to contain reduplication but never occur without the apparent reduplication. Such stems are regarded as single-root stems. For example, (173 + V) ki-pehpena 'he gathers it', (173 + V + 231) ki-cecelo-a 'he shakes it', etc.

1.3.5 726 'stem formative' + (root or stem).

726 + V, te:- 'stem formative' + -ilwi 'tell', as in the sequence (173 + Vs + 231), ki-to:ilwi-a 'he accuses him', 'he complains against him'. Or, te:- 'stem formative' + -maka 'give', as in the sequence (173 + Vs), ki-te:maka 'he gives'. Or, te:- 'stem formative' + -tla:okoli 'give a gift', as in the sequence (173 + Vs + 231), ki-te:tla:okoli-a 'he gives him gifts'. There are five examples of this combination.

726 + Vs, te:- 'stem formative' + -ma:kti 'place of the hand' [< P + 731 + 721, -ma: 'hand' + -k 'place of' + -ti 'verbalizer'], as in the sequence (173 + Vs + 231), ki-te:ma:kti-a 'he delivers it to him'. Or, te:- 'stem formative' + -tlane:hti 'loan' [< V + 723, tlane:wi 'borrow' + -ti 'causative], as in the sequence (173 + Vs + 231), ki-te:tlane:hti-a 'he loans it'. Or, te:- 'stem formative' + -wi:kili 'carry it' [< V + 211, -wi:ka 'carry' + -li 'second goal'], as in the sequence (173 + Vs + 231), ki-te:wi:kili-a 'he owes him'. These three are the only examples of this combination.

1.3.6 121 'unspecified goal' + root or stem, or 121 'unspecified goal' + root + root, or 121 'unspecified goal' + root + root + root 121 + V, tla- 'unspecified goal' + ki:sa 'go out', as in the sequence (Vs), tlaki:sa 'it (the rainy season) ends'. Or, 121 tla- 'unspecified goal' + $k^{w}$epo:ni 'explode', as in the sequence (Vs) tlak$^{w}$epo:ni 'it thunders'. Or, tla- 'unspecified goal' + -ko:wi 'buy', as in the sequence (173 + Vs + 231), ki-tlako:wi-a 'he buys things for him'. There are fifteen examples of this combination.

121 + Vs, tla- 'unspecified goal' + šošoke:wi 'become green' [< šošok- 'green'

+ -e:wi 'verbalizer'], as in the sequence (Vs), tlašošoke:wi 'it ('the landscape') becomes green' (at the beginning of the rainy season). Or, tla- 'unspecified goal' + wahwa:ki 'dry', 'get dry' [< 111 + V, $C_1V_1$h- 'reduplication' + wa:ki 'dry'], as in the sequence (Vs), tlawahwa:ki 'it dries up'. There are four examples of this combination.

121 + P + V, tla- 'unspecified goal' + i:š- 'eye', 'face' + tlehko 'rise', as in the sequence (Vs), tlai:štlehko 'he goes up the incline' ( that is, hill, etc.). Or, tla- 'unspecified goal' + po:k- 'smoke' + te:mi 'fill', as in the sequence (Vs), tlapo:kte:mi 'fills up with smoke'. There are five examples of this combination.

121 + V + V, tla- 'unspecified goal' + koči 'sleep' + -mela:wa 'straighten', as in the sequence (Vs), tlakočmela:wa 'he sleeps a dead sleep'. This is the only example of this combination.

121 + P + P + V, tla- 'unspecified goal' + ših- 'weeds' + -ma: 'hand' + -te:ka 'lay down', as in the sequence (Vs), tlašihma:te:ka 'he pulls weeks'. This is the only example of this combination.

1.3.7 121 'unspecified goal' + (root or stem) + 211 'second goal', or root + root + 211 'second goal'.. In this construction, 121 'unspecified goal' (of the pattern 121 + root or stem + 211) and the initial root (of the pattern root + root + 211) are amplifications of 211 'second goal'. That is, 121 specifies the second goal (211) as being various items unspecified, and the root specifies the second goal (211) as being that particular item. For example, in k-a:-saki-li-a 'he carries water for him', a:- 'water' makes specific what -li the second goal is.

121 + Vs + 211, tla- 'unspecified goal' + -yeka:na 'lead' [< P + V, yek- 'well' + -a:na 'grab'] + -lti 'second goal', as in the sequence (173 + Vs + 231), ki-tlayeka:nalti-a 'he goes on ahead of him'. Or, tla- 'unspecified goal' + -$k^wihk^wi$ 'bring' [< 111 + V, $C_1V_1$h- 'reduplication' + $k^wi$ 'grab', 'bring'] + -li 'second goal', as in the sequence (173 + Vs + 231), ki-tlak$^w$ihk$^w$ili-a 'he picks it out' ('trash from beans', 'etc'.). Or, tla- 'unspecified goal' + -ne:šti 'find' [< V + 722, ne:si 'appear' + -ti 'transitivizer'] + -li 'second goal', as in the sequence (173 + Vs + 231), ki-tlane:štili-a 'he lights it', 'he shines light on it'. Or, tla- 'unspecified goal' + -mahma:ka:wa 'drop from the hand' [< 111 + Vs, $C_1V_1$h- 'reduplication' + -ma:ka:wa (< P + V, -ma: 'hand' + -ka:wa 'leave')] + -li 'second goal', as in the sequence (132 + Vs + 231), mo-tlamahma:ka:wili-a 'he loses his balance'. There are ten examples of this combination.

P + V + 211, a:- 'water' + -saka 'carry' + -li 'second goal', as in the sequence (173 + Vs + 231), k-a:sakili-a 'he carried water for him'. Or, tepos- 'iron' + -keca 'stand' + -li 'second goal', as in the sequence (173 + Vs + 231), ki-teposkečili-a 'he brands it'. There are nine examples of this combination.

1.3.8 (Root or stem) + (root or stem).

N + V, tla:l- 'dirt', 'ground' + -ičpa:na 'sweep', as in the sequence (173 + Vs), ki-tla:ličpa:na 'he drags it on the ground'. Or, to:č- 'rabbit' + -mo:tla 'throw', as in the sequence (Vs), to:čmo:tla 'he hunts rabbits'. There are 74 examples of this combination.

N + Vs, k$^w$a:k$^w$a:- 'ox' + -i:šo:ti 'take care of' [< P + 721 + 722, i:š- 'eye' + -o 'verbalizer' + -:ti 'transitivizer'], as in the sequence (Vs + 231), k$^w$a:k$^w$a:i:šo:ti-a 'he pastures the oxen'. Or, ko:kone:h- 'doll' + -čihči:wa 'make' [< 111 + V,

$C_1V_1$h- 'reduplication' + -či:wa 'make'], as in the sequence (173 + Vs), ki-ko:kone: hčihči:wa 'she makes an effigy'. There are four examples of this combination.

P + V, tlaškal- 'tortilla' + -mana 'pat', as in the sequence (Vs), tlaškalmana 'she makes tortillas'. Or, $k^W$al- 'good' + -ihta 'see', as in the sequence (173 + Vs), ki-$k^W$alihta 'he likes it'. There are 269 examples of this combination.

P + Vs, yeka- 'nose' + -pohpo 'clean' [< 724 + V, $C_1V_1$h- 'reduplication' + -po 'count'], as in the sequence (132 + Vs + 231), mo-yekapohpo-a 'he blows his nose'. Or, yes- 'blood' + -kišti 'take out' [< V + 722, ki:sa 'go out' + -ti 'transitivizer'], as in the sequence (173 + Vs + 231), ki-yeskišti-a 'he extracts blood from him'. Or, pah- 'medicine' + $k^W$alti 'make eat' [< V + 723, -$k^W$a 'eat' + -lti 'causative'], as in the sequence (173 + Vs + 231), ki-pahk$^W$alti-a 'he poisons him'. Or, tlawe:l- 'anger' + tlahtlahto- 'talk' [< 724 + 121 + V, $C_1V_1$h- 'reduplication' + tla- 'unspecified goal' + -ihto 'say'], as in the sequence (Vs + 231), tlawe:ltlahtlahto-a 'he speaks angrily'. Or, ci:n- 'bottom' + -tlahtlaškalo 'pat' [< 111 + P + 721, $C_1V_1$h- 'reduplication' + tlaškal- 'tortilla' + -o 'verbalizer'], as in the sequence (173 + Vs + 231), ki-ci:ntlah-tlaškalo-a 'he spanks him'. There are 60 examples of this combination.

Ps + V, tlahtlako:l- 'sin' [< 121 + V + 713, tla- 'unspecified goal' + -ihtlako 'put in disrepair' + -:l 'nominalizer'] + -či:wa 'maka', as in the sequence (Vs), tlahtlako: lči:wa 'he sins'. Or, tlao:l- 'shelled corn' [< 121 + V + 713, tla- 'unspecified goal' + -o 'shell' + -:l 'nominalizer'] + -cecelo 'shake', as in the sequence (Vs + 231), tlao:lcecelo-a 'he cleans corn'. Or, tla:lkakawa- 'peanut' [< N + P, tla:l- 'dirt' + kakawa- 'cocoa bean'] + -kopi:na 'pull up', as in the sequence (Vs), tla:lkakawakopi: na 'he harvests peanuts'. There are 12 examples of this combination.

Ps + Vs, -to:nal 'soul' [< V + 713, to:na 'shine' + -l 'nominalizer'] + -cahcili 'call on him' [< V + 211, cahci 'call' + -li 'second goal'], as in the sequence (173 + Vs + 231), ki-to:nalcahcili-a 'he casts evil on him'. Or, i:šk$^W$ahmo:l 'eyebrow' [< P + P, i:š- 'eye' + -$k^W$ahmo:l 'brow'] + -kehkeca 'stand' [< 111 + V, $C_1V_1$h- 'reduplication' + -keca 'stand'], as in the sequence (132 + Vs), m-i:šk$^W$ahmo:lkehkeca 'he raises his eyebrows'. These two are the only examples of this combination.

V + V, -tlalwi 'invite' + ki:sa 'go out', as in the sequence (Vs), tlalwiki:sa 'he gives a feast'. Or, siyawi 'tire' + -tla:sa 'drop', 'put down' (> -siyahtla:sa 'rest'), as in the sequence (132 + Vs), mo-siyahtla:sa he rests. There are ten examples of this combination.

V + Vs, -pa:co 'dent' + kalaki 'enter' [< N + V, kal- 'house' + aki 'fit in', 'enter'], as in the sequence (Vs), pa:ckalaki 'he sinks in'. Or, koči 'sleep' + -mahmahti 'be scared' [< 111 + Vs, $C_1V_1$h- 'reduplication' + -mahti 'scare' (< V + 722, mawi 'fear' + -ti 'transitivizer')], as in the sequence (132 + Vs + 231), mo-koč-mahmahti-a 'he gets frightened in his dream'. There are five examples of this combination.

Ls + V, -ma:teč 'by the hand' [< P + L, -ma: 'hand' + -teč 'beside', 'against'] + -a:na 'grab', as in the sequence (173 + Vs), ki-ma:teča:na 'he takes him by the hand'. Or, ahkopa- 'upwards' [< P + L, ahko- 'up' + -pa 'place'] + tlači- 'see', 'look', as in the sequence (Va + 231), ahkopatlači-a 'he looks up'. There are six examples of this combination.

1.3.9 Root + root + (root or stem).

P + N + V, yek- 'well' + $k^W$aw- 'wood' + -nelo 'mix' (> yehh$^W$ahnelo 'stir well

with wooden utensil'), as in the sequence (173 + Vs + 231), ki-yehk$^{W}$ahnelo-a 'she stirs it thoroughly'. This is the only example of this combination.

P + P + V, a:yo:- (meaning uncertain) + -ci:n 'bottom' + -k$^{W}$epa 'change', 'turn', as in the sequence (173 + Vs), k-a:yo:ci:nk$^{W}$epa 'he somersaults him'. Or, -te:n 'edge', 'mouth' + con- 'hair' + -pihpi 'cut', as in the sequence (132 + Vs), mo-te:ncopihpi 'he shaves' ('his beard'). There are 13 examples of this combination.

P + P + Vs, a:- 'water' + i:hyo:- 'breath', 'air' + -mikti 'kill' [< V + 722, miki 'die' + -ti 'transitivizer'], as in the sequence (173 + Vs + 231), k-a:i:hyo:mikti-a 'he drowns it'. Or, a:- 'water' + i:hyo:- 'breath' + kalaki 'enter' [< N + V, kal- 'house' + aki 'enter'], as in the sequence (Vs), a:i:hyo:kalaki 'he dives in the water'. There are three examples of this combination.

P + V + Vs, lo:ko:- 'throat', 'neck' + -pa:c 'squeeze' + -mikti 'kill' [< V + 722, miki 'die' + -ti 'transitivizer'], as in the sequence (173 + Vs + 231, ki-ko:ko:pa:cmikti-a 'he chokes him to death'. This is the only example of this combination.

V + P + V, koči 'sleep' + -kama 'mouth' + -koya:wi 'perforate', as in the sequence (Vs), kočkamakoya:wi 'he yawns'. Or, koči 'sleep' + tlapeč- 'bed' + -tepešiwi 'knock down', as in the sequence (132 + Vs + 231), mo-kočtlapečtepešiwi-a 'he fell out of bed in his sleep'. These two are the only examples of this combination.

1.3.10 Root + 725 'stem formative' + (root or stem).

V + 725 + V, -mela:wa 'straighten' + -ka: 'stem formative' + -po 'count' (> -mela:hka:po 'recount truthfully'), as in the sequence (173 + Vs + 231), ki-mela:hka:po-a 'he tells it straight', 'he speaks as a witness'. Or, pa:ki 'be happy' + -ka: 'stem formative' + poliwi 'lack' ( > pa:hka:poliwi 'lose happiness'), as in the sequence (Vs), pa:hka:poliwi 'he doesn't feel good'. Or, -e:wa 'raise' + -te 'stem formative' + -keca 'stand', as in the sequence (173 + Vs), k-e:witekeca 'he straightens it up' (something hanging down, e.g. sleeping child's head, plant, etc.). There are 16 examples of this combination.

