CONFLATED SUBSYSTEMS MARKING PERSON AND ASPECT IN CHIQUIHUITLÁN MAZATEC VERBS

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0. Chiquihuitlán Mazatec[1] (CM) personal verbs[2] are characterized by the interaction of complex subsystems that mark both actor person and aspect. This article describes these subsystems in detail, including their function in both compound and negative verbs. It also offers some suggestions about the origin of the synchronic complexity via both internal reconstruction and a comparison with the Huautla dialect of Mazatec. Twenty sample paradigms show most of the elements within each subsystem, but only a fraction of the possible combinations among the subsystems. For a presentation of features of CM verbs not treated here, such as impersonal verbs and stative voice, imperative mood, and suppletive stem variants of personal verbs, the reader is referred to C. A. Jamieson (1976).

[1] Chiquihuitlán Mazatec is a Popolocan language of the Otomanguean stock spoken only by the 3,000 to 4,000 inhabitants of Chiquihuitlán de Juárez, district of Cuicatlán, Oaxaca, México. Perched at 4,000 feet above sea level, it is separated by a canyon from the other Mazatec towns and has limited contact with them.

CM phonemes include plosives *t*, *ȶ*, *ʇ*, *č*, *k*; fricatives *s*, *š*; sonorants *m*, *b*, *n*, *r*, *ñ*, *y*; laryngeals ?, *h*; and vowels *i*, *e*, *æ*, *a*, *o*, *u*. Vowels may be nasalized and/or interrupted by a laryngeal. There are also single tones 1, 2, 3, 4 where 1 is high and 4 is low; and glides 14, 24, 34, 21, 31, 41, 42, 214, 314, 414, 424, 11. The 11 glide occurs only as the result of a perturbed 31 and is classified with the glides because of its length. For a more detailed analysis of CM phonology, see A. R. Jamieson (1977*a*; 1977*b*).

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[2] In contrast, impersonal verbs are limited to third-person verb forms, which have a zero person marker, *mẹh*^{31} 'it is wanted'. To state the agent of an impersonal verb explicitly, a cliticized indirect-object pronoun is added, for example, *mẹh*^{31} *=nạ*^{1} 'it is wanted by me'.

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1. Within the verb word, seven distinct person-number categories for actor can be distinguished: first-person singular (1s), second-person singular (2s), third-person definite (3def), third-person indefinite (3indef), first-person plural inclusive (1in), first-person plural exclusive (1ex), and second-person plural (2p). The 3indef forms are not treated in this article because they are highly irregular. Again, the reader is referred to C. A. Jamieson (1976:98-99). Number in 3def forms is distinguished syntactically via free pronouns or noun phrases; often the number is clear from the context.

Actor is marked by the conflation of three distinct subsystems, each of which conjugates independently of the other two and partially distinguishes among the six actor categories treated here. These subsystems are the final vowel of the verb stem and/or word, the stem-formative prefix, and the stem tones. In a few cases an actor is unambiguously marked by one of the three subsystems; in other cases two or all three subsystems are needed; and in still other cases some ambiguity remains in the conflated form.

1.1. In the final-vowel subsystem, the 3def form is unmarked and shows the basic stem-final vowel.[3] Other person markers are indicated by changes in this vowel. CM has three front vowels, *i*, *e*, æ, and three back vowels, *u*, *o*, *a*; all but æ occur nasalized (æ surfaces as ę). All vowels may be simple or take either of two laryngeal components, ʔ or *h*.[4] This vowel system can be described using the features back, high, low, nasal (nas), laryngeal (lar), and interrupted (int). The feature int here refers to the stream of air. Thus *V*ʔ has the features +lar, +int, and *Vh* has the features +lar, –int. Two degrees of juncture are posited in this article: suffix boundary (+), which precedes the person suffixes, and clitic boundary (≠), which precedes the negative marker described in **4.** Table 1 shows and illustrates the vowel changes that mark actor person.

The forms of table 1 can be derived synchronically by positing a set of person suffixes consisting of vowels, which coalesce with the stem-final vowel via morphophonemic rules. The base forms of these suffixes appear to be: +*a* '1s', +*ą* '1in', +*i* '2s', +*į* '1ex', and +*ų* '2p'.[5]

[3] Both 3def and 3indef show the basic stem-final vowel. This subsystem is the only one of the three in which 3indef is predictable.

[4] Although written following the vowel in this article, laryngeal components interrupt the vowel. A syllable nucleus containing two vowels has, however, only one interruption, which in this article is written following the second vowel. In the vowel sequence *ai*, interruption occurs between the *a* and the *i*. In other vowel sequences, the first vowel is always high and is actualized as an onglide; laryngeal components therefore interrupt the second vowel. For a further description, see A. R. Jamieson (1977*a*).

[5] In that all the plural forms are nasalized and neither of the singular forms is, it seems clear that nasalization is a component of plural marking. However, since 1in is the only

TABLE 1

ACTOR INDICATED BY THE FINAL VOWEL OF THE VERB

3def (Basic)	1s	1in	2s	1ex	2p
i *ka*^{3}*nti*^{1} 'dump'	æ *ka*^{3}*ntæ*^{1}	ɐ *ča*^{3}*ntɐ*^{31}	*i* *ča*^{3}*nti*^{1}	*į* *ča*^{3}*ntį*^{14}	ɥ *ča*^{3}*ntɥ*^{1}
e *ba*^{3}*se*^{2} 'remember'	æ *ba*^{3}*sæ*^{1}	ɐ *ča*^{2}*sɐ*^{2}	*e* *ča*^{2}*se*^{2}	*į* *ča*^{2}*sį*^{24}	ɥ *ča*^{2}*sɥ*^{2}
æ *ba*^{2}*štæ*^{2} 'wrap'	æ *ba*^{1}*štæ*^{1}	ɐ *ba*^{2}*štɐ*^{2}	*e* *ba*^{2}*šte*^{2}	*į* *ba*^{2}*štį*^{24}	ɥ *ba*^{2}*štɥ*^{2}
u *be*^{3}*ču*^{1} 'reach'	*u* *be*^{14}*ču*^{3}	ɥ *be*^{14}*čɥ*^{42}	*i* *be*^{14}*či*^{3}	*į* *be*^{14}*čį*^{34}	ɥ *be*^{14}*čɥ*^{3}
o *be*^{2}*šo*^{2} 'stack'	*o* *be*^{1}*šo*^{1}	ɒ *be*^{2}*šɒ*^{2}	*e* *be*^{2}*še*^{2}	*į* *be*^{2}*šį*^{24}	ɥ *be*^{2}*šɥ*^{2}
a *be*^{3}*čha*^{1} 'close'	*a* *be*^{3}*čha*^{1}	ɑ *be*^{3}*čhɑ*^{31}	*e* *be*^{3}*čhe*^{1}	*į* *be*^{3}*čhį*^{14}	ɥ *be*^{3}*čhɥ*^{1}
į *ɸi*^{3}*smį*^{1} 'loose'	ɐ *ɸi*^{3}*smɐ*^{1}	ɐ *nį*^{3}*smɐ*^{31}	*į* *nį*^{3}*smį*^{1}	*į* *nį*^{3}*smį*^{14}	ɥ *nį*^{3}*smɥ*^{1}
ɐ *ɸi*^{3}*khɐ*^{1} 'feed'	ɐ *ɸi*^{3}*khɐ*^{1}	ɐ *nį*^{3}*khɐ*^{31}	*į* *nį*^{3}*khį*^{1}	*į* *nį*^{3}*khį*^{14}	ɥ *nį*^{3}*khɥ*^{1}
ɥ *be*^{3}*hnɥ*^{2} 'plane'	ɥ *be*^{3}*hnɥ*^{1}	ɥ *be*^{2}*hnɥ*^{2}	*į* *be*^{2}*hnį*^{2}	*į* *be*^{2}*hnį*^{24}	ɥ *be*^{2}*hnɥ*^{2}
ɑ *ɸi*^{2}*čɑ*^{2} 'roar'	ɑ *ɸi*^{1}*čɑ*^{1}	ɑ *nį*^{2}*čɑ*^{2}	*į* *nį*^{2}*čį*^{2}	*į* *nį*^{2}*čį*^{24}	ɥ *nį*^{2}*čɥ*^{2}

ɒ does not occur as a stem-final vowel in my data; æ does not occur as a surface segment in CM.

person derived solely by the nasalization of its singular counterpart, in this article nasalization has not been separated from the vowel it accompanies.

Except for certain irregularities associated with a restricted set of morphemes, the final vowels in table 1 can be derived by a set of seven rules. Some rules effect partial or complete assimilation of the person-marker vowel to the stem-final vowel; these are followed by a rule that drops the stem-final vowel. A rule of nasalization agreement and a rule of progressive laryngealization of vocalic segments must also precede the rule that drops the stem vowel. In that nasalization agreement and progressive laryngealization are entirely regular in CM, we have an instance of regular processes being ordered earlier than an irregular rule. There are gaps in the numbering to permit the insertion of further rules needed for negative forms, which are described in **4**.

(1) *a*, *ą* assimilation:

$$\begin{bmatrix} \text{V} \\ +\text{back} \\ +\text{low} \end{bmatrix} \rightarrow \left\{ \begin{array}{ll} [-\text{back}] & / \begin{bmatrix} \text{V} \\ -\text{back} \\ \text{V} \end{bmatrix} \text{\_\_\_} \\ [\alpha \text{ low}] & / \begin{bmatrix} +\text{back} \\ \alpha \text{ low} \\ \beta \text{ high} \end{bmatrix} \text{\_\_\_} \end{array} \right\}.$$

This rule changes *a* or *ą* to æ or ǽ following a front vowel, or to a back vowel of the same height as a preceding back vowel, resulting in complete assimilation.

(3) Nasalization agreement:

$$\text{V} \rightarrow [+\text{nas}] \; / \begin{bmatrix} \text{V} \\ +\text{nas} \end{bmatrix}.$$

This rule nasalizes vowels before and after nasalized vowels. It is a regular process, but must be ordered to precede vowel drop. Only progressive nasalization is needed to explain the vowels in the regular verbs illustrated above; the need for regressive nasalization will be shown below.

(4) Progressive laryngealization:

$$\text{V} \rightarrow \begin{bmatrix} +\text{lar} \\ \alpha \text{ int} \end{bmatrix} \; / \begin{bmatrix} \text{V} \\ +\text{lar} \\ \alpha \text{ int} \end{bmatrix} \text{\_\_\_}.$$

This rule copies a laryngeal component from one vowel to a following one. It is a regular process, but like the preceding rule, must be ordered to precede vowel drop. Because no suffixes contain vowels with a laryngeal component, there are no environments in CM to which regressive laryngealization could apply, and so the rule has been formulated to include ony progressive laryngealization. The following paradigms illustrate rule 4 (*ɬi*^{3}*kęʔ*^{2} 'kill' has irregular tones in all persons

except 1s, perhaps to avoid homophony with a suppletive stem of 'paint'):

	'kill'	'fix'
3def	$ɬi^3kɐ̨ʔ^2$	$ɬi^3ntah^{31}$
1s	$ɬi^3kɐ̨ʔ^{31}$	$ɬi^3ntah^{31}$
lin	$nɻ^2kɐ̨ʔ^2$	$nɻ^3ntɑ̨h^{31}$
2s	$nɻ^2kɻʔ^2$	$nɻ^3nteh^{31}$
lex	$nɻ^2kɻʔ^{24}$	$nɻ^3ntɻh^{314}$
2p	$nɻ^2kɥʔ^2$	$nɻ^3ntɥh^{31}$

(5) *u* lowering:

$$\begin{bmatrix} \text{V} \\ +\text{back} \\ +\text{high} \end{bmatrix} \rightarrow [-\text{high}] \; / \; \_\_\text{C} \begin{bmatrix} \text{V} \\ -\text{high} \end{bmatrix} + \begin{bmatrix} \text{V} \\ +\text{high} \\ -\text{back} \\ -\text{nas} \end{bmatrix}.$$

This rule lowers *u* in the penultimate syllable of the stem to *o* when the stem-final vowel is mid or low and the person marker is *i*. As formulated, it must precede rule 6, which lowers the vowel of the person marker.

(6) *i* lowering:

$$\begin{bmatrix} \text{V} \\ +\text{high} \\ -\text{back} \\ -\text{nas} \end{bmatrix} \rightarrow [-\text{high}] \; / \; \begin{bmatrix} \text{V} \\ -\text{high} \end{bmatrix} + \_\_ \; .$$

This rule lowers *i* to *e* following any mid or low vowel. As formulated, it must follow rule 3.

