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REDUPLICATION AND ACCENT IN SOUTHEASTERN TEPEHUAN

Elizabeth Willett

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0. Introduction. In the early stages of analysis, Southeastern Tepehuan (SET)¹ vowel length appeared to be conditioned by accent. Although accent fell in a majority of words on closed syllables, there were so many exceptions that no general statement could be made. Thus accent was relegated to being a feature of the underlying character of roots. Reduplicated forms, however, were a confusing body of unpredictable accent; if accent were phonemic, why did it occur on the root syllable of some forms, and on the reduplicated syllable in others? Some plurals were judged irregular because they seemed to lose or gain whole syllables; vowels appeared or disappeared in various places.

Native speakers insisted that there was a difference between *cos nest* and *coos he's sleeping*, although the linguists tried to explain the two words as being semantically related (one rests in his nest). Historical evidence in this case was the deciding clue to discovery. Related languages and their proto-language reconstructed by Bascom (1965) showed that accent in SET reduplicated stems coincided with length on historical forms, although accent in either the sense of tone or stress did not necessarily occur on the same syllable. What we had considered to be *bában coyotes* was seen to be *baabánai* in Northern Tepehuan, *báabaní* in Upper Piman, *báaban* in Lower Piman, and reconstructed as **baabánai* in

Proto-Tepiman. In this paper it is argued that length rather than accent is underlying, and that accent and vowel alternation in reduplicated forms can be predicted by phonological rules. In section 1 I will describe morpheme structure, in section 2 the rules for reduplication, in section 3 the accent rule, and in section 4 the phonological rules that coordinate with accent to produce phonetic forms.

1. Roots² in Southeastern Tepehuan may contain one to four syllables before they are acted upon by the phonological rules. Each syllable begins with a single consonant, which is followed by a single vowel or a vowel sequence.³ The corresponding surface forms of roots, however contain fewer syllables, some closed, due to final and post-accent vowel dropping. Underlying monosyllabic roots must contain a vowel sequence.

1.1 Final single vowels of words drop, except following h, closing the final syllable. This exception feeds the h-drop rule, which produces final diphthongs. (Note that orthographically, h is written j.)

$V \rightarrow \emptyset / C _ \#\#, \text{ where } C \text{ is not } j(=[h])$

Vowel dropping cannot precede palatalization; that is, palatalization occurs before final i is dropped. Examples involving palatalization are:

- | | | | | | | |
|--------|--------------------------|------------|----------|---------------|------------|----------------|
| (1) a. | jiñchuvuuhl ⁴ | my hip | d. | jajaavcahli'ñ | his lungs | |
| | b. | tuvuuhli'ñ | his hip | e. | jiñcaquëhl | my ankle bone |
| | c. | jajaavcahl | my lungs | f. | caquëhli'ñ | his ankle bone |

Additional words show evidence of having dropped a final i historically:

- | | | |
|--------|--------|--------|
| (2) a. | muuhl | turtle |
| b. | chio'ñ | man |
| c. | tapiix | flea |

Examples not involving palatalization are:

- | | | | | | | |
|--------|---------|-----------|----------------|---------|------------|--------------|
| (3) a. | caama'n | his cheek | e. | soiga'n | his pet | |
| | b. | jiñcaam | my cheek | f. | jiñsoi' | my pet |
| | c. | juutu'n | his fingernail | g. | maquia' | he will give |
| | d. | jiñhuut | my fingernail | h. | bai'xiñmac | give me! |

As specified in the rule, single vowels drop in final position; but vowel sequences are not dropped by this rule:

- | | | | | | | |
|--------|-----------|----------|--------|--------|--------------|-------------|
| (4) a. | jiñchinvo | my beard | d. | 'ahlii | child | |
| | b. | yaatui | potato | e. | topaa | pestle |
| | c. | 'uvii | woman | f. | jacuucxiopoo | their necks |

- g. *jiñ'uu'lia* *my knee* h. *casio* *fox*

The final vowel does not drop after an h:

- (5) a. *vooji* *bear*
 b. */jiñ-caji/* *thigh*
 c. */baji/* *tail*
 d. */jiñ-vuji/* *eye*
 e. */'iibaji/* *prickly-pear*

Features of the final vowels of some underlying forms are not predictable from surface data since some nouns do not take the possessive suffix, and the final vowels of some verbs are deleted or change quality before vowel-initial suffixes. Some can be said to be not *i*, because the final consonant is not palatalized, but are otherwise unpredicable. Final vowels are sometimes reconstructable by reference to the other Tepiman languages: Northern Tepehuan, Lower Piman, and Upper Piman (Papago), but again, may vary between them.

