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Series: LIV
No: 287

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TEPEHUA PHONOLOGY

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May, 1951
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0. The present study is a description and analysis of the phonology of Tepehua as spoken in the community of Huehuetla, Hidalgo, Mexico. It is supplemented by a consideration of the influence of Spanish upon the formal structure of the sound system.

Tepehua is related to Totonac, one of the languages which have been classified with the Macro-Penutian stock (Trager, 1945).

The presentation is outlined as follows:

1. Theoretical Considerations
2. The Phonetic Segments
3. The Prosodic Frame of the Phonetic Segments
4. The Phonemes: Description
5. The Phonemes: Distribution
6. Historical Considerations
7. Conclusions.

1. The field work for this study was done during 10 weeks of the summer of 1960. The materials collected are approximately 600 words of isolated vocabulary, several songs and lengthy stories, and a large body of unsolicited texts.

Thanks are due to numerous friends in Huehuetla, especially to Miguel Aparicio, Don Bernabe Garcia, and Don Juan Salazar, the first of whom served as my informant, the others assisted in interpreting and amplifying the material.

Acknowledgment is gratefully expressed to the collection and preservation of materials available for the unavoidable inadequacies of distributional data. Where examples have been drawn from this material they are indicated by '(m)' appended to the gloss.
1.1. The analysis of Tepehua phonemics is complicated by the presence of Spanish loanwords exhibiting various degrees of phonemic assimilation. Fries and Pike (1949) have suggested that such loans may constitute a separate and coexistent system. Wonderly (1946) gives an example of this type of analysis in contrast to the unitary alternative which he prefers. In this last it has been possible to resolve the problem neatly by describing certain alternations as morphophonemic (i.e., voiced allophones of the pre-Columbian Zoque stop series appearing only after nasals, are classed with the voiced stop series in the unitary analysis, thus transforming the alternation “voiced stop for unvoiced stop after nasals” into a morphophonemic one.) Such a resolution of the analogous problems in Tepehua is not entirely possible if we wish to employ an economical description, as will be seen in the following sections. Whether the system as presented here should be considered as a single system, as two coexistent systems, or as a single system with a sub-system seems to be very nearly, if not wholly, arbitrary from the standpoint of descriptive criteria. From what we know (or think we know) about language it would seem preferable to speak of it as a phonemic system.

Each and every element of a phonemic pattern is
not uniformly related to every other element of the pattern, and in this sense we may significantly speak of the degree of integration of any element in the pattern. This might be expressed in terms of the number of contrasts into which an element enters, its frequency of appearance in relation to the frequencies of other elements of the same phonetic type, its freedom of appearance, etc. In these terms the changing of phonemic patterns can be considered as a process in which the integration of the various elements is modified, and elements with a markedly low degree of integration are considered as indicative of change (in an indeterminate direction). The degree of integration would be best expressed statistically, and this would make for more specific statements regarding states of change. Some such statements, though without statistical refinement, are suggested by the Tepehua data.

1.2. The procedures followed in the analysis have been descriptive. If historical inferences are warrant-ed from the results it is due to the results themselves and not to the methods used in arriving at them.
2. The Phonetic Segments—Description. The following is a list and description of the segments which have been isolated, together with an example of each. Further examples will be found in section 3. The terminology used in the description of sounds is primarily articulatorily, and was selected from the sound classifications of Pike (1943, 1947) and Bloch and Trager (1942), with the modifications indicated in the foot notes.

Nonsyllabics: Contoids

[p] voiceless bilabial stop released through the succeeding segment: [pumpó] 'ropa'

[p'] voiceless bilabial stop without audible release: [laqatá] 'cerro'

[pʰ] voiceless glottalized bilabial stop: [pʰin] 'chile'

[t] voiceless dental stop released through the succeeding segments: [tapú] 'queschuectul'

[t'] voiceless dental stop without audible release: [puxítat] 'iglesia'

[tʰ] voiceless glottalized dental stop: [tʰin] 'tierra'

[tʰ'] voiceless glottalized dental stop in which the glottis remains closed through the following segments: [tʰ'ictit] 'negro'