P + 725 + Vs, -ma: 'hand' + -te 'stem formative' + ah ack$^{W}$epo:ni 'hit resoundingly' [< 111 + V + V, $C_1V_1$h- 'reduplication' + -tlaco 'beat', 'whip' + k$^{W}$epo:ni 'explode'], as in the sequence (173 + Vs + 231), ki-ma:tatlahtlack$^{W}$epo:ni-a 'he whips him with his hand'. Or, -ci:n 'bottom' + -te 'stem formative' + tlahtlack$^{W}$epo:ni 'hit resoundingly' [< 111 + V + V, $C_1V_1$h- 'reduplication + -tlaco 'beat', 'whip' + k$^{W}$epo:ni 'explode'], as in the sequence (173 + Vs + 231), ki-ci:ntetlahtlack$^{W}$epo:ni-a 'he spanks him'. Or, -yeka 'nose' + -ste 'stem formative' + mohmolo:ni 'open' (flower), 'boil' [< 724 + V, $C_1V_1$h- 'reduplication' + molo:ni 'open' (flower), 'boil'], as in the sequence (132 + Vs + 231), mo-yekastemohmolo:ni-a 'he hits himself in the nose' (making it bleed). These three are the only examples of this combination.

V + 725 + Vs, miki 'die' + -ka: 'stem formative' + tlacili:ni 'ring' [< 121 + V, tla- 'unspecified object' + cili:ni 'ring'] (> mihka:tlacili:ni 'ring' [bell] 'for a dead one'), as in the sequence (Vs), mihka:tlacili:ni 'it' (the bell) 'rings for someone who has died'. Or, mawi 'fear' + -ka: 'stem formative' + -mikti 'kill' [< V + 722, miki 'die' + -ti 'transitiviser'] ( > mahka:mikti 'scare to death'), as in the sequence (173 + Vs + 231), ki-mahka:mikti-a 'he frightens him'. Or, mawi 'fear' + -ka: 'stem formative' + -yeka:na 'lead' [< yek- 'well' + -a:na 'grab'], as in the sequence (173 + Vs), ki-mahka:yeka:na 'he flees from him in fear'. These three are the only examples of this combination.

2. Both simple stems and complex stems (see 1.) occur with the affix morphemes which divide stems into classes. One stem class is distinguished from another by the affix or affixes which uniquely occur in combination with the members of that stem class and never occur in combination with the members of any other stem class. Such an affix or set of affixes occurring exclusively with members of one and only one class of stems and with all members of that class is said to be diagnostic for that stem class.[5]

It is not required that a diagnostic affix occur in obligatory sequence with the members of the stem class but rather that it at least occur in optional sequence with them. It may be that a diagnostic affix will occur in obligatory combination with the stem class members, but such obligatory occurrence is not an essential characteristic in order that the affix be diagnostic.

The function of the diagnostic affix is not to mark the boundary limits of the stem but rather to signal the fact that the stem, whatever its limits may be, belongs to the class which is marked by that diagnostic affix. The combination of stem components is treated above (see 1.), but it may be well to point out here that century 700 affixes occur exclusively as components of stems; that affixes 111, 121, and 211 may occur either as components of stems (according to patterns described under 1.) or as inflectional morphemes outside the stems; and that all other affixes occur only outside the stems.

If the affix is diagnostic for verbs, the right boundary of the verb stem is either 211, a root, or a member of Class 720, whichever occurs last in the sequence; and the left boundary of the verb stem is either 111, 121, or a root. The diagnostic affix for nouns and for locatives also marks the stem boundary.

2.1 Stems which occur with the following affixes are verb stems: 194 o- 'past tense', 232 -h 'preterit tense', 233 -s 'future tense', and 234 -ya 'imperfect tense'. Both simple stems and complex stems may occur with these morphemes as the following examples demonstrate.

194 o- 'past tense[6]'
(193 + V + 232) o-čo:ka-k 'he cried'
(193 + Vs + 232) o-kočihta-k 'he dreamed'
(193 + V + 234) o-koči-ya 'he was sleeping'
(193 + Vs + 234) o-yekwikai-ya 'it was getting well-cooked'

232 -h 'preterit tense'
(V + 232.1 + 261) čа:lo-h-ki 'they escaped'
(Vs + 232.1 + 261) tlao:lcecelo-h-ki 'they cleaned the corn'
(V + 232.2 + 261) cik$^{W}$i:n-ki 'they ran'
(Vs + 232.2 + 261) pa:ckalah-ki 'they sank in'
(V + 232.3 + 26l) čo:ka-k-i 'they cried'
(Vs + 232.3 + 261) kočihta-k-i 'they dreamed'
(173 + V + 232.4 + 261 ) ki-pi-š-ki 'they had it'
(173 + Vs + 232.4 + 261) ki-ma:pi-š-ki 'they had it in their hand'
( 173 + V + 232.5 + 261) ki-ko-:h-ki 'they bought it'
(173 + Vs + 232.5 + 261) ki-pohpo-:ki 'they cleared it off'

233 -s 'future tense'
(V + 233) cik$^{W}$i:ni-s 'he will run'

(Vs + 233) kapeco:wi-s 'it will get black'
(173 + V + 231 + 233) ki-pi-a-s 'he will have it'
(173 + Vs + 231 + 233) ki-ma:pi-a-s 'he will have it in his hand'
234 -ya 'imperfect tense'
(V + 234) čo:ka-ya 'he was crying'
(Vs + 234) tlaškalnamaka-ya 'she was selling tortillas'
(173 + V + 231 + 234) ki-no:ki-a-:ya 'he was pouring it out'
(173 + Vs + 231 + 234) k-a:i:hyo:mikti-a-:ya 'he was drowning him'

2.2 Stems which occur with morpheme 423 -me 'unpossessed noun plural' are noun stems.

Other affixes could be selected as marking noun stems instead of 423 but they do not yield as large a class. For example, morpheme 422 -tli 'unpossessed noun singular' as a divisive suffix would yield a somewhat smaller list of noun stems. Likewise, morpheme class 300 'possessor person prefixes' and morpheme 411 -ci: '2nd person honorific possessor' (singular or plural) could be selected as divisive affixes for noun stems were it not for semantic limitations that reduce the size of the class. That is, such words as 'star', 'sky', 'day', etc., are not generally thought of as being possessed.

Both simple stems and complex stems may occur with morpheme 423 -me 'unpossessed noun plural'. For example, (N + 423) sowa-me 'women' or šo:či-me 'flowers', and (Ns + 423) tlo:lto:to:-me 'maizero birds' (corn-eaters)[< Ps + N, tlao:l- 'corn' (< 121 + V + 713 tla- 'unspecified goal' + -o 'shell' + -:l 'nominalizer') + to:to:- 'bird] or talatla:l-te 'ant-hills' [< N + N, tala- 'ant' + tla:l- 'dirt'] or teopan-me 'churches' [< N + L, teo- 'god' + -pan 'place of'].

2.3 Stems which occur with morpheme 511 -ci:nko '2nd person honorific' (singular or plural) are locative stems. Both simple stems and complex stems may occur with morpheme 511. For example, (412 + L + 511) mo-wan-ci:nko 'with honorable you' ('sg'.) or mo-pan-ci:nko 'upon honorable you' ('sg'.) and (412 + Ls + 511) m-i:špan-ci:nko 'in your honorable presence' ('sg'.) [< P + L, i:š- 'eye' + -pan 'place of'], or mo-ma:tlan-ci:nko 'in your honorable possession' ('sg'.) [< P + L, -ma: 'hand' + -tlan 'place of'].

2.4 Stems which occur with none of the above divisive affixes are particle stems. Particle stems include those stems which occur with affixes but are non-divisive, such as (313 + P) i:-ma: 'his hand' or (P + 422) či:l-i 'hot pepper': stems which never occur with affixes, such as lalewis 'very' or mo:stla 'tomorrow'; and stems which are bound unique root components of stems, such as -ci:n 'bottom' or -a:wa 'soft spot' (of baby's head).

3. Since Tetelcingo Nahuatl affixes have been described in a previous monograph,[1] they are not discussed in this paper. Nevertheless, a summary inventory of affixes is included as a convenience for reference.

In the inventory and in all references to the affixes in this paper, each affix is assigned an index number. The decade indexes indicate, both for prefixes and for suffixes, the relative position from the stem outward. That is, members of Class 110 occur nearest the stem, and members of Class 120 in the next position from the stem, and so on. This does not mean, however, that members of Class 170, for example,

cannot occur at times next to the stem but rather means that decade number 170 is assigned to that particular class of affixes since the seventh position is the outermost position from the stem in which members of that class of affixes may occur.

The affixes within a decade class are mutually exclusive. However, members of Class 230, while mutually exclusive in position 3 and mutually exclusive in position 5, may at times occur in sequence in those two positions.

Class 240-250 requires two decades to accommodate the membership of the class. Its members, however, are mutually exclusive and occupy only one suffix position, namely, position fourth from the stem. Class 260, nevertheless, occurs in position 6 as indicated by its decade number since Class 230 may occur in both positions 3 and 5.

For each affix listed a parenthetic notation indicates the stem class association of that affix. The order used in listing the classes of affixes for each of the major stem classes begins at the left outermost prefix position and moves toward the stem and from the stem toward the right outermost suffix position.

AFFIX INVENTORY

100 Prefixes occurring with V
- 190 'Tense-mode morphemes' (closing prefixes)
  - 191 ma- 'hortative' (V)
  - 192 mahkamo- 'negative hortative' (V)
  - 193 šī- 'imperative' (V)
    - 193.1 šī- occurs preceding consonant
    - 193.2 š- occurs preceding vowel
    - 193.3 šo- occurs in free variation with 193.1 preceding 132
- 180 'Actor person morphemes'
  - 181 ni- '1st person singular actor' (V, N, P)
    - 181.1 ni- occurs preceding consonant
    - 181.2 n- occurs preceding vowel
    - 181.3 no- occurs preceding (173.2 + 161)
  - 182 ti- '2nd person singular actor' (V, N. P)
    - 182.1 ti- occurs preceding consonant
    - 182.2 t- occurs preceding vowel
    - 182.3 to- occurs preceding (173.2 + 161) or in free variation with 182.1 preceding 132
  - 183 ti- '1st person plural actor' (V. N P)
    - 183.1 ti- occurs preceding consonant
    - 183.2 t- occurs preceding vowel
    - 183.3 to- occurs preceding (173.2 + 161)
  - 184 ne- '2nd person plural actor' (V, N, P)
    - 184.1 ne- occurs preceding consonant
    - 184.2 nem- occurs preceding vowel
    - 184.3 nen- occurs in free variation with 184.1 preceding velar consonant
- 170 'Goal person prefixes'
  - 171 ne:č- '1st person singular goal' (V)
    - 171.1 ne:č- occurs except preceding c or č

171.2 ne:h- occurs preceding c or č
172 timic- '2nd person singular goal' (V)
172.1 timic- occurs as goal with 1st person as actor except before c or č
172.2 timih- occurs as goal with 1st person as actor before c or č
172.3 mic- occurs as goal with 3rd person as actor except before c or č
172.4 mih- occurs as goal with 3rd person as actor before c or č
173 ki- '3rd person singular familiar goal' (V)
173.1 ki- occurs word initially preceding consonant; or following 184 preceding consonant
173.2 k- occurs word initially preceding vowel; or following 181, 182, 183 preceding consonant except k or $k^w$
173.3 h- occurs following 181, 182, 183 preceding k or $k^w$
174 te:- '3rd person singular honorific goal' (V)
175 te:č- '1st person plural goal' (V)
175.1 te:č- occurs except preceding c or č
175.2 te:h- occurs preceding c or č
176 neme:č- '2nd person plural goal' (V)
176.1 neme:č- occurs except preceding c or č
176.2 neme:h- occurs preceding c or č
160 'Lexically Indeterminate Morpheme'
161 on- (meaning not yet determined( (V)
161.1 on- occurs preceding consonant except bilabial
161.2 om- occurs preceding vowel and bilabial
161.3 o- occurs in free variation with 161.2 preceding m
150 'Action moving (spatial or temporal) toward speaker'
151 wal- 'come' (V)
140 'Plural of 3rd person goal prefixes'
141 in- 'plural of 3rd person goal (V)
141.1 in- occurs elsewhere
141.2 im- occurs preceding vowel or m
141.3 inm- occurs in free variation with 141.2
141.4 i- occurs following 161.2 and preceding n
141.5 i:n- occurs following 174 and preceding consonant
141.6 i:m- occurs following 174 and preceding vowel
141.7 i:nm- occurs in free variation with 141.6
130 'Reflexive 2nd person honorific prefixes'
131 mo- '2nd person honorific (actor/goal); deity honorific (2nd or 3rd person)' (V)
131.1 mo- occurs preceding consonant
131.2 m- occurs preceding vowel
132 mo- 'reflexive' (V)
132.1 mo- occurs preceding consonant
132.2 m- occurs preceding vowel
132.3 o- occurs when 1st person singular or plural is subject
132.4 ne- occurs when 3rd person honorific is subject

120 'Unspecified goal prefix'
121 tla- 'unspecified goal'
110 'Reduplication prefix'
111 ($C_1V_1$ + h ⇒) $C_1V_1$h- 'repetitive' (of action or of person actor = plural) (V). Occurrence of the allomorphs is unpredictable
111.1 $C_1V_1$h- before $C_1V_1$ initial stem
111.2 $C_1V_1$h- before $C_1V{:}_1$ initial stem
111.3 $C_1V{:}_1$- before $C_1V_1$ initial stem
111.4 $C_1V{:}_1$- before $C_1V{:}_1$ initial stem
111.5 $C_1V{:}_1$h- before $C_1V_1$ initial stem
111.6 $C_1V{:}_1$h- before $C_1V{:}_1$ initial stem
111.7 $C_1V_1$- before $C_1V_1$ initial stem
111.8 $C_1V_1$- before $C_1V{:}_1$ initial stem
111.9 $V_1$h- before $V_1$ initial stem
111.10 $V_1$h- before $V{:}_1$ initial stem
111.11 ho- minus stem initial V
200 Suffixes occurring exclusively with V
210 'Referent'
211 -li 'second goal' (always direct goal) (V)
Occurrence of allomorphs is unpredictable
211.1 -li
211.2 -lwi
211.3 -wi
211.4 -:lti
220 'Honorific suffixes'
221 -li '2nd person honorific non-reflexive (actor or goal); deity honorific non-reflexive (2nd or 3rd person)' (V)
Occurrence of allomorphs is unpredictable
221.1 -li
221.2 -:li
221.3 -lti
221.4 -:lti
221.5 -lwi
221.6 -ti
221.7 -:ti
221.8 -wi
221.9 -ø
222 -ci:no '2nd person honorific reflexive; deity honorific reflexive (2nd or 3rd person)'
223 -lo '3rd person honorific actor' (V). Occurrence of allomorphs is unpredictable
223.1 -lo
223.2 -lo:
223.3 -:lo
223.4 -:lo:
223.5 -:ro
223.6 -:ro:

223.7 -o replaces stem final a or i
223.8 -o: replaces stem final a or i
223.9 -:wa
223.10 -a
223.11 -oa (-o replaces stem final a or i) + a

230 'Tense suffixes'

231 -a 'present tense' (V)
232 -h 'preterit tense' (V)
232.1 -h occurs with verb class 1 ($V_1$)
232.2 minus final stem vowel occurs with verb class 2 ($V_2$)
232.3 -k occurs with verb class 3 ($V_3$); or following 223.9, 223.10, 223.11
232.4 -š occurs with verb class 4 ($V_4$)
232.5 -:h occurs with verb class 5 ($V_5$)
233 -s 'future tense' (V)
233.1 -s occurs elsewhere
233.2 -:s occurs following 211, 221, 247, and $V_1$
234 -ya 'imperfect tense' (V) (closing suffix)
234.1 -ya occurs elsewhere
234.2 -:ya occurs following ($V_1$ + 231) or $V_6$
234.3 -a:ya occurs following 222

240-250 'Aspect suffixes'

241 -te:wa action done upon leaving (V)
241.1 -te:wa occurs word final when action of verb is present
241.2 -te: occurs word final when action of verb is past
241.3 -te:h occurs preceding 261.1
242 -tiki:sa suddenly-occurring action (V)
242.1 -tiki:sa occurs when action of verb is non-past
242.2 -tiki:s occurs when action of verb is past
243 -tiweci 'immediative' (V)
243.1 -tiweci occurs when action of verb is non-past
243.2 -tiwec occurs when action of verb is past
244 -ta 'durative' (V)
245 -tinemi 'ambulative' (V)
246 -ta: 'durative' (V)
247 -tehko 'pass by and do something, do upon arrival' (V)
248 -tiwi:c 'comes doing' (V)
249 -tika 'present progressive' (V)
251 -ti: 'directional (go to do)' (V)
251.1 -ti: occurs except following $V_1$
251.2 -:ti: occurs following $V_1$
252 -ki: 'directional (come to do)' (V)
252.1 -ki: occurs except following $V_1$
252.2 -:ki: occurs following $V_1$
253 -to 'directional (went to do)' (V) (closing suffix)
253.1 -to occurs except following $V_1$
253.2 -:to occurs following $V_1$

254 -ko 'directional (came to do)' (V) (closing suffix)
254.1 -ko occurs except following $V_1$
254.2 -:ko occurs following $V_1$
255 -sneki 'desiderative' (V) (closing suffix)
255.1 -sneki occurs except following $V_1$
255.2 -:sneki occurs following $V_1$
256 -skia:ni 'contrary to fact' (V) (closing suffix)
Occurrence of allomorphs is in free variation except that the allomorphs with heightening (:) occur with $V_1$
256.1 -skia:ni
256.2 -:skia:ni
256.3 -skia:ya
256.4 -:skia:ya
256.5 -skia
256.6 -:skia
256.7 -ni
256.8 -:ni

260 'Actor plural suffix'
261 -ki 'plural of actor' (closing suffix)
261.1 -ki occurs elsewhere
261.2 -ka: occurs in sequence (191/192/193) + ($V_2$/$V_3$/$V_4$/$V_5$) + 261.2
261.3 -:ka: occurs in sequence (191/192/193) + $V_1$ + 261.3
261.4 -i occurs in sequence $V_3$ + 232.3 + 261.4 or V + 248 + 261.4
261.5 -te occurs in sequence V + 249 + 261.5
261.6 -we occurs in sequence V + (251/252) + 261.6

300 Prefixes occurring with N, P, and L
310 'Possessor person prefixes'
311 no- '1st person singular possessor' (N, P, L)
311.1 no- occurs preceding consonant
311.2 n- occurs preceding vowel
312 mo- '2nd person singular possessor' (N, P, L)
312.1 mo- occurs preceding consonant
312.2 m- occurs preceding vowel
313 i:- '3rd person familiar singular possessor' (N, P, L)
314 i:n- '3rd person familiar plural possessor' (N, P, L)
314.1 i:n- occurs preceding consonant
314.2 i:nm- occurs preceding vowel
314.3 i:m- occurs in free variation with 314.2
315 te:- '3rd person honorific singular possessor' (N, P, L)
316 to- '1st person plural possessor' (N, P, L)
316.1 to- occurs preceding consonant
316.2 t- occurs preceding vowel
317 nemo- '2nd person plural possessor' (N, P, L)
317.1 nemo- occurs preceding consonant
317.2 nem- occurs preceding vowel

400 Suffixes occurring with N and P
410 'Specialized person markers'

411 -ci: '2nd person honorific possessor' (N, P)
411.1 -ci: occurs in sequence (312/315/317) + N/P + 411.1
411.2 -cici: occurs in sequence (312/315/317) + N/P + 411.2 + 421
412 -kone 'diminutive' (N, P)
412.1 -kone occurs in sequence N/P + 412.1 + 422.4; or 310 + N/P + 412.1; or (312/315/317) + N/P + 412.1 + 411.1
412.2 -ko:kone occurs in sequence N/P + 412.2; or 310 + N/P + 412.2 + 421; or (312/315/317) + N/P + 412.2 + 411.2 + 421
413 -we:wen 'augmentative, male' (N)
413.1 -we:wen occurs preceding a suffix
413.2 -we:we occurs word final
414 -lama 'female' (used in reference to animals) (N, P)
415 -karayo: 'male' (used in reference to animals) (N, P)
420 'Number suffixes'
421 -wa 'possessed noun plural' (N, P)
422 -tli 'unpossessed noun singular' (N, P)
Allomorphs .1, .2, .3 occur with most N and P stems and within that group are predictable as indicated below. The occurrence of the remaining allomorphs is unpredictable.
422.1 -tli occurs following consonant except l
422.2 -i occurs following l
422.3 -tl occurs following vowel
422.4 -ci:
422.5 -to:
422.6 -itl
422.7 reduplication ... -ci:
422.8 reduplication ... -to:
423 -me 'unpossessed noun plural' (N, P)
Occurrence of these allomorphs is unpredictable
423.1 -me
423.2 -te
423.3 reduplication
423.4 reduplication ... -me
423.5 reduplication ... -te
423.6 -i
423.7 -s
423.8 -es
423.9 -cici:
423.10 -toto:
500 Suffix occurring exclusively with L
510 'Honorific suffix'
511 -ci:nko (2nd person honorific' (singular or plural) (L)
700 Affixes occurring exclusively as components of stems
The occurrence of allomorphs of each morpheme of the following classes is unpredictable.
710 'Components of noun stem'
711 -yo 'collectivizer' (?)

711.1 -yo
711.2 -yo:
712 -ki 'agentive nominalizer' (one who)
712.1 -ki
712.2 -ni
712.3 -:ni
713 -lis 'abstractive nominalizer' (produces abstract noun)
713.1 -lis
713.2 -:lis
713.3 -l
713.4 -:l
714 -tik 'stem formative'
714.1 -tik
714.2 -k
720 'Components of verb stem'
721 -wi 'verbalizer'
721.1 -wi
721.2 -:wi
721.3 -iwi
721.4 -o:wi
721.5 -ewi
721.6 -e:wa
721.7 -ti
721.8 -:ti
721.9 -li
721.10 -tili
721.11 -o
721.12 -yo
722 -ti 'transitivizer'
722.1 -ti
722.2 -:ti
722.3 -lti
722.4 -:lti
722.5 -li
722.6 -wi
723 -lti 'causative'
723.1 -lti
723.2 -:lti
723.3 -li
723.4 -ti
723.5 -:ti
724 $C_1V_1h$- 'stem formative'
See prefix 111 for allomorphs
725 -ka: 'stem formative'
725.1 -ka:
725.2 -te
726 te:- 'stem formative'

730 'Components of locative stem'
731 -tla 'place of'
731.1 -tla occurs word final
731.2 -tlan occurs preceding 511
731.3 -pa occurs word final
731.4 -pan occurs preceding 511
731.5 -k occurs following -ma: 'hand'
731.6 -ko occurs following i:š- 'eye'

## FOOTNOTES

1 Pittman, R.S., A Grammar of Tetelcingo (Morelos) Nahuatl, Language Dissertation 50, 1954.

2 Data were gathered by the author during various periods in the field from 1952 to 1961, while working and living in Tetelcingo, Morelos, Mexico, under the auspices of the Summer Institute of Linguistics.

For the phonemic analysis of this dialect see Pittman, R.S., The Phonemes of Tetelcingo (Morelos) Nahuatl, in the volume A WILLIAM C. TOWNSEND, en el vigésimecuinto aniversario del Instituto Lingüístico de Verano, México, D.F., 1961, 643-51.

Morphophonemic phenomena are not treated in this paper.

3 With a more extensive and thorough analysis than has so far been given, it may well be that many of these stems are susceptible to further morpheme cuts. See 1.2. for possibility of -wi versus -wa, -ni versus -na, etc., as morphemes.

4 In other dialects of Nahuatl there are four vowels, each of which may occur with length: i, e, a, o and i: [ii], e: [ee], a: [aa], o: [oo]. In this dialect there are also four vowels: i [I], e, a, o. Their "long" counterpart is one of quality rather than quantity, namely vowels which are phonetically heightened rather than phonetically lengthened. That is, long vowels in the other dialects correspond to heightened vowels in this dialect: i: [i], e: [ie], a: [ɔ], o: [u].

As a kind of typological device to facilitate comparative studies, the same notation is used for the heightened vowels of this dialect that is used for the lengthened vowels of the other dialects. Furthermore, the notation indicates more clearly the interchange pattern between the two sets of four vowels which is exhibited both in reduplication and in the morphophonemics involved in certain affixations. Where morphophonemic vowel alternation occurs, the colon representing the heightened feature of the vowel is assigned to the affix. This is done in order to reduce the number of stem allomorphs. Such analysis, of course, results in an increased number of affix allomorphs. However, since affixes are members of closed classes, allomorphic economy is gained by this analysis for the language as a whole.

5 The same is true for affixes in combination with subclasses of the major stem

classes. An affix or set of affixes that occurs exclusively in combination with members of one and only one sub-class and never in combination with the members of any other sub-class is divisive for that sub-class.

6 In the sequence 194 + V + 232 or 194 + V + 234 morpheme 194 o- 'past' is optional, being obligatory only in sequence with verbs which occur as monosyllables (194 + V of monosyllabic shape + 232). For example, (V) te:mi 'it fills', (194 + V + 232.2) o-te: 'it filled'. Perhaps the phonemic pattern of penultimate word stress has relevance here with respect to the obligatory sequence (194 + [V of monosyllabic shape in past tense] + 232.2). That is, what would otherwise be monosyllabic shaped verbs occur as bisyllabic forms by adding 194 o- 'past' which then receives the penultimate stress.

# IV. MICHOACÁN (PÓMARO) NAHUAL CLAUSE STRUCTURE

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1. The four major verb clause systems.
1.1 Nucleus of clause tagmemes.
1.2 Periphery of clause tagmemes.

2. Indicative clause system; nucleus.
2.1 Transitive clauses.
2.2 Reciprocal clauses.
2.3 Semi-transitive clauses.
2.4 Intransitive clauses.

3. Causative clause system: nucleus.
3.11 Causative-transitive clause A.
3.12 Causative-transitive clause B.
3.21 Causative-reciprocal clause A.
3.22 Causative-reciprocal clause B.
3.3 Causative-semi-transitive clauses.

4. Referential clause system: nucleus.
4.11 Referential-transitive clause A.
4.12 Referential-transitive clause B.
4.21 Referential-reciprocal clause A.
4.22 Referential-reciprocal clause B.
4.3 Referential-semi-transitive clauses.

5. Causative-referential clause system: nucleus.
5.11 Causative-referential transitive clause A.
5.12 Causative-referential transitive clause B.
5.21 Causative-referential reciprocal clause A.
5.22 Causative-referential reciprocal clause B.
5.3 Causative-referential semi-transitive clauses.

6. Derived verbal clauses.
6.1 Imperative clauses.
6.2 Permissive clauses.

7. Nominal clause system.
7.11 Descriptive clauses.
7.12 Descriptive-possessive clauses.
7.2 Existential clauses.
7.3 Derived nominal clauses.

1. There are four major systems of clauses in Michoacán Nahual (MN)[1]: indicative (I), causative (C), referential (R), and causative-referential (CR). Within the indicative system four kernel clauses are distinguished: transitive (tr), reciprocal (r), semi-transitive (st), and intransitive (i). For each of the causative, referential, and causative-referential clause systems there are five kernel clauses distinguished: two transitive, two reciprocal, and one semi-transitive. In the following diagram the items on the horizontal axis are differentiated by the number of DRAMATIS PERSONAE involved; the items on the vertical axis are kernel clauses which are differentiated by degree of transitivity.

CHART A

| | INDICATIVE | CAUSATIVE | REFERENTIAL | CAUSATIVE-REFERENTIAL |
|---|---|---|---|---|
| Transitive | X | X | X | X |
| | | X | X | X |
| Reciprocal | X | X | X | X |
| | | X | X | X |
| Semi-transitive | X | X | X | X |
| Intransitive | X | | | |

Each of the nineteen kernel clauses represented by an X on the chart has two derived clause types: imperative and permissive.

In addition to the four major verb clause systems, with their nineteen kernel clauses, another clause system will be described, a system which manifests nominal elements and the verb 'to be' as contrastive fillers of predicate slots. Kernel clauses of the nominal system are descriptive and existential. The existential clause has two derived types: imperative and permissive. Sections 1-6 are used to define the verb clause systems and section 7 for the nominal clauses.

1.1 A composite formula for any one of the kernel clauses is: verb clause = + (Nuc) $\pm$ (Peri), i.e., a verb clause consists of an obligatory nucleus and an optional periphery. The clause nucleus consists of an obligatory predicate and optional subject, causative-object, referential-object, and object, i.e., Nuc = + Pred $\pm$ S $\pm$ cO $\pm$ rO $\pm$ O. The basis for differentiating the various kernel clauses lies in (1) the contrastive status of fillers of the predicate tagmeme, and (2) the obligatory versus optional presence or absence of the various object tagmemes.