(9) Stem vowel drop 2:

$$\text{V} \rightarrow \emptyset \; / \; \_\_ + \text{V}.$$

This rule deletes the stem-final vowel when it precedes a person marker. It must follow the above rules, all of which include the deleted vowel in the context.

(10) $ɐ̨ / æ̨$ neutralization:

$$\begin{bmatrix} \text{V} \\ -\text{back} \\ +\text{nas} \end{bmatrix} \rightarrow [-\text{low}] \; .$$

This rule changes $æ̨$ to $ɐ̨$ in all contexts; it is a completely regular process. The nasalization-agreement rule feeds it.

Vowel-height harmony in rule 1, which produces the most extensive change in the person-marker vowel, could be replaced by a rule which

simply deletes the person-marker vowels *a* and *ą* following a back vowel; such a rule would follow the nasalization-agreement rule. While either rule produces the correct output, I have chosen the rule which preserves the generalization that all stem-final vowels drop after affecting the person-marker vowel. In addition to preserving this generalization, it appears plausible that these low, back person-marker vowels, which assimilate to front vowels by becoming fronted, assimilate to back, mid, or high vowels by becoming raised. It appears less plausible that they are exceptions and drop in a restricted environment.

1ex and 2p have the simplest derivations, involving rule 9 and sometimes rule 4, as seen in the following examples (the numbers of the rules involved are enclosed in parentheses after each example): *bi*^{3}*ntu*^{3}*ba*^{2} 'comes' +*į* '1ex' → *bi*^{3}*ntu*^{3}*bį*^{24} 'we (ex) come' (9), *bi*^{3}*ntu*^{3}*ba*^{2} 'comes' +*ų* '2p' → *bi*^{3}*ntu*^{3}*bų*^{2} 'you (pl) come' (9); *ba*^{3}*nįh*^{31} 'carries' +*į* '1ex' → *ča*^{3}*nįh*^{314} 'we (ex) carry' (4, 9), *ba*^{3}*nįh*^{31} 'carries' +*ų* '2p' → *ča*^{3}*nųh*^{31} 'you (pl) carry' (4, 9).

1in utilizes rules 1, 9, and 10 or rules 1 and 9; each sequence may also involve rule 4. Examples: *ba*^{3}*hnę*^{24} 'picks (fruit)' +*ą* '1in' → *ča*^{14}*hnę*^{42} 'we (in) pick (fruit)' (1, 9, 10), *ba*^{3}*šæ*^{2} 'takes out' +*ą* '1in' → *ną*^{2}*šę*^{2} 'we (in) take out' (1, 9, 10), *ba*^{3}*nįh*^{31} 'carries' +*ą* '1in' → *ča*^{3}*nęh*^{31} 'we (in) carry' (1, 4, 9, 10), *bi*^{3}*ntu*^{3}*ba*^{2} 'comes' +*ą* '1in' → *bi*^{3}*ntu*^{3}*bą*^{2} 'we (in) come' (1, 9), *ɬi*^{2}*ʔñų*^{2} 'ties' +*ą* '1in' → *nį́*^{2}*ʔñų́*^{2} 'we (in) tie' (1, 9), *bu*^{2}*ša*^{2}*ʔ* 'opens' +*ą* '1in' → *ču*^{2}*šąʔ*^{2} 'we (in) open' (1, 4, 9).

1s utilizes rules 1 and 9 and sometimes 10. It may also involve rules 3 and/or 4. Examples: *ka*^{3}*ntí*^{1} 'dumps' +*a* '1s' → *ka*^{3}*ntæ*^{1} 'I dump' (1, 9), *ba*^{3}*hnę*^{24} 'picks (fruit)' +*a* '1s' → *ba*^{14}*hnę*^{3} 'I pick (fruit)' (1, 3, 9, 10), *ba*^{3}*nįh*^{31} 'carries' +*a* '1s' → *ba*^{3}*nęh*^{31} 'I carry' (1, 3, 4, 9, 10), *be*^{2}*šo*^{2} 'stacks up' +*a* '1s' → *be*^{1}*šo*^{1} 'I stack up' (1, 9), *ɬi*^{2}*ʔñų*^{2} 'ties' +*a* '1s' → *ɬi*^{1}*ʔñų*^{1} 'I tie' (1, 3, 9), *bu*^{2}*ša*^{2}*ʔ* 'opens' +*a* '1s' → *bu*^{1}*ša*^{1}*ʔ* 'I open' (1, 4, 9).

2s utilizes rule 9 alone or rules 6, 9, and sometimes 5; each sequence may also involve rules 3 and/or 4. Examples: *ba*^{3}*hnę*^{24} 'picks (fruit)' +*i* '2s' → *ča*^{14}*hnį*^{3} 'you (sg) pick (fruit)' (3, 9), *ba*^{3}*nįh*^{31} 'carries' +*i* '2s' → *ča*^{3}*nįh*^{31} 'you (sg) carry' (3, 4, 9), *ba*^{3}*šæ*^{2} 'takes out' +*i* '2s' → *ną*^{2}*še*^{2} 'you (sg) take out' (6, 9), *bu*^{3}*ya*^{2} 'returns' +*i* '2s' → *bo*^{3}*ye*^{2} 'you (sg) return' (5, 6, 9).

In CM, verb stems are sometimes followed by a directional marker to form a compound verb.[6] Both the final vowel of the stem and the final

[6] Directionals include such morphemes as *-sų*^{1} 'on top of', *-ya*^{1} 'inside', *-koh*^{3} 'with', and *-taʔ*^{2} 'alongside'. Directionals are sometimes included in the stem, in which case only the final vowel of the directional conjugates, and the directional takes the final tone of the tone type. For example, *be*^{2}*hñąʔ*^{2}*ya*^{1} 'wait' is a two-syllable B 1-1 stem plus a tone 1 directional, but *ɬi*^{3}*nte*^{2}*ya*^{2} 'change' is a three-syllable B 1-1 stem. Both end in the directional *-ya*^{1}, but in the second case the directional has become incorporated into the

vowel of the directional coalesce with the person-marker suffixes. The final vowel of the directional usually combines with the person markers in the same way those of the verb stem do. However, six directionals,[7] all with back vowels, retain their vowel before *+i* '2s' and *+į* 'lex'. These are: *+koh*^{3} 'with', *+čo?*^{3} 'bad', *+rkų*^{2} 'fear', *+ka*^{1}*kų*^{1} 'innermost part', *+šu*^{2} 'boil', and *+kų*^{2} (meaning unknown). Examples (the verb 'chase' indicates a suppletive stem *ba*^{3}*nka*^{3}/*bi*^{2}*yu*^{2} 'run'):

	'scare (put-fear)'	'chase (run-with)'
3def	*bi*^{3}*nča*^{2}*rkų*^{2}	*ba*^{3}*nka*^{3}*koh*^{3}
1s	*bi*^{2}*nčą*^{1}*rkų*^{2}	*ba*^{14}*nka*^{14}*koh*^{3}
lin	*bi*^{2}*nčą*^{2}*rkų*^{2}	*bi*^{2}*yų*^{2}*kǫh*^{42}
2s	*bi*^{2}*nče*^{2}*rkųį*^{2}	*bi*^{2}*yi*^{2}*kueh*^{3}
lex	*bi*^{2}*nčį*^{2}*rkųį*^{24}	*bi*^{2}*yį*^{2}*kųįh*^{34}
2p	*bi*^{2}*nčų*^{2}*rkų*^{2}	*bi*^{2}*yų*^{2}*kųh*^{3}

To handle these forms we need a rule of regressive nasalization (already built into rule 3 above), an exception feature to rule 9 for these morphemes, and a new rule which raises *o* to *u* before another vowel.

The six directionals are exceptions to the vowel-drop rule and must be so marked in the lexicon; they are, however, exceptions only when the vowel in the environment is –back, –low. This is an unusual sort of exception, but the alternative is to separate the vowel-drop rule into two distinct rules, one before high and mid front vowels and the other elsewhere. These six directionals would then be exceptions to the first rule, but not to the second. I did not do this, however, because vowel drop seems to be a single process.

The new rule is rule 12. It must follow rule 6 to generate the correct form for 2s.

(12) *o* raising:

$$\begin{bmatrix} \text{V} \\ +\text{back} \\ -\text{low} \end{bmatrix} \rightarrow [+\text{high}] \; / \; \underline{\quad} \; \text{V} .$$

This rule changes *o* to *u* preceding another vowel; it is a regular process in CM.

1.2. Verbs fall into eighteen arbitrary classes according to which stem-formative set they take. In the list which follows, the first member of each set is used in 3def and 1s, and the second member is used in the other persons: set 1 *be-*, *be-*; set 2 *ba-*, *ba-*; set 3 *bo-*, *čo-*; set 4 *bu-*, *ču-*;

stem and takes stem tones. (Note that no type B 3def stem ends in a tone 1.) See Pike (1948:129-30) for a description of directionals as used in Huautla Mazatec.

[7] See **4** for irregularities in the negative forms of four of these morphemes.

set 5 *hu-*, *čhu-*; set 6 *hi-*, *čhi-*; set 7 *hba-*, *hba-*; set 8 *ɬi-*, *nį-*; set 9 *su-*, *nų-*; set 10 *bu-*, *bu-*; set 11 *ba-*, *ča-*; set 12 *ka-*, *ča-*; set 13 *hba-*, *ną-*; set 14 *ba-*, *ną-*; set 15 *bi-*, *bi-*; set 16 *bu-*, *ntu-*; set 17 *hi-*, *či-*; and set 18 *hba-*, *čha-*.

Intransitive verbs belong to classes which correspond to sets 1, 2, 7, 10, and 15, that is, their stem formatives do not change for person. Almost all transitive verbs belong to one of the other sets, which take one stem formative in 3def and 1s, and another stem formative in the other persons. The following transitive verbs are exceptions to this generalization because they belong to sets 1 or 15, which take the same stem formative in all persons: *be*^{2}*čhi*^{2} 'pay', *be*^{3}*ya*^{2}*nįh*^{21} 'bury', *bi*^{3}*te*^{2}*ša*^{2} 'send on an errand', *bi*^{3}*te*^{3}*ñą*^{2} 'sell', *bi*^{3}*te*^{2}*nta*^{2} 'baptize', *bi*^{3}*ku*^{3}*ya*^{2} 'teach' *bi*^{3}*te*^{3}*ča*^{2} 'sweep', and *bi*^{3}*ha*^{2}*kų*^{2} 'confess'.

Several classes share a stem formative for one of the two actor categories, but use a different stem formative for the other. For example, classes 2, 11, and 14 use the formative *ba-* in 3def and 1s, but use *ba-*, *ča-*, or *ną-* in the other persons. Examples:

	Set 2 'roof'	Set 11 'remember'	Set 14 'take out'
3def	*ba*^{3}*tæ*^{1}	*ba*^{3}*se*^{2}	*ba*^{3}*šæ*^{2}
1s	*ba*^{3}*tæ*^{1}	*ba*^{3}*sæ*^{1}	*ba*^{3}*šæ*^{1}
lin	*ba*^{3}*tę*^{31}	*ča*^{2}*sę*^{2}	*ną*^{2}*šę*^{2}
2s	*ba*^{3}*te*^{1}	*ča*^{2}*se*^{2}	*ną*^{2}*še*^{2}
lex	*ba*^{3}*tį*^{14}	*ča*^{2}*sį*^{24}	*ną*^{2}*šį*^{24}
2p	*ba*^{3}*tų*^{1}	*ča*^{2}*sų*^{2}	*ną*^{2}*šų*^{2}

Stem formatives are preposed to verbs of one or two syllables, creating two- and three-syllable stems. Two two-syllable verbs appear without stem formatives: *nɬa*^{2}*be*^{2} 'play' and *ntu*^{3}*ba*^{2} 'come'. The latter is a shortened form of *bi*^{3}*ntu*^{3}*ba*^{2} 'come'; the source of the former is unknown. In addition, there are a number of one-syllable stems that appear without stem formatives. Stem-formative sets 1, 8, 10, 11, and 15 are most frequent. Set 8 is a causative; it increases the root transitivity one degree (i.e., 0 to1, 1 to 2, etc.). The stem of a causative verb may be a verb, a noun, a connective, a modifier, or a directional. An example of the last is *ɬi*^{2}*ʔñų*^{2} 'tie' (*ɬi-* *ʔñų*^{2} 'tight'). Further examples of stem formatives are given in **7**.