2. "Glottalized" here means the simultaneous closure of the glottis and the oral mechanism. The release of the oral closure precedes that of the glottis.
\[k\] voiceless velar^3 stop released through the succeeding segment: [\text{\textit{\textipa{\v{s}k\'\text{"a}}n}}] 'agua'

\[k\'] Voiceless velar^3 stop without audible release: [\text{\textipa{\text{"a}-\text{"o}n\,\text{"a}}k\']} 'hombre, individuo'

\[\text{\textipa{\text{"a}}}\] voiceless glottalized velar^3 stop: [\text{\textipa{\text{"a}'\text{"u}}}] 'árbol, leña'

\[\text{\textipa{\text{"a}}}\] voiceless back velar stop released through the succeeding segment: [\text{\textipa{t\text{"o}q\text{"e}\text{"a}\text{"e}\text{"i}}}] 'la tarde'

\[\text{\textipa{\text{"a}}}\] voiceless back velar stop without audible release: [\text{\textipa{\text{"a}-\text{"e}}}\text{\text{"a}}}] 'aguila'

\[\text{\textipa{\text{"a}}}\] voiceless glottalized back velar stop: [\text{\textipa{\text{"a}\text{"e}l\text{"i}}}] 'canasta'

\[
\text{\textipa{\text{"a}i\text{"u}}}\] segmental glottal stop: [\text{\textipa{\text{"a}i\text{"u}}}] 'calzones'

\[\text{\textipa{\text{"a}}}\] voiced bilabial stop (as the Spanish word-initial 'b'): [\text{\textipa{\text{"a}\text{"e}}}] 'baile'

\[\text{\textipa{\text{"a}}}\] voiced dental stop (as in English): [\text{\textipa{\text{"a}d\text{"i}\text{"e}}}] 'Dios'

\[\text{\textipa{\text{"a}}}\] voiced velar^3 stop (as in English): [\text{\textipa{\text{"a}i\text{"a}}}\text{\text{"o}n\text{"e}}}] 'nuestro(-s) amigo(-s)'

\[\text{\textipa{\text{"a}}}\] voiced bilabial fricative^4 (as the Spanish 'v'): [\text{\textipa{\text{"a}t\text{"e}i\text{"e}}}] 'habla', [\text{\textipa{\text{"a}}\text{"e}r\text{"i}}}] 'abril'

\[\text{\textipa{\text{"a}}}\] voiceless narrow grooved alveolar fricative: [\text{\textipa{\text{"a}}}] 'todo'

---

3. Or "back palatal".
4. This unique voiced fricative is discussed in the analysis of the voiced stops, Section 4.5, and in historical terms in Section 6.2.
voiceless glottalised narrow grooved alveolar fricative: [ʃʃʃ̊ʃ̊] 'negro'

voiceless wide grooved alveolo-palatal fricatives: [ʂkɑ̃] 'agua'

voiceless glottalised wide grooved alveolo-palatal fricatives: [ʃʃɑ̃] 'pie'

voiceless velar fricative in which the tongue approximates the position, and lends the quality, of the higher-back vocoid [u] : [taxɤ̃] 'esta cayendo'

voiceless velar fricative in which the tongue approximates the position, and lends the quality, of the higher front vocoid [i] : [kiʃnɑ̃] 'nosotros'

voiceless velar fricative in which the tongue approximates the position, and lends the quality, of the low central vocoid [a] : [tʃɑ̃] 'granizo'

voiced bilabial nasal: [tʊmɪ̃] 'dinero'

voiced dental nasal: [nɪpʃ̊] 'calabaza'

voiced velar nasal: [tɑŋϕalɪ̃] 'canasta'

voiced dental nasal: [tɑŋϕalɪ̃] 'canasta'

voiceless alveolar lateral spirant: [tɑŋϕalɪ̃] 'canasta'

voiceless alveolar lateral spirant: [ʃʃʃ̊ʃ̊]

voiceless frapped dental vibrants: [kɑ̃sʰɪ̃ɾu] 'costillas'

voiceless trilled dental vibrants: [pʊ̃ɾu] 'burro'

5. In this case the glottis is closed before the onset of the egress of air and not released until the egress is completed. This segment forms such an obvious monophenemonic cluster with [ʃ̊] that it is included here in this manner solely for purposes of consistency.