The peripheral tagmemes are: Locative (L), location in both space and time; Manner (M), i.e., manner, instrumentality, and accompaniment; Purpose (P); and Quotative (Q).

A composite formula for the periphery is: Peri = $\pm L^3 \pm M^3 \pm P \pm Q^2$, i.e., a periphery consists of an optional locative tagmeme which may be manifested three times in one clause, an optional manner tagmeme which may be manifested three times in one clause, an optional purpose tagmeme, and an optional quotative tagmeme which may be manifested twice in the same clause. The peripheral tagmemes are essentially the same from one clause system to another both in occurrence and ordering.

1.2 The four peripheral tagmemes are defined below both as to classes which manifest the tagmemes and as to the ordering of the tagmemes within the clause.

The locative tagmeme (L) refers to location in time or space; it is manifested by temporal attributatives: mohmosta 'every day', yalwa 'yesterday', iteki 'daily, and tiolak 'afternoon. Locative is manifested by locational attributative: temuán 'down below', lakpan 'up there', laihtik 'inside'. Locative is manifested by attributives, locative or temporal, whose meaning is determined by the context: umpa 'there, then'; nikan 'here, now'. umpa nikitak 'there I-him-saw'; umpa tikyapalu in ikpal 'then we-it-dye the thread' (in 'the', ikpal 'thread'). nikan nionka 'here I-am'; nikan tikpia tikpakalo 'now we-it-have we-it-wash'.

Locative is manifested by a relator-axis noun phrase: walas pa lunes 'he-will-come on Monday' (pa 'on', lunes 'Monday'); pin kwahlan 'in the forest' (pin 'in', kwahlan 'forest'); de pa yina 'from way back there' (de 'from', pa 'to', yina 'ancient time'); lahko pin tišušli 'in the midst of the fire' (lahko 'middle', pin 'in', tišušli 'fire').

Locative is manifested by a series of locative tagmemes: yes nikan laihtik 'it-must-be here inside' (nikan 'here', laihtik 'inside'); nikitak ašan wahcinko 'I-him-saw today morning' (ašan 'today', wahcinko 'morning').

Locative is manifested by an attributive noun phrase: nikčias han ok se tonali wehkanik san 'I'll-wait-for-him just one more long day only' (attributive NP = han ok se tonali, han 'just', ok 'yet', se 'one', tonali 'day', wehkanik 'long', san 'only'); nihuala in mierkoles 'I-come this Wednesday' (attributive NP = in mierkoles, in 'this', mierkoles 'Wednesday').

Locative is manifested by a clause: tilamilo tiktekalo 'when we finish laying it down' (tilamilo 'we-it-finish', tiktekalo 'we-it-lay-down'); kapik tiyawilu pan nekwli 'to where we go for honey' (kapik 'to where', tiyawilu 'we go', pan nekwli 'for honey').

The locative tagmeme in its temporal significance usually occurs before the predicate: newal yawipla niak San Pedro (newal I, yawipla 'day-before-yesterday', niak 'went') 'I went to (the town of) San Pedro the day before yesterday'. The locative tagmeme in its locational significance usually occurs after the predicate; see examples given in previous paragraphs.

The manner tagmeme (M) comprises three areas of meaning or function, i.e., (1) manner, how an action is accomplished; (2) instrumentality, the means by which an action is accomplished; and (3) accompaniment, the object or event which accompanies the action of the verb.

The manner tagmeme is manifested by relator-axis noun phrases: (1) manner: ka kwidados wala iteko in mihkil 'with grief comes his owner the corpse' (NP = ka kwidados 'with grief', wala 'comes', iteko 'his owner', in mihkil 'the corpse'); (2) instrumentality: tiktekilu ka tomahma 'we-it-cut with our hand' (NP = ka tomahma 'with our-hands'), panua in al de in totonki 'the water evaporates because of the heat' (NP = de in totonki 'by-means-of the heat', panua 'evaporates', al 'water'); (3) accompaniment: pa kuntikate kafe ka alkool 'so that they may be drinking coffee with alcohol' (NP = ka alkool 'along-with alcohol', pa 'so that', kuntikate 'they-may-be-drinking', kafe 'coffee').

Other illustrations of the manner tagmeme, manifested by relator-axis noun phrases, are: tihkwalu ha šušuwitos 'we eat it just a little underdone' (NP = ha šušuwitos 'just a-little-underdone', tihkwalu 'we-it-eat'); ninehnemiaya ipunta notalon

'I walked on the back of my heel' (NP = ipunta notalon 'its-back my-heel', nineh-nemiaya 'I walked').

Manner is also manifested by manner attributives: huntos 'together', yohi 'thus'. The following example shows the manner tagmeme manifested three times in one clause: porque tiamigos miak ka amhuanten entero anomenten 'because we are great friends with you, very much with you (porque 'because', tiamigos 'we are friends', M = miak 'very much', M = ka amhuanten 'with you-pl', M = entero anomen-ten 'completely with-you-pl').

The ordering of the manner tagmeme in the clause is relatively free. About two thirds of the occurrences of the manner tagmeme follow the predication. See examples given above for freedom of occurrence.

The quotative tagmeme (Q) is manifested by only one particle, i.e., kil 'it-is-said'. It usually occurs following the predicate and but once in a clause: kataya kil he lakal riko 'there was, it is said, a rich man' (kataya 'there was', he 'a', lakal 'man', riko 'rich'). The quotative tagmeme usually follows the predicate.

The purpose tagmeme (P) is manifested only by a relator-axis noun phrase: ma nia pan laškali 'let me go for tortillas' (NP = pan laškali 'for tortillas', ma 'let', nia 'I-go'); pa kihkikwas nošolul 'that he may eat my daughter' (NP = pa kihkik-was 'that he-it-will-eat', nošolul 'my-daughter'). The purpose tagmeme occurs be-fore or after the predicate.

For any given clause there is rarely more than one peripheral tagmeme, in addi-tion to the nuclear tagmemes. Clauses containing five tagmemes are rare; the fol-owing example shows three peripheral tagmemes, in addition to two nuclear tagmemes: moabentaruk kil pa ikišlan kil in leona 'she-threw-herself it-is-said on his-neck it-is-said the lionness' (Pred = moabentaruk 'she-threw-herself', Q = kil 'it-is-said', L = pa ikišlan 'on his-neck', Q = kil, S = in leona 'the lioness').

2. The nuclei of the indicative clause system involve a maximum of two dramatis personae, a subject (S), and an object (O). The predicate slot is manifested by a transitive or an intransitive verb stem to which are affixed appropriate tense and per-son markers. There are four kernel clauses within the indicative clause system: transitive, reciprocal, semi-transitive, and intransitive.

2.1 The transitive clause is expressed by the formula: tr = +(+Pt +S +O) +Peri, i.e., a transitive clause consists of an obligatory predicate tagmeme, manifested by a transitive verb stem, an optional subject and object tagmeme and an optional peri-phery. Examples: tewanten pwes tikpialu in kostumbre nikan 'we now have the cus-tom here' (S = tewanten 'we', pwes 'now', Pt = tikpialu 'we-it-have', O = in kos-tumbre 'the custom', L = nikan 'here');[1] kinamikik ok se ikni he cikal 'he met ano-ther of his brother ants' (Pt = kinamikik 'he-him-met', O = ok se ikni 'another his-brother', he cikal 'an ant'); kahsik pan puro icontekito 'he got him right on his little old head' (Pt = kahsik 'he-him-got', L = pan puro 'on exactly', icontekito 'his-head-little'); nimihcontekik yalwa ka nomačete 'I slashed you yesterday with my machete' (Pt = nimihcontekik 'I-you-slashed', T = yalwa 'yesterday', M = ka nomačete 'with my-machete').

Ptr, transitive predicate tagmeme, is manifested by a verb phrase, simple or expanded; the head slot of the verb phrase is manifested by transitive verb stems. The transitive verb stems are obligatorily marked by first order prefixes (from the

root) which signal singular or plural objects: nič- 1st sg; mic- 2nd sg;[2] k- ~ ki- 3rd sg (k- occurs before all vowel-initial stems and before consonant-initial stems only in the first and second singular and the first plural; ki- occurs before consonant-initial stems in the second plural, third singular and third plural);[3] tič- 1st pl; anmic- 2nd pl; kin- 3rd pl.[4]

All stems are obligatorily marked for subject by prefixes (second order) which correlate with the person of the optional subject tagmeme.[5] The prefixes which mark subject are: ni- '1st sg', nikita 'I-it-see', niktoma 'I-it-untie; ti- '2nd sg', tikita 'you-it-see', tiktoma 'you-it-untie'; Ø- '3rd sg', kita 'he-it-sees', kitoma 'he-it-unties', kinmita 'he-them-sees', kintoma 'he-them-unties'; ti-. . . -lu '1st pl',[6] tikitalu 'we-it-see', tiktomalu 'we-it-untie'; an- '2nd pl', ankita 'you-it-see', ankitoma 'you-it-untie'; Ø-. . . -lu '3rd pl', kitalu 'they-it-see', kitomalu 'they-it-untie', kinmitalu 'they-them-see', kintomalu 'they-them-untie'.

The subject tagmeme is manifested by pronouns: nel, newal '1st sg'; tewante (n) '1st pl'; tel, tewal '2nd sg'; amwante (n) '2nd pl'; yial, yil, yiwal '3rd sg'; yiwante '3rd pl'. Examples: amo wil kisaya yial 'he couldn't get out' (Pred = amo wil kisaya, amo 'not', wil 'able to', kisa 'get out', -aya 'imperfect', S = yial 'he'); kinami tewanten tipanulu nikan pa topweblo 'as we get along here in our village' (kinami 'as', S = tewante 'we', Pred = tipanulu 'we-get-along', L = nikan 'here', L = pa topweblo 'in our-village'). Of the alternate forms of pronouns, the shorter ones are heard more often in conversational speech.

Subject is manifested by noun phrases, i.e., the descriptive, attributive and possessive noun phrases. Descriptive: in ome calimes čihčičiltik 'these two red houses' (in 'these', ome 'two', calimes 'houses', čihčičiltik 'red'). Attributive: se kwali lakal čikawak 'a good man and strong' (se 'a', kwali 'good', lakal 'man', čikawak 'strong'). Possessive: nošolomes 'my-children'; itahcin in mučača 'the girl's father' (itahcin 'her-father', in mučača 'the girl').

Subject is manifested by a clause: aki kipia inakas ma lakaki 'he who has ears let him hear' (S = aki kipia inakas, aki 'he who', kipia 'he-it-has', inakas 'his-ears', ma 'let', lakaki 'he-hears').

The object tagmeme is manifested by the same set of items which manifests the subject tagmeme. The manifestants of the subject and object tagmemes are largely the same from clause type to clause type; hence, their definition will not be repeated in succeeding sections.

The ordering of tagmemes within the nucleus is not fixed. The following generalizations, however, are possible: The object tagmeme occurs more frequently than the subject; the object usually follows the predicate. When both the subject and object occur, the preferred order is predicate-subject-object. The object may be moved to first place in the clause for emphasis: in burro nikwitekik newal 'I, myself, beat the donkey (in burro 'the donkey', nikwitekik 'I-it-beat', newal 'I'). Subject tagmeme may also occur in the first place of the clause: in lakwacin kikwa totolin 'the possum eats chicken' (in lakwacin 'the possum', kikwa 'eats', totolin 'chicken').

2.2 The reciprocal clause is expressed by the formula: r = +(+Pr ±S) ±Peri, i.e., a reciprocal clause consists of an obligatory predicate tagmeme, manifested by a transitive verb stem and an optional subject. The reciprocal clause has an obligatory absence of the object tagmeme; it has, within the predicate tagmeme, a reciprocal object in place of the specific object of the transitive predicate tagmeme. ka umpa

mokistitiwalak pin seriatilan 'from there he came taking himself out of the forest' (L = ka umpik 'from there', Pr = mokištitiwalak, mo- 'reflexive', kišti 'take out', -ti- 'connective', walak 'came', L = pin seriatilan 'in forest'); timopalewihi 'we helped ourselves/one another' (Pr = ti- 'we', mo- 'ourselves/one another', palewi 'help', -hi 'preterite plural').

Pr, reciprocal predicate tagmeme, is manifested by a verb phrase, simple or expanded; the head slot of the verb phrase is manifested by transitive verb stems with the reflexive prefix mo-. The morpheme mo- indicates that the action of the verb is received by the subject either reflexively or reciprocally. The reciprocal predicate differs from the transitive predicate in that the marker mo- is the only manifestant possible for the object slot within the predicate. The subject of the reciprocal predicate is, in effect, the object of the action of the verb, i.e., the subject and the reflexive object are the same person. Hence, only one dramatis persona is possible within the nucleus of the reciprocal clause, i.e., the subject. The subject tagmeme is optionally present on the clause level. momihmiluk pan lali 'he rolled himself on the ground' (Pr = mo- 'self', mihmilu 'roll', -k 'preterite', L = pan lali 'on ground'); ašan ke ya timoišimatihi 'now that we have become acquainted' (ašan ke 'now that', Pr = ya 'already', ti- 'we', mo- 'reciprocal', išmati 'know a person', -hi 'preterite plural'); mokeca $k^{W}$alkan 'he-gets-up before dawn' (Pr = mo- 'self', -keca 'get up', L = $k^{W}$alkan 'before dawn').

2.3 The semi-transitive clause is expressed by the formula: st = +(+Pst ±S) ±Peri, i.e., a semi-transitive clause consists of an obligatory predicate tagmeme, manifested by a transitive verb stem, and an optional subject. The semi-transitive clause has an obligatory absence of the object tagmeme; it has within the predicate tagmeme a generalized or impersonal object in place of the specific object of the transitive clause. yial latokatia atras 'he goes along sowing it behind' (S = yial 'he', Pst = latokatia 'he-goes-along sowing-it', L = atras 'behind'); ya pewas lakwas in perikos 'already they will begin to eat it' (Pst = ya 'already', pewas 'they will begin', lakwas 'they-will-eat-it', S = in 'the', perikos 'parrots').