1.2. Vowel sequences are of two types. Geminate vowel clusters, that is, a sequence of two identical vowels, are heard as length. A diphthong is a sequence of two non-identical vowels. The distinction between single vowels and two-vowel sequences, whether long vowels or diphthongs, plays a key role in the accent system.

Examples of length and non-length as phonemic properties of vowels are:

- (6) a. *vuupuhl* *tied up* d. *coos* *he's sleeping*
 b. *jixvupuuhl* *it's narrow* e. *viīpī'* *before*
 c. *cos* *nest* f. *jixvipiī'* *it's red*

Examples of diphthongs are:

- (7) a. *saīch* *gull* f. *tai* *fire*
 b. *gaī* *it fell* g. *vivīatam* *spring*
 c. *voi* *trail* h. *dui* *plum*
 d. *casio* *fox* i. *nui'* *garbage*
 e. *giotīr* *plain* j. *tua* *oak*
 k. *suac* *he's crying*

2. Plural stems of nouns, adjectives, and verbs are formed by reduplication of the first syllable. In verbs, reduplication signals plural subject in intransitive stems, plural object in transitive stems, distributive aspect in the sense of plural location, or iterative aspect in the sense of repeated action. Reduplication is considered part of the stem because it takes part in accent and other phonological rules which operate on the stem, whereas prefixes do not.

Plural stems fall into two unpredictable groups according to whether the reduplicated syllable is long, CVV, or short, CV.

- (8) a. $\emptyset \rightarrow CV_iV_j / \# \text{ ______ } CV_iV_j$
[+long RED]
- b. $\emptyset \rightarrow CV_iV_i / \# \text{ ______ } CV_i(V_i)C$
[+long RED]
- c. $\emptyset \rightarrow CV_i / \# \text{ ______ } CV_i(V)$
[+short RED]

2.1. The first group includes all stems which pluralize with a long vowel in the first syllable regardless of whether the first vowel of the root is long or short:⁵

- (9) a. ban, baaban
coyote(s)
- b. co', cooco'
snake(s)
- c. vacoocos'am
they are already asleep
- d. vatiitim jachich
we already descended

Examples of long reduplication of roots whose first vowel is long, that is, a sequence, are shown and discussed in section 4.1 and 4.5 in connection with vowel-dropping in the syllable following accent and geminate cluster reduction.

2.2. The second group includes stems that pluralize by reduplicating only the first vowel, regardless of whether the first syllable of the root contains a single vowel, a geminate sequence, or a diphthong:

- (10) a. gagaat bows c. duduiñcar pipes
- b. gigioda' doves d. jix'u'uam they're yellow
- e. niniñdya' will see⁶

2.3. Adjectives of shape differ from other adjectives in that they pluralize by reduplicating the first CV(V) with a long vowel and glottal:

- (11) a. jixcomaarac, jixcoo'cmarac *it's, they are wide*
 b. jirtëëv, jirtëë'tëv' *it's, they are long*
 c. jirxicohlic, jirxii'xcohlic *it's, they are round*

2.4 In reduplicated stems, the first *v* between vowels changes to *p*. This is not limited to the reduplicated pair of syllables, but applies anywhere in the entire stem:

- (12) a. via'ñcai', vipia'ñcai' *lizard(s)*
 b. t̄irvin, t̄īitropin *rope(s)*
 c. vaavax, vapaavax *pheasant(s)*

This process of *v* changing to *p* is not universal in the language, however, but occurs only in plural stems, as is seen from the following words that are not reduplicated. In them *v* remains *v*, even though it occurs between vowels:

- (13) a. mavii'ñ *lion*
 b. j̄iv̄īihl *wind*
 c. d̄iv̄īir *earth*

This rule probably follows post-accent vowel drop:

- (14) túutvuhli'ñ *his hips*

2.5. Many stems do not reduplicate: the same word is used to mean one or many. This is true for foods and mass nouns:

- (15) a. bav *bean(s)*
 b. yooxi' *flower(s)*

Some words have the characteristics of plural form, that is, they show reduplication or *v* to *p* change; but there is no singular used:

- (16) a. 'u'uu *arrow(s)*
 b. jijii'n *its intestine(s)*

3. Accent in Southeastern Tepehuan is usually a combination of additional loudness and higher pitch. On isolated words or even short sentence frames, the two prosodies generally coincide. On longer texts, however, the pitch is influenced by intonation to the extent that some accent centers receive lower tone, especially at the end of phrases.⁸ The interaction of stress and pitch needs further study. In this paper the accent rules describe stress placement.

3.1 All words are accented on the first or second syllable of the stem, including reduplicated stems. Of these two syllables, the one of heaviest grade is accented. If they are equally heavy, the first one receives the accent.⁹

There are three degrees of heaviness. An open syllable with a short vowel is the lightest. A closed short syllable resulting¹⁰ from final vowel dropping or from the suffixing of a consonant is heavier. A syllable with a vowel sequence is the heaviest.

In the following examples, a hyphen is placed between the stem and its prefixes, but it has no phonetic or phonemic content.

3.2 Some roots with vowel sequences in the first syllable are:

- | | | | | | |
|---------|-------------|-------------------|----|-------------|-------------------|
| (17) a. | vá:ipi | before | d. | ná:icartam | dancing place |
| b. | jix-cháima' | it's fire-colored | e. | giotir | plain |
| c. | yáatui | potato | f. | jiñ-ñúuchix | my brother-in-law |

Words of this form also include stems pluralized with long reduplication:

- | | | | | | |
|---------|------------|-----------|----|---------|-------------|
| (18) a. | báaban | coyotes | d. | dá:idi' | holes |
| b. | jiñ-cáacam | my cheeks | e. | vúupuhl | tied up |
| c. | jiñ-ñóonov | my hands | f. | gáa'nga | looking for |

In these forms the accent does not occur on a syllable of the root; it is placed on the first syllable of the stem, which is a long reduplication of the first syllable of the root. Thus accent is not phonemic; it is predictable in that it always falls on the first syllable of the stem containing a VV.

3.3 Some roots with vowel sequences in the second syllable are:

- | | | | | | |
|---------|--------------|-----------------------|----|-----------|-----------|
| (19) a. | tapá:ix | flea | e. | ma:vi'i'ñ | lion |
| b. | tacá:arui' | chicken | f. | ma:tái | ashes |
| c. | jix-'icóora' | it's dirty | g. | ba:'áa' | eagle |
| d. | savú:irax | white cotton trousers | h. | vacú:ana' | will wash |

Roots pluralized with short reduplication of this type are:

- (20) a. *gagáat bows* d. *'u'úux trees*
 b. *gigfoda' doves* e. *jix-vápfi' they're red*
 c. *jajáarax crabs* f. *jiñ-cícimít they bit me*
 g. *susúa he cried*

In most of these stems the accent is placed on the first syllable of the root in both singular and plural forms, because it contains the first vowel sequence in both singular and plural.

3.4 It is hard to hear the difference between a long and a short vowel in a closed final syllable which is also the second syllable of the stem, without minimal pairs. Both types are accented finally; thus we have no clues as to vowel length either from the accent system or from internal vowel-dropping associated with three and four syllable stems. Length seems especially ambiguous before *c*, as in:

- (21) a. *sapóc story* d. *jujúc pines*
 b. *tíróc lizard* e. *'a'ác rivers*
 c. *vaséc rat* f. *piríc parrot*

Some third person possessed body parts, however, are certainly of the form #CVCVC#. The vowel of the closed syllable is known to be short, because it does not draw accent, but is dropped in final position when possessed by a first or second person:

- (22) a. *jiñ-cóm my back* c. *jiñ-júr, jurá-'n my, his heart*
 comí'ñ his back d. *jiñ-ñóv, noví-'ñ my, his hand*
 b. *jiñ-chíñ my mouth* f. *jiñ-cóv, cová-'n my, his forehead*
 chiñí-'ñ his mouth

These are examples of resyllabification of stems. Note that the syllable which receives accent in both prefixed and suffixed forms contains part of the stem.

