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V → [+stress] / — C₀ [—MSR]
 V → [+stress] / V C₀ —
 [—stress]

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NOTES

- 1 For *çocuklar* 'children (vocative)', cf. note 4 below.
- 2 The symbol *ç* stands for the voiceless palatal affricate (similar to the *ch* in Eng. *chat*), *c* for the voiced palatal affricate (similar to Eng. *j* in *jar*), and *i* for a high, back or central, unrounded vowel (the back counterpart of *i*). Main stress is marked with an acute accent. Occasionally I shall use a hyphen to indicate morpheme boundary.
- 3 Turkish has front-back vowel harmony, so that *-ma-* is used in words with back vowels, *-me-* in words with front vowels.
- 4 There are several other related phenomena which I have not discussed here. For example, there are foreign loans which do not have end-stress (*kabine* 'cabinet', *pénere* 'window', etc). Ilse Granoff has suggested to me that all such words end in a vowel; if this is true, some explanation for this peculiar relation is required. Another phenomenon is retraction of stress in vocatives if a non-final vowel is followed by two or more consonants; thus there are nom.-voc. pairs like the following: *Ahmet-Áhmet*, *kahveci-káhveci* 'coffee-shop keeper', *benzinçi-benzinci* 'gas-station keeper', *çocuklar-çocuklar* 'children', and so on. If there are no consonant clusters, the stress remains final in the voc.: *Hasán, çocuk* 'child', *çocuküm* 'my child'. Place-names and adverbs have initial-stress: *Ankara, Páris, ártık* 'at last', *kışın* 'in the winter' (cf. *kışın* the gen. case of *kış* 'winter'), and so on. Initial stress is also found in words with the diminutive suffix *-cik*; thus *bebék* 'baby' but *bébe(k)cik* 'dear, little baby', *yumuşak* 'soft' but *yúmuşacik* 'beautifully soft'. There seems to be a rule for compounds something like the rule in English; thus *kız* 'girl', *kardéş* 'sibling', but *kızkardéş* 'sister'. As in French, there is in Turkish a delicate interplay between stress and pitch. For discussion of some of these topics and for references to earlier works on suprasegmentals, see Foster 1969.

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THE PHONOLOGY OF THE MIXTEPEC DIALECT OF MIXTEC

EUNICE V. PIKE AND THOMAS IBACH

1. PHONOLOGICAL WORD

In Mixtepec Mixtec¹ the minimal phonological word is made up of the sequence of two syllables — a couplet. This couplet is the complex nucleus of the word; the first syllable is marked phonologically by a lengthened vowel unless that vowel is preceding /ʔ/: *k[o.ɫo¹ko¹* 'our (excl.) male turkey', *š[i.ɫ²š³ɛ²-ɛ²* 'his or her (child) aunt', *s[o.ɫ³ko³-yu³* 'my (polite) collarbone', *z[i.ɫ³ɛ²-ɛ²* 'sandal', *t³š³k^w[a.ɫ³a²* 'butterfly'; but, *la²a²la²-ɛ²* 'his or her (child) mucus'. *ʃa¹a¹-ni¹* 'your (sing. polite) gravy'.

A hyphen has been placed after the couplet unless the couplet is final in the word. For example: *ka¹-su³-ni¹* 'you (sing. polite) are toasting (it)' versus *t³š³ka³-su³* 'a toasted tortilla'; *ka³a²-ɛ²* 'his or her (child) metal' versus *ve¹-ka³a²* 'a jail'; *ɛ³so²-ɛ²* 'his or her (child) brother-in-law' versus *ɛ³ku³ɛ²* 'a bat'; *ta¹ku²ni²* 'yesterday' versus *ta¹ka²-ni¹* 'your (sing. polite) woodpecker'.

Following are a few examples of nouns made up of the fusion of two couplets: *ve²e²* 'house' + *č²ɫ²* 'work' > *ve²č²ɫ²* 'townhall'; *da²a²* 'hand' + *ka³a²* 'metal' > *da¹ka³a²* 'key'; *so³o²* 'ear' + *ve²e²* 'house' > *so³ve²e²* 'side of house'; *do³o²* 'adobe' + *ya²ta¹* 'old' > *do³ya²ta¹* 'old adobe'; *š³ɫ³-ɫ²* 'money' + *tu²tu³* 'paper' > *š³ɫ³-ɫ²tu²* 'paper money'.

Timing is one of the contrastive features of the phonological word in that a word with several syllables is usually pronounced faster than words with only two syllables. Syllables which occur post-couplet are pronounced especially fast.

Examples of words with four or more syllables: *t³ku³ni²-yu³* 'my (polite) onion', *k^wš³ka²-ko²yi³* 'their (masc. fam.) comb', *di²ta¹-ɫ²-ni¹* 'you (sing. polite) are stingy', *ɛa³ni³ku³š³-ni¹* 'you (sing. polite) already slept', *ka¹-ni³du³ɛ²-ko²yi³* 'they (masc. fam.) will bury (it)', *ku¹š³-ka²-ko²-yu¹* 'you (pl. fam.) will sell', *ɛa³ni³ka²da¹ya³ɛ²-ra³* 'they (masc. fam.)

polite) already came again', $daa^1\check{s}i^3-1ko^2-tu^2ku^2ko^2yu^1$ 'you (pl. fam.) are going to sell again'.

Loudness, *stress*, usually occurs on the first syllable of the couplet. When, however, tone 1 or tone 2 precedes tone 3, the syllable preceding the tone 3 may be louder than the first syllable: $vi^1lu^1-yu^3$ 'my (polite) cat', $ei^3so^2-yu^3$ 'my (polite) brother-in-law'. The loudness is especially noticeable on the tone clusters 1-3 and 2-3: vi^1lu^1-3 'my (fam.) cat', ei^3so^2-3 'my (fam.) brother-in-law'. The contrast between $\check{s}a^3-2a^3$ 'beard' and ka^2a^2-3 'my (fam.) bell' can be perceived both as a difference in placement of stress, and as the lower allotone of tone 2 in $\check{s}a^3-2a^3$ versus the raised allotone of tone 2 in ka^2a^2-3 . See § 4 for a discussion of allotones.

2. SYLLABLE

The first syllable of the couplet consists of one vowel preceded by one or two consonants. It may or may not be followed by a glottal stop. This syllable has either a single tone, or a cluster of two tones. Examples of the various types of syllables initial in the couplet: CV+CV ϕo^1ko^2 'possum', $?i^2ta^3$ 'flower', ti^3-2na^3 'dog', kt^2-3ni^3 'pig', $ti^3-1?i^2$ 'rat'; CV γ +CV $sa^2a^2-3va^3$ 'frog', $le^2?lu^2$ 'lamb'; CCV+CV skw^1ko^1 'is turning (it)', $sku^2-1\check{c}i^2$ 'bathed', $s\check{c}i^1?i^3$ 'is grinding'; CCV γ +CV $s\check{c}i^1?i^2$ 'is causing to enter'.