6. See the following description and diagramming of the syllabic vocoids for explication of the terminology.
Nonsyllabics: Vocoids

\[ u \] voiced nonsyllabic rounded higher back vocoid: \([\mathbf{u}] \) 'árbol, leña'

\[ ù \] voiceless nonsyllabic rounded higher back vocoid: \([\mathbf{u}] \) 'árbol, palo'

\[ i \] voiced nonsyllabic unrounded higher front vocoid: \([\mathbf{i}] \) 'perro'

\[ ï \] voiceless nonsyllabic unrounded higher front vocoid: \([\mathbf{i}] \) 'perro'

Syllabics: Vocoids -- Some greater degree of clarity regarding the sounds of the following segments may be gained from their relative positions in the vowel triangle of Chart 1., p.9.

\[ i \] voiced unrounded higher front vocoid: \([\mathbf{i}] \) 'árbol'

\[ ì \] as \([\mathbf{i}] \) but of greater duration: \([\mathbf{i}] \) 'piedra'

\[ i' \] voiced unrounded high front vocoid: \([\mathbf{i}] \) 'mi vida'

\[ i\] voiced unrounded higher mid front vocoid: \([\mathbf{i}] \) 'boca'

\[ ï \] voiceless unrounded higher front vocoid: \([\mathbf{i}] \) 'boca'

\[ e \] voiced unrounded mean-mid front vocoid: \([\mathbf{e}] \) 'compadre'

\[ ë \] voiced unrounded long low-mid front vocoid: \([\mathbf{e}] \) 'cuentas'

\[ ë \] voiced unrounded low-mid front vocoid: \([\mathbf{e}] \) 'mi mentón'

7. A certain liberty is taken here with Pike's terminology, for there is perceptible, if limited, friction in the mouth in both cases \([\mathbf{i}] \) and \([\mathbf{u}] \). These segments are different from the homorganic voiceless syllabic vocoids \([\mathbf{i}] \), \([\mathbf{u}] \) by this friction as well as by being nonsyllabic, and differ from the voiced nonsyllabic vocoids \([\mathbf{i}] \) and \([\mathbf{u}] \) by this friction as well as by lack of voice. See Pike (1943) p. 78.
[ɔ] voiced unrounded high-mid central vocoid of very brief duration: [qo-tʃi] 'jején'

[ɒ] voiceless unrounded high-mid central vocoid:

[ʃqo-pa-tʃi] 'pinole'

[a] voiced unrounded low central vocoid:

[tʃa-ʃai] 'hoy, ahora'

[a] as [a] but of greater duration:

[tʃa-ʃa-n] 'coa'

[ɒ] voiceless unrounded low central vocoid:

[ská-tʃi] 'piojo'

[a] voiced unrounded low back vocoid:

[pary-ʃa-n] 'barriga'

[a] as [a] but of greater duration:

[pary-ʃa-n] 'pierna'

[ɔ] voiced rounded long low-mid back vocoid:

[kɬ-ʃa-re] 'cobre'

[ɔ] voiced rounded mean-mid back vocoid:

[mɔɾa-ɾu] 'plátano morado'

[ɔ] voiced rounded higher mid back vocoid:

[tʃo-ʃa-ʃa-n] 'la tarde'

[ɔ] as [ɔ] but of greater duration:

[tʃo-ʃa-ɾo-n] 'indígena'

[u] voiced rounded high back vocoid:

[ʃa-ʃa-ni] 'también'

[u] voiced rounded higher back vocoid:

[kast-i-ɾu] 'costillas'

[u] as [u] but of greater duration:

[tʃu-ɾu] 'mojarra'

[u] voiceless rounded higher back vocoid:

[ku-ʃi-ɾu] 'remedio'
Hereafter the consonants and nonsyllabic vocoids will be referred to as 'consonants' and the syllabic vocoids as 'vowels'.
3.0 Prosodic Frame of the Phonetic Segments