There are no known words that are accented on CVC or CVV(C) suffixes, except in cases where the word has been resyllabified in such a way as to form a heavy second syllable out of the suffix combined with part of the stem:

- (23) a. *va-gixía' will return* b. *jugía' 'ich we will eat*
 va-gíi returned *xi-jú' eat!*

e. maquía' *will give* bai'xiñ-mác *give it to me!*

Examples of accent moving between the first and second syllables of a stem, but not the third, which might be heavier as the syllables change weight due to resyllabification are:

- (24) a. jiñ-cusúp, cúsupa'n *the back of my, his neck*
 b. /sarani-a'/ sárñia' *will tear*
 xi-sarãñ *tear it!*

4. There are six phonological rules that interact with accent to modify morpheme structure. Unstressed geminate clusters reduce. Vowels are dropped in the syllable following the accented syllable--a separate rule from final vowel-dropping. *o* changes to *a* in unstressed syllables. Three rules involving *h*-dropping reinforce the accent rule.¹¹

4.1 Geminate vowel sequences in an unaccented position reduce to the single vowel:

- (25) a. jiñcáam, jiñcáacam *my cheek(s)*
 b. vacóos, vacóocos'am *he, they went to sleep*
 c. vúuhl, vúupuhl *is tied up, are tied up*
 d. jiñchóon, jiñchóoton *my leg(s)*

This rule reinforces accent by shortening the second of equally long syllables, that is, by making the second equally heavy syllable less heavy. It is obviously fed by accent.

Diphthongs which are in an unaccented position, however, remain diphthongs.¹² They have not been tested instrumentally, but I suspect that they may be pronounced more rapidly in that position than in an accented syllable.

- (26) a. cóocroidya' *tadpole* c. vía'ñcai' *lizard*
 b. tóolgiom *mouse* d. yáatui *potato*
 e. jóodai *stones*

4.2. *h*-drop preceding *i* converts the sequence *jiV* to *yVV*.

- (27) *jiV* → *yVV*

Possibly every *y* in the language may arise from this rule since *y* is followed by a long vowel in all known cases, but never a diphthong. This

rule preserves accent on a syllable which would normally receive accent by generating length VV on the syllable containing an underlying diphthong. This rule does, however, precede the vowel sequence reduction rule; that is, the geminate sequences derived from this rule reduce to a single vowel in an unaccented syllable. Known stems beginning with this sequence do not reduplicate for plurals:

- (28) a. yooxi' *flower(s)*
 b. yaatui *potato(es)*
 c. yaasap *bury*

Stems whose second syllable undergo this rule are:

- (29) a. t^hiyax *baby girl*
 b. t^hiyáa *girl*

Geminate sequences derived from this rule, unlike other geminate sequences, do not drop in an open syllable after accent, which suggests that h-drop may follow vowel-drop:

- (30) t^ht^hiyá *girls*

4.3. Inter-vocalic h-drop reinforces the accent rule. h drops between two single vowels to form a vowel sequence.

- (31) j → ∅ / CV _____ V { CV }
 { ## }

The vowel sequences formed as a result of this rule are the same as underlying diphthongs, but for true underlying diphthongs there is no evidence, either in comparative forms or in plurals and other surface manifestations, to show that they might have been similarly derived at some point in their history. For some underlying diphthongs there is historical evidence to show a Uto-Aztecan h between the vowels, but Uto-Aztecan h went to zero in Proto-Tepiman: Uto-Aztecan *tahi *fire* > Proto-Tepiman *tai > Southeastern Tepehuan tai. Uto-Aztecan h does not occur in Southeastern Tepehuan underlying forms, thus does not influence reduplication. Comparative evidence for geminate sequences derived from h-drop found in Bascom (1965) is confirmed by surface evidence found in plural forms, because reduplication feeds the h-drop rule:

- (32) a. -jadúun *relative* (Proto-Tepiman *hadúni), -j^hjaduun *relatives*
 (Proto-Tepiman *háhaduni) > -j^háaduun
 b. jodái *stone* (Proto-Tepiman *hodai), j^hodai > j^hodai *stones*