1.3. The stem tones form the third and perhaps the oldest subsystem that indicates actor person. Of the three subsystems, considerably more neutralization, which does not occur in other dialects, has occurred in this area of CM verbs. The complexities and messiness evident in **2** show tone neutralization to be a continuing process in CM. As in the final-vowel subsystem, 3def is the basic form. It takes a wide variety of tone

patterns which do not correlate with the patterned changes the verbs undergo for other persons. While the stem formatives differentiate 1s and 3def from the other persons, the stem tones generally signal the first person as opposed to the second person. There is no tone contrast between 2s and 2p.

Four major patterns of tone change must be posited. These patterns are labeled types A, B, C, and D. Types B and D have subtypes based on different tones for 1s only. Tone types A and B occur most frequently, with type C probably arising from type A and type D from type B (see **5**). Each tone type has a pattern of tones which replace the basic tones of the last two syllables of the 3def stem. 2s and 2p replace these tones by 3-1 in type A, 2-2 in type B, 14-3 in type C, and 3-2 in type D.[8] 1s replaces these tones by tones 3-1 in type A, 3-1 or 1-1 in the two subtypes of types B and D, and by tones 14-3 in type C. A downglide to tone 4 added to the 2s/2p tones of each type signals lex. An upglide occurs on 1in forms in types A and C and was, I believe, once present on all 1in forms. In types B and D it partially surfaces in the incompletive aspect (see **2**) and in some compounds (see **3**). In the neutral aspect, however, 1in tones in types B and D are the same as the 2s/2p tones. Table 2 shows and illustrates the tone patterns for actor in the neutral aspect, which is the aspect all examples have been given in thus far.

All verb stems ending in a simple vowel and most verb stems ending in a vowel with a laryngeal component distribute their tone pattern over the final two syllables of the stem. Three-syllable stems require an initial tone 3 for all tone types. Thus, the pattern for a three-syllable type A is 3-3-1 (from 3-1), and the pattern for a three-syllable type B is 3-2-2 (from 2-2), etc. However, when a two- or three-syllable verb stem is tone type A or B (3-1) and its final syllable contains a laryngeal component, the normal two-syllable tone pattern is carried on the final syllable, and all nonfinal syllables take tone 3. Examples: *ɬi*^{3}*ka*^{3}*nɛh*^{31} 'I load', *nį*^{3}*ka*^{3}-*nįh*^{314} 'we (ex) load' (type A); *bu*^{3}*ɬɛh*^{31} 'I look', *ču*^{3}*ɬįh*^{24} 'we (ex) look' (type B 3-1).

One-syllable stems that do not end in a laryngeal have irregular tone patterns, except for *sæ*^{2} 'sing', which takes the tone or tones of the final syllable of type B.[9] One-syllable stems that end in a laryngeal are all type A or type B (3-1) and carry the tone pattern on the final syllable, as do longer stems of these types that end in a laryngeal.

[8] Although it would be possible to write stem-formation rules for the tone replacements, I have not done so here, partly because of the problems associated with the use of binary features for tone.

[9] There are seven irregular one-syllable verb stems: *sua*^{2} 'give', *ʔbi*^{2} 'drink', *ʔbo*^{2} 'grind', *hbe*^{3} 'go', *bæ*^{31} 'know', *ča*^{4} 'speak', and *mų*^{3} 'plow'.

TABLE 2

TONE PATTERNS SHOWING ACTOR IN THE NEUTRAL ASPECT

3def (Basic)	1s	1in	2s	1ex	2p
A $ba^3tæ^1$ 'roof'	3-1 $ba^3tæ^1$	3-31 $ba^3tę^{31}$	3-1 ba^3te^1	3-14 $ba^3tį^{14}$	3-1 $ba^3tų^1$
B 1-1 $hu^2bæ^2$ 'pull'	1-1 $hu^1bæ^1$	2-2 $čhu^2bę^2$	2-2 $čho^2be^2$	2-24 $čhu^2bį^{24}$	2-2 $čhu^2bų^2$
B 3-1 $hba^3nči^2$ 'weed'	3-1 $hba^3nčæ^1$	2-2 $hba^2nčę^2$	2-2 $hba^2nči^2$	2-24 $hba^2nčį^{24}$	2-2 $hba^2nčų^2$
C $ba^3hnę^{24}$ 'pick (fruit)'	14-3 $ba^{14}hnę^3$	14-42 $ča^{14}hnę^{42}$	14-3 $ča^{14}hnį^3$	14-34 $ča^{14}hnį^{34}$	14-3 $ča^{14}hnų^3$
D 1-1 bu^3ya^2 'return'	1-1 bu^1ya^1	3-2 $bu^3yą^2$	3-2 bo^3ye^2	3-24 $bu^3yį^{24}$	3-2 $bu^3yų^2$
D 3-1 $bi^3ku^3ya^2$ 'teach'	3-1 $bi^3ku^3ya^1$	3-2 $bi^3ku^3yą^2$	3-2 $bi^3ko^3ye^2$	3-24 $bi^3ku^3yį^{24}$	3-2 $bi^3ku^3yų^2$

Occasional ambiguities occur even when all three subsystems are conflated. For example, 3def and 1s forms are frequently homophonous: $be^3čha^1$ 'he closes / I close', $ɬi^3ntah^{31}$ 'he fixes / I fix', $ba^3nę^1$ 'he washes / I wash'. Also, a type B verb with final *u* or *ų* in the basic form results in homophonous 2p and 1in forms: $nį^1šų^2$ 'you (pl) boil (it) / we (in) boil (it)', $ntu^2hnų^2$ 'you (pl) dust / we (in) dust'.

2. The aspects marked in CM are: neutral (aspect not in focus), completive, continuative, and incompletive. Neutral is marked by the absence of a prefix and takes the tone patterns described in **1.3**; it is considered basic. All examples given thus far are in the neutral aspect.

The completive and continuative aspects are formed by prefixing ka^3+ and ti^3+, respectively, to the neutral aspect form. These prefixes do not affect any of the three subsystems presented above. Examples: $nɬa^2be^2$ 'you (sg) play', $ka^3nɬa^2be^2$ 'you (sg) played', $ti^3nɬa^2be^2$ 'you (sg) are playing'.

TABLE 3

STEM-FORMATIVE CHANGES FOR ASPECT

Set No.	3def or 1s		Other Persons	
	Neutral	Incomp	Neutral	Incomp
1	*be-*	*kue-*	*be-*	*kue-*
2	*ba-*	*kua-*	*ba-*	*kua-*
3	*bo-*	*sko-*	*čo-*	*čo-*
4	*bu-*	*sku-*	*ču-*	*ču-*
5	*hu-*	*sku-*	*čhu-*	*čhu-*
6	*hi-*	*ski-*	*čhi-*	*čhi-*
7	*hba-*	*khua-*	*hba-*	*khua-*
8	*ɸi-*	*ɸi-*	*nį-*	*nį-*
9	*su-*	*su-*	*nų-*	*nų-*
10	*bu-*	*ku-*	*bu-*	*ku-*
11	*ba-*	*kua-*	*ča-*	*ča-*
12	*ka-*	*ska-*	*ča-*	*ča-*
13	*hba-*	*khua-*	*ną-*	*ną-*
14	*ba-*	*kua-*	*ną-*	*ną-*
15	*bi-*	*kui-*	*bi-*	*kui-*
16	*bu-*	*sku-*	*ntu-*	*ntu-*
17	*hi-*	*si-*	*či-*	*ši-*
18	*hba-*	*khua-*	*čha-*	*čha-*

The remainder of this section deals with the incompletive aspect (incomp), which is marked by changes in two of the three previously described subsystems: the stem formatives and the stem tones. Neither subsystem changes in all verbs.

The stem-formative changes are listed in table 3; examples are given with the description of the tone changes below. In addition, an example of each set is included in **7**.

The second marker of the incompletive aspect is tone. There are four different tone possibilities in this aspect: retention of the tone patterns for neutral aspect as described in **1.3** (i.e., zero change), the three-syllable 4 replacement, the two-syllable 4 replacement (which is slightly more complex), and the 4-3 replacement. The choice among them is determined by the number of syllables, the tone type, the person, and the stem-formative class.

All three-syllable verb stems, regardless of tone type or stem-formative class, take the three-syllable 4 replacement in all persons. This involves only the replacement of the initial tone (always a tone 3) by a

tone 4. (Verb stems have a maximum of three syllables; longer verbs are compounds, which are treated in **3**.) Examples of three-syllable verbs:

	Set 4 Type A 'study'	Set 15 Type B 1-1 'fall'
1s neutral	*bu*^{3}*ta*^{3}*ya*^{1}	*bi*^{3}*ti*^{1}*kha*^{1}
1s incomp	*sku*^{4}*ta*^{3}*ya*^{1}	*kui*^{4}*ti*^{1}*kha*^{1}
2s neutral	*ču*^{3}*ta*^{3}*ye*^{1}	*bi*^{3}*ti*^{2}*khe*^{2}
2s incomp	*ču*^{4}*ta*^{3}*ye*^{1}	*kui*^{4}*ti*^{2}*khe*^{2}

The tone system of a two-syllable incompletive verb is considerably more complex; the tone changes are shown and illustrated in table 4. The remainder of this section deals with these complexities. These verbs take zero change, the two-syllable 4 replacement, or the 4-3 replacement. A given verb may take more than one tone change in various persons, depending on the tone type and the stem-formative class.

All two-syllable verbs of type C take zero tone change in all persons: *ba*^{14}*hnę*^{3} 'I pick (fruit)', *kua*^{14}*hnę*^{3} 'I will pick (fruit)'; *čo*^{14}*te*ʔ^{3} 'you (sg) break, you (sg) will break'.

The initial tone of any 3def two-syllable verb stem of type A, B, or D is replaced by a tone 4 (the two-syllable 4 replacement). The initial tone of any 1s two-syllable verb of types A, B, or D is never replaced. For the other persons, zero change occurs in stem-formative classes 1-7 (see table 3), and the two-syllable 4 replacement occurs in classes 8-18 of types A and D and in classes 8-13 of type B. (Classes 14-18 of type B take the 4-3 replacement, which is described below.)

The two-syllable 4 replacement involves a further change in the tone of some 1in forms. Type A (including type A laryngeal), which in the neutral aspect is 3-31 for this person, becomes 4-41 rather than the expected 4-31. This is an automatic change when some 3's follow 4's, and does not affect the analysis of the verb. Examples: *nį*^{3}*smę*^{31} 'we (in) release', *nį*^{4}*smę*^{41} 'we (in) will release'. Types B and D, however, which in the neutral aspect have 1in tones 2-2 and 3-2, respectively, become 4-42 rather than the expected 4-2. Examples:

	'roar' (Type B)	'return' (Type D)
1in neutral	*nį*^{2}*čą*^{2}	*bu*^{3}*yą*^{2}
1in incomp	*nį*^{4}*čą*^{42}	*ku*^{4}*yą*^{42}

This introduces an upglide in the 1in forms which serves as one of the characteristic features of the morpheme for 1in in contrast to the downglides for 1ex. The apparently arbitrary changes are more likely cases of retention of a basic upglide pattern which has been lost in the neutral aspect. See **5** for more discussion of earlier stages of CM.

In stem-formative classes 14-18, tone type B verbs take the 4-3 replacement. There is a replacement of the tone of the first syllable by tone 4 in the same position as in the 4 replacement pattern, and there is an upglide introduced on the second syllable of 1in. In addition, any remaining tone 2 from the neutral aspect in the second syllable is replaced by 3.

Since the distribution of these tone-replacement patterns is complex, I restate it here from the viewpoint of the stem formatives. In all stem-formative classes, persons, and tone types, three-syllable verbs replace the initial tone 3 by a 4 and retain the tone patterns used in the neutral aspect on the second and third syllables. For two-syllable verbs, stem-formative classes fall into three groups: 1-7, 8-13, and 14-18. Classes 1-7 show a replacement of the first tone by tone 4 in the 3def form of verbs of tone types A, B, and D. All other persons in types A, B, and D and all persons in type C retain the same tone patterns as the neutral aspect. Classes 8-13 show a replacement of the initial tone by tone 4 in all persons except 1s of verbs of tone types A, B, and D. The 1s form of types A, B, and D and all persons of type C retain the tone patterns of the neutral aspect. Classes 14-18 show a replacement of the initial tone by tone 4 in all persons except 1s of verbs of tone types A and D. All persons except 1s of type B show a replacement of the initial tone by a tone 4 and the replacement of any succeeding basic tone 2 by a tone 3. The 1s form of types A, B, and D and all persons of type C retain the basic tone patterns of the neutral aspect.