3.1 The Syllable. The points of syllabic division in any complex free form do not necessarily conform to those of morphemic division, e.g., \([\tilde{z}\phi o i \tilde{i}]\) 'perro', \([k\tilde{r}z\tilde{a} o i \tilde{i}]\) 'mi perro', \([\tilde{p}\tilde{a} s]\) 'pues', \([\widetilde{r}i\tilde{r}z\tilde{a} \tilde{p} \tilde{a} s]\) 'yu pues', \([k\tilde{r}z\tilde{u} i \tilde{n}]\) 'monte', \([\tilde{k}r\tilde{r}z\tilde{u} i \tilde{n} i \tilde{r}z\tilde{a} \tilde{p} \tilde{a} s]\) 'jabali'. A point of syllabic division occurs between the members of a form-medial cluster of two consonants, and between the first and second members of a medial cluster of three. A single consonant occurring between vowels is initial to the following syllable. These observations allow the prediction of the form of the syllable within a free form, with the following exceptions: syllable division does not usually occur between the members of the clusters \([t\tilde{z}]\), \([t\tilde{z}'\tilde{z}]\), \([t\tilde{z}]\), and \([t\tilde{z}'\tilde{z}]\). These, as will be shown below in Section 4.4, are monophonemic.

Deviation from this described manner of syllabic division is one of the characteristics of a relatively rare group of forms which might be termed "compound", being made up of two potentially free forms, only the latter of which has a strong stress. (See Section 3.3.)
3.2 Stress. Available data does not allow for a thorough treatment of intonation, but it suggests that the distribution of contrasting intonational features is linked to the positioning of stress and to the length of the syllable. Stress itself may be linked with intonational features, for besides the extra emphasis given to one syllable of each free form there is a slight rise of pitch on a short syllable, and a rise and fall of pitch on a long. Its appearance is restricted to the following positions: to one syllable of a two syllable form; on free forms of three syllables to the ultima or penult; and on words of four or more syllables, to the ultima, penult, or antepenult. Occurrence of stress on the antepenult is rare. Examples are: [toqoaetzi] 'la tarde', [biblia] 'biblia'.

Consideration of the following examples makes clear the indeterminate nature of the appearance of strong stress on either of the final two syllables:

[slapul] 'rojo', colorado
[sgapat] 'pinole'

[kirmakai] 'mi mano'
[namagat] '(está) muy lejos'
Strong stress, being independently variable and hence unpredictable, is considered phonemic. It is shown in the phonetic and phonemic transcriptions by an acute accent, /*/. Weak stress is not marked.

3.3 Juncture. Any utterance containing more than one free form may be divided by perceptible pauses correlated with the appearance of particular classes of phonetic segments or prosodic features. It is possible that these pauses and the correlated phonetic features could be most simply defined in terms of patterns of intonation, but, since this material is unavailable, it is necessary to posit the following significant distinctions in the division of the continuum of any complex utterance:

1) Internal Close Juncture, [\_], which is the normal syllabic division internal to the form. It follows the rules of syllabic division stated in Section 3.1. Only exceptions to this type of syllabic juncture are marked in the transcription.
2) Compound Juncture, [−] : /−/, conforms to the point of division between two immediately constituent free forms, only the second of which has a strongly stressed syllable. When the second form begins with a consonant cluster the cluster is not divided by an internal close juncture.

3) Close Juncture, [+] , corresponds to the point of division of strong stressed free forms. Its occurrence is indicated in the phonemic transcription by a space.

4) Open Juncture, [≠] , borders a free form in isolation, marks the beginning and end of a complex unit utterance, or is marked by a perceptible pause within an utterance of two or more forms. When appearing final to a complex unit utterance it is indicated by a period, / . /, but is otherwise unmarked in the phonemic transcription. Chart 2, p.14, shows the phonetic correlates of these junctures.

The following examples of compound forms may be compared with forms, actual and hypothetical, showing the same or analogous sequences of segments divided by internal close juncture (i.e., normal internal syllabic division). Internal close juncture is shown by [\_\_] . Hypothetical forms are starred (*).
8. Starred entries are those for which there is no example in the data.

9. "Form" here denotes any group of segments which is isolable and which contains only one strongly stressed syllable.
As will be seen in the above examples the initial constituent of the compound lacks a strong stressed syllable, thus differing from the phrase of several strong stressed forms with intervening [?] junctures.