The second syllable of the couplet consists of one or two vowels which may or may not be preceded by one (not two) consonants. This syllable has either a single tone, or a cluster of two tones. Examples of the various types follow: CV+V lu^2u^2 'small', ϕa^3-1a^2 'new', $ni^2-2?i^1$ 'ear of corn', $ni^2-3?i^1-3$ 'my (fam.) ear of corn'; CV+CV $\check{s}i^1-3ni^3-1$ 'hat'; CV+ γ V $\check{n}i^2-2?u^3$ 'fire'; CV γ +CV ka^2nu^2 'big'; CV+CVV $\check{s}i^1-3ni^3-1$ 'her (fam.) hat', $\check{s}i^1-3ni^3-1-3$ 'his (fam.) hat', yu^3-1ta^1 'her (fam.) sand', vi^1lu^1 'her (fam.) cat', vi^1lu^1-3 'his (fam.) cat'; CCV+V sta^2u^1 'your (sing. fam.) tortilla'.

We consider the sequence of two vowels which occur after the couplet-medial consonant to be one syllable and not two since they are short, and since the tone sequences 2 1 and 1 2 can occur in successive syllables, but do not occur on the vowels in that environment. The only vowel sequences which occur in the second syllable are /ia/ and /ui/.

For the most part, only the syllable type CV occurs pre or post-couplet. For example: $ni^3ki^3si^3$ 'slept', $vi^1lu^1-ku^1$ 'your (sing. fam.) cat'. But see $sta^3\phi a^3-1a^3-1$ 'liver'.

3. TONE CONTRAST

There are three levels of tone: 1 (high), 2 (mid), 3 (low). These contrast as in: $\phi q^1-?u^1$ 'you (sing. fam.) are smoking', $\phi q^1-?u^2$ 'is smoking', $\phi q^1-?u^3$ 'I (fam.) am smoking'; $k-wi^3ka^3-ni^1$ 'your (sing. polite) comb', $k-wi^3ka^3-\phi i^2$ 'his or her (child) comb', $k-wi^3ka^3-va^3$ 'his (polite) comb'. Contrasts can also be demonstrated following the frames: $?i^2?i^2$ 'one', $?i^3?i^3$ 'nine'; and when preceding ka^2nu^2 'big'. For example: yu^1-ku^1 'yoke', tu^2-ku^1 'paper', $k-wi^3ka^3$ 'comb'; sa^1ta^2 'dove', $ma^2\check{c}u^2$ 'mule', ϕi^3so^2 'brother-in-law'.

In two-syllable words with a medial consonant, eight different sequences of single tones occur: $lo^1\check{c}i^1$ 'buzzard', ϕo^1ko^2 'possum', su^1ku^3 'high'; ya^2ta^1 'old', $ya^2\check{c}i^2$ 'near', $\check{s}i^2?o^3$ 'uncle'; $\check{s}i^3k-wi^2$ 'milk', so^3ko^3 'collarbone'. The tone sequence 3 1 may occur when the second syllable consists of a vowel: ko^3o^1 'snake'. When, however, there is a medial consonant, the sequence 3 1 alternates to 3-2 1 and 3-1 1 as in: $\check{y}i^3/3-2/3-1ku^1$ 'you (sing. fam.) are returning'. When the tone sequence 3 1 occurs between words, however, that alternation does not occur: $tu^2tu^3 \check{y}a^1a^1$ 'blue paper', $k-wi^3ka^3 ka^2nu^2$ 'big comb'.

We have distinguished between a TONE SEQUENCE in which the tones occur on successive syllables and a TONE CLUSTER in which the tones occur on a single syllable. There are four tone clusters: 3-1, 3-2, 1-3, and 2-3. The clusters 2-1 and 1-2 do not occur. The cluster 3-2 does not occur on a word-final syllable. Following are examples showing single tone and tone clusters in contrast.

Tone sequences beginning with tone 1: ko^1lo^1-3 'my (fam.) male turkey', $ka^1\check{s}u^3-1$ 'you (sing. fam.) sneeze', ϕa^1ku^3-1 'you (sing. fam.) are placing (it)', ϕa^1ku^3 'is placing (it)', ko^1lo^1 'male turkey', su^1ku^3 'high'. The cluster 2-3 does not follow tone 1.

Tone sequences beginning with the tone cluster 1-3: $tu^1-3\phi i^1-3$ 'I (fam.) have pain', $tu^1-3\phi i^3-1$ 'has pain', ϕa^1-3ku^3-1 'you (sing. fam.) are laughing', ϕa^1-3ku^3 'is laughing', ϕi^1-3ni^2 'is intoxicated', ϕi^1-3ni^2-3 'I (fam.) am intoxicated', ske^1-3tu^1 'you (sing. fam.) ran quickly'.

Tone sequences beginning with tone 2: $ya^2?i^1-3$ 'he (fam.) is old', $\check{s}i^2\check{s}u^3-1$ 'your (sing. fam.) aunt', $ta^2\check{s}i^1$ 'quiet', $ya^2\check{c}i^2$ 'near', $\check{s}i^2\check{s}i^3$ 'aunt'. The cluster 2-3 does not follow tone 2.

Tone sequences beginning with the tone cluster 2-3: sa^2-3ni^1-3 'his (fam.) clothing', sa^2-3na^3-1 'clothing', $yu^2-3\check{c}i^3$ 'knife'. The tones 1 and 2 and the cluster 2-3 do not follow tone cluster 2-3.

Tone sequences beginning with tone 3: na^3ma^1-3 'my (fam.) soap',

$\varrho a^3 t u^3$ 'box', $t i^3 \varrho i^2$ 'my (fam.) stomach', $y u^3 \check{c} a^2$ 'river', $s u^3 t u^3$ 'priest'.

Tone sequences beginning with the tone cluster 3-2 or with the tone cluster 3-1: $k o^3$ 'your (sing. fam.) adze', $\check{f} i^3$ 'someone' (someone) ground (it), $d a^3$ 'broom', $d u^3$ 'looked for', $d u^3$ 'my (fam.) sand'. The cluster 2-3 does not follow the cluster 3-2 or 3-1.

In couplets without a medial consonant, nine different sequences of single tones occur: $\check{f} a^1$ 'blue', $s t o^1$ 'is erasing', $k^w \varrho$ 'yellow', $\check{f} e^2 e^1$ 'thick', $l u^2$ 'small', $s a^2 a^3$ 'bird', $s t a^2 a^1$ 'tortilla', $\check{c} a^3 a^2$ 'man', $d a^3 a^3$ 'straight'.