Reduplication also shows that certain diphthongs are probably derived from h-drop. The presence of h in the underlying form blocks reduplication of a whole diphthong. On hearing the surface form bai *tail*, one might

predict the plural to be either báibai with long reduplication, or babái with short reduplication. The correct form, however, is báabai *tails*. An explanation for this could be an underlying form bají (Proto-Tepiman *báhi) and long reduplication báabají > báabai. Other plurals of this type are:

- (33) a. jiñcai, jiñcaacai *my thigh(s)* (Proto-Tepiman *-kahi)
 b. jiñvui, jiñvuupui *my eye(s)* (Proto-Tepiman *-vuhi)
 c. joi'ñ, joojoi'ñ *looking at* (no Proto-Tepiman available)

These are in contrast to underlying diphthongs which are copied in total in long reduplication. Positing this underlying h, which is substantiated from diachronic evidence, one needs only two classes of stems rather than three with respect to reduplication.

4.4. A consonant-doubling rule also has the effect of dropping h. It converts h and the following vowel or geminate sequence into a consonant, when the h is preceded by a vowel sequence rather than a single vowel. The consonant produced is identical to the next consonant in the stem:

- (34) a. jiicuhl, jiiccuhl *uncle(s)*
 b. jiñamít, jiiññamít *they shouted, they shouted* RED
 c. jirjígíarum, jirjì'ngíarum'am *it's, they're untamed [animals]*
 d. 'an ya' vañ-jípiñ, na pai'tám-jíppi'ñ *I am resting here, where people rest*

If this rule were preceded by the vowel sequence reduction rule the rule could be simplified and written as:

- (35) jVC → CC / CVV_____VC

The consonant-doubling rule does not interact with accent; but it does reinforce accent by closing an already long syllable. The consonant-doubling rule precedes vowel-dropping in the syllable following accent; that is, sequences jVC become CC; rather than becoming jC through vowel-dropping.

4.5 In general, vowels, including sequences, drop in open syllables in the syllable following accent. Diphthongs, however, do not seem to drop final in this environment:¹³

- (36) a. jóodai *stones* b. yáatui *potatoes*

Neither do vowels drop before or after h. Vowels which are in the same syllable as an h in the underlying form do not drop:

- (41) a. 'u'úuy *women*; 'uvíi *woman*
 b. 'a'áahl *children*; 'ahlíi *child*
 c. jiññúunchix *my brothers-in-law*; jiññúuchix *my brother-in-law*
 d. gáaga' *looking for (future)*; gáa'nga *looking for (red. present)*

These geminate sequences are susceptible to vowel sequence reduction, so could also be first reduced, then dropped as single vowels with identical results.

Stems with diphthongs in the first syllable that reduplicate with long reduplication show diphthongs which drop in the syllable following accent:

- (42) a. jixmáicac, jixmáimcac *it's, they're sweet-tasting*
 b. súimahl, suísmahl *deer*
 c. cúicásic, cúiccásic *was jumping*
 d. gíotár, gíó'ntár *plain(s)*

4.6. The vowel *o* dissimilates to *a* in an unaccented syllable when the vowel of the accented syllable that follows is also *o*. The accent rule must precede this one.

Reduplicated forms which show this vowel change are common:

- (43) a. sasói' *pets* e. cacóocroidya' *tadpoles*
 b. vapói *trails* f. tatóo'm *rabbits*
 c. jajóoni' *wives* g. jajóoxia' *dishes*
 d. vapóotpoda' *worms* h. vapóoxcar *brooms*
 i. jixmamóic *they're soft*

This vowel change, however, is not restricted to reduplicated forms. It is sometimes seen in the singular of forms whose plural retains the *o* because of lengthening in the reduplication and subsequent accent:

- (44) a. gagóx, góo'ngox *dog(s)*
 b. vatóop, vóoptop *fish*
 c. cacóon, cóoccon *raccoon(s)*

5. Conclusion and derivations. By taking the position that vowel length and open syllables are underlying in Southeastern Tepehuan, accent can be predicted for all forms. In addition, phonetic forms of all stems can be predicted by a set of phonological rules deriving from accent.

Following are a few derivations which show the emergence of actual surface forms of stems from the phonological rules. Posited underlying final vowels, whose features are unpredictable and never appear in surface forms, have been omitted.