The following forms in isolation and their combination in more complex utterances show the correlation of phonetic features with the pauses that constitute close and open junctures.

\[
\begin{align*}
\text{[paɪ.ˈtəɾnaissance lʊ] } & \quad \text{[la.ˈqəˌtʃɑ.end] 'seis'} \\
\text{[qa.ˈlo.ˈqo.ˈstə.ˈpaɾu] } & \quad \text{[qa.ˈlo.ˈqo.ˈstə.ˈpaɾu] < [qa.ˈlo.ˈqo.ˈpaɾu] 'cuerno' and [qa.ˈlo.ˈqo.ˈpaɾu] 'frijol'} \\
\text{[ˈlə.ˈqo.ˈli.rˌˈkɪɾ.ˈstə.ˈpaɾu] } & \quad \text{[ˈlə.ˈqo.ˌli.rˌˈkɪɾ.ˌstə.ˈpaɾu] 'un tipo de frijol'}
\end{align*}
\]

3.4 It is necessary to posit the following six prosodic phonemes:

**Stress**

- **Strong** (shown by /\/)
- **Weak** (unmarked)
Junctures

Internal Close (unmarked)
Compound (shown by / • /)
Close (shown by a space)
Open (shown by / . / when necessary)

All junctures are shown by their phonetic rendition (i.e., \&, -, \#, \#) when under discussion and in charts, but in examples and in the glossary (Appendix A) junctures are shown only by the means outlined above.

These four junctures are tentatively posited since they allow a systematic description of the data at hand. They are not, however, so clearly defined or so well attested as might be wished. A final solution of the problem of junctures must await further data.
4.0 The Phonemes -- Description. This section provides a list of the phonemes, their allophones and the conditions of allophonic variation. A detailed description of the phonetic nature of the segments discussed will be found in Section 2.

Consonant Phonemes:

Unglottalized Voiceless Stops:

/ p / occurs as

- [p'] before consonants and junctures
  e.g., [laqta'tap' ~ -p'] : / laqta-\={t}ap / "cerro"

- [p] before internal close juncture except when the juncture is followed by / s, ñ, ʃ, v, y, y / and before / t, #, #/, in all of which environments it is in free variation with [p']. (For a discussion of the monophonic status of the cluster see Section 4.2).
  e.g., [taap'nah']~[taap'nah'] ; /'alapp/ 'llama';
  [na-kap'ta]~[nap'ta] ; / na-kap'pata / 'estoy muy cansado'; but
  [nap'si] ; / nipal / 'calabaza';

and elsewhere as

- [p]
  e.g., [pump'ú?] ; / pumpú? / 'ropa';
  [stápu?] ; / stápu / 'frijol'
/t/ occurs as

\[ [t'] \] before consonants and junctures

e.g., \[ papita\-t\-\text{"sa\-lu} \] : /payta\-t\-\text{"sa\-lu} /

\[ \text{\c{a}ntaro} \] [\text{\text{"amaqani\-t\-\text{"t}}} \text{"t\-\text{"t}}] : 

/\text{\text{"amaqani\-t} / \text{\'ruido}'

\[ [tt] \] before internal close juncture except when [\text{"t}] is followed by /s, s, ʃ, w, y/ and
before /-, #/#/, in all of which environments it is in free variation with [t']. (For a
discussion of the monophonemic status of the cluster see Section 4.2).

e.g., \[ tapakau\-\text{"t\-\text{"t}}} \text{"t\-\text{"t}}] : /tapakawut /

\[ \text{\text{"nombre'}}

and elsewhere as

\[ [t] \]

e.g., \[ kinta\-\text{"t\-\text{"t}}} \text{"t\-\text{"t}}] : /kinta\-\text{"t\-\text{"t}} /

\[ \text{\text{"mi abuelo'}}

/k/ occurs as

\[ [k'] \] before consonants and junctures

e.g., \[ lapana\-k' \] : /lapanak /

\[ \text{\text{"hombre, individuo'}}

\[ [k\#] \] before internal close juncture except when [\text{"t}] is followed by /s, s, ʃ