3. Compound verbs consist of an independent verb stem followed by a one- or two-syllable directional suffix, some of which have been introduced in **1.1**. In some cases the meaning of the directional can be easily recovered, while in others semantic shifts have obscured the original meaning. All, however, are frozen forms having the status of idioms; each must be separately listed in a dictionary.

In compounds, verb stems conjugate in accord with their stem-formative class and usually with their tone type. Both the final vowel of the stem and the final vowel of the directional coalesce with the person-marker suffixes. Directionals do not take stem formatives, nor do they regularly change tone as stems do to indicate person.[10] For example, consider the verb *hi*^{3}*nta*^{3}*ya*^{2}*ʔmą*^{1} 'call secretly', composed of the stem *hi*^{3}*nta*^{3}*ya*^{2} 'call' and the directional +*ʔmą*^{1} 'hidden', which is tone type B (1-1) plus the tone 1 of the directional:

[10] When an obligatorily possessed body part such as *nɬa*^{3} 'hand' functions as a directional, however, the tone changes which indicate possessor do occur.

TABLE 4

TWO-SYLLABLE TONE PATTERNS IN THE INCOMPLETIVE ASPECT

Neutral	Incomp					
3def	3def	1s	1in	2s	1ex	2p
A (1-7) $be^{3}hñą^{2}$ 'leave' (1)	4-? $kue^{4}hñą^{2}$	3-1 $kue^{3}hñą^{1}$	3-31 $kue^{3}hñą^{31}$	3-1 $kue^{3}hñį^{1}$	3-14 $kue^{3}hñį^{14}$	3-1 $kue^{3}hñų^{1}$
A (8-18) $ɬi^{3}khę^{1}$ 'feed' (8)	4-1 $ɬi^{4}khę^{1}$	3-1 $ɬi^{3}khę^{1}$	4-41 $nį^{4}khę^{41}$	4-1 $nį^{4}khį^{1}$	4-14 $nį^{4}khį^{14}$	4-1 $nį^{4}khų^{1}$
b 1-1 (1-7) $ba^{2}štæ^{2}$ 'wrap' (2)	4-? $kua^{4}štæ^{2}$	1-1 $kua^{1}štæ^{1}$	2-2 $kua^{2}štę^{2}$	2-2 $kua^{2}šte^{2}$	2-24 $kua^{2}štį^{24}$	2-2 $kua^{2}štų^{2}$
B 1-1 (8-13) $ɬi^{2}ʔñų^{2}$ 'tie' (8)	4-? $ɬi^{4}ʔñų^{2}$	1-1 $ɬi^{1}ʔñų^{1}$	4-42 $nį^{4}ʔñų^{42}$	4-2 $nį^{4}ʔñį^{2}$	4-24 $nį^{4}ʔñį^{24}$	4-2 $nį^{4}ʔñų^{2}$
B 1-1 (14-18) $bu^{3}hnų^{3}$ 'dust' (16)	4-? $sku^{4}hnų^{3}$	1-1 $sku^{1}hnų^{1}$	4-42 $ntu^{4}hnų^{42}$	4-3 $ntu^{4}hnį^{3}$	4-34 $ntu^{4}hnį^{34}$	4-3 $ntu^{4}hnų^{3}$
B 3-1 (1-7) $hba^{3}ya^{2}$ 'pat (tortillas)' (7)	4-? $khua^{4}ya^{2}$	3-1 $khua^{3}ya^{1}$	2-2 $khua^{2}yą^{2}$	2-2 $khua^{2}ye^{2}$	2-24 $khua^{2}yį^{24}$	2-2 $khua^{2}yų^{2}$
B 3-1 (8-13) $ba^{3}se^{2}$ 'remember' (11)	4-? $kua^{4}se^{2}$	3-1 $kua^{3}sæ^{1}$	4-42 $ča^{4}sę^{42}$	4-2 $ča^{4}se^{2}$	4-24 $ča^{4}sį^{24}$	4-2 $ča^{4}sų^{2}$
B 3-1 (14-18) $hba^{3}ya^{1}$ 'gather' (18)	4-? $khua^{4}ya^{1}$	3-1 $khua^{3}ya^{1}$	4-42 $čha^{4}yą^{42}$	4-3 $čha^{4}ye^{3}$	4-34 $čha^{4}yį^{34}$	4-3 $čha^{4}yų^{3}$
C (1-18) $ba^{3}hnę^{24}$ 'pick (fruit)' (11)	?-? $kua^{3}hnę^{24}$	14-3 $kua^{14}hnę^{3}$	14-42 $ča^{14}hnę^{42}$	14-3 $ča^{14}hnį^{3}$	14-34 $ča^{14}hnį^{34}$	14-3 $ča^{14}hnų^{3}$
D 1-1 (8-13) $bu^{3}ya^{2}$ 'return' (10)	4-? $ku^{4}ya^{2}$	1-1 $ku^{1}ya^{1}$	4-42 $ku^{4}yą^{42}$	4-2 $ko^{4}ye^{2}$	4-24 $ku^{4}yį^{24}$	4-2 $ku^{4}yų^{2}$

The numbers in parentheses refer to stem-formative sets. Those following the tone type show the sets to which the pattern applies, e.g., B 3-1 (8-13) refers to tone type B 3-1, sets 8-13 inclusive.

All type A verbs in stem-formative classes 8-18 have tone 1 on the final syllable of the 3def form. This is the only 3def tone which can be predicted.

There are no two-syllable examples of tone type D 3-1, and only one example of a two-syllable D 1-1.

3def	*hi*^{3}*nta*^{3}*ya*^{2}*ʔmą*^{1}
1s	*hi*^{3}*nta*^{1}*ya*^{1}*ʔmą*^{1}
1in	*čhi*^{3}*nta*^{2}*yą*^{2}*ʔmą*^{21}
2s	*čhi*^{3}*nta*^{2}*ye*^{2}*ʔmį*^{1}
1ex	*čhi*^{3}*nta*^{2}*yį*^{2}*ʔmį*^{14}
2p	*čhi*^{3}*nta*^{2}*yų*^{2}*ʔmų*^{1}

In two cases, however, directionals change tone or affect the verb-stem tone. The first case involves the regular tone perturbation rules of CM, and the second involves the shift of a tone to the end of a word, producing a word-final downglide in all lex forms and an upglide in some 1in forms.

Three regular tone-perturbation rules affect compound verbs. First, adding a directional with a 14 downglide to a stem ending in a tone 1 causes one or more preceding tone 1's to become 14: *be*^{3}*ya*^{1}*nįh*^{1} 'I bury' (*be*^{3}*ya*^{1} 'I place' *+nįh*^{1} 'up'), but *be*^{3}*yį*^{14}*nįh*^{14} 'we (ex) bury' (*be*^{3}*yį*^{1} 'we place' *+nįh*^{14} 'up (lex)'). In addition, a tone 3 can be stable (3a) or perturbable (3b). The second rule is that a stable 3 causes one or more preceding tone 1's to become 14: *be*^{1}*taʔ*^{1} 'I hit' *+nɬa*^{3a} 'hand' → *be*^{14}*taʔ*^{14}*nɬa*^{3} 'I touch'. The third rule is that a perturbable 3 assimilates to a preceding tone 1 or 2: *bi*^{3}*te*^{1}*hñą*^{1} 'I sit' *+he*^{3b}*nta*^{3b} 'rest' → *bi*^{3}*te*^{1}-*hñą*^{1}*he*^{1}*nta* 'I rest sitting'.[11]

In the case of 1ex, all compounds end in a downglide. Thus, a directional with tone 2 gains a 4 to become 24, etc. Tone type A has the downglide both on the stem and on the directional.[12] Other types lose the downglide on the stem. Table 5 shows and illustrates the 1ex stem tones for each tone type and the resulting tone patterns when directionals of each possible tone are added.

In the case of 1in, some compounded forms show an upglide on the stem, others on the directional, and still others on neither. If the stem ended in an upglide, the upglide is retained before a directional with

[11] A more detailed description of tone perturbation is given in A. R. Jamieson (1977*b*:113-22).

[12] The double manifestation of the downglide in type A can, however, be derived from the single downglide word-finally via the tone perturbation rules given above. When the final syllable of a compound is a directional with tone 1 and a downglide to 4 is added to it, the first perturbation rule explains the change from 1 to 14 stem-finally. When the final syllable is a directional with tone 3a, the second perturbation rule explains the change from 1 to 14 stem-finally. When the final syllable is a directional with tone 3b and a downglide to 4 is added to it, the third perturbation rule explains the change from 34 to 14 following the stem-final tone 1, which then becomes 14 by the first rule. Note that if a downglide is posited on both the stem-final vowel and the directional, the presence of a 14 downglide on directionals with underlying tone 3b cannot easily be accounted for. When the idioms became frozen, the source of the downglide was apparently forgotten, and the downglide was added to type A verbs with tone 2 directionals by analogy.

TABLE 5

TONES OF COMPOUNDED IEX VERBS

Tone Type and Stem-Formative Set	Stem Tones	Stem Tone plus a Directional of Tone			
		1	2	3a	3b
A 1-7	3-14 *čhįʔ*^{314} 'we take'	3-14-14 *čhįʔ*^{314}*tįʔ*^{14} 'we remove'	3-14-24 *čhįʔ*^{314}*rkų́į*^{24} 'we respect'	3-14-34 *čhįʔ*^{314}*nɬ́į*^{34} 'we receive'	3-14-14 *čhįʔ*^{314}*he*^{14}*yį*^{14} 'we rest'*
A 8-18 incomp	4-14 *nąą*^{4}*nkį*^{14} 'we will harvest'	4-14-14 *nąą*^{4}*nkį*^{14}*yį*^{14} 'we will harvest with basket'	4-14-24 *nąą*^{4}*nkį*^{14}*tįʔ*^{24} 'we will glean a little'	——	——
B 1-7	2-24 *bi*^{3}*nę*^{2}*čį*^{24} 'we stay'	2-2-14 *bi*^{3}*nę*^{2}*čį*^{2}*yį*^{14} 'we wait'	2-2-24 *bi*^{3}*nę*^{2}*čį*^{2}*ʔñį*^{24} 'we are strong'	2-2-34 *bi*^{3}*nę*^{2}*čį*^{2}*kų́įh*^{34} 'we remain with'	2-2-24 *bi*^{3}*nę*^{2}*čį*^{2}*čįʔ*^{24} 'we result well'
B 8-13 incomp	4-24 *nį*^{4}*ʔñį*^{24} 'we will tie'	4-2-14 *nį*^{4}*ʔñį*^{2}*šį*^{14} 'we will tie separately'	4-2-24 *nį*^{4}*ʔñį*^{2}*khį*^{24} 'we will tie up'	4-2-34 *nį*^{4}*ʔñį*^{2}*kų́įh*^{34} 'we will tie with'	4-2-24 *nį*^{4}*ʔñį*^{2}*ntįh*^{214} 'we will retie'**

B 14-18 incomp	4-34 *čhu*^{4}*yį*^{34} 'we will sew'	4-3-14 *čhu*^{4}*yį*^{3}*yį*^{14} 'we will mend a hole'	4-3-24 *čhu*^{4}*yį*^{3}*tį?*^{24} 'we will mend'	4-3-34 *čhu*^{4}*yį*^{3}*nɬį*^{34} 'we will sew by hand'	——
C 1-18	14-34 *nų*^{14}*hį*^{34} 'we speak'	14-3-14 *nų*^{14}*hį*^{3}*sį*^{14} 'we recite'	14-3-24 *nų*^{14}*hį*^{3}*tį?*^{24} 'we contradict'	14-3-34 *nų*^{14}*hį*^{3}*kų̱jh*^{34} 'we converse'	14-3-34 *nų*^{14}*hį*^{3}*?nkį*^{34} 'we argue'
D 1-7	3-24 *bi*^{3}*ntu*^{3}*bį*^{24} 'we come'	3-2-14 *bi*^{3}*ntu*^{3}*bį*^{2}*?mį*^{14} 'we sneak'	3-2-24 *bi*^{3}*ntu*^{3}*bį*^{2}*khį*^{24} 'we come across on the level'	3-2-34 *bi*^{3}*ntu*^{3}*bį*^{2}*kų̱jh*^{34} 'we bring'	3-2-24 *bi*^{3}*ntu*^{3}*bį*^{2}*bį?*^{214} 'we crowd'†
D 8-13 incomp	4-24	——	4-2-24 *ku*^{4}*yį*^{2}*tį?*^{24} 'we will return to stay'	4-2-34 *kui*^{4}*sį*^{2}*kų̱į*^{34} 'we will help'	——

The first example of each tone type is given in the neutral aspect. The tone it represents applies to all stem-formative sets in the neutral aspect and the indicated stem-formative sets in the incompletive aspect as well. Patterns labeled incompletive (incomp) only occur in that aspect and only with the stem-formative sets indicated.