Pst, semi-transitive predicate tagmeme, is manifested by a verb phrase, simple or expanded; the head slot is manifested by transitive verb stems with the indefinite object prefix la-. A semi-transitive predicate differs from a transitive and reciprocal predicate by the obligatory presence of the indefinite object prefix la-; no other bound object occurs with the semi-transitive predicate. There is an obligatory absence of the clause level object tagmeme. The subject tagmeme is optionally present. The semi-transitive predicate is transitive in the sense that the action of the verb is passed on to the indefinite object; the object is identified in a clause other than the semi-transitive clause. ya tilamantinemi kinami len bwey 'already you go about carrying loads like some ox' (Pst = ya 'already', tilamantinemi, ti- 'you', la- 'indefinite obj', man- 'carry loads', -tinemi 'go about', M = kinami len bwey 'like some ox'); tewanten tilamamalu yohi pan lomo 'we bear loads thus on the back' (S = tewanten 'we', Pst = tilamamalu, ti-. . . -lu 'we', la- 'indefinite obj', mama- 'bear loads', M = yohi 'thus', L = pan lomo 'on back'); yial lamatiaya kil 'he felt it, it is said' (S = yial 'he', Pst = lamatiaya, la- 'indefinite obj', mati 'feel', -aya 'imperfect', Q = kil, 'it is said').

2.4 The intransitive clause is expressed by the formula: i = +(+Pi ±S) ±Peri, i.e., an intransitive clause consists of an obligatory predicate tagmeme, manifested

by an intransitive verb stem, and an optional subject. There is an obligatory absence of the object tagmeme.
ya istatika in ičkal seha 'already the cotton is turning white again' (Pi = ya 'already', istatika 'is-turning-white', S = in ičkal 'the cotton', M = seha 'again'); kapa lastika pan lapešli 'where she was lying on the bed' (kapa 'where', Pi = las- 'lie down', -tika 'progressive tense', L = pan 'on', lapešli 'bed'); nia pin lwahlan pan nekwli 'I'm going to the woods for honey' (Pi = nia 'I'm going', L = pa kwahlan 'into woods', P = pan nekwli 'for honey').

Pi, intransitive predicate tagmeme, is manifested by a verb phrase, simple or expanded; the head slot is manifested by an intransitive verb stem. The intransitive predicate has neither specific, indefinite, nor reciprocal bound objects; it has a zero grade of transitivity on both the word and clause level. ašan kiahtika ka yohi 'today it is raining over there' (L = ašan 'today', Pi = kiah- 'it rains', -tika 'progressive tense', L = ka yohi 'over there'); solahtika in kwawil ka miak lakilyo 'the tree is heavy with fruit' (Pi = solah- 'bend limbs', -tika 'progressive tense', S = in kwawil 'the tree', M = ka miak lakilyo 'with much fruit').

3. The nuclei of the causative clause system involve a maximum of three dramatis personae, a subject, an object, and a causative object (cO), i.e., the object which is caused to perform the action of the verb. The predicate slot of the causative clause is manifested by causative verb bases. The term base refers to a construction which consists of a verb stem plus a causative, referential, or causative-referential marker. The causative base itself consists of transitive or intransitive verb stems plus the causative morpheme -ti/-lti (-ti occurs following consonants; -lti occurs following vowels).

All causative bases are non-transitive; some are di-transitive. Causative bases with intransitive stems involve a maximum of two dramatis personae, a subject and a causative object. Causative bases with transitive stems involve a maximum of three dramatis personae, a subject, object, and causative object. The indicative intransitive clause is transformed to a causative clause by the suffixation of the causative morpheme and the addition of the substantitive which manifests the causative object. There are five kernel clauses within the causative system: two transitives, two reciprocals, and one semi-transitive.

3.11 The causative clause A is expressed by the formula: Ctr A = +(+CPtr $\pm$S $\pm$cO $\pm$O) $\pm$Peri, i.e., the causative, transitive clause A consists of an obligatory causative predicate tagmeme, manifested by a causative base with transitive verb stem, optional subject, object, and causative object, and optional periphery.
nikihnamikiltik Juan de in lahtol 'I reminded John of the word' (CPtr = nikihnamikiltik, ni- 'I', k- '3rd sg obj', ihnamiki 'remember', -lti 'causative', -k 'preterite', cO = Juan 'John', O = de in lahtol 'about the word'); nikintohtokaltik in pelohmes in lakwacin 'I set the dogs on the opossum' (CPtr = nikintohtokaltik, ni- 'I', kin- '3rd pl obj', tohtoka 'persecute', -lti 'causative', -a 'present tense', cO = in pelohmes 'the dogs', O = in lakwacin 'the opossum').

CPtr, causative predicate tagmeme, is manifested by a verb phrase, simple or expanded; the head slot is manifested by causative verb bases with transitive verb stems. A causative verb base with transitive verb stem has three dramatis personae implicit in its bound subjects and objects; they may be optionally made explicit by the

occurrence of the subject, object, and causative object tagmemes. The causative object may be first, second, or third person; the object is always third person. nimicneltokaltia notahcin tewal 'I'll make you obey my father' (CPtr = nimicneltokaltia, ni- 'I', mic- 'you', neltoka 'obey', -lti, 'causative', -a 'present tense', O = notahcin 'my-father', cO = tewal 'you'). For other examples, see previous paragraph.

3.12 The causative clause B is expressed by the formula: Ctr B = +(+CPi ±S ±cO) ±Peri, i.e., the causative, transitive clause B consists of an obligatory causative predicate tagmeme, manifested by a causative base with intransitive verb stem, optional subject and causative object, and optional periphery. tihčoktia 'you make me cry' (CPi = tihčoktia, ti- 'you', -h-[7] 'me', -čok 'cry', -ti 'causative', -a 'present tense'); tiklakentik in šolul 'you dressed the baby' (CPi = tiklakentik, ti- 'you', k- '3rd sg obj', laken 'blanket', -ti 'causative', -k 'preterite', cO = in šolul 'the baby'); kicopelialtik kuřkopia in kafe 'Curcopia sweetened the coffee' (CPi = kicopelialtik, ki- '3rd sg obj', copelia 'is sweet', -lti 'causative', -k 'preterite', S = kuřkopia 'Curcopia, proper name', cO = in kafe 'the coffee'). The base CPi differs from the base CPtr only in that the former is manifested by intransitive verb stems, the latter by transitive verb stems.

CPi, causative predicate tagmeme, is manifested by a verb phrase, simple or expanded; the head slot is manifested by causative verb bases with intransitive verb stems. A causative verb base with intransitive verb stem has two dramatis personae implicit in its bound subjects and objects; they may optionally be made explicit by the occurrence of the subject and causative object tagmemes. The causative object may be any of the three persons. kikočiltik maria in šolul 'Mary put the baby to sleep' (CPi = kikočiltik, ki- '3rd sg obj', koči 'sleep', -lti 'causative', -k 'preterite', S = maria 'Mary', cO = in šolul 'the baby'); ya tiolaktia 'it is afternoon' (CPi = ya tiolaktia, ya 'already', tiolak 'is afternoon', -ti 'causative', -a 'present tense'); kiweyiltia in kali 'he enlarges the house' (CPi = kiweyiltia, ki- '3rd sg obj', weyi 'is large', -lti 'causative', -a 'present tense', cO = in kali 'the house').

3.21 The causative-reciprocal clause A is expressed by the formula: Cr A = +(+CPrtr ±S ±O) ±Peri, i.e., the causative-reciprocal clause A consists of an obligatory causative-reciprocal predicate tagmeme, manifested by a causative-reciprocal base with a transitive verb stem, optional subject and object, and an optional periphery. The causative object and the subject are the same dramatis persona; hence, if an object is expressed, it is the direct object of the verb action. wahcinco nimoaniltik miak šušiyo 'in the morning I daubed myself with the honeycomb' (L = wahcinco 'in the morning', CPrtr = nimoaniltik, ni- 'I', mo- 'myself', ani- 'smear with', -lti 'causative', -k 'preterite', O = miak šušiyo 'much honeycomb'); newal nimomamiltik in masal 'I carried the deer on my back' (S = newal 'I', CPrtr = nimomamiltik, ni- 'I', mo- 'myself', mami 'carry-on-the-back', -lti 'causative', -k 'preterite', O = in masal 'the deer').

CPrtr, causative-reciprocal predicate tagmeme, is manifested by a verb phrase, simple or expanded; the head slot is manifested by causative verb bases with transitive verb stems and mo- reciprocal. The causative-reciprocal verb base with transitive verb stem has two dramatis personae implicit in its bound subject and object; they may optionally be made explicit by the occurrence of the subject and object tagmemes The causative object implicit in the verb is the same dramatis persona as the

subject. The object tagmeme for this clause refers only to third person. in ihado momamiltik pa ilomo 'she loaded the godchild on her back' (O = in ihado 'the godchild', CPrtr = momamiltik, mo- 'herself', mami- 'carry-on-back', -lti 'causative', -k 'preterite', L = pa ilomo 'on her-back'); da sierto kinektila monamiktia nošol 'if for sure he's wanting to marry my daughter' (da 'if', M = sierto 'for sure', CPrtr = kinektila monamiktia, mo- 'himself', namik- 'meet', -ti 'causative', -a 'present tense', O = nošol 'my-daughter'); kinami tiyawiluaya timomačiltilu pwes len anmicpanuk 'how would we come to know then what happened to you' ( kinami 'how', CPrtr = timomačiltilu, ti-. . . -lu 'we', mo- 'ourselves', mači- 'learn', -lti 'causative', i.e., 'we cause ourselves to learn', pwes 'then', O = len anmicpanuk, len 'what', anmicpanuk 'happened-to-you').

3.22 The causative-reciprocal clause B is expressed by the formula: Cr B = +(+CPri ±S) ±Peri, i.e., the causative-reciprocal clause B consists of an obligatory causative-reciprocal predicate tagmeme, manifested by a causative-reciprocal base with an intransitive verb stem, optional subject, and optional periphery. The causative object and the subject are the same dramatis persona. rikarda mokočiltik čokatika pa ikočian 'Dickie put herself to sleep crying on her bed' (S = rikarda 'Dickie', CPri = mokočiltik, mo- 'herself', koči 'sleep', -lti 'causative', -k 'preterite', čokatika 'is-crying', L = pa ikočian 'on her-sleeping-place'); molakentia kwaltičin 'she dresses herself beautifully' (CPri = molakentia, mo- 'herself', laken 'blanket', -ti 'causative', -a 'present tense', M = kwaltičin 'beautifully'); moweyiltia in koyamil 'the pig gets fat' (CPri = moweyiltia, mo- 'itself', weyi 'is big', -lti 'causative', -a 'present tense'); molehkultitinemiluaya kwawimes se wan okse 'they were going around climbing trees one with another' (CPrtr = molehkultitinemiluaya, mo- 'themselves', lehku- 'go up', -lti 'causative', -ti 'conjoiner', nemi- 'go about', -lu 'pl sbj', -aya 'imperfect tense', O = kwawimes 'trees', S = se wan okse 'one with another').

CPri, causative-reciprocal predicate tagmeme, is manifested by a verb phrase, simple or expanded; the head slot is manifested by causative-reciprocal verb bases with intransitive verb stems and mo- 'reciprocal'. The causative-reciprocal verb base with intransitive verb stem has only one dramatis persona, the subject, which may be made explicit on the clause level. The causative object is the same dramatis persona as the subject. šimokalaktikan pin kalihtik ka umpek 'enter yourselves in the house over there' (CPri = šimokalaktikan, ši- 'imperative', mo- 'yourselves', kalaki- 'enter',[8] -ti 'causative', -kan 'pl sbj', L = pin 'in', kal- 'house', -ihtik 'inside', L = ka umpek 'over there'); ka umpek mokištitiwalak pin seriatilan 'from there he came leaving the forest' (L = ka umpek 'from there', CPri = mokištitiwalak, mo- 'himself', kisa-[9] 'go out', -ti 'causative', i.e., 'he caused himself to go out', -ti 'conjoiner', -wala 'come', -k 'preterite', L = pin 'in', seriatilan 'forest').

3.3 The causative-semi-transitive clause is expressed by the formula: Cst = +(+CPst ±S) ±Peri, i.e., the causative-semi-transitive clause consists of an obligatory causative-semi-transitive predicate tagmeme, manifested by a causative-semi-transitive base with transitive or intransitive verb stems, an optional subject, and an optional periphery. There is an obligatory absence of both object and causative object; there is an obligatory presence of the indefinite object -la prefixed to the verb base. lačoktia 'he makes someone cry' (CPst = lačoktia, la- 'indefinite obj', čok- 'cry', -ti 'causative', -a 'present tense'); nilačiwaltitika lakwalispan 'I

cause things to be done at noon' (CPst = nilačiwaltitika, ni- 'I', la- 'indefinite obj', čiwa- 'do', -lti 'causative', -tika 'progressive tense', L = lakwalispan 'at-noon'); nilatekipanultitinemi řesio 'I go around making them work hard' (CPst = nilatekipanultitinemi, ni- 'I', la- 'indefinite obj', tekipanu 'work', -lti 'causative', -ti 'conjoiner', nemi 'go around', M = řesio 'hard').

CPst, causative-semi-transitive predicate tagmeme, is manifested by a verb phrase, simple or expanded; the head slot is manifested by causative verb bases with transitive or intransitive stems and the indefinite object prefix la-. No other bound objects are possible; there are no object tagmemes possible on the clause level. lalakentia 'he dresses people' (CPst = lalekentia, la- 'indefinite obj', laken 'clothing', -ti 'causative', -a 'present tense'); laweyiltia 'he makes things big' (CPst = laweyiltia, la- 'indefinite obj', weyi 'is big', -lti 'causative', -a 'present tense'); lapahahtia mohmosta 'he puts sashes on people every day' (CPst = lapahahtia, la- 'indefinite obj', pahah- 'put-on-sash', -ti 'causative', -a 'present tense', L = mohmosta 'every day').

4. The nuclei of the referential clause system involve a maximum of three dramatis personae, a subject, an object, and a referential object (rO), i.e., an object which is the recipient or beneficiary of the action of the verb. The predicate slot of the clause is manifested by referential verb bases, i.e., a base which consists of transitive or intransitive verb stems plus the referential morpheme -li. All referential bases are mono-transitive; some are di-transitive. Referential base with intransitive stem involves a maximum of two dramatis personae, a subject and a referential object. Referential base with transitive stem involves a maximum of three dramatis personae, a subject, an object, and a referential object. The indicative intransitive clause is transformed to the referential clause by the suffixation of the referential morpheme and the addition of the substantive which manifests the referential object. There are five kernel clauses within the referential system: two transitives, two reciprocals, and one semi-transitive.