The tone clusters 1-3, 3-1, 3-2, 2-3 may also occur in couplets with no medial consonants: $\check{c} \check{f} i^1$ 'fingernail', $\check{c} \check{f} i^1$ 'my (fam.) fingernail', ϱa^3 'you (sing. fam.) are young', ϱa^3 'new', ϱa^3 'I (fam.) am young', $\check{v} i^2$ 'pretty', $\check{v} i^2$ 'I (fam.) am pretty', $\check{f} i^1$ 'my (fam.) hail', $p a^1$ 'her (fam.) bread', $\check{f} e^2 e^1$ 'I (fam.) am thick', $\check{f} i^1$ 'your (sing. fam.) badger', $s o^3$ 'my (fam.) blanket', $k a^3$ 'your (sing. fam.) bell', $\check{s} a^3$ 'beard'.

Even when the vowels are contiguous, there is contrastive placement of three tones on the two syllables. That is, there is contrastive placement of a tone cluster plus a single tone versus a single tone plus a tone cluster versus a tone cluster plus a tone cluster. For example: $s t a^2 a^1$ 'my (fam.) tortilla', versus ϱa^3 'I (fam.) am young'; $\check{y} u^2$ 'her (fam.) bird', versus $\check{n} u^2$ 'her (fam.) town'; $s t a^2 u^1$ 'your (sing. fam.) tortilla', versus ϱa^3 'you (sing. fam.) are young', versus $d a^3 u^3$ 'you (sing. fam.) are correct' (also: $\check{s} a^3$ 'your (sing. fam.) beard', $\check{s} a^3$ 'beard', versus $k a^3 a^2$ 'my (fam.) bell'; $k a^3 a^2$ 'bell', $d a^3 a^3$ 'straight', $s a^2 a^3$ 'bird').

Several of the sets of words differing by tone are as follows: $\check{v} a^3 a^2$ 'good', $\check{v} a^3$ 'bad'; $\check{v} a^3$ 'you (sing. fam.) are good', $\check{v} a^3$ 'you (sing. fam.) are bad'; $\check{f} i^1$ 'hail', $\check{f} i^2$ 'one', $\check{f} i^3$ 'nine', $\check{f} i^1$ 'skin', $\check{f} i^2$ 'salt', $\check{f} i^3$ 'there are', $\check{f} i^1$ 'my (fam.) hail', $\check{f} i^2$ 'my (fam.) skin', $\check{f} i^3$ 'my (fam.) salt'; $d u^2$ 'is looking for', $d u^1$ 'will soon look for', $d u^2$ 'I (fam.) am looking for', $d u^1$ 'I (fam.) will soon look for', $d u^2$ 'looked for', $d u^1$ 'I (fam.) looked for'; $t u^2$ 'paper', $t u^1$ 'your (sing. fam.) paper', $t u^2$ 'firewood', $t u^1$ 'my (fam.) firewood', $t u^2$ 'is whistling'; $t u^1$ 'I (fam.) am whistling'; ϱa^3 'corral', ϱa^2 'my (fam.) corral', ϱa^1 'your (sing. fam.) corral', ϱa^2 'is laughing', ϱa^1 'your (sing. fam.) are laughing', ϱa^1 'is placing (it)', ϱa^1 'your (sing. fam.) are placing (it)'.

4. TONE VARIANTS

Tone variants may be conditioned by the vowel with which the tone occurs. The vowel /i/ usually has a higher pitch than the other vowels in the same environments: $\check{v} a^3 \varrho i^2$ 'a priest is coming' versus $k u^3 n a^2$ 'a priest is opening (it)'; $d u^2$ 'they (fem. fam.) are looking for' versus $d u^2$ 'you (pl. fam.) are looking for'; $s \check{f} i^3$ 'my (fam.) leg' versus $s \check{f} i^2$ 'his (fam.) leg'; $t \check{q} i^1$ 'my (fam.) relative' versus $t \check{q} i^2$ 'his (fam.) relative'.

Lower allotones frequently occur with nasal vowels: $\check{c} \check{f} i^3$ 'hen', versus $y u^2$ 'stone'; $k^w \check{f} i^1$ 'narrow' versus $k^w \check{f} i^1$ 'green'.

Even within repetitions of the same word, there is considerable variation in the pitch of tone 1.

Tone 1 has a raised allotone when contiguously preceding tone 2, and it is raised even higher when preceding tone 3: $k o^1$ 'big male turkey', $t i^1$ 'a possum is whining' (the third syllables are the highest); $k o^1$ 'his (polite) male turkey', $k o^1$ 'her (child) male turkey' (the second syllables are the highest).

When two clusters of 1-3 occur in the same word, the first has the higher allotone: $k a^1$ 'I (fam.) am sneezing', $\check{f} i^1$ 'my (fam.) hat'.

Tone 1 is lowered when it occurs as part of the tone cluster 3-1. The tone cluster 3-1 varies between a short upglide and a level allotone: $k u^2$ 'four eagles'. (See the paragraph on the description of the allotones of the 3-1 cluster for further details of the variants.) Tone 2 has a raised allotone when contiguously preceding tone 3: $t e^2$ 'his (polite) lamb' (the second syllable is the highest).

When part of the tone cluster 3-2, the tone 2 is lowered: $t i^3$ 'dog', $d u^3$ 'honey', $\check{s} a^3$ 'beard'. (See the paragraph on the description of the allotones of the 3-2 cluster for further details of the variants.)

A tone 3 is lower when part of a prepausal tone sequence 3 2 than when it is part of a nonprepausal 3 2 sequence: $\check{v} a^3$ 'a brother-in-law is coming', $k i^2$ 'his brother is entering' (the third syllables are lowest).

A phrase-final tone 3 may downglide. It may vary from a short to a longer downglide when, as part of the same word, it follows the tone cluster 3-1. There is still a contrast, however, between a long downgliding allotone of tone 3, and a downgliding 1-3, or 2-3 cluster: $y u^3$ 'his (fam.) sand' versus $k a^3$ 'his (fam.) cotton' versus $t i^3$ 'his (fam.) stomach'. (See the paragraph on the allotones of the cluster 3-1.)

Tone 3 usually has a longer downglide when following a cluster 3-1 than when following tone 1 or the cluster 3-2: *ko¹lo¹-ra³* 'his (polite) male turkey' versus *ka²čič³-l¹-ra³* 'his (polite) cotton' versus *ka¹š-2-ñu³* 'meat'.

The tone cluster 3-1 varies from an upglide, sometimes short, sometimes long, to a level tone which is lower than a normal tone 2.

When followed within the word by a tone 3, the cluster 3-1 alternates between an upglide and a level tone. When the cluster 3-1 is a level pitch, the following tone 3 is a downglide which starts higher than the phonetic level of the cluster 3-1. When the cluster 3-1 is actualized as an upglide, the downglide of the tone 3 does not start as high as the end of the cluster 3-1: *ka²čič³-l¹-ra³* 'his (polite) cotton', *ea³tu³-l¹-yu³* 'my (polite) box'; *yo³-l¹so³* 'my (fam.) metate', *ka¹gu³su³* 'I (fam.) will sell', *ku¹-g^wi³-2-so³* 'I (fam.) will carry', *ka¹gu³su³* 'I (fam.) will sleep'.