No directionals with tone 4 occur in our data.

Hyphens show holes in the pattern as a result of limited data, rather than systemic gaps.

*From *-he*^{3}*ya*^{3}.

**From *-ntah*^{31}.

†From *-baʔ*^{31}.

TABLE 6

TONES OF COMPOUNDED 1IN VERBS

Tone Type and Stem-Formative Set	Stem Tones	Stem Tone plus a Directional of Tone			
		1	2	3a	3b
A 1-7	3-31 *čhą?*^{31} 'we take'	3-31-1 *čhą?*^{31}*tą?*^{1} 'we remove'	3-31-2 *čhą?*^{31}*rkų*^{2} 'we respect'	3-14-42 *čhą?*^{314}*nɬą*^{42} 'we receive'	3-31-1 *čhą?*^{31}*he*^{1}*yą*^{1} 'we rest'*
A 8-18 incomp	4-41 *ną*^{4}*nką*^{41} 'we will harvest'	4-41-1 *ną*^{4}*nką*^{41}*yą*^{1} 'we will harvest with baskets'	4-41-2 *ną*^{4}*nką*^{41}*tą?*^{2} 'we will glean a little'	——	——
B 1-7	2-2 *bi*^{3}*nę*^{2}*čą*^{2} 'we stay'	2-2-21 *bi*^{3}*nę*^{2}*čą*^{2}*yą*^{21} 'we wait'	2-2-2 *bi*^{3}*nę*^{2}*čą*^{2}*?ñų*^{2} 'we are strong'	2-2-42 *bi*^{3}*nę*^{2}*čą*^{2}*kǫh*^{42} 'we remain with'	2-2-2 *bi*^{3}*nę*^{2}*čą*^{2}*čę?*^{2} 'we result well'

B 8-18 incomp	4-42 $nį^{4}ʔñį^{42}$ 'we will tie'	4-2-21 $nį^{4}ʔñų^{2}šę^{21}$ 'we will tie separately'	4-42-2 $nį^{4}ʔñų^{42}khą^{2}$ 'we will tie up'	4-2-42 $nį^{4}ʔñų^{2}kǫh^{42}$ 'we will tie with'	4-42-2 $nį^{4}ʔñų^{42}ntąh^{21}$ 'we will retie'**
C 1-18	14-42 $nų^{14}hą^{42}$ 'we speak'	14-2-21 $nų^{14}hą^{2}sų^{21}$ 'we recite'	14-42-2 $nų^{14}hą^{42}tąʔ^{2}$ 'we contradict'	14-2-42 $nų^{14}hą^{2}kǫh^{42}$ 'we converse'	14-42-2 $nų^{14}hą^{42}ʔnką^{2}$ 'we argue'
D 1-7	3-2 $bi^{3}ntu^{3}bą^{2}$ 'we come'	3-2-1 $bi^{3}ntu^{3}bą^{2}ʔmą^{1}$ 'we sneak'	3-2-2 $bi^{3}ntu^{3}bą^{2}khą^{2}$ 'we come across on the level'	3-2-42 $bi^{3}ntu^{3}bą^{2}kǫh^{42}$ 'we bring'	3-2-2 $bi^{3}ntu^{3}bą^{2}bąʔ^{21}$ 'we crowd'†
D 8-13 incomp	4-42	——	4-42-2 $ku^{4}yą^{42}tąʔ^{2}$ 'we will return to stay'	4-2-42 $kui^{4}sę^{2}kǫǫ^{42}$ 'we will help'	——

From $-he^{3}ya^{3}$.

**From $-ntah^{31}$.

†From $-baʔ^{31}$.

tone 2 or 3b and sometimes before a directional with tone 1, but is shifted to the directional when the directional is tone 3a and sometimes also when the directional is tone 1. If the stem did not end in an upglide, namely, in the forms of types B and D that do not show the two-syllable 4 replacement or the 4-3 replacement, an upglide is added to a directional with tone 3a and sometimes to a directional with tone 1, but not to a directional with tone 2 or 3b. Table 6 shows and illustrates the 1in stem tones for each tone type and the resulting tone patterns when directionals of each possible tone are added.

Note that in a compound marked for persons other than 1in, no upglide is introduced in a form which has the same underlying stem tone and the same underlying directional tone as a 1in form. For example, compare *bi²nčą²ʔmų²¹* 'we (in) harm' (*bi²nčą²* 'we (in) put' +*ʔmų¹* 'hurt', 2 2 + 1 → 2 2 21) and *bi²nčų²ʔmų¹* 'you (pl) harm' (2 2 + 1 → 2 2 1). This fact supports the claim made earlier that an upglide is a basic characteristic of 1in, which distinguishes it from the downglides of 1ex. See **5** for a discussion of earlier stages of CM.

4. The most common means of negating a verb in CM utilizes both changes in the final vowel and tone changes. The vowel change involves the addition of the negative clitic ≠ *į* following the person marker. In non-3def forms the vowel of the negative is completely lost, and only the feature nasal remains to affect the person-marker suffix. Note that the non-3def negative and positive forms are identical save for tone when the final vowel of the basic form is nasalized. In 3def forms, which are marked by the absence of the person-marker suffix, the negative clitic ≠*į* is retained as the final vowel, and the stem-final vowel is sometimes lost. Table 7 shows and illustrates the fused negative vowels.

Four new rules, which are ordered among the rules presented in **1.1**, are needed to account for negative forms. Since negative forms lose the laryngeal component ʔ of stem-final vowels, rule 2 drops it. Rule 7 drops the vowel of the negative marker in non-3def forms after rule 3 transfers its nasalization to the preceding person marker. Rule 8 drops some stem vowels in 3def forms, and rule 11 epenthesizes the vowel *ą* in other 3def forms.

(2) Laryngeal deletion:

$$V \quad \begin{bmatrix} V \\ +\text{lar} \\ +\text{int} \end{bmatrix} \rightarrow \begin{bmatrix} -\text{lar} \\ -\text{int} \end{bmatrix} \; / \; \underline{\quad}(V) \neq \text{į}.$$

(7) Negative-vowel drop:

$$\text{į} \rightarrow \emptyset \; / \; + V \neq \underline{\quad}.$$

TABLE 7

FINAL VOWELS OF NEGATIVE VERBS IN THE NEUTRAL ASPECT

Positive	Negative					
3def	3def	1s	1in	2s	1ex	2p
i, į, e, ę, æ	*į*	*ę*	*ę*	*į*	*į*	*ų*
ɬi^{3}*šį*^{1}	*ɬi*^{2}*šį*^{21}	*ɬi*^{2}*šę*^{21}	*nį*^{2}*šę*^{21}	*nį*^{2}*šį*^{21}	*nį*^{2}*šį*^{214}	*nį*^{2}*šų*^{21}
'dry'						
ɬi^{3}*smį*^{1}	*ɬi*^{2}*smį*^{21}	*ɬi*^{2}*smę*^{21}	*nį*^{2}*smę*^{21}	*nį*^{2}*smį*^{21}	*nį*^{2}*smį*^{214}	*nį*^{2}*smų*^{21}
'release'						
ba^{3}*se*^{2}	*ba*^{2}*sį*^{21}	*ba*^{2}*sę*^{21}	*ča*^{2}*sę*^{21}	*ča*^{2}*sį*^{21}	*ča*^{2}*sį*^{214}	*ča*^{2}*sų*^{21}
'remember'						
ɬi^{3}*khę*^{1}	*ɬi*^{2}*khį*^{21}	*ɬi*^{2}*khę*^{21}	*nį*^{2}*khę*^{21}	*nį*^{2}*khį*^{21}	*nį*^{2}*khį*^{214}	*nį*^{2}*khų*^{21}
'feed'						
ɬi^{3}*tæ*^{1}	*ɬi*^{2}*tį*^{21}	*ɬi*^{2}*tę*^{21}	*nį*^{2}*tę*^{21}	*nį*^{2}*tį*^{21}	*nį*^{2}*tį*^{214}	*nį*^{2}*tų*^{21}
'spin'						
u, ų	*į*	*ų*	*ų*	*į*	*į*	*ų*
ɬi^{3}*ɬhu*^{1}	*ɬi*^{2}*ɬhį*^{21}	*ɬi*^{2}*ɬhų*^{21}	*nį*^{2}*ɬhų*^{21}	*nį*^{2}*ɬhį*^{21}	*nį*^{2}*ɬhį*^{214}	*nį*^{2}*ɬhų*^{21}
'toast'						
be^{3}*hnų*^{2}	*be*^{2}*hnį*^{21}	*be*^{2}*hnų*^{21}	*be*^{2}*hnų*^{21}	*be*^{2}*hnį*^{21}	*be*^{2}*hnį*^{214}	*be*^{2}*hnų*^{21}
'plane'						
o	*ųąį*	*ǫ*	*ǫ*	*į*	*į*	*ų*
be^{3}*tho*^{1}	*be*^{2}*thųąį*^{21}	*be*^{2}*thǫ*^{21}	*be*^{2}*thǫ*^{21}	*be*^{2}*thį*^{21}	*be*^{2}*thį*^{214}	*be*^{2}*thų*^{21}
'put away'						
a, ą	*ąį*	*ą*	*ą*	*į*	*į*	*ų*
hbaʔ^{2}	*hbąį*^{21}	*hbą*^{21}	*čhą*^{21}	*čhį*^{21}	*čhį*^{214}	*čhų*^{21}
'take'						
be^{3}*hñą*^{2}	*be*^{2}*hñąį*^{21}	*be*^{2}*hñą*^{21}	*be*^{2}*hñą*^{21}	*be*^{2}*hñį*^{21}	*be*^{2}*hñį*^{214}	*be*^{2}*hñų*^{21}
'leave'						

ba^{3}*se*^{2} 'remember' and *be*^{3}*hnų*^{2} 'plane' are type B; all other examples in this table are type A.

This rule deletes the negative marker in non-3def forms after its nasalization is transferred to the person marker by rule 3.

(8) Stem-vowel drop 1:

$$\left\{\begin{bmatrix} V \\ -\text{back} \end{bmatrix}\right\} \rightarrow \quad \emptyset \quad / \quad \underline{\quad} \neq \dot{\imath}\,.$$

This rule deletes front stem vowels plus *u*, *ụ* in 3def forms. It must follow rule 7 because otherwise it would incorrectly delete person-marker vowels also. Six directionals with final *u* or *ụ* are exceptions to rule 8, allowing them to undergo rule 11. Four of these are also exceptions to stem-vowel drop 2, presented in **1.1**. They are: $+rk\underline{u}^2$ 'fear', $+ka^1k\underline{u}^1$ 'innermost part', $+\check{s}u^2$ 'boil', and $+k\underline{u}^2$ (meaning unknown). The two which are exceptions only to rule 8 are: $+?\tilde{n}\underline{u}^2$ 'tight' and $+?m\underline{u}^1$ 'hurt'.

(11) *ạ* epenthesis:

$$\emptyset \rightarrow \underline{a} \;/\; \begin{bmatrix} V \\ +\text{back} \\ -\text{low} \end{bmatrix} \_\_\_\_ \neq \underline{i}.$$

This rule inserts *ạ* in 3def forms with final stem vowel *o* and in forms ending in directionals that are exceptions to rule 8. It must therefore follow rule 8. Forms with *o* then undergo rule 12, *o* raising, to generate the correct *ụạị* cluster. Examples: $\acute{t}i^2?\tilde{n}\underline{u}^2$ 'he ties', $\acute{t}i^2?\tilde{n}\underline{u}\underline{a}\underline{i}^{21}$ 'he does not tie'; $be^2\check{s}o^2$ 'he stacks', $be^2\check{s}\underline{u}\underline{a}\underline{i}^{21}$ 'he does not stack'. The *ạ* epenthesis rule is phonetically implausible and does not eliminate all *ụị* clusters in surface forms; cf. $bi^2y\underline{i}^2k\underline{u}\underline{i}h^{34}$ 'we (ex) chase'. It does, however, explain the forms that occur in negative verbs. It appears to have developed via analogy with the *ạị* cluster retained in 3def negative forms with final stem vowels *a* and *ạ*, which are very common. There is some indication that this pattern is being generalized to all back vowels. Some speakers optionally limit the structural description of rule 8 to front vowels, allowing rule 11 to apply to all instances of final stem vowel *u* or *ụ*, as well as to *o*.