4.11 The referential clause A is expressed by the formula: Rtr A = +(+RPtr ±S ±S ±rO ±O) ±Peri, i.e., the referential clause A consists of an obligatory referential predicate tagmeme, manifested by a referential base with transitive verb stem, optional subject, referential object, and object, and optional periphery. ničtemuwilik newal in biga 'he lowered the beam for me' (RPtr = ničtemuwilik, nič- 'me', temuwi 'lower', -li 'referential', -k 'preterite', rO = newal 'for me', O = in biga 'the beam'); tikinmahokilia yewanten in costales pan buřo 'you lifted up the corn for them onto the donkey' (RPtr = tikinmahokilia, ti- 'you', kinm- '3rd pl obj', ahoki 'lift up', -li 'referential', -a 'present tense', rO = yewanten 'for them', O = in costales 'bags-of-corn', L = pan buřo 'onto donkey').

RPtr, referential predicate tagmeme, is manifested by a verb phrase, simple or expanded; the head slot is manifested by referential verb bases with transitive verb stems. A referential base with transitive stem has three dramatis personae implicit in its bound subjects and objects; they may optionally be made explicit by the occurrence of subject, object, and referential object tagmemes. The referential object may be first, second, or third person; the object is always third person. quinami ničlakecilini nel nonancin in kwento 'as my mother told me the story' (quinami 'as', RPtr = ničlakecilini, nič- 'to me', lakeci 'converse', -li 'referential', -ni 'remote

preterite', rO = nel 'to me', S = nonancin 'my-mother', O = in kwento 'the story'); pos yalu ničitililu in tamali nikan 'well they aren't going to find the tamali for me here' (pos 'well', RPtr = amo 'not', yalu 'they-go', ničitililu, nič- 'for me', iti- 'find', -li 'referential', -lu 'pl sbj', O = in tamali 'the tamale', L = nikan 'here'); toantigüedad tečkawilihi tewanten toawelohmes 'our forefathers left for us our ancient ways' (O = toantigüedad 'our-ancient-ways', RPtr = tečkawilihi, teč- 'for us', kawi- 'leave', -li 'referential', -hi 'preterite pl', rO = tewante 'for us', S = toawelohmes 'our-forefathers').

4.12 The referential clause B is expressed by the formula: Rtr B = +(+RPi ±S ±rO) ±Peri, i.e., the referential clause B consists of an obligatory referential predicate tagmeme, manifested by a referential base with intransitive verb stem, optional subject and referential object, and optional periphery. yiwal nehčokilik newal 'he cried for me' (S = yiwal 'he', RPi = nehčokilik, neh- 'for me', čoki- 'cry', -li 'referential', -k 'preterite', rO = newal 'for me'); nikcahcilik yiwal 'I yelled at him' (RPi = ni, 'I', k- 'at him', cahci- 'yell', -li 'referential', -k 'preterite', rO = yiwal 'at him'); kinkwalanilia in totolen iparačitos 'the hen defends her chicks' (RPi = kinkwalanilia, kin- 'for them', kwalani 'be angry, stirred up', -li 'referential', -a 'present tense', S = in totolen 'the hen', rO = iparačitos 'for her chickens').

RPi, referential predicate tagmeme, is manifested by a verb phrase, simple or expanded; the head slot is manifested by referential verb bases with intransitive verb stems. A referential base with intransitive stem has two dramatis personae implicit in its bound subjects and object; they may optionally be made explicit by the occurrence of subject and referential object tagmemes. nimickwahmiluilis tewal 'I will clear-the-field for you' (RPi = nimickwahmiluilia, ni- 'I', mic- 'for you', kwahmilui- 'clear-field', -li 'referential', -s 'fut', rO = tewal 'for you'); anničkukulihtataya newal amwanten 'you were angrily criticizing me' (RPi = anničkululihtataya, an- 'you-pl', nič- 'with me', kuku- 'be piquant', -li 'referential', -tata 'continuative', -ya 'imperfect', rO = newal 'with me', S = amwanten 'you-pl'); tiktekipanuilihtika yiwal 'you are working for him' (RPi = tiktekipanuilihtika, ti- 'you', k- 'for him', tekipanui 'work', -li 'referential', -h 'conjoiner', -tika 'continuative', rO = yiwal 'for him').

4.21 The referential-reciprocal clause A is expressed by the formula: Rr A = +(+RPrtr ±S ±O) ±Peri, i.e., the referential-reciprocal clause A consists of an obligatory referential-reciprocal predicate tagmeme, manifested by a referential-reciprocal base with transitive verb stem, optional subject and object, and optional periphery. There is an obligatory absence of the referential object tagmeme; the subject and referential object are the same dramatis persona. It is signaled by mo- prefixed to the referential verb base. Some occurrences of mo- are translated with reflexive rather than referential meaning. mosta nimokuwilis se kwařačes 'tomorrow I'll buy sandals for myself' (L = mosta 'tomorrow', RPrtr = nimokuwilis, ni- 'I', mo- 'for myself', kuwi- 'buy', -li 'referential', -s 'future', O = se kwařačes 'one-pair-of-sandals'); hasta mokickilik in kušpa 'until he grabbed the iguana' (hasta 'until', RPrtr = mokickilik, mo- 'for himself', kicki- 'grab', -li 'referential', -k 'preterite', O = in kušpa 'the iguana').

RPrtr, referential-reciprocal predicate tagmeme, is manifested by a verb phrase, simple or expanded; the head slot is manifested by referential-reciprocal verb base with transitive verb stem. A referential-reciprocal verb base with transitive verb

stem has two dramatis personae implicit in its bound subjects and objects; they may optionally be made explicit by the occurrence of the subject and object tagmemes. nimokowilia se cocomahli 'I buy for myself some clothes' (RPrtr = nimokowilia, ni- 'I', mo1 'for myself', kowi- 'buy', -li 'referential', -a 'present', O = se cocomahli 'some clothes'); tewanten timočiwilihmi tokwi 'we make clothes for ourselves' (S = tewanten 'we', RPrtr = timočiwilihmi, ti- 'we', mo- 'for ourselves', čiwi- 'make', -li 'referential', -hmi 'pl sbj', O = tokwi 'our-clothes').

4.22 The referential-reciprocal clause B is expressed by the formula: Rr B = +(+RPri ±S) ±Peri, i.e., the referential-reciprocal clause B consists of an obligatory referential-reciprocal predicate tagmeme, manifested by a referential-reciprocal base with intransitive verb stem, an optional subject, and an optional periphery. There is an obligatory absence of both referential object and object tagmemes. The subject and referential object are the same dramatis persona. mokukulihtikate se wan okse 'they are angrily criticizing' (RPri = mokukulihtikate, mo- 'themselves', kuku- 'be piquant', -li 'referential', -h 'conjoiner', -tika 'continuative', -te 'pl sbj', S = se wan okse 'one-and-another/they'); mokwahmiluililu yiwanten inwian 'they clean land only for themselves' (RPri = mokwahmiluililu, mo- 'for themselves', kwahmilui- 'clear-land', -li 'referential', -lu 'pl sbj', S = yiwanten 'they', M = inwian 'they-only').

RPri, referential-reciprocal predicate tagmeme, is manifested by a verb phrase, simple or expanded; the head slot is manifested by referential-reciprocal verb base with intransitive verb stem. A referential-reciprocal verb base with intransitive verb stem has but one dramatis persona, the subject. The referential prefix mo- signals the dramatis persona which is at once subject, reflexive object, and referential object. yiwal močokilia 'he cries for himself' (S = yiwal 'he', RPri = močokilia, mo- 'for himself', čoki- 'cry', -li 'referential', -a 'present'); mokwalanilia in buřo 'the donkey got (himself) angry' (RPri = mokwalanilia, mo- 'himself', kwalani 'become angry', -li 'referential', -a 'present', S = in buřo 'the donkey').

4.3 The referential-semi-transitive clause is expressed by the formula: Rst = +(+RPst ±S) ±Peri, i.e., the referential-semi-transitive clause consists of an obligatory referential-semi-transitive predicate, manifested by a referential-semi-transitive base with transitive or intransitive verb stems, an optional subject, and an optional periphery. There is an obligatory absence of both referential object and object tagmemes; there is an obligatory presence of the indefinite object -la prefixed to the verb base. The referents of the indefinite object and the referential object are the same dramatis persona; it is never made explicit on the clause level. lačiwilihtinemilu 'they go about doing things-for-people' (RPst = lačiwilihtinemilu, la- 'things-for-people', 'indefinite obj', čiwi- 'do', -li 'referential, -h 'conjoiner', -ti 'conjoiner', -nemi- 'go around', -lu 'pl sbj'); lakukulihtinemi siempre 'he always goes around angrily criticizing people' (RPst = lakukulihtinemi, la- 'people', 'indefinite obj', kuku- 'be piquant', -li 'referential', -h, 'conjoiner', -ti 'conjoiner', -meni 'go around', M = siempre 'always').

RPst, referential-semi-transitive predicate tagmeme, is manifested by a verb phrase, simple or expanded; the head slot is manifested by referential-semi-transitive verb base with either transitive or intransitive verb stems and the indefinite object prefix la-. No other bound objects are possible; there are no object tagmemes on the clause level. lakwalanilia siempre in lakal 'that man is always angry at people'

(RPst = lakwalanilia, la- 'people, indefinite obj', kwalani 'be angry', -li 'referential', -a 'present', M = siempre 'always', S = in lakal 'that man'); mosta lakuwilis 'tomorrow', RPst = lakuwilis, la- 'things-for-people', 'indefinite obj', kuwi- 'buy', -li 'referential', -s 'future').

5. The nuclei of the causative-referential clause system involve a maximum of four dramatis personae, a subject, object, referential object, and causative object. The predicate slot of the clause is manifested by causative-referential verb bases, i.e., a base which consists of a transitive or intransitive verb stem plus both the causative and referential markers, -ti/-lti + -li (-tili occurs following consonants; -ltili occurs following vowels). All causative-referential bases are di-transitive; some are tri-transitive. The causative-referential base with intransitive stem involves a maximum of three dramatis personae, i.e., a subject, referential object, and causative object. The causative-referential base with transitive stem involves a maximum of four dramatis personae, i.e., subject, object, referential object and causative object. The indicative intransitive clause is transformed to the causative-referential clause by the suffixation of the causative-referential morpheme and the addition of the substantitives which manifest the various objects. There are five kernel clauses within the causative-referential system: two transitive, two reciprocals, and one semi-transitive.

5.11 The causative-referential clause A is expressed by the formula: CRtr A = +(+CRPtr ±S ±cO ±rO ±O) ±Peri, i.e., the causative-referential clause A consists of an obligatory causative-referential predicate tagmeme, manifested by a causative-referential base with transitive verb stem, optional subject, causative object, referential object, and object, and an optional periphery. nimicnamakiltilis tewal in kali prahedes 'I'll make you sell the house for Praxedes' (CRPtr = nimicnamakiltilis, ni- 'I', mic- 'you', namaki- 'sell', -lti 'causative', -li 'referential', -s 'future', cO = tewal 'you', O = in kali 'the house', rO = prahades 'for Praxedes'); tihcayaniltilik newal in koton rikardo 'you made me rip Dick's shirt for him' (CRPtr = tihcayaniltilik, ti- 'you', h- 'me', cayani 'rip', -lti 'causative' -li 'referential', -k 'preterite', cO = newal 'me', O = in koton 'the shirt', rO = rikardo 'for Dick').

CRPtr, causative-referential predicate tagmeme, is manifested by a verb phrase, simple or expanded; the head slot is manifested by causative-referential verb base with transitive verb stem. A causative-referential verb base with transitive stem has four dramatis personae implicit in its bound subject and object affixes; they may optionally be made explicit by the occurrence of the subject, causative object, referential object, and object tagmemes. Both the referential and causative objects may refer to any of the three persons but the object is always third person. nimickapunaltilis tewal in pačulimes in lakal 'I'll make you pull up the plants for the man' (CRPtr = nimickapunaltilis, ni- 'I', mic- 'you', kapuna 'pluck-up', -lti 'causative', -li 'referential', -s 'future', cO = tewal 'you', O = in pačulimes 'the plants', rO = in lakal 'the man'); nikmamiltiluilik hwan in burro tewal 'I made John load the donkey for you' (CRPtr =nikmamiltiluilik, ni- 'I', k- 'obj 3rd sg', mami 'load-on-back', -lti 'causative', -luili 'referential', [10] -k 'preterite, cO = hwan 'John', O = in burro 'the donkey', rO = tewal 'you').

5.12 The causative-referential clause B is expressed by the formula: CRtr B = +(+CRPi ±S ±cO ± rO) ±Peri, i.e., the causative-referential clause B consists of

an obligatory causative-referential predicate tagmeme, manifested by a causative-referential base with intransitive verb stem, optional subject, causative object, and referential object, and optional periphery. niklakentilik in šolul inancin 'I dressed the baby for its mother' (CRPi = niklakentilik, ni- 'I', k- 'obj 3rd sg', laken- 'blanket', -ti 'causative', -li 'referential', -k 'preterite', cO = in šolul 'the baby', rO = inancin 'his-mother'); newal nikweyiltilik notahcin in kali 'I enlarged the house for my father' (S = newal 'I', CRPi = nikweyiltilik, ni- 'I', k- 'obj 3rd sg', weyi 'is big', -lti 'causative', -li 'referential', -k 'preterite', rO = notahcin 'my-father', cO = in kali 'the house').

CRPi, causative-referential predicate tagmeme, is manifested by a verb phrase, simple or complex; the head slot of the verb phrase is manifested by causative-referential verb base with intransitive verb stem. A causative-referential verb base with intransitive stem has three dramatis personae implicit in its bound subject and object affixes; they may optionally be made explicit by the occurrence of the subject, causative object, and referential object tagmemes. Both the causative and referential objects may refer to any of the three persons but the object is always third person. tičyukšiltilia nel nolakwali 'you prepare my food for me' (CRPi = tičyukšiltilia, tič- 'you-for-me', yukši- 'it cooks', -lti 'causative', -li 'referential', -a 'present', rO = nel 'for me', cO = nolakwali 'my-food'); in tonali kišukuyaltilik Federico ilarahas 'the sun soured Frederick's oranges' (S = in tonali 'the sun', CRPi = kišukuyaltilik, ki- 'obj 3rd sg', šukuya 'it sours', -lti 'causative', -li 'referential', -k 'preterite', rO = federiko 'for Frederick', cO = ilarahas 'his-oranges').