	<i>plain pl.</i>	<i>dove pl.</i>	<i>soft pl.</i>	<i>sweet pl.</i>	<i>see pl.</i>
root	giot̄ir	gioda'	moic	maicac	jojida
RED	giogiot̄ir	gigioda'	jixmomoic	jixmaimaicac	joojojida
Pal.	----	----	----	----	joojojidya
Final vowel drop	----	----	----	----	joojojidy
Accent	gíogiot̄ir	gígíoda'	'jixmomóic	jixmáimaicac	jóojoidy
h-drop	----	----	----	----	jóojoidy
VV red.	----	----	----	----	----
Post-accent vowel drop	gíogt̄ir	----	----	jixmáimcac	----
o → a	----	----	jixmamóic	----	----
v → p	----	----	----	----	----
Stop → ñnas	gío'nt̄ir	----	----	----	jóojoi'ñ
SF	gío'nt̄ir	gígíoda'	jixmamóic	jixmáimcac	jóojoi'ñ

	<i>crow (pl)</i>	<i>raccoon (pl)</i>	<i>his head</i>	<i>scorpion (pl)</i>	<i>bat (pl)</i>
root	cocoon	vovoon	mo'od	nacasiri	nacamiri
RED	coococoon	voovovooc	----	naanacasiri	naanacamiri
Pal.	----	----	----	naanacasihli	naanacamihli
Final					
vowel drop	coococoon	voovovooc	----	naanacasihl	naanacamihl
Accent	cóococoon	vóovovooc	mo'ód	náanacasihl	náanacamihl
h-drop	----	----	----	----	----
VV red.	cóococon	vóovovoc	----	----	----
Post accent					
vowel drop	cóoccon	vóovvoc	----	náancasihl	náancamihl
o → a	----	----	ma'ód	----	----
v → p	----	vóoppoc ¹⁴	----	----	----
Stop → ?nas	----	----	ma'ó'ñ	----	----
SF	cóoccon	vóoppoc	ma'ó'ñ	náancasihl	náancamihl

FOOTNOTES

¹Southeastern Tepehuan is a Uto-Aztecan language of the Tepiman family (Bascom 1965) spoken by 5,000 to 8,000 inhabitants of the region southeast of the city of Durango, Mexico, principally in the Ejido of Santa María, Municipio of Mezquital, Durango. There is now thought to be a distinct, but yet unstudied Southwestern Tepehuan located in the region southwest of the city of Durango in the municipio Pueblo Nuevo. Field work was done in the cultural and governmental center of the language group, the village of Santa María Ocotán, Durango, under the auspices of the Summer Institute of Linguistics. Linguistic data were gathered over a period of four years from June 1975 to June 1979 by Thomas and Elizabeth Willett. This paper was originally drafted at a workshop directed by Joseph E. Grimes, and revised at the University of North Dakota Summer Institute of Linguistics with the help of G. H. Matthews.

²A root is a morpheme, either noun, pronoun, adjective, adverb or verb, whose meaning can be semantically augmented by affixes or segment deletion. A stem is the part of a word which carries the central meaning. It may be composed of a simple root, a reduplicated root, or, for some tenses of the verb, a shortened root. Accent always falls on the first or second syllable of a stem in native Tepehuan words.

³The vowels of Southeastern Tepehuan are /i ē ī a u o/. /i ī u/ are high; /ē, o/ are non-high and non-low; /a/ is low. /ī ē a u o/ are back; /i/ is non-back. /u o/ are labial (rounded); /i ī ē a/ are non-labial (unrounded). The consonants are /b d g p t k '=[?] v s j=[h] m n r/. The stops /b d g p t k '/ have closure, but the fricatives and resonants /v s j m n r/ do not have closure. /b d g v m n r/ are voiced; /p t k ' s j/ are non-voiced. /b p v/ are labial. /d t s r n/ are coronal. /g k j / are high. /m n/ are nasal. The voiced stops /b d g/ have preglottalized nasals at the same point of articulation as variants in syllable coda position ['m 'n 'ŋ] /g/ however, becomes ['] word final. The coronal (alveolar) consonants /d t s n r/ are palatalized contiguous to /i/ as [dž tš š ñ g±] and written orthographically dy, ch, x, ñ, hl. Palatalization is an early rule; its effects are often hidden by low-level rules. It precedes accent placement and the vowel-dropping rules. Because of Spanish orthographical considerations [k] is written as c before a o u and qu before i and ē; [g] is written gu before i and ē, gü is pronounced [gu].