All two-syllable negative verbs undergo a tone change which is characterized by a final 21 or 41 upglide. Type C verbs have the negative tone pattern 2-41 in all aspects. Types A, B, and D have the negative tone pattern 2-21 in forms that do not show the two-syllable 4 replacement or the 4-3 replacement, and the negative tone pattern 4-41 in forms that undergo one of these replacements. 1ex forms add a final tone 4 to these patterns in all tone types to form the characteristic downglide. The upglide of 1in is overridden by the negative upglide. Table 8 shows and illustrates the negative tone patterns.

The last two syllables of a three-syllable stem take the two-syllable pattern for the tone type, as shown in table 8. The first stem syllable (i.e., that of the stem formative) is tone 3 in the neutral (neut), completive (comp), and continuative aspects, and tone 4 in the incompletive aspect regardless of the stem-formative class to which it belongs. The aspect prefixes ka^3- and ti^3- retain their basic tone 3. The following examples compare positive (pos) and negative (neg) forms of three- and two-syllable stems.

TABLE 8

TWO-SYLLABLE TONE PATTERNS FOR NEGATIVE VERBS

Positive	Negative					
3def	3def	1s	1in	2s	1ex	2p
A, B, D basic	2-21	2-21	2-21	2-21	2-214	2-21
$ba^3nę^1$ 'wash'	$ba^2nį^{21}$	$ba^2nę^{21}$	$ba^2nę^{21}$	$ba^2nį^{21}$	$ba^2nį^{214}$	$ba^2nų^{21}$
$ba^2štæ^2$ 'wrap'	$ba^2štį^{21}$	$ba^2štę^{21}$	$ba^2štę^{21}$	$ba^2štį^{21}$	$ba^2štį^{214}$	$ba^2štų^{21}$
bu^3ya^2 'return'	$bu^2yąį^{21}$	$bu^2yą^{21}$	$bu^2yą^{21}$	$bu^2yį^{21}$	$bu^2yį^{214}$	$bu^2yų^{21}$
C basic	2-41	2-41	2-41	2-41	2-414	2-41
$be^3čų^1$ 'arrive'	$be^2čį^{41}$	$be^2čų^{41}$	$be^2čų^{41}$	$be^2čį^{41}$	$be^2čį^{414}$	$be^2čų^{41}$
A, B, D incomp replacements	4-41	2-21	4-41	4-41	4-414	4-41
$kua^4nę^1$ 'will wash'	$kua^4nį^{41}$	$kua^2nę^{21}$	$kua^4nę^{41}$	$kua^4nį^{41}$	$kua^4nį^{414}$	$kua^4nų^{41}$
$ɬi^4čą^2$ 'will roar'	$ɬi^4čąį^{41}$	$ɬi^2čą^{21}$	$nį^4čą^{41}$	$nį^4čį^{41}$	$nį^4čį^{414}$	$nį^4čį^{41}$
ku^4ya^2 'will return'	$ku^4yąį^{41}$	$ku^2yą^{21}$	$ku^4yą^{41}$	$ku^4yį^{41}$	$ku^4yį^{414}$	$ku^4yų^{41}$

Tone Type	B 1-1 'swing 1s'	C 'break 1s'	A 4 Replacement 'step on 2s'
pos neut	$bi^3thi^1ya^1$	$bo^{14}to?^3$	$nų^3nį^1$
neg neut	$bi^3thi^2yą^{21}$	$bo^2tǫ^{41}$	$nų^2nį^{21}$
pos comp	$ka^3bi^3thi^1ya^1$	$ka^3bo^{14}to?^3$	$ka^3nų^3nį^1$
neg comp	$ka^3bi^3thi^2yą^{21}$	$ka^3bo^2tǫ^{41}$	$ka^3nų^2nį^{21}$
pos incomp	$kui^4thi^1ya^1$	$sko^{14}to?^3$	$nų^4nį^1$
neg incomp	$kui^4thi^2yą^{21}$	$sko^2tǫ^{41}$	$nų^4nį^{41}$

When a negative verb is compounded by the addition of a directional, the stem and prefixes of types A, B, and D retain the stem tone of the negative verb, except that the upglide (and the downglide in 1ex) shifts to word-final position, leaving tone 2 or 4 on the stem-final syllable. Examples: $be^2hñą^{21}$ 'I do not leave' (type A), $be^2hñą^2šę^{21}$ 'I do not set apart' (type A + 1); $bi^2nčį^{214}$ 'we (ex) do not put' (type B), $bi^2nčį^2hyį^{214}$ 'we (ex) do not accuse' (type B + 2); $ɬi^4?ñųąį^{41}$ 'he will not tie' (type B 1-1), $ɬi^4?ñųąį^4kųąįh^{41}$ 'he will not tie with' (type B 1-1 + 3a). The stem

tones of type C compounded negative verbs lose their distinctive 2-41 negative pattern and become 2-2. The syllables of the directional take tone 2, and the final syllable receives the upglide to tone 1. Examples: *nǫ*^{14}*he*^{3} 'you (sg) talk', *nų*^{2}*hį*^{41} 'you (sg) do not talk' (type C); *nǫ*^{14}*he*^{3}*sį*^{1} 'you (sg) recite', *nų*^{2}*hį*^{2}*sį*^{21} 'you (sg) do not recite' (type C + 1).

5. In this section, I offer some suggestions about the source of the less frequent tone types C and D and about the cause of the partial loss of the upglide in 1in forms of types B and D that do not show the two-syllable 4 replacement or the 4-3 replacement.

It seems likely that at an earlier stage in the history of CM there were only tone types A and B. Type C verbs are probably all frozen compounds of a type A verb plus a directional with tone 3a. Because this tone causes perturbation of a preceding tone 1 to 14, the tone pattern 3-1 in 1s, 2s, and 2p forms becomes 3-14. In a few cases, the first syllable, which was a stem formative, appears to have been lost, leaving the two-syllable pattern 14-3.

Type D verbs may have arisen via the loss of the final syllable of a three-syllable type B verb. The tone pattern in 2s and 2p for such verbs is 3-2-2, which could have been reduced to 3-2. Type D (3-1) may also have resulted from the loss of a laryngeal feature. This feature is the only difference between non-1s tone patterns for type B (3-1) laryngeal and type D (3-1); both have 3-2 for 2s, 2p, and 1in, and 3-24 for 1ex (see **1.3**). Type D verbs may once have been fairly common, but at present they appear limited to five verbs and their compounds: *bi*^{3}*ntu*^{3}*ba*^{2} 'come', *bi*^{3}*ku*^{3}*ya*^{2} 'teach', *bu*^{3}*ya*^{2} 'return', *bi*^{3}*ntu*^{3}*ya*^{2} 'bathe oneself', and the compound *bi*^{3}*se*^{2}*ko*^{3} 'help' (D 1-1 + 3a). All are common and therefore resistant to regularization. However, *bi*^{3}*ntu*^{3}*ba*^{2} 'come' fluctuates between type D (3-1) and type A, while the short form of the verb, *ntu*^{3}*ba*^{2}, is always type A; compare *bi*^{3}*nto*^{3}*be*^{2} / *bi*^{3}*nto*^{3}*be*^{1} 'you (sg) come' and *nto*^{3}*be*^{1} 'you (sg) come'. The change to type A rather than the assumed source, type B, may have arisen from the replacement of the rare 3-2 pattern by the common and similar 3-1.

The upglides which appear in certain 1in forms in the incompletive aspect are retentions of an older pattern of upglides for this person which distinguish it from the downglides which characterize 1ex. In Huautla Mazatec (see **6**), the 1in person marker has tone 2 and the 1ex has tone 4, whereas the other person markers have tone 3. Because Huautla tone clusters retain the tones of the composing morphemes, there are tone glides rising to tone 2 for 1in and falling to tone 4 for 1ex. The more neutral tone 3 produces less noticeable tone glides. Early CM must have had a pattern very similar to present-day Huautla Mazatec. Even today, in CM, there is a predominance of upglides in 1in. Where it

does not occur in 1in, it is presumed to have been lost. The motivation for the loss in B and D type verbs which do not have a 4 or 4-3 replacement pattern in the incompletive aspect is to avoid confusion with negative forms of those verbs. Because types B and D end with tone 2, the only possible upglide is 21, which would result in the pattern 2-21, the same pattern found in negative verbs. The influence of interference from the negative pattern is still active. On at least one occasion a compound verb of type B plus a tone 1 directional has been recorded without the word-final upglide, presumably to avoid homophony with the negative form, which was also in focus at the same elicitation session.

6. In this section, the CM verb system is compared with that of Huautla Mazatec (HM), described by Pike (1948:95-165).

According to the 1966-67 Mazatec dialect intelligibility testing, CM is the most divergent Mazatec dialect. Its highest intelligibility score, 39 percent, was scored on the Huautla dialect, while each of the other twenty-one Mazatec towns tested scored at least 74 percent on the Huautla dialect (see Kirk 1970). Part of the reason for this lies in the fact that CM is the only Mazatec dialect spoken on the south side of the deep Santo Domingo River canyon. According to oral tradition, the Mazatecs migrated to Chiquihuitlán, a Cuicatec town, and settled in the upper half. Cuicatec is no longer spoken in Chiquihuitlán, but it appears to have affected CM deeply before it disappeared. The details of this influence are, unfortunately, beyond the scope of this article.

Although the diverse use of fusion in the verb inflection of CM and HM makes cognates harder to recognize between verbs than between nouns, the verb inflection of CM is basically Mazatec. The HM system shows complex vowel clusters and complex tone clusters which retain the features of both the stem and suffixes or postclitics added to it (Pike 1948:111-16). CM sometimes retains the vowel clusters *ai*, *ui*, *uai*, *ua*, *ue*, and their nasalized counterparts; more often, the underlying vowel sequences have fused to a single vowel. The only retention of a tone morpheme in a tone cluster occurs in the first-person plurals: 1ex always involves a downglide to tone 4, and 1in often has an upglide. Other underlying tone clusters have fused to a single tone or to a glide which is not necessarily related to the original tone cluster.

The HM actor markers are: $-a^3$ '1s', $-i^3$ '2s', $-o^3$ '2p', $-i^4$ '1ex', and $-a^2$ '1in' (Pike 1948:108). These are very similar to the CM markers, with HM *o* corresponding to CM *u*, except that nasalization for plural is absent in HM.

HM has a set of verb stems that are called first main stems. Every HM verb either consists of one of these stems or has one of them as its

first syllable. Many of them are cognate with CM stem formatives. Some HM first main stems are parallel to CM stem-formative sets 1-7, which in tone types A, B, and D show a two-syllable 4 replacement or a 4-3 replacement in the incompletive only in 3def forms. The HM first main stems also show a lower tone in the incompletive in third singular (3s) forms, but not in other persons (except 1s, which has a lower tone in all aspects for many verbs and is not considered here). For example (Pike 1948:111):

	'deposit'	'place'
neutral 3s	*vʔe*^{1}-	*va*^{1}-
neutral 2s	*vʔe*^{2}-	*vha*^{3}-
incomp 3s	*kʔoe*^{42}-	*koa*^{42}-
incomp 2s	*kʔoe*^{1}-	*khoa*^{1}-

(The verb 'deposit' is cognate with CM stem-formative set 1, and 'place' is cognate with CM stem-formative set 7.) Other HM first main stems are parallel to CM stem-formative sets 8-18, which in tone types A, B, and D show a two-syllable 4 replacement or a 4-3 replacement in the incompletive in all persons except 1s. The HM first main stems show a lower tone in the incompletive in all persons. For example (Pike 1948:111):

	'carry'	'make'
neutral 3s	*vʔa*^{3}-	*si*^{1}-
neutral 2s	*čʔa*^{2}-	*nį*^{2}-
incomp 3s	*kʔoa*^{4}-	*si*^{42}-
incomp 2s	*čʔa*^{4}-	*si*^{4}-

(The verb 'carry' is cognate with CM stem-formative set 11, and 'make' is cognate with CM stem-formative set 8.)