5.21 The causative-referential-reciprocal clause A is expressed by the formula: CRr A = +(+CRPrtr ±S ±O) ±Peri, i.e., the causative-referential-reciprocal clause A consists of an obligatory causative-referential-reciprocal predicate tagmeme, manifested by a causative-referential-reciprocal base with transitive verb stem, optional subject and object, and optional periphery. There is an obligatory absence of both referential and causative objects. The subject, referential and causative objects are the same dramatis persona. nimomamiltilik yalwa in kostales 'I caused myself to carry for myself the bags yesterday (CRPr = nimomamiltilik, ni- 'I', mo- 'for myself', mami- 'carry-on-back', -lti 'causative', -li 'referential', -k 'preterite', L = yalwa 'yesterday', O = in kostales 'the bags'); anmolakwaltilis anmolaškali pa kwalkan 'you'll feed yourselves the tortillas before dawn' (CRPrtr = anmolakwaltilis, an- 'you pl', mo- 'for yourselves', lakwa 'eat', -lti 'causative', -li 'referential', -s 'future', anmolaškali 'your-tortillas', L = pa kwalkan 'before dawn').

CRPrtr, causative-referential-reciprocal predicate tagmeme, is manifested by a verb phrase, simple or complex; the head slot of the verb phrase is manifested by a causative-referential-reciprocal verb base with a transitive verb stem. A causative-referential-reciprocal verb base with transitive stem has two dramatis personae implicit in its bound subject and object affixes; they may optionally be made explicit by the occurrence of the subject and object tagmemes. The subject, referential and causative objects are the same dramatis persona; they are marked in the base by the reciprocal prefix mo-. The subject causes the causative object to effect the action of the verb for the sake of the referential object. leka timočikawaltilik lapešli 'why did you make the bed hard for yourself?' (leka 'why', CRPrtr = timočikawaltilik, ti- 'you', mo- 'for yourself', čikawa 'is strong', -lti 'causative', li 'referential', -k

'preterite', O = lapešli 'bed'); timopicaltilik ihyekal tewal 'you made a breeze for yourself, i.e., you fanned yourself' (CRPrtr = timopicaltilik, ti- 'you', mo- 'for yourself', pica- 'it blows', -lti 'causative', -li 'referential', -k 'preterite', O = ihyekal 'breeze', S = tewal 'you').

5.22 The causative-referential reciprocal clause B is expressed by the formula: CRr B = +(+CRPri ±S) ±Peri, i.e., the causative-referential-reciprocal clause B consists of an obligatory causative-referential-reciprocal predicate tagmeme, manifested by a causative-referential-reciprocal base with intransitive verb stem, optional subject and optional periphery. There is an obligatory absence of all types of object tagmemes. The subject, referential and causative objects are the same dramatis persona, i.e., the subject makes itself (causative object) effect the action of the verb for itself (referential object). mokwahkwawiltilihtinemi 'he goes around wood-cutting for himself' (CRPri = mokwahkwawiltilihtinemi, mo- 'for himself', kwahkwawi- 'cut-wood', lti 'causative', -li 'referential', -h 'conjoiner', -ti 'conjoiner', nemi 'go about'); motemiltilia yiwal ka layoli 'he fills it for himself with corn' (CRPri = motemiltilia, mo- 'for himself', temi- 'it fills', -lti 'causative', -li 'referential', -a 'present', S = yiwal 'he', M = ka layoli 'with corn').

CRPri, causative-referential reciprocal predicate tagmeme, is manifested by a verb phrase, simple or expanded; the head slot of the verb phrase is manifested by a causative-referential-reciprocal verb base with intransitive verb stem. A causative-referential-reciprocal verb base with intransitive stem has only one dramatis persona implicit in its bound prefixes; it is optionally made explicit by the occurrence of the subject tagmeme. The subject, referential object, and causative object are the same dramatis persona; they are marked in the base by the reciprocal marker mo-. močoktilia in šolul pa kwalkan 'the baby cries before dawn' (CRPri = močoktilia, mo- 'for himself', čok- 'cry', -lti 'causative', -li 'referential', -a 'present', S = in šolul 'the baby', L = pa kwalkan 'before dawn'); moweyiltilik in lakal 'the man felt very proud' (CRPri = moweyiltilik, mo- 'for himself', weyi 'is big', -lti 'causative', -li 'referential', -k 'preterite', i.e., 'the man caused himself to feel very great for his own benefit', S = in lakal 'the man').

5.3 The causative-referential semi-transitive clause is expressed by the formula: CRst = +(+CRPst ±S) ±Peri, i.e., the causative-referential semi-transitive clause consists of an obligatory causative-referential semi-transitive predicate, manifested by a causative-referential semi-transitive base with transitive or intransitive verb stems, an optional subject, and an optional periphery. There is an absence of all object tagmemes; there is the obligatory occurrence of the indefinite object marker la-. The referents of the indefinite object, the causative object, and the referential object are the same dramatis persona; it is never made explicit on the clause level. tilamačiltililu tewanten 'we make known things-for-them' (CRPst = tilamačiltililu, ti- 'we', la- 'things-for-them', mači- 'know', -lti 'causative', -li 'referential', -lu 'pl sbj', S = tewanten 'we'); lakwalantilini siempre 'he had always angered them-for-something' (CRPst = lakwalantilini, la- 'them-for-something', kwalan- 'be angry', -ti 'causative', -li 'referential', -ni 'remote preterite', M = siempre 'always').

CRPst, causative-referential semi-transitive predicate tagmeme, is manifested by a verb phrase, simple or expanded; the head slot of the verb phrase is manifested by a causative-referential semi-transitive verb base with either transitive or intran-

sitive verb stems and the indefinite object prefix la-. No other bound objects occur; no object tagmemes occur on the clause level. lakuwiltilia mohmosta pa tianguis 'he causes them to buy things-for-them every day in the market' (CRPst = lakuwiltilia, la- 'indefinite obj', kuwi- 'buy', -lti 'causative', -li 'referential', -a 'present', L = mohmosta 'daily', L = pa tianguis 'in the market'); laweyiltilik itahcin 'his father enlarged it-for-them' (CRPst = laweyiltilik, la- 'it-for-them', weyi 'is big', -lti 'causative', -li 'referential', -k 'preterite', S = itahcin 'his-father').

6. Derived clause types for each of the nineteen kernel clauses, defined in sections one through five, are imperative and permissive. Sub-section 6.1 and 6.2 are used to delineate the structure of these two derived verbal clauses.

6.1 Any kernel clause is transformed to an imperative clause by the affixation of imperative markers to the verb stem or base. To mark singular imperative, the morpheme ši- is prefixed to the verb; to mark plural imperative, the morpheme ši- is prefixed to the verb and the morpheme -kan is suffixed to the verb. The prefix ši- is mutually exclusive with the second order prefixes which mark subject. All tense suffixes are dropped when either singular or plural imperative markers are affixed to a verb. For the imperative clause, the verb base is obligatorily clause-initial. The manifestants of the nuclear and peripheral tagmemes are the same for kernel and derived clauses. The following examples demonstrate the nineteen kernel clauses in the derived imperative form. tr = šikwika pwes noihado 'take away my godson then!' (Ptr = šikwika, ši- 'imperative', kwika 'take away', pwes 'then', O = noihado 'my-godson'); r = šimolali 'sit down!' (Pr = šimolali, ši- 'imperative', mo- 'yourself', lali 'put sown'); st = šia šilašawa pa mila 'go plow in the cornfield!' (Pst = šia 'go!!' šilašawa, ši- 'imperative', la- 'indefinite object', šawa 'plow', L = pa mila 'in the cornfield'); i = šiwala ka nik 'come here!' (Pi = šiwala, ši- 'imperative', wala 'come', L = ka nik 'here'); Ctr A = amo šiklakwalti maik laškali noihado 'don't feed my godson many tortillas (CPtr = amo šiklakwalti, amo 'no', ši- 'imperative', k- 'obj 3rd sg', lakwa 'eat', -lti 'causative', O = miak laškali 'many tortillas', cO = noihado 'my-godson'); Ctr B = šiklakenti mošolul 'dress your child!' (CPi = šiklakenti, ši- 'imperative', k- 'obj 3rd sg', laken- 'blanket', -ti 'causative', cO = mošolul 'your-child'); Cr A = šimomaštitia 'go on learning!' (CPrtr = šimomaštitia, ši- 'imperative', mo- 'yourself', maš- 'teach', -ti 'causative', -ti 'directional', -a 'present'); Cr B = šimolakenti pa kwahli 'get dressed in the woods!' (CPri = šimolakenti, ši- 'imperative', mo- 'yourself', laken- 'blanket', -ti 'causative', L = pa kwahli 'in woods'); Cst = šilamaštitinemi 'go about teaching people!' (CPst = šilamaštitinemi, ši- 'imperative', la- 'indefinite obj, people', maš- 'learn', -ti 'causative', -ti 'conjoiner', nemi 'go about'); Rtr A = šiknamakili hwan in kostal 'sell the bag to John!' (RPtr = šiknamakili, ši- 'imperative', k- 'obj 3rd sg', namaki- 'sell', -li 'referential', rO = hwan 'to John', O = in kostal 'the bag'); Rtr B = šičcahcili pa kwalkan 'call for me early!' (RPi = šičcahcili, ši- 'imperative', č- 'for me', cahci 'yell', -li 'referential', L = pa kwalkan 'early'); Rst = šilalalpačulihtinemikan 'go about burying people-for-others' (RPst = šilalalpačulihtinemikan, ši- 'imperative', la- 'people-for-others', lalpaču- 'bury', -li 'referential', -hti 'conjoiner', nemi 'go about', -kan 'pl sbj'); CRtr A = šiknamakiltili yiwal in kali margarito 'make him sell the house to Margarito' (CRPtr = šiknamakiltili, ši- 'imperative', k- '3rd sg obj', namaki- 'sell', -lti 'causative',

-li 'referential', cO = yiwal 'him', O = in kali 'the house', rO = margarito 'Margarito'); CRtr B = šikweyiltili in kwahmili motahcin 'enlarge the cornfield for your father!' (CRPi = šikweyiltili, ši- 'imperative', k- 'obj 3rd sg', weyi 'is big', -lti 'causative', -li 'referential', cO = in kwahmili 'cornfield', rO = motahcin 'your-father'); CRr A = šimočikawaltili tewal molapešli 'make the bed hard for yourself' (CRPrtr = šimočikawaltili, ši- 'imperative', mo- 'for yourself', čikawa- 'harden', -lti 'causative', -li 'referential', S = tewal 'you', O = molapešli 'your-bed'); CRr B = šimokwalantili 'get angry with yourself' (CRPri = šimokwalantili, ši- 'imperative', mo- 'with yourself', kwalani 'is angry', -ti 'causative', -li 'referential'); CRst = šilaweyiltili mohmosta 'every day enlarge it-for-them!' (CRPst = šilaweyiltili, ši- 'imperative', la- 'it-for-them', weyi 'is big', -lti 'causative', -li 'referential', L = mohmosta 'every day').

6.2 Any kernel clause is transformed to a derived permissive clause by the preposing of the free form ma 'permissive' to the verb phrase. Any person and object prefix may occur with the verb base except the imperative ši-. When the permissive morpheme occurs, all tense suffixation is dropped. When the permissive ma- refers to plural subject, it is marked by the suffix -kan. For the permissive clause the predicate tagmeme is obligatorily clause-initial. The manifestants of the nuclear and peripheral tagmemes are the same for the kernel and permissive clauses. The permissive morpheme has two areas of meaning: (1) a mild imperative, especially used when giving orders to members of the older generation; (2) asking permission to do something. The following examples demonstrate the nineteen kernel clauses in the derived permissive form. tr = ma tihkwakan in nakal 'let's eat the meat' (Pt = ma tihkwakan, ma 'permissive', ti- 'we', h- 'obj 3rd sg', kwa 'eat', -kan 'pl sbj', O = in nakal 'the meat'); r = ma timolalikan 'let's sit down' (Pr = ma timolalikan, ti- 'we', mo- 'reciprocal', lali 'place', -kan 'pl sbj'); st = ma nilatokatia pin kwahmili 'let me go sowing in the cornfield' (Pst = ma nilatokatia, ni- 'I', la- 'indefinite obj', toka- 'sow', -ti 'directional', -a 'present', L = pin kwahmili 'in the cornfield'); i = ma lehkukan pa punta 'let them climb to the top' (Pi = ma lehkukan, lehku- 'ascend', -kan 'pl sbj', L = pa punta 'to the top'); Ctr A = ma kimačilti in šolomes 'let him teach the children' (CPtr = ma kimačilti, ki- 'obj 3rd sg', mači- 'learn', -lti 'causative', O = in šolomes 'the children'); Ctr B = ma nečkišti pin nikan 'let her take me out here' (CPi = ma nečkišti, neč- 'me', kiš- 'come out', -ti 'causative', L = pin nikan 'here'); Cr A = ma molakwalti 'let him feed himself' (CRrtr = ma molakwalti, mo- 'himself', lakwa- 'eat', -lti 'causative'); Cr B = ma molakenti 'let him dress himself' (CPri = ma molakenti, mo- 'himself', laken 'blanket', -ti 'causative'); Cst = ma nilamaštitia kahkapa 'let me go teaching people everywhere' (CPst = ma nilamaštitia, ni- 'I', la- 'indefinite obj', maš- 'learn', -ti 'causative', -ti 'directional', -a 'present', L = kahkapa 'all over'); Rtr A = ma nimickawili moihado 'let me leave for you your godson' (RPtr A = ma nimickawili, ni- 'I', mic- 'for you', kawi- 'leave', -li 'referential', O = moihado 'your-godson'); Rtr B = ma tečkwalanili 'let him defend us' (RPi = ma tečkwalanili, teč- 'us', kwalani 'be angry', -li 'referential'); Rr A = ma nimokwepili okse plato 'let me bring myself another plate' (RPrtr = ma nimokwepili, ni- 'I', mo- 'for myself', kwepi 'bring back', -li 'referential', O = okse plato 'another plate'); Rr B = ma mokwalanili 'let him defend himself' (RPri = ma mokwalanili, mo- 'for himself',

kwalani 'is angry', -li 'referential'); Rst = ma lalalpačulikan in lakames 'let the men bury them-for-others' (RPst = ma lalalpačulikan, la- 'them-for-others', lalpaču- 'bury', -li 'referential', -kan 'pl sbj', S = in lakames 'the men'); Crtr A = ma tehčikawaltilwili tewanten itapon in boteya 'let him tighten the top on the bottle for us' (CRPtr = ma tehčikawaltilwili, teh- 'for us', čikawa- 'tighten', -lti 'causative', -lwili 'referential', rO = tewanten 'for us', O = itapon in boteya 'the bottle-top'); CRtr B = ma niklakentili in šolul inancin 'let me dress the baby for his mother' (CRPi = ma niklakentili, ni- 'I', k- 'obj 3rd sg', laken 'blanket', -ti 'causative', -li 'referential', cO = in šolul 'the baby', rO = inancin 'his-mother'); CRr A = ma nimočikawaltili in lapešli 'let me make the bed hard for myself' (CRPrtr = ma nimočikawaltili, ni- 'I', mo- 'for myself', čikawa 'hard', -lti 'causative', li- 'referential', O = in lapešli 'the bed'); CRr B = ma mokwahkwawiltilihtia 'let him go wood-cutting for himself' (CRPri = ma mokwahkwawiltilihtia, mo- 'for himself', kwahkwawi- 'wood-cut', -lti 'causative', -li 'referential', -h 'conjoiner', -ti 'directional', -a 'present'); CRst = ma tilamačiltilikan 'let's announce it-to-people' (CRPst = ma tilamačiltilikan, ti- 'we', la- 'it-to-people', mač- 'learn', -lti 'causative', -li 'referential', -kan 'pl sbj').