When followed by a tone 3 in the following word, the cluster 3-1 is actualized by an upglide: *ta³(a³-l²-yu³va³)* 'bitter medicine'; *ea²yo³-l¹-ra³* 'his (polite) chewing gum' versus *ea²yo³-l¹-yu³šič³* 'sweet chewing gum'.

When followed within the word by a tone 2, the cluster 3-1 glides to a level higher than the following tone 2: *yo³-l¹so²* 'metate'; *ka²čič³-l¹-e¹š²* 'his or her (child) cotton' versus *ki³šič²-e¹š²* 'his or her (child) jar' versus *sa³e¹š³-e¹š²* 'his or her (child) nephew'.

When followed by a tone 1, there is no contrast between a cluster 3-1 and a cluster 3-2: *ea²tu³-2/š³-l¹-ñad¹* 'her (polite) box' versus *čič³to²-ñad¹* 'her (polite) bed'; *ka²čič³-2/š³-l¹-ñi¹* 'your (sing. polite) cotton' versus *ki³šič²-ñi¹* 'your (sing. polite) jar' versus *sa²e¹š³-ñi¹* 'your (sing. polite) nephew'; *su³-2/š³-l¹ko¹-l¹ko¹-l¹ko¹* 'it is not a male turkey', *su³-l¹e²yo²tu²-k^wi¹-3* 'it is not a lamb'.

Tone cluster 3-2 varies from a short upglide to a level pitch which is just higher than tone 3: *šič³-2* 'string bean', *ti³-2ñad³* 'dog'.

Because the allotones of tone 3 and clusters 3-2 and 3-1 are so varied, and because (until a person is aware of the environments in which the allotones occur) contrast is hard to hear, we have given additional contrastive sets: *šič³-2ka²* '(someone) walked', *yo³-l¹so²* 'metate'; *da³-2ku³* 'broom', *ea³-l¹ku³* 'my (fam.) corral', *ea³tu³* 'hot, spicy', *ea²tu³* 'trousers', *šič³-nu³* 'my (fam.) cigar'; *dī³-2yu³-l¹* 'you (sing. fam.) blew', *stu³-l¹yu³-l¹* 'you (sing. fam.) knocked down', *du³eu³-l¹* 'you (sing. fam.) have pain', *du²yu³-l¹* 'your (sing. fam.) vegetable', *šič³-l¹yu³-l¹* 'your (sing. fam.) name'; *ñi³ka³-2čič³* '(someone) said', *ea³šič³-l¹i³* '(someone) already ground'.

5. CONSONANT CONTRASTS

In this dialect of Mixtec there are six voiceless unaspirated stops or affricates /p (rare), t, č, k, k^w/, a glottal stop /ʔ/, six voiced prenasalized stops or affricates /b (rare), d, ʒ, j, g, g^w (rare)/, two voiceless sibilants /s, š (retroflexed)/, two semi-consonants /v, y/, three nasals /m, n, ñ/, a lateral /l/, and a flap /r/.

Bilabials /p, b, v, m/: *pa¹a³* 'bread', *ba¹a³* 'compadre', *va³a²* 'good', *ma¹a²* 'raccoon'.

Dentals /t, č, d, ʒ, s, n, l, r/: *ta³ta³-l¹* 'medicine', *da³a²* 'straight', *ea³-l¹a²* 'new', *ʒa²l¹nu²* 'old person', *sa²a²* 'bird', *na²-3a¹* 'to carry-in-arms', *la²a²la²* 'mucus'. The flap /r/ occurs only in a few morphemes other than Spanish loan words, but it contrasts with /l/ and with /t/ in: *lu¹-ru¹* 'burro' versus *lu²lu²* 'small' versus *li¹lu¹* 'kid'.

Alveopalatals /č, j, š, y, ñ/: *ča³a²* 'man', *ja¹a¹* 'blue', *ša³-2a³* 'beard', *ya¹-3a¹* 'tongue', *ña²a²a¹* 'woman'. There is contrast between /č/ and /š/ in *ti³-l¹čič²* 'avocado' versus *ti³šič²* 'stomach'; and between /j/ and /š/ in *ji¹-čič³* 'difficult' versus *zi³ea³-l¹* 'sandals'.

Velars and glottal stop /k, k^w, g, g^w, ʔ/: *ka²ka³* 'lime', *k^wa²a²* '(his) sister', *ga³-2a³* 'town of Putla', *g^wi²i²* 'fox', *k^wi¹-3i¹* 'green', *ʔi³ʔi³* 'five'. The glottal stop contrasts with the absence of glottal stop and with /t/: *ʔi³ʔi³* 'five', *ti³ʔi³* 'charcoal', *ti³ʔi³* 'word'. A labialized velar stop contrasts with /ku/: *k^wi¹-3i¹* 'green' versus *ku²i¹* 'she is able to'.

6. CONSONANT VARIANTS

The consonant /k/ varies from a voiceless velar stop to a voiced lenis fricative [k̠], and the consonant /y/ varies from a voiced alveopalatal resonant to a lenis fricative [ʃ] when they occur following the couplet: *vi¹lu¹-[k̠]/g̠lu¹* 'your (sing. fam.) cat', *vi¹lu¹-k^o[y]/ʒi¹i³* 'their (masc. fam.) cat'.

The consonant /v/ varies from labiodental to bilabial. The labiodental allophone is more frequent when contiguous to /j/ and /e/; whereas the bilabial allophone is more frequent when contiguous to /a/: *šič³-l¹* 'name', *da³va²* 'to fly', *vi³šič²* 'cold', *va³a²* 'good', *va³lu¹* 'joint'.

A couplet-medial consonant may be lengthened in emphatic speech: *ske¹[t₁]²* 'run!', *ji¹[s₁]²* 'carry (it)!'.

7. VOWEL CONTRASTS

There are five oral vowels /i, e, a, o, u/ and five nasal vowels /ĩ, ẽ, ą, օ, ֆ (one morpheme only), ֆ/. Sets of words showing the contrasts follow.

With medial glottal stop: $\nu i^2 \nu^3$ 'his (fam.) house', $\nu e^2 e^2$ 'house', $\nu a^3 \nu a^2$ 'good', $\nu o^2 \nu o^1$ 'rope', $\nu u^2 \nu u^1$ 'mouth'; $s i^2 i^3$ 'forked limb', (/e/ does not occur following /ʔ/), $t a^1 \nu a^2$ 'a relative', $k o^3 \nu o^3$ 'we (excl.) are going', $k u^3 \nu u^3$ 'is going', $s a^1 \nu a^1 \nu a^2$ 'is working', $s a^1 \nu a^1 \nu o^1$ 'we (excl.) are working'.