Pike (1948:130) states that HM transitive verbs that function as first main stems show actor person via suppletive stem variants (as seen in the above examples), but that HM intransitive verbs that function as first main stems do not. In CM, most transitive verbs show stem-formative change for person, though a few do not (see **1.2**), and intransitive verbs do not show stem-formative change for person.

There is considerable fusion of actor pronouns followed by object pronouns in HM (Pike 1948:123-24). Object pronouns do not fuse in CM. In HM, the model postclitics fuse with the preceding elements, whereas they usually do not fuse in CM. However, the HM modal clitic *-hį*^{2} 'it is not thus' is almost certainly cognate with the *-į* negative clitic in CM (Pike 1948:124-25). No system of negative verbs has been reported

for any other Mazatec dialect. Instead, they have a negative word preposed to the verb.[13] CM can also negate verbs by preposing the word *ʔa*^{4}*kụị*^{41}, but it is more common to negate the verb itself.

7. In the paradigms below, the six persons dealt with in this article are shown in the neutral and incompletive aspects, including the positive and negative forms of each. The completive and continuative aspects can be formed by adding the prefixes *ka*^{3}- and *ti*^{3}-, respectively, to the neutral-aspect forms. The four rows of each paradigm give the neutral positive, neutral negative, incompletive positive, and incompletive negative forms. The six columns give 3def, 1s, 1in, 2s, 1ex, and 2p. Each paradigm is introduced by a number, a gloss, the tone type, and the stem-formative number.

(1) 'close'—Type A, Set 1:

be^{3}*čha*^{1}	*be*^{3}*čha*^{1}	*be*^{3}*čhą*^{31}	*be*^{3}*čhe*^{1}	*be*^{3}*čhị*^{14}	*be*^{3}*čhụ*^{1}
be^{2}*čhąị*^{21}	*be*^{2}*čhą*^{21}	*be*^{2}*čhą*^{21}	*be*^{2}*čhị*^{21}	*be*^{2}*čhị*^{214}	*be*^{2}*čhụ*^{21}
kue^{4}*čha*^{1}	*kue*^{3}*čha*^{1}	*kue*^{3}*čhą*^{31}	*kue*^{3}*čhe*^{1}	*kue*^{3}*čhị*^{14}	*kue*^{3}*čhụ*^{1}
kue^{4}*čhąị*^{41}	*kue*^{2}*čhą*^{21}	*kue*^{2}*čhą*^{21}	*kue*^{2}*čhị*^{21}	*kue*^{2}*čhị*^{214}	*kue*^{2}*čhụ*^{21}

(2) 'roof'—Type A, Set 2:

ba^{3}*tæ*^{1}	*ba*^{3}*tæ*^{1}	*ba*^{3}*tę*^{31}	*ba*^{3}*te*^{1}	*ba*^{3}*tị*^{14}	*ba*^{3}*tụ*^{1}
ba^{2}*tị*^{21}	*ba*^{2}*tę*^{21}	*ba*^{2}*tę*^{21}	*ba*^{2}*tị*^{21}	*ba*^{2}*tị*^{214}	*ba*^{2}*tụ*^{21}
kua^{4}*tæ*^{1}	*kua*^{3}*tæ*^{1}	*kua*^{3}*tę*^{31}	*kua*^{3}*te*^{1}	*kua*^{3}*tị*^{14}	*kua*^{3}*tụ*^{1}
kua^{4}*tị*^{41}	*kua*^{2}*tę*^{21}	*kua*^{2}*tę*^{21}	*kua*^{2}*tị*^{21}	*kua*^{2}*tị*^{214}	*kua*^{2}*tụ*^{21}

(3) 'break'—Type C (3def incomp has irregular tones; variant forms for 3def neg and 1in witness to an alternative base form with final *a*), Set 3:

bo^{3}*to*ʔ^{24}	*bo*^{14}*to*ʔ^{3}	*čo*^{14}*tǫ*ʔ^{42} / *čo*^{14}*tą*ʔ^{42}	*čo*^{14}*te*ʔ^{3}	*čo*^{14}*tị̈*ʔ^{34}	*čo*^{14}*tụ*ʔ^{3}
bo^{2}*tụąị*^{41} / *bo*^{2}*tąị*^{41}	*bo*^{2}*tǫ*^{41}	*čo*^{2}*tǫ*^{41} / *čo*^{2}*tą*^{41}	*čo*^{2}*tị*^{41}	*čo*^{2}*tị*^{414}	*čo*^{2}*tụ*^{41}
sko^{4}*to*ʔ^{424}	*sko*^{14}*to*ʔ^{3}	*čo*^{14}*tǫ*ʔ^{42} / *čo*^{14}*tą*ʔ^{42}	*čo*^{14}*te*ʔ^{3}	*čo*^{14}*tị̈*ʔ^{34}	*čo*^{14}*tụ*ʔ^{3}
sko^{4}*tụąị*^{41} / *sko*^{4}*tąị*^{41}	*sko*^{2}*tǫ*^{41}	*čo*^{2}*tǫ*^{41} / *čo*^{2}*tą*^{41}	*čo*^{2}*tị*^{41}	*čo*^{2}*tị*^{414}	*čo*^{2}*tụ*^{41}

(4) 'study'—Type A, Set 4, 3-syllable:

bu^{3}*ta*^{3}*ya*^{1}	*bu*^{3}*ta*^{3}*ya*^{1}	*ču*^{3}*ta*^{3}*yą*^{31}	*ču*^{3}*ta*^{3}*ye*^{1}	*ču*^{3}*ta*^{3}*yị*^{14}	*ču*^{3}*ta*^{3}*yụ*^{1}
bu^{3}*ta*^{2}*yąị*^{21}	*bu*^{3}*ta*^{2}*yą*^{21}	*ču*^{3}*ta*^{2}*yą*^{21}	*ču*^{3}*ta*^{2}*yị*^{21}	*ču*^{3}*ta*^{2}*yị*^{214}	*ču*^{3}*ta*^{2}*yụ*^{21}
sku^{4}*ta*^{3}*ya*^{1}	*sku*^{4}*ta*^{3}*ya*^{1}	*ču*^{4}*ta*^{3}*yą*^{31}	*ču*^{4}*ta*^{3}*ye*^{1}	*ču*^{4}*ta*^{3}*yị*^{14}	*ču*^{4}*ta*^{3}*yụ*^{1}
sku^{4}*ta*^{2}*yąị*^{21}	*sku*^{4}*ta*^{2}*yą*^{21}	*ču*^{4}*ta*^{2}*yą*^{21}	*ču*^{4}*ta*^{2}*yị*^{21}	*ču*^{4}*ta*^{2}*yị*^{214}	*ču*^{4}*ta*^{2}*yụ*^{21}

(5) 'open'—Type B 1-1, Set 4:

bu^{2}*ša*ʔ^{2}	*bu*^{1}*ša*ʔ^{1}	*ču*^{2}*šą*ʔ^{2}	*čo*^{2}*še*ʔ^{2}	*ču*^{2}*šị̈*ʔ^{24}	*ču*^{2}*šụ*ʔ^{2}
bu^{2}*šąị*^{21}	*bu*^{2}*šą*^{21}	*ču*^{2}*šą*^{21}	*ču*^{2}*šị*^{21}	*ču*^{2}*šị*^{214}	*ču*^{2}*šụ*^{21}

[13] Eunice V. Pike (Huautla and Soyaltepec) and Terry L. Schram and Judith L. Schram (Jalapa), personal communication.

$sku^{4}\check{s}a?^{2}$	$sku^{1}\check{s}a?^{1}$	$\check{c}u^{2}\check{s}\varrho?^{2}$	$\check{c}o^{2}\check{s}e?^{2}$	$\check{c}u^{2}\check{s}i?^{24}$	$\check{c}u^{2}\check{s}\mu?^{2}$
$sku^{4}\check{s}\varrho i^{41}$	$sku^{2}\check{s}\varrho^{21}$	$\check{c}u^{2}\check{s}\varrho^{21}$	$\check{c}u^{2}\check{s}i^{21}$	$\check{c}u^{2}\check{s}i^{214}$	$\check{c}u^{2}\check{s}\mu^{21}$

(6) 'pull'—Type B 1-1, Set 5:

$hu^{2}b\text{æ}^{2}$	$hu^{1}b\text{æ}^{1}$	$\check{c}hu^{2}b\varrho^{2}$	$\check{c}ho^{2}be^{2}$	$\check{c}hu^{2}bi^{24}$	$\check{c}hu^{2}b\mu^{2}$
$hu^{2}bi^{21}$	$hu^{2}b\varrho^{21}$	$\check{c}hu^{2}b\varrho^{21}$	$\check{c}hu^{2}bi^{21}$	$\check{c}hu^{2}bi^{214}$	$\check{c}hu^{2}b\mu^{21}$
$sku^{4}b\text{æ}^{2}$	$sku^{1}b\text{æ}^{1}$	$\check{c}hu^{2}b\varrho^{2}$	$\check{c}ho^{2}be^{2}$	$\check{c}hu^{2}bi^{24}$	$\check{c}hu^{2}b\mu^{2}$
$sku^{4}bi^{41}$	$sku^{2}b\varrho^{21}$	$\check{c}hu^{2}b\varrho^{21}$	$\check{c}hu^{2}bi^{21}$	$\check{c}hu^{2}bi^{214}$	$\check{c}hu^{2}b\mu^{21}$

(7) 'shout'—Type B 1-1, Set 6, 3-syllable:

$hi^{3}nta^{3}ya^{2}$	$hi^{3}nta^{1}ya^{1}$	$\check{c}hi^{3}nta^{2}y\varrho^{2}$	$\check{c}hi^{3}nta^{2}ye^{2}$	$\check{c}hi^{3}nta^{2}yi^{24}$	$\check{c}hi^{3}nta^{2}y\mu^{2}$
$hi^{3}nta^{2}y\varrho i^{21}$	$hi^{3}nta^{2}y\varrho^{21}$	$\check{c}hi^{3}nta^{2}y\varrho^{21}$	$\check{c}hi^{3}nta^{2}yi^{21}$	$\check{c}hi^{3}nta^{2}yi^{214}$	$\check{c}hi^{3}nta^{2}y\mu^{21}$
$ski^{4}nta^{3}ya^{2}$	$ski^{4}nta^{1}ya^{1}$	$\check{c}hi^{4}nta^{2}y\varrho^{2}$	$\check{c}hi^{4}nta^{2}ye^{2}$	$\check{c}hi^{4}nta^{2}yi^{24}$	$\check{c}hi^{4}nta^{2}y\mu^{2}$
$ski^{4}nta^{2}y\varrho i^{21}$	$ski^{4}nta^{2}y\varrho^{21}$	$\check{c}hi^{4}nta^{2}y\varrho^{21}$	$\check{c}hi^{4}nta^{2}yi^{21}$	$\check{c}hi^{4}nta^{2}yi^{214}$	$\check{c}hi^{4}nta^{2}y\mu^{21}$

(8) 'weave'—Type B 3-1, Set 7:

$hba^{3}?ya^{2}$	$hba^{3}?ya^{1}$	$hba^{2}?y\varrho^{2}$	$hba^{2}?ye^{2}$	$hba^{2}?yi^{24}$	$hba^{2}?y\mu^{2}$
$hba^{2}?y\varrho i^{21}$	$hba^{2}?y\varrho^{21}$	$hba^{2}?y\varrho^{21}$	$hba^{2}?yi^{21}$	$hba^{2}?yi^{214}$	$hba^{2}?y\mu^{21}$
$khua^{4}?ya^{2}$	$khua^{3}?ya^{1}$	$khua^{2}?y\varrho^{2}$	$khua^{2}?ye^{2}$	$khua^{2}?yi^{24}$	$khua^{2}?y\mu^{2}$
$khua^{4}?y\varrho i^{41}$	$khua^{2}?y\varrho^{21}$	$khua^{2}?y\varrho^{21}$	$khua^{2}?yi^{21}$	$khua^{2}?yi^{214}$	$khua^{2}?y\mu^{21}$

(9) 'load'—Type A, laryngealized nucleus, Set 8, 3-syllable:

$\ɬi^{3}ka^{3}ni\text{ʔ}h^{31}$	$\ɬi^{3}ka^{3}n\varrho\text{ʔ}h^{31}$	$ni^{3}ka^{3}n\varrho\text{ʔ}h^{31}$	$ni^{3}ka^{3}ni\text{ʔ}h^{31}$	$ni^{3}ka^{3}ni\text{ʔ}h^{314}$	$ni^{3}ka^{3}nu\text{ʔ}h^{31}$
$\ɬi^{3}ka^{2}ni\text{ʔ}h^{21}$	$\ɬi^{3}ka^{2}n\varrho\text{ʔ}h^{21}$	$ni^{3}ka^{2}n\varrho\text{ʔ}h^{21}$	$ni^{3}ka^{2}ni\text{ʔ}h^{21}$	$ni^{3}ka^{2}ni\text{ʔ}h^{214}$	$ni^{3}ka^{2}nu\text{ʔ}h^{21}$
$\ɬi^{4}ka^{3}ni\text{ʔ}h^{31}$	$\ɬi^{4}ka^{3}n\varrho\text{ʔ}h^{31}$	$ni^{4}ka^{3}n\varrho\text{ʔ}h^{31}$	$ni^{4}ka^{3}ni\text{ʔ}h^{31}$	$ni^{4}ka^{3}ni\text{ʔ}h^{314}$	$ni^{4}ka^{3}nu\text{ʔ}h^{31}$
$\ɬi^{4}ka^{2}ni\text{ʔ}h^{21}$	$\ɬi^{4}ka^{2}n\varrho\text{ʔ}h^{21}$	$ni^{4}ka^{2}n\varrho\text{ʔ}h^{21}$	$ni^{4}ka^{2}ni\text{ʔ}h^{21}$	$ni^{4}ka^{2}ni\text{ʔ}h^{214}$	$ni^{4}ka^{2}nu\text{ʔ}h^{21}$

(10) 'step on'—Type A, Set 9:

$su^{3}n\varrho^{1}$	$su^{3}n\varrho^{1}$	$nu^{3}n\varrho^{31}$	$nu^{3}ni^{1}$	$nu^{3}ni^{14}$	$nu^{3}nu^{1}$
$su^{2}ni^{21}$	$su^{2}n\varrho^{21}$	$nu^{2}n\varrho^{21}$	$nu^{2}ni^{21}$	$nu^{2}ni^{214}$	$nu^{2}nu^{21}$
$su^{2}n\varrho^{1}$	$su^{3}n\varrho^{1}$	$nu^{4}n\varrho^{41}$	$nu^{4}ni^{1}$	$nu^{4}ni^{14}$	$nu^{4}nu^{1}$
$su^{4}ni^{41}$	$su^{2}n\varrho^{21}$	$nu^{4}n\varrho^{41}$	$nu^{4}ni^{41}$	$nu^{4}ni^{414}$	$nu^{4}nu^{41}$

(11) 'return'—Type D 1-1, Set 10:

$bu^{3}ya^{2}$	$bu^{1}ya^{1}$	$bu^{3}y\varrho^{2}$	$bo^{3}ye^{2}$	$bu^{3}yi^{24}$	$bu^{3}y\mu^{2}$
$bu^{2}y\varrho i^{21}$	$bu^{2}y\varrho^{21}$	$bu^{2}y\varrho^{21}$	$bu^{2}yi^{21}$	$bu^{2}yi^{214}$	$bu^{2}y\mu^{21}$
$ku^{4}ya^{2}$	$ku^{1}ya^{1}$	$ku^{4}y\varrho^{42}$	$ko^{4}ye^{2}$	$ku^{4}yi^{24}$	$ku^{4}y\mu^{2}$
$ku^{4}y\varrho i^{41}$	$ku^{2}y\varrho^{21}$	$ku^{4}y\varrho^{41}$	$ku^{4}yi^{41}$	$ku^{4}yi^{414}$	$ku^{4}y\mu^{41}$

(12) 'carry' (defective verb)—Type A, laryngealized nucleus, Set 11:

$ba^{3}ni\text{ʔ}h^{31}$	$ba^{3}n\varrho\text{ʔ}h^{31}$	$\check{c}a^{3}n\varrho\text{ʔ}h^{31}$	$\check{c}a^{3}ni\text{ʔ}h^{31}$	$\check{c}a^{3}ni\text{ʔ}h^{314}$	$\check{c}a^{3}nu\text{ʔ}h^{31}$
$ba^{2}ni\text{ʔ}h^{21}$	$ba^{2}n\varrho\text{ʔ}h^{21}$	$\check{c}a^{2}n\varrho\text{ʔ}h^{21}$	$\check{c}a^{2}ni\text{ʔ}h^{21}$	$\check{c}a^{2}ni\text{ʔ}h^{214}$	$\check{c}a^{2}nu\text{ʔ}h^{21}$
$kua^{4}ni\text{ʔ}h^{41}$	$kua^{3}n\varrho\text{ʔ}h^{31}$	$\check{c}a^{4}n\varrho\text{ʔ}h^{41}$	$\check{c}a^{4}ni\text{ʔ}h^{41}$	$\check{c}a^{4}ni\text{ʔ}h^{414}$	$\check{c}a^{4}nu\text{ʔ}h^{41}$
——	$kua^{2}n\varrho\text{ʔ}h^{21}$	——	——	——	——

(13) 'remember'—Type B 3-1, Set 11:

$ba^{3}se^{2}$	$ba^{3}s\text{æ}^{1}$	$\check{c}a^{2}s\varrho^{2}$	$\check{c}a^{2}se^{2}$	$\check{c}a^{2}si^{24}$	$\check{c}a^{2}s\mu^{2}$
$ba^{2}si^{21}$	$ba^{2}s\varrho^{21}$	$\check{c}a^{2}s\varrho^{21}$	$\check{c}a^{2}si^{21}$	$\check{c}a^{2}si^{214}$	$\check{c}a^{2}s\mu^{21}$
$kua^{4}se^{2}$	$kua^{3}s\text{æ}^{1}$	$\check{c}a^{4}s\varrho^{42}$	$\check{c}a^{4}se^{2}$	$\check{c}a^{4}si^{24}$	$ca^{4}s\mu^{2}$
$kua^{4}si^{41}$	$kua^{2}s\varrho^{21}$	$\check{c}a^{4}s\varrho^{41}$	$\check{c}a^{4}si^{41}$	$\check{c}a^{4}si^{414}$	$\check{c}a^{4}s\mu^{41}$

(14) 'throw away'—Type A, Set 12:

$ka^{3}nti^{1}$	$ka^{3}nt\text{æ}^{1}$	$\check{c}a^{3}nt\varrho^{31}$	$\check{c}a^{3}nti^{1}$	$\check{c}a^{3}nti^{14}$	$\check{c}a^{3}nt\mu^{1}$
$ka^{2}nti^{21}$	$ka^{2}nt\varrho^{21}$	$\check{c}a^{2}nt\varrho^{21}$	$\check{c}a^{2}nti^{21}$	$\check{c}a^{2}nti^{214}$	$\check{c}a^{2}nt\mu^{21}$
$ska^{4}nti^{1}$	$ska^{3}nt\text{æ}^{1}$	$\check{c}a^{4}nt\varrho^{41}$	$\check{c}a^{4}nti^{1}$	$\check{c}a^{4}nti^{14}$	$\check{c}a^{4}nt\mu^{1}$

ska⁴ntį⁴¹	*ska²ntę²¹*	*ča⁴ntę⁴¹*	*ča⁴ntį⁴¹*	*ča⁴ntį̄⁴¹⁴*	*ča⁴ntų⁴¹*

(15) 'harvest'—Type A, Set 13:

hba³nka¹	*hba³nka¹*	*ną³nką³¹*	*ną³nke¹*	*ną³nkį̄¹⁴*	*ną³nkų¹*
hba²nkąį²¹	*hba²nką²¹*	*ną²nką²¹*	*ną²nkį²¹*	*ną²nkį̄²¹⁴*	*ną²nkų²¹*
khua⁴nka¹	*khua³nka¹*	*ną⁴nką⁴¹*	*ną⁴nke¹*	*ną⁴nkį̄¹⁴*	*ną⁴nkų¹*
khua⁴nkąį⁴¹	*khua²nką²¹*	*ną⁴nką⁴¹*	*ną⁴nkį⁴¹*	*ną⁴nkį̄⁴¹⁴*	*ną⁴nkų⁴¹*

(16) 'take out'—Type B 3-1, Set 14:

ba³šæ²	*ba³šæ¹*	*ną²šę²*	*ną²še²*	*ną²šį̄²⁴*	*ną²šų²*
ba²šį²¹	*ba²šę²¹*	*ną²šę²¹*	*ną²šį²¹*	*ną²šį̄²¹⁴*	*ną²šų²¹*
kua⁴šæ³	*kua³šæ¹*	*ną⁴šę⁴²*	*ną⁴še³*	*ną⁴šį̄³⁴*	*ną⁴šų³*
kua⁴šį⁴¹	*kua²šę²¹*	*ną⁴šę⁴¹*	*ną⁴šį⁴¹*	*ną⁴šį̄⁴¹⁴*	*ną⁴šų⁴¹*

(17) 'teach'—Type D 3-1, Set 15, 3-syllable:

bi³*ku³ya²*	*bi³ku³ya¹*	*bi³ku³yą²*	*bi³ko³ye²*	*bi³ku³yį̄²⁴*	*bi³ku³yų²*
bi³ku²yąį²¹	*bi³ku²yą²¹*	*bi³ku²yą²¹*	*bi³ku²yį²¹*	*bi³ku²yį̄²¹⁴*	*bi³ku²yų²¹*
kui⁴ku³ya²	*kui⁴ku³ya¹*	*kui⁴ku³yą²*	*kui⁴ko³ye²*	*kui⁴ku³yį̄²⁴*	*kui⁴ku³yų²*
kui⁴ku²yąį²¹	*kui⁴ku²yą²¹*	*kui⁴ku²yą²¹*	*kui⁴ku²yį²¹*	*kui⁴ku²yį̄²¹⁴*	*kui⁴ku²yų²¹*

(18) 'dust'—Type B 1-1, Set 16:

bu³hnų³	*bu¹hnų¹*	*ntu²hnų²*	*ntu²hnį²*	*ntu²hnį̄²⁴*	*ntu²hnų²*
bu²hnį²¹	*bu²hnų²¹*	*ntu²hnų²¹*	*ntu²hnį²¹*	*ntu²hnį̄²¹⁴*	*ntu²hnų²¹*
sku⁴hnų³	*sku¹hnų¹*	*ntu⁴hnų⁴²*	*ntu⁴hnį³*	*ntu⁴hnį̄³⁴*	*ntu⁴hnų³*
sku⁴hnį⁴¹	*sku²hnų²¹*	*ntu⁴hnų⁴¹*	*ntu⁴hnį⁴¹*	*ntu⁴hnį̄⁴¹⁴*	*ntu⁴hnų⁴¹*

(19) 'eat'—Type B (1s like type C; 3def incomp has irregular tones), Set 17:

hi³nę³	*hi¹⁴nę³*	*či²nę²*	*či²nį²*	*či²nį̄²⁴*	*či²nų²*
hi²nį²¹	*hi²nę⁴¹*	*či²nę²¹*	*či²nį²¹*	*či²nį̄²¹⁴*	*či²nų²¹*
si⁴nę⁴	*si¹⁴nę³*	*ši⁴nę⁴²*	*ši⁴nį³*	*ši⁴nį̄³⁴*	*ši⁴nų³*
si⁴nį⁴¹	*si²nę⁴¹*	*ši⁴nę⁴¹*	*ši⁴nį⁴¹*	*ši⁴nį̄⁴¹⁴*	*ši⁴nų⁴¹*

(20) 'pull out'—Type A, Set 18:

hba³nę¹	*hba³nę¹*	*čha³nę³¹*	*čha³nį¹*	*čha³nį̄¹⁴*	*čha³nų¹*
hba²nį²¹	*hba²nę²¹*	*čha²nę²¹*	*čha²nį²¹*	*čha²nį̄²¹⁴*	*čha²nų²¹*
khua⁴nę¹	*khua³nę¹*	*čha⁴nę⁴¹*	*čha⁴nį¹*	*čha⁴nį̄¹⁴*	*čha⁴nų¹*
khua⁴nį⁴¹	*khua²nę²¹*	*čha⁴nę⁴¹*	*čha⁴nį⁴¹*	*čha⁴nį̄⁴¹⁴*	*čha⁴nų⁴¹*

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