7. Kernel clauses of the nominal system are descriptive and existential. The predicates of these clauses are manifested by nominal elements or a form of the verb 'to be'. No objects are manifested within the nuclei. Peripheral tagmemes are the same as in the four major clause systems.

7.11 The descriptive (d) clause is expressed by the formula: d = +(+Pd ±S) ±Peri, i.e., the descriptive clause consists of an obligatory descriptive predicate tagmeme manifested by nouns, an optional subject and an optional periphery. newal nilakal 'I am a man' (S = newal 'I', Pd = nilakal, ni- 'I', lakal 'man'); huan tel tibravo 'and you are a very mean person' (huan 'and', M = tel 'very', Pd = tibravo, ti- 'you', bravo 'mean person'); porque tiamigos miak ka amhuanten entero anomenten 'because we are great friends with you, very much with you' (porque 'because', Pd = tiamigos, ti- 'we', amigos 'friends', M = miak 'great', M = ka amhuanten 'with you-pl', M = entero anomenten 'completely with-you-pl').

Pd, descriptive predicate tagmeme, is manifested by a noun phrase, simple or expanded; the head slot of the noun phrase is manifested by nouns. The noun is obligatorily marked for person by the same set of person prefixes that mark verbs, see section 2.1. The meaning of the descriptive predicate tagmeme is that of the subject's being characterized by or equated with the meaning of the noun which manifests the predicate tagmeme. tewal tilapahtini 'you are a doctor' (S = tewal 'you', Pd = tilapahtini, ti- 'you', lapahtini 'healer'); newal nisiwal 'I am a woman' (S = newal 'I', Pd = nisiwal, ni- 'I', siwal 'woman').

7.12 The descriptive-possessive (dp) clause is expressed by the formula: dp = +(+Pdp ±S) ±Peri, i.e., the descriptive-possessive clause consists of an obligatory descriptive-possessive predicate tagmeme, manifested by possessed nouns, an optional subject, and an optional periphery. newal nimosiwal 'I am your wife' (S = newal 'I', Pdp = nimosiwal, ni- 'I', mo- 'your', siwal 'woman'); tewal tinolakal 'you are my husband' (S = tewal 'you', Pdp = tinolakal, ti- 'you', no- 'my', lakal 'man'); yewanten nopelomes 'they are my dogs' (S = yewanten 'they', Pdp = nopelomes, no- 'my', pelo- 'dog', -mes 'pl').

Pdp, descriptive-possessive predicate tagmeme, is manifested by a noun phrase, simple or expanded; the head slot of the noun phrase is manifested by nouns. The noun is obligatorily marked for person by the set of verbal person markers and by the set of nominal possessive markers. The possessor of the possessed noun is optionally made explicit in the noun phrase.

The nominal person markers are: no- '1at sg', nošolul 'my-baby'; mo- '2nd sg', mošolul 'your baby', i- '3rd sg', išolul 'his/her baby'; to- '1st pl', tošolul 'our baby'; anmo- '2nd pl', anmošolul 'your baby', in- '3rd sg', inšolul 'their baby'.

The noun filler of the head slot of the noun phrase is optionally marked for plural by the suffix -mes 'plural'. The nominal person markers with plural noun are: nopelomes 'my dogs', mopelomes 'your dogs', ipelomes 'his/her dogs', topelomes 'our dogs', anmopelomes 'your dogs', inpelomes 'their dogs'.

Examples of a simple noun phrase manifesting the head slot of the predicate tagmeme: tewal tiilakal 'you are her husband' (S = tewal 'you', Pdp = tiilakal, ti- 'you', i- 'her', lakal 'man'); yewanten noiknimes 'they are my children' (S = yewanten 'they', Pdp = noiknimes, Ø '3rd pl sbj', no- 'my', ikni 'child', -mes 'pl').

Examples of an expanded noun phrase in which the head slot is manifested by a possessed noun and the other slot is manifested by the possessor of the possessed noun: tewal tiilakal maria 'you are Maria's husband' (S = tewal 'you', Pdp = tiilakal maria, ti- 'you', i- 'her', lakal 'husband', maria 'possessor of husband'); iyolo ičkal 'it is the heart of the cotton' (Pdp = iyolo ičkal, i- 'its', yolo 'heart', ičkal 'cotton, possessor of heart'); iikni cikal 'it is the brother of the ant' (Pdp = iikni cikal, i- 'his', ikni 'brother', cikal 'ant, possessor of the brother'). The possessor slot may precede the possessed noun: in kostal ikamak 'it is the mouth of the sack' (Pdp = in kostal ikamak, in 'the', kostal 'bag, possessor of the mouth', i- 'its', kamak 'mouth').

7.2 The existential (e) clause is expressed by the formula: e = +(+Pe ±S) ±Peri, i.e., the existential clause consists of an obligatory existential predicate, manifested by the verb meaning 'existence', or 'to be in a place', an optional subject and an optional periphery. There is an obligatory absence of object tagmemes in the nucleus. ha he sora kataya 'there was just one fox' (M = ha 'just', S = he sora, 'one fox', Pe = kataya 'was'); porque amo nikataya newal 'because I was not there' (porque 'because', Pe = amo nikataya, amo 'no', ni- 'I', kataya 'be there', S = newal 'I'); he sakacindi unka 'there is one weed' (S = he sakacindi 'one weed', Pe = unka 'there is').

Pe, existential predicate tagmeme, is manifested by a verb phrase, simple or expanded; the head slot of the verb phrase is manifested by the verb unka 'existence', or the verb kataya 'existence or location'. de punta kata siempre 'he was always on top' (L = de punta 'up on top', Pe = kata 'was', M = siempre 'always'); ni se pelo amo kataya 'there wasn't even one dog' (ni 'not', S = se pelo 'one dog', Pe = amo kataya, amo 'not', kataya 'was').

The existential predicate tagmeme is also manifested by an expanded verb phrase which consists of the verb 'to be' plus Spanish loan words, either adjectives or nouns. unka bwen kargo ka nel nopersona nikan 'it is a good responsibility with my person here, i.e., you have a very responsible person here, namely me' (Pe = unka bwen kargo, unka 'is', bwen kargo 'good responsibility', M = ka nel 'with me', nopersona

'my-person', L = nikan 'here'); tikate reunidos nikan pan lugar pin husgado 'we are assembled here in this place in the courthouse' (Pe = tikate reunidos, tikate 'we are', reunidos 'assembled', L = nikan 'here', L = pan lugar 'in this place', L = pin husgado 'in the courthouse').

7.3 Derived clauses of the nominal system are imperative and permissive. They are defined in the same way as derived clauses of the verbal system; see section 6.1 for definition. The following examples demonstrate the derived forms of the descriptive, descriptive-possessive, and existential clauses:

For descriptive clauses, only the derived permissive clause occurs: d = ma tiamigos siempre 'let us always be friends' (Pd = ma tiamigos, ma 'let', ti- 'we', amigos 'friends'); d = ma tilapahtini 'may you be a doctor' (Pd = ma tilapahtini, ti- 'you', lapahtini 'doctor').

For descriptive-possessive clauses, only the derived permissive clause occurs: dp = ma nimolakal 'let me be your husband' (Pdp = ma nimolakal, ni- 'I', mo- 'your', lakal 'man'); dp = ma tewal tiilakal maria 'that you be Maria's husband' (Pdp = ma tiilakal, ti- 'you', i- 'her', lakal 'man', S = tewal 'you', Maria 'possessor of husband').

For existential clauses, both the imperative and permissive types occur: e = amo šiye tonto 'don't be a fool' (Pe = amo šiye, amo 'no', ši- 'imperative', -ye 'existence', tonto 'stupid'); e = šikaya nikan lakwalispan 'be here at noon!' (Pe = šikaya, ši- 'imperative', -kaya 'be-location', L = nikan 'here', L = lakwalispan 'noon'); e = yohi ma ye 'let it be thus' (M = yohi 'thus', Pe = ma ye, ye 'existence'); e = ma kayakan nikan pa tiolak 'let them be here by evening' (Pe = ma kayakan, kaya 'be-location', -kan 'pl sbj', L = nikan 'here', L = pa tiolak 'at evening').

## FOOTNOTES

1 Michoacán Nahual is spoken by about a thousand persons located in four villages near the Pacific Coast of the State of Michoacán, México. In two of these villages Pómaro and San Pedro, Nahual is the language preferred by old and young alike, though all are more or less bilingual in Spanish. In the other two villages, Coire and Ostula, the Nahual language has been replaced by Spanish. Data were gathered by William R. Sischo on field trips from 1960-64 under the auspices of the Summer Institute of Linguistics, Mexico Branch. Principal informants were Zenaido de Aquino y Chavez, Nicholas de Papas, Gabriel Flores y Calixto. Mr. Sischo is responsible for the gathering of the texts and conversation materials used in the body of the paper as illustrations; Mr. Robinson helped in the organization and writing of the paper. The first draft of this article was prepared at a linguistic workshop conducted by S. I. L. at the Centro Lingüístico Manuel Gamio, Ixmiquilpan, Hidalgo, México, Sept. - Dec., 1964. The authors gratefully acknowledge the assistance of Robert Longacre, conference director, for his comments and criticism of the structure and writing of this article. The final draft was prepared at a similar workshop in 1966.

While Michoacán Nahual is structurally similar to other Nahuatl dialects, it is

nevertheless lexically divergent from them, having displaced many Nahual words with Spanish equivalents, as well as having different meanings for Nahual words which occur in other dialects. This dialect, for want of a better term, is tentatively classified as an 'l' dialect because of the occurrence of 'l' where 'tl' or 't' would occur in other dialects. See the recent publication on the phonology of another 'l' dialect near Toluca, Otto Shuman, México.

Michoacán Nahual phonemes are voiceless stops /p,t,k,kw/, voiced stops /b,d, g/, affricates /c,č/, fricatives /s,š,h/, glottal stop, nasals /m,n/, liquids /l,r/, semi-vowels /w,y/, high vowels /i,u/, mid vowels /e,o/, low vowel /a/, /w/ has two allophones f,b. Low vowel has a higher allophone in unstressed final syllables.

Selected morphophonemic rules for Michocán Nahual:

1. č ⟶ š / ___t
2. c ⟶ s / ___t
3. s ⟶ š / ___i,t
4. e ⟶ i / no stress
5. u ⟶ o / stress
6. W ⟶ h / coda slot of syllable, but not word final
7. k ⟶ h / ___k
8. c,č ⟶ h / ___c,č,s,š
9. p ⟶ k / ___t

The full phonology will be dealt with in succeeding articles.

## 2 GLOSSARY OF SYMBOLS

i = intransitive
r = reciprocal
tr = transitive
st = semi-transitive
d = descriptive
e = existential
Ctr = causative-transitive
Cr = causative-reciprocal
Cst = causative-semi-transitive

Rtr = referential-transitive
Rr = referential-reciprocal
Rst = referential-semi-transitive

Crtr = causative-referential-transitive
CRr = causative-referential-reciprocal
CRst = causative-referential semi-transitive

rO = referential object
cO = causative object

C = causative
I = Indicative
O = object
P = predicate
S = subject
p = possessive

| CLAUSE SYMBOLS | PREDICATE SYMBOLS | DRAMATIS PERSONAE SYMBOLS |
|---|---|---|
| **Indicative system:** | | |
| tr | Ptr | S O |
| r | Pr | S |
| st | Pst | S |
| i | Pi | S |
| **Causative system:** | | |
| Ctr A | CPtr | ScO O |
| Ctr B | CPi | ScO |
| Cr A | CPrtr | S O |
| Cr B | CPri | S |
| Cst | CPst | S |
| **Referential system:** | | |
| Rtr A | RPtr | SrO O |
| Rtr B | RPi | SrO |
| Rr A | RPrtr | SOO |
| Rr B | RPri | S |
| Rst | RPst | S |
| **Causative-referential system.** | | |
| CRtr A | CRPtr | ScOrO O |
| CRtr B | CRPi | ScOrO |
| CRr A | CRPrtr | S O |
| CRr B | CRPri | S |
| CRst | CRPst | S |


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# Chapter 1: Introduction

This is the first chapter of the book. It introduces the main concepts that will be explored in subsequent chapters.

## Section 1.1: Background

Some background information goes here. This section provides context for the reader.

### Subsection 1.1.1: Details

More detailed information appears in this subsection.

## Section 1.2: Motivation

The motivation for this work is described here.

# Chapter 2: Related Work

This chapter reviews related work in the field.

## Section 2.1: Overview

An overview of the literature is presented here.

## Section 2.2: Comparison

A comparison of different approaches is given in this section.

# Chapter 3: Methodology

The methodology used in this study is described in this chapter.

## Section 3.1: Data Collection

Data was collected from various sources as described here.

## Section 3.2: Analysis

The analysis procedures are detailed in this section.

# Chapter 4: Results

The results of the study are presented in this chapter.

## Section 4.1: Findings

The main findings are summarized here.

## Section 4.2: Discussion

A discussion of the results follows.

# Chapter 5: Conclusion

This chapter concludes the book and suggests future work.

## Section 5.1: Summary

A summary of the contributions is given here.

## Section 5.2: Future Work

Directions for future research are outlined in this section.