With no medial consonant: $\nu i^2 i^3$ 'badger', $\nu e^2 e^2$ 'heavy', $\nu a^3 \nu a^2$ 'man', $\nu o^3 \nu o^1$ 'moon', $\nu u^2 \nu u^1$ 'stone'; $\nu i^2 i^2$ 'one', $t e^3 e^2$ 'perspiration', $\nu a^2 \nu a^3$ 'forehead', $t o^3 \nu o^1$ 'our (excl. fam.) charcoal', $t u^3 \nu u^1$ 'charcoal'.

With medial /k/: $\nu i^2 \nu i^3 \nu i^3$ 'squash' (/e/ does not follow a medial /k/), $t a^1 k a^2$ 'woodpecker', $\nu o^1 k o^2$ 'possum', $s u^1 k u^3$ 'high'. Except for /ʔ/, nasal vowels do not follow a medial consonant.

8. VOWEL VARIANTS

A vowel, a sequence of vowels, and vowels separated by /ʔ/ become allophonically nasalized when following a nasal consonant: $\tilde{\nu} i^2 \nu i^1$ [ɱi²ɱi¹] 'land'. This allophonic nasalization, however, is not as heavy as the nasalization of a nasal vowel: $\nu a^2 \nu a^1$ 'dark' versus $k^w \nu a^2 \nu a^3$ 'yellow', $\nu i^2 \nu i^1$ 'ear of corn' versus $\nu i^1 \nu i^1$ 'skin', $\nu i^1 \nu i^1 \nu i^1$ 'his (fam.) hat' versus $\nu i^1 \nu i^1 \nu i^1$ 'his (fam.) fingernails'. Vowels have very little allophonic nasalization when preceding a nasal consonant: $k u^3 \nu u^3$ 'four', $k i^2 \nu i^3$ 'pig'. The vowel /u/ is more heavily nasalized than other vowels: $\nu u^3 \nu u^1$ 'face' versus $\nu i^3 \nu i^1$ 'blood', $\nu a^2 \nu a^1$ 'dark', $\nu a^2 \nu u^3$ 'fifteen'.

All vowels (except those preceding /ʔ/) have lengthened allophones when occurring in the first syllable of the couplet: $k i^3 \nu i^2$ 'jar', $s u^2 \nu u^3$ 'priest', $s o^3 \nu o^3$ 'collarbone', $s a^1 \nu a^2$ 'dove', $s k e^1 \nu a^2$ 'is running quickly'. Because of the /ʔ/, the vowel of the first syllable is not lengthened as in the following examples: $\nu a^2 \nu a^2$ 'good', $t e^2 \nu u^2$ 'lamb'.

Vowels have slightly lengthened allophones when occurring in a syllable with a tone cluster: $s a^2 \nu a^2 \nu a^2$ 'frog' versus $s a^2 \nu a^2 \nu a^3$ 'clothing', $\nu a^2 \nu a^3$ 'hole' versus $\nu u^2 \nu u^3$ 'petate', $s o^3 \nu o^3$ 'collarbone' versus $k o^3 \nu o^3$ 'adze'.

The vowel /e/ varies from a mid front close allophone [e] to a mid front open allophone [ɛ]. The close allophone occurs more frequently in couplets without a medial consonant ($\nu e^2 e^2$ 'heavy'), whereas the open allophone occurs more frequently when contiguous to a glottal stop ($\nu e^2 \nu e^2$ 'house').

The vowel /u/ has a voiced bilabial syllabic nasal as an allophone which is most frequent when contiguous to /ʔ/: $\nu u^3 \nu u^3$ 'five'.

9. DISTRIBUTION OF PHONEMES

All couplet-initial consonant clusters begin with /s/ (alternating with /š/ when preceding /n/). Specifically: /st, sš, sč, sk, sk^w, sn (alternating with šn)/.

Most of the clusters are bimorphemic and occur with a causative verb. For example: $s t a^1 t a^1$ 'to cure (someone)', $s i^1 \nu i^2$ 'to filter', $s c i^1 \nu i^3$ 'to grind', $s k a^1 \nu a^3$ 'to interpret', $s k^w a^1 \nu a^2$ 'to break (it) into pieces', $s n a^1 \nu a^3$ / $s n a^1 \nu a^3$ 'to teach'.

There are a few monomorphemic nouns beginning with /st/: $s t a^2 \nu a^1$ 'tortilla', $s t u^3 \nu a^3$ 'cobweb', $s c e^3 \nu a^3$ 'morning'.

All couplet-medial consonant clusters begin with /ʔ/, and the second consonant is always voiced. The clusters are /ʔm, ʔn, ʔñ, ʔd, ʔl, ʔy, ʔv/: $\tilde{\nu} u^2 \nu u a^3$ 'smoke', $k a^2 \nu u^2$ 'big', $s a^2 \nu u^1$ 'your (sing. fam.) boundary', $s a^2 \nu u^3$ 'heel', $t a^2 \nu a^2$ 'mucus', $d o^2 \nu o^2$ 'spring of water', $\nu a^2 \nu u^3$ 'chewing gum'. The clusters /ʔb, ʔz, ʔg, ʔr/ do not occur.

Prenasalized stops do not occur medial in a couplet, and voiced oral consonants are rare in that environment: $d i^3 \nu i^3$ 'egg', $t i^3 d u^2$ 'your³⁻¹ a type of squash', $\nu i^1 \nu u^1$ 'cat', $t u^1 \nu u^1$ 'burro'.

When in a couplet-initial environment, some prenasalized stops are monomorphemic ($d u^2 \nu i^3$ 'bean', $\nu a^2 \nu u^2$ 'old person', $g a^3 \nu a^3$ 'town of Putla', $\nu a^1 \nu a^1$ 'blue') and some are bimorphemic ($\nu a^3 \nu a^2$ 'smoked', $d u^2 \nu u^3$ 'whistled').

A labialized stop /k^w/ may occur either initial in a couplet, or medial in a couplet: $k^w i^1 \nu u^1$ 'swelling', $s i^3 k^w i^2$ 'milk'. A labialized stop does not, however, occur twice in the same couplet. See § 10.3, Rule 5.

In monomorphemic couplets, a rounded vowel /o, ɔ, u, ʉ/ does not follow a labial consonant /k^w, b, g^w, v, m/. A rounded vowel may follow /m/ or /v/, however, in a bimorphemic couplet: $s a^2 \nu a^3 \nu u^3$ 'your (sing. fam.) clothing', $s i^1 \nu u^1$ 'your (sing. fam.) name', $s i^1 \nu o^1$ 'our (excl. fam.) name'.