Forms are cited in the practical orthography unless within slashes for underlying forms or in brackets for phonetic forms. We have departed from the orthography only in that ˘ means stress rather than length, and length is indicated by geminate vowel sequence. Diphthongs heard in stems are [ēi ói ió ái íá úí úá]. [˘] indicates relative prominence. In cited forms ˘ is placed on the first member of each vowel sequence indicating that the sequence is an accent center, and ignores which member has relative prominence.

⁴All body parts are obligatorily possessed, either by the prefixes *jiñ-* *my*, *jum-* *your sg.*, *jich-* *our*, *ja-* *their*, *jam-* *your pl.* or by the suffix *-n* *his, her, its*. All adjectives are preceded by a stative proclitic, either *jix-* or *jir-*. The prefixes do not affect accent placement on stems. The addition of the third person possessive suffix, however, causes effective resyllabification of a stem. Examples are given in section 3.4.

⁵Three plurals of stems that are words for humans appear to be irregular in that the second of the reduplicated pair of syllables is lengthened rather than the first. This could also be thought of as infixing and lengthening the reduplicated CV after the first syllable of the root: *'uvii* *woman*, *'u'uuv* *women*; *'ahlii* *child*, *'a'aahl* *children*; *tɨyaa* *girl*, *tɨtɨiyaa* *girls*. Northern Tepehuan pluralizes with infixes and reduplication (Woo 1970).

⁶I have not tried to describe the phonology of verb affixes in this paper, but I do not assume that their underlying syllable structure must necessarily be CV(V) as in roots.

⁷By a low-level language-wide vowel rearticulation rule, the sequence V'C is heard phonetically as V'VC, where the inserted V has identical features, but is voiced before a voiced consonant and voiceless before an unvoiced consonant:

*jixcoo'*Ocmarac, *jirtëë'*Ētëv

Capitals are used for the voiceless vowels. This rule precedes the rule which forms preglottalized nasal allophones of voiced stops. In other words, vowels never rearticulate between the glottal and the nasal of preglottalized nasals. Vowel-dropping provides input for this vowel rearticulation rule by producing the cluster 'C. Because of this, some vowels which could be considered to be dropped are later reinserted by this rule, as in the noun *'oo'*odam *Indian person* > *'oo'*dam by vowel dropping > *'oo'*odam by vowel rearticulation. The rule is needed, however, for the adjectives of shape as well as words like *gia'tav* *cactus* [*gia'Atav*].

⁸Rarely, a high pitch is heard on an unstressed syllable in text. This is as yet unexplained, but may be traceable to lexical tone with a very low functional load.

⁹Bascom (1965:19) describes tone in Northern Tepehuan as phonemic, that is lexical; stress as non-phonemic and fluctuating. Stress occurs on high or low-toned vowel sequences; if there are no vowel sequences, it occurs on the high-toned syllable. He describes stress as phonemic, however, in Southern Tepehuan. He gives several environments where Southern Tepehuan stress remains on the same syllable as in Proto-Tepiman; otherwise it moves to the first syllable. The stress on near-minimal pairs Bascom cites as showing phonemic stress can be predicted with the observation that they involve prefixes, e.g. *'ɛxchuc* *seed*, *jixchúc* *it's black*.

¹⁰See Kiparsky (1968:196-199) for an explanation of feeding and bleeding orders. Fought (1973:71) discusses quasi-order as an alternative: "In partial order, no two distinct elements are symmetrically ordered, and in random order all are. In quasi-order, which has the properties of transitivity and reflexivity, pairs of distinct elements may be in symmetric, or simultaneous order; hence, in principle, rules in quasi-order can be made to apply in sequence when that is advantageous, without being required to do so when it is not." I mention rule order when it seems necessary, but alternative ordering is possible in many cases.