Nasal vowels occur only in couplets with contiguous vowels or in a couplet whose vowels are separated by /ʔ/: $k^w \nu a^2 \nu a^3$ 'yellow', $\nu a^2 \nu u^3$ 'fifteen'. In compounds, however, they may precede consonants other than /ʔ/: $s i^3 \nu i^3 \nu u^2 \nu u^3$ 'paper money'.

The vowel /e/ occurs only in couplets with contiguous vowels. In a monomorphemic couplet, /e/ occurs only next to another /e/: $t e^2 e^2$ 'is perspiring'. In bimorphemic couplets /e/ may occur next to /ʉ/: $t e^2 \nu u^1$ 'you (sing. fam.) are perspiring'.

Except for the two stems $t e^2 \nu u^2$ 'lamb' and $s k e^1 \nu a^2$ 'is running quickly',

in our data /e/ occurs only in a stem with contiguous vowels or with a medial /ʔ/: *je²e¹* 'thick', *te³ʔe³* 'vine'.

In monomorphemic couplets, nasal vowels do not follow voiced consonants. In bimorphemic couplets, however, they may follow voiced consonants: *dʔ³-2ʔ²* 'grasped' (*tʔ²* 'is grasping'), *zq³-2ʔ²* 'smoked' (*e^ql¹-ʔ²* 'is smoking').

Most monomorphemic couplets with a medial glottal stop have a sequence of like vowels: *ya²ʔa¹* 'chile', *do³ʔo²* 'adobe', *tʔ³-1ʔ²* 'rat'. In a few monomorphemic couplets, however, one vowel is low central, and the other high front or back: *stu³ʔa³* 'cobweb', *ja³ʔi³* 'mud', *ʃi¹ʔe²* 'chickenhawk', *e^qʔ²u³* 'fifteen'. In bimorphemic couplets, sequences of diverse vowels separated by /ʔ/ are frequent: *sʔ³ʔu³-1* 'your (sing. fam.) leg', *ve²ʔu¹* 'your (sing. fam.) house', *da²ʔu¹* 'your (sing. fam.) hand', *yo²ʔu¹* 'your (sing. fam.) rope', *da²ʔi¹* 'her (fam.) hand', *yo²ʔi¹* 'her (fam.) rope', *sʔ³ʔu³-1* 'her (fam.) leg', *sʔ³ʔo³-1* 'our (excl.) forked limb', *ʃi¹ʔo³-1* 'we (excl.) are grinding'.

Most monomorphemic couplets with contiguous vowels have a sequence of like vowels; but there are a few with diverse vowels: *eʔ³o¹* 'griddle', *k-wi³a³* 'year', *stu¹q²* 'is knocking down', *sa³-2i³* 'pblæg^m'.

Examples of bimorphemic couplets with contiguous diverse vowels: *sa²i³-1* 'her (fam.) bird', *do³i¹* 'her (fam.) sugarcane', *nu³i¹* 'her (fam.) face' (there is no /ei/); *ni³q¹* 'her (fam.) blood' (there is no /ea/, /oa/, /ua/); *vi²-3o³-1* 'we (excl.) are pretty', *ʔi³ʔo³-1* 'our (excl.) salt' (there is no /eo/, /ao/, /uo/); *eʔ¹-3u¹* 'your (sing. fam.) fingernail', *te³u¹* 'you (sing. fam.) are perspiring', *ska¹u³-1* 'you (sing. fam.) are going up'; *do³u¹* 'your (sing. fam.) sugarcane'. The vowel /e/ does not occur second in bimorphemic diverse clusters.

10. STEM PLUS PRONOMINAL SUFFIX

Some person markers have both fused and nonfused forms. Other person markers have only nonfused forms.

10.1 The first person singular familiar person marker, {3}, has the same fused first person singular familiar person marker, {3}, has the same segmental phonemes as a stem without a person marker. The difference between the two forms is a difference in tone.

(1) When the stem-final syllable has tone 2 (and if the preceding syllable has tone 1 or 2, or the cluster 3-1), then the final syllable of the fused stem plus first person singular familiar has tone 3: *le²ʔu²* 'lamb',

le²ʔu³ 'my lamb'; *to²ʔo²* 'rooster', *to²ʔo³* 'my rooster'; *va³-1ʔa²* 'bad', *va³-1ʔa³* 'I am bad', *lu²u²* 'small', *lu²u³* 'I am small'.

(2) When the stem-final syllable has tone 2 (and if the preceding syllable has tone 3 or the cluster 1-3), the final syllable of the fused stem and the first person singular familiar has the cluster 2-3: *se³ʔe²* 'son', *se²ʔe³-3* 'my son'; *eʔ¹-3u²* 'is intoxicated', *eʔ¹-3u²-3* 'I am intoxicated'.

(3) When the stem-final syllable has tone 1 or the cluster 3-1, the final syllable of the fused stem and first person singular familiar has the cluster 1-3: *nu³u¹* 'face', *nu³u¹-3* 'my face'; *yo²ʔo¹* 'rope', *yo²ʔo¹-3* 'my rope'; *ta³ʔa³-1* 'medicine', *ta³ʔa¹-3* 'my medicine'.

(4) When the stem-final syllable has tone 3, it is homophonous with the stem plus the first person singular familiar person marker: *ʃi²ʔi³* 'aunt' or 'my aunt', *tʔ¹u³* 'is blowing' or 'I am blowing'.

10.2 The second person singular familiar person marker, {-ku¹}, is added to a stem as follows: (1) If the second syllable of the stem has /u¹/ or /u³-1/, or if the medial consonant is /k^w/, then the nonfused *-ku¹* must be used: *yu²ʔu¹* 'mouth', *yu²ʔu¹-ku¹* 'your mouth', *vi¹u¹* 'cat', *vi¹u¹-ku¹* 'your cat', *e^aʔu³-1* 'box', *e^aʔu³-1-ku¹* 'your box', *ʃi²k-wa³-1* 'eyelid', *ʃi²k-wa³-1-ku¹* 'your eyelid'.

(2) When the stem has a medial /ʔ/ and diverse vowels, the second of which is /i/ or /i/, then the first syllable of the fused stem and the second person singular familiar becomes /yu/ or /ñu/: *da¹ʔi³* 'is crying', *da¹ʔ-yu³-1* 'you are crying'; *ʃq¹ʔi²* 'boundary', *ʃq¹ʔñu¹* 'your boundary'.

(3) For all other stems, the second vowel is replaced by /u/ or /u/ (if the stem has nasal vowels, the fused person marker is also nasal): *ka²ni²* 'is hitting', *ka²nu¹* 'you are hitting'; *ñe²ʔe²* 'is scratching', *ñe²ʔu¹* 'you are scratching'; *sa¹ʔa²* 'dove', *sa¹ʔu¹* 'your dove'; *ka³a²* 'bell', *ka³u¹* 'your bell'; *ko¹ʔo¹* 'male turkey', *ko¹ʔu¹* 'your male turkey'; *le²ʔu²* 'lamb', *le²ʔu¹* 'your lamb'; *eⁱʔo²* 'griddle', *eⁱʔu¹* 'your griddle'; *ta¹ʔe²* 'a relative', *ta¹ʔu¹* 'your relative'; *do³ʔo¹* 'sugarcane', *do³u¹* 'your sugarcane'.

(4) If the stem has the tone sequence 3 2, or if the second syllable has tone 3 or cluster 3-1, then the fused stem and second person singular familiar has *-u³-1* or *-u³-1*: *sa²e²i³* 'nephew', *sa²e²u³-1* 'your nephew'; *va³ʔa²* 'good', *va³ʔu³-1* 'you are good'; *do²ʔo²* 'spring of water', *do²ʔ-yu³-1* 'your spring of water'; *ni²i³* 'ear of corn', *ni²u³-1* 'your ear of corn'; *ka³e²i³-1* 'cotton', *ka³e²u³-1* 'your cotton'.

(5) If the second syllable of the stem is tone 2 (if not part of the sequence 3 2) or tone 1, then the fused stem and second person singular

familiar has $-u^1$ or $-u^1$: $to^{21}lo^2$ 'rooster', $to^{21}tu^1$ 'your rooster'; $ve^{22}e^2$ 'house', $ve^{22}tu^1$ 'your house'; ea^3-l-a^2 'new', ea^3-l-u^1 'you are young'; $du^1-ča^1$ 'goat', $du^1-čü^1$ 'your goat'.

10.3 The third person singular feminine familiar person marker, $\{-i^1\}$, is added to the stem as follows: (1) When, in the stem, $/i/$ contiguously follows a nonglottal consonant, then $/a/$ is added to form the third person singular feminine familiar: ko^1-ni^1 'female turkey', ko^1-nia^1 'her female turkey'; $tu^1-3-čü^1$ 'to have pain', $tu^1-3-čüa^3-1$ 'she has pain'.

(2) When the stem has a medial $/ʔ/$ and diverse vowels, the second of which is $/i/$ or $/j/$, then the final syllable of the fused stem and the third person singular feminine familiar becomes $/ya/$ or $/ña/$: $da^1-ʔi^3$ 'is crying', $da^1-ʔya^3-1$ 'she is crying'; $sčü^1-ʔi^3$ 'boundary', $sčü^1-ʔña^1$ 'her boundary'.

(3) When both syllables of the stem have $/i/$ or $/j/$, either with or without a medial $/ʔ/$, then the second vowel is replaced with $/a/$ or $/aj/$: $sčü^1-ʔi^3$ 'is grinding', $sčü^1-ʔa^3-1$ 'she is grinding'; $ʔi^2-i^3$ 'badger', $ʔi^2-a^3-1$ 'her badger'; $ʃi^1-ʔi^1$ 'leg', $ʃi^2-ʔa^3-1$ 'her leg'.

(4) When both syllables of the stem have $/e/$ or $/e/$ either with, or without, a medial $/ʔ/$, then both vowels are replaced with $/i/$ or $/j/$: $je^1-ʔe^2$ 'is looking', $ji^1-ʔi^1$ 'she is looking'; te^3-e^2 'is perspiring', te^3-i^1 'she is perspiring'.

(5) When the stem-final syllable has $/ku/$ or $/ko/$, then (except when the first syllable has $/u/$ or $/k^w/$) the final syllable of the fused stem and third person singular feminine familiar has $/k^w/$: ea^1-3-ku^3 'is laughing', $ea^1-3-k^wü^3-1$ 'she is laughing'; $šü^1-ko^2$ 'is selling', $šü^1-k^wü^1$ 'she is selling'; ji^2-ko^2 'is grinding', $ji^2-k^wü^1$ 'she is grinding'. When the first syllable of the stem has $/u/$, then the $/o/$ or $/u/$ or the second syllable is replaced with $/i/$: du^2-ku^1 'is looking for', du^2-ki^1 'she is looking for'; su^1-ku^3 'high', su^1-ki^3-1 'she is tall'. When the first syllable of the stem has $/k^w/$, then the $/o/$ or $/u/$ of the stem-final syllable is replaced by $/i/$: $sk^wü^1-ko^1$ 'is turning (it)', $sk^wü^1-ki^1$ 'she is turning (it)'.

(6) When the stem has a medial consonant other than $/k/$ or $/ʔ/$, and the second vowel (but not the first) is $/u/$, then $/i/$ is added: $ša^1-nu^3$ 'cigar', $ša^1-nu^3-1$ 'her cigar' (but, $su^2-ʔnu^3-1$ 'shirt', $su^2-ʔni^3-1$ 'her shirt'); ea^2-tu^3-1 'box', ea^2-tui^3-1 'her box' (but, sku^1-tu^1 'is decorating', sku^1-ti^1 'she is decorating'); le^2-tu^2 'lamb', le^2-tui^1 'her lamb'.

(7) For all other stems, the second vowel is replaced by $/i/$, (or by $/j/$ if the stem has nasal vowels): ko^1-lo^1 'male turkey', ko^1-li^1 'her male turkey'; $ta^1-ʔa^2$ 'a relative', $ta^1-ʔi^1$ 'her relative'; $yo^2-ʔo^1$ 'rope', $yo^2-ʔi^1$ 'her rope'; $yu^2-ʔu^1$ 'mouth', $yu^2-ʔi^1$ 'her mouth'; ka^2-a^2 'bell', ka^2-i^1

'her bell'; ni^3-u^1 'face', ni^3-i^1 'her face'; $tu^3-čü^2$ 'charcoal', tu^3-i^1 'her charcoal'; $nü^3-nü^3-1$ 'bee', $nü^3-nü^3-1$ 'her bee'; sa^1-ta^2 'dove', sa^1-ti^1 'her dove'.

(8) If the stem has the tone sequence 3 2 or 1-3 2, or if the second syllable has tone 3 or the cluster 3-1, then the final syllable of the fused stem and third person singular feminine familiar person marker has the tone cluster 3-1: $ti^3-čü^2$ 'stomach', $ti^3-čüa^3-1$ 'her stomach'; $šü^1-3-ʔi^2$ 'name', $šü^1-3-ʔia^3-1$ 'her name'; $sa^2-čü^3$ 'nephew', $sa^2-čüa^3-1$ 'her nephew'; na^3-ma^3-1 'soap', na^3-mi^3-1 'her soap'; $ka^1-ʔa^3$ 'is speaking', $ka^1-ʔi^3-1$ 'she is speaking'.