¹¹h-drop does not precede nor follow the accent rule on the basis of synchronic evidence. The presence of h somehow prevents vowels in the same syllable from dropping in both the case of final vowel-dropping and in vowel-dropping in the syllable after stress. If historical evidence from Proto-Tepiman (Bascom 1965) is taken as being very close to the Southeastern Tepehuan underlying form, there are h's in positions in some stems such that h-drop would need to precede accent in order to place accent on the correct syllable.

Proto-Tepiman	Southeastern Tepehuan	
*ki'óhorai	qui'óor	<i>rainbow</i>
*nonóha	nanóo	<i>egg</i>
*i'óhog̃i	'i'óo'	<i>to cough</i>

If this ordering were found necessary, I would suggest a global constraint preventing vowels from dropping in any syllable that contained h in the underlying form.

¹²An exception to this general rule is a specific morphophonemic rule involving verb suffixes. Diphthongs Vi produced across a morpheme boundary between a verb stem and a suffix reduce to i.

$$V \rightarrow \emptyset / ____ -i$$

This involves the suffixes that begin with i:

- ix state of being
- im process
- im̃c imperfect or non-punctiliar past

as in:

- tu'u'ua'na-ix > tu'u'ua'ñix *is written*
- tubiñora-ix > tubiñolix *is loaded*
- gaaga-im > gaagim *he is looking for*
- tjuana-im̃c > tjuanim̃c *he was working*
- coos̃i-im > cooxim *sleepy, sleeping*
- joojoidya-im̃c > joojoidyim̃c *was looking at*
- ñira-im̃c > ñirim̃c *was waiting for*
- ñidya-im̃c > ñidyim̃c *was seeing*

In some cases the first vowel of a diphthong appears to change quality to i across morpheme boundaries: coos̃i-a' > cooxia' *will sleep*, 'i'bĩ-a' > 'i'bia' *will smell*.

¹³Having the rule exclude final diphthongs from dropping contrasts with some Proto-Tepiman comparative analysis. Bascom (1965) cites comparative evidence from a large body of words whose Proto-Tepimic final diphthong disappears in Southern Tepehuan. There is no surface evidence, however, to support these diphthongs as being in Southeastern Tepehuan underlying forms. For instance, his Proto-Tepiman *gaatoi *bow* > Southern Tepehuan *gaat*. In this case the only Southeastern Tepehuan surface form which reveals a final vowel is the third person possessed form /gaatu'n/ *his bow*, which would indicate an underlying form *gaatu* with final vowel *u* rather than Bascom's posited Proto-Tepiman *oi. I suggest that, since Northern Tepehuan is the only descendant language showing final diphthongs on these words, Proto-Tepiman may have contained only single final vowels. These single vowels were carried on by Southern Tepehuan and Upper and Lower Pima as single vowels, with quality changes; but Northern Tepehuan may have augmented these final vowels with an *i*-glide. Examples taken from Bascom's list of cognate sets and reconstructed Proto-Tepiman forms are:

Proto-Tepiman	Northern Tepehuan	Southern Tepehuan	Upper Pima	Lower Pima	
*banai	banai	ban	banɨ	ban	<i>coyote</i>
*gaatoi	gaatoi	gaat	gaatɨ	gaat	<i>bow, gun</i>
*hukui	ukui	huk	hukɨ	huk	<i>pine tree</i>

If diphthongs in an open syllable following accent were allowed to drop final, the two known words which retain final diphthongs in this environment would need to be explained as being originally two single vowels separated by *h*: /jojodaji/ *stones*, /jiatuji/ *potato(es)*. But, if accent precedes *h*-drop, as would be necessary since the accent rule precedes vowel-drop in the syllable after accent, and the presence of *h* prevents vowel-drop in the same syllable, this would place the accent incorrectly on *jodaji stone*. This rule, therefore, is written to exclude final diphthongs from dropping. If the further investigation of verbs, however, should reveal stems ending in diphthongs in some environments before suffixes with the same diphthongs deleted when they occur following accent, the phonology could consistently delete all post-accent vowel clusters, marking *joodai* and *yaatui* as exceptions to this rule.

¹⁴If *v* → *p* change occurs intervocalically after vowel drop, it must consider geminate clusters of *v* as being liable to this change. However, it does not happen in one case: *muuvahl*, *muuvvahl fly, flies*.

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