(9) If the second syllable of the stem was tone 2 (if not part of the sequence 3 2 or 1-3 2), or tone 1, then the fused stem and third person singular feminine familiar person marker has tone 1: $to^{21}lo^2$ 'rooster', $to^{21}li^1$ 'her rooster'; $ve^{22}e^2$ 'house', $vi^2-ʔi^1$ 'her house'; sta^3-a^1 'tortilla'; sta^2-i^1 'her tortilla'; $ti^1-šü^1$ 'is whining', $ti^1-šüa^1$ 'she is whining'.

10.4 When the third person singular masculine familiar person marker, $\{i^3\}$, fuses to the stem, the vowel changes are the same as those of the third person singular feminine familiar person marker, whereas the tone changes are the same as those for the first person singular familiar person marker: ko^1-ni^1 'female turkey', ko^1-nia^1-3 'his female turkey'; $ti^1-šü^1$ 'is whining', $ti^1-šüa^1-3$ 'he is whining'; $šü^2-ʔi^3-1$ 'leg', $šü^2-ʔa^1-3$ 'his leg'; ea^2-tu^3-1 'box', ea^2-tui^1-3 'his box'; $yo^2-ʔo^1$ 'rope', $yo^2-ʔi^1-3$ 'his rope'; sta^2-a^1 'tortilla', sta^2-i^1-3 'his tortilla'; $šü^2-šü^3$ 'aunt', $šü^2-šüa^3$ 'his aunt'; $le^2-ʔa^2$ 'lamb', $le^2-ʔa^1-ʔi^3$ 'his lamb'; $ta^1-ʔa^2$ 'a relative', $ta^1-ʔi^3$ 'his relative'; $va^3-1-ʔa^2$ 'bad', $va^3-1-ʔi^3$ 'he is bad'; $šü^1-ko^2$ 'is selling', $šü^1-k^wü^3$ 'he is selling'; $se^3-ʔe^2$ 'son', $si^3-ʔi^2-3$ 'his son'.

10.5 The first person plural exclusive person marker $\{-ko^1\}$ may or may not fuse to the stem when it ends in one of the vowels $/i/$, i , u , $ü/$, but whether it does or does not fuse in that environment seems to be arbitrary: $ku^2-čü^1$ 'to carve', $ku^2-čüo^1$ 'we (excl.) are carving'; but $du^2-čü^2-ko^1$ 'we (excl.) are burying'; ki^2-ni^1 'is shooting', ki^2-no^1 'we (excl.) are shooting', but $ka^1-ni^3-ko^1$ 'we (excl.) are wanting'; $nü^1-čü^3$ 'town', $nü^1-čüo^3-1$ 'our (excl.) town', but $nü^1-čü^1-ko^1$ 'our (excl.) palm'; $nü^1-3-2-ʔa^3$ 'fire', $nü^1-3-2-ʔo^3-1$ 'our (excl.) fire', but $yu^2-ʔi^1-ko^1$ 'our (excl.) mouths'.

When the first person plural exclusive person marker fuses to a stem in which both vowels are $/u/$ or $/ü/$ with a medial $/ʔ/$, or with no medial consonant, both vowels change: $lu^2-ü^2$ 'small', lo^2-o^1 'we (excl.) are small'; $šü^3-1-ʔa^2$ 'money', $šü^3-1-ʔo^1$ 'our (excl.) money'. When, however, both vowels of the stem are $/i/$ or $/j/$ only the second vowel changes: ni^2-3-i^1

'ear of corn', $ni^2\text{-}^3o^1$ 'our (excl.) ear of corn'; $s_i^3\text{-}^2\text{-}^3$ 'forked limb', $s_i^3\text{-}^2\text{-}^3o^3\text{-}^1$ 'our (excl.) forked limb'.

When the first person plural exclusive person marker fuses to the stem, the tone changes are the same as those for the second person singular familiar; $ti^1\text{-}^3\text{-}^1$ 'is whining', $ti^1\text{-}^3o^1$ 'we (excl.) are whining'; $ki^3\text{-}^2\text{-}^3\text{-}^1$ 'is entering', $ki^3\text{-}^2\text{-}^3\text{-}^1o^1$ 'we (excl.) are entering'; $ka^1\text{-}^2\text{-}^3$ 'is saying', $ka^1\text{-}^2\text{-}^3o^3\text{-}^1$ 'we (excl.) are saying'.

10.6 Other person markers follow the stem, but are not fused to it and do not cause the stem to change. They are: $-yu^3$ 'I (polite)'; $-ni^1$ 'you (sing. polite)'; $-ni^1a^1$ 'she (polite)'; $-ra^3$ 'he (polite)'; $-ei^2$ 'his or her (child)'; $-ni^1a^3$ 'it'; $-ya^3$ 'sacred'; $-kwe^1$ 'we (incl.)'; $-ko^2\text{-}yu^1$ 'you (pl. fam.)'; $-ko^2\text{-}yi^1$ 'they (fem. fam.)'; $-ko^2\text{-}yi^3$ 'they (masc. fam.)'; $-ni^1a^3$ 'they (unspecified)'; $-tu^2$ 'wood'; $-ti^1$ 'animal'; $-ra^1$ 'water'.

In addition, there are pronouns that are not bound to the stem, for example: $kwe^3\text{-}me^2\text{-}ni^1$ 'you (pl. polite)', $yu^3\text{-}^2\text{-}^3$ 'I (polite)'.

11. TONE SANDHI

There is one instance of tone sandhi. In all environments but one, the first syllable of the following words has tone 1: $k^wq^1\text{-}q^3$ 'yellow', $k^wq^1\text{-}^2\text{-}q^3$ 'red', $k^w\text{-}^1\text{-}q^1\text{-}^3$ 'white', $k^w\text{-}^1\text{-}ti^3$ 'short', $ka^2\text{-}ni^1$ 'big'. When following a word which ends in tone 3, the first syllable of the above words may be tone 1, or it may alternate to the cluster 3-1: $^2\text{-}^1\text{-}ta^3$ $k^wq^1\text{-}^3\text{-}^1\text{-}q^3$ 'yellow flower', $tu^2\text{-}tu^3$ $k^wq^1\text{-}^3\text{-}^1\text{-}^2\text{-}q^3$ 'red paper', $yu^2\text{-}^3\text{-}^2\text{-}^3$ $k^w\text{-}^1\text{-}^3\text{-}^1\text{-}^2\text{-}^3$ 'white knife', $k^w\text{-}^1\text{-}^3\text{-}ka^3$ $k^w\text{-}^1\text{-}^3\text{-}^1\text{-}ti^3$ 'short comb', $sa^2\text{-}ei^3$ $ka^2\text{-}^1\text{-}ni^1$ 'big nephew'.

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NOTE

1. This dialect of Mixtec is spoken by approximately 14,500 speakers. They are located in the township of San Juan Mixtepec, about twenty miles west-northwest of Tlaxiaco, Oaxaca, Mexico. Various informants were used, but the principal one was Agustín López Reyes. He is twenty years old and a native speaker of the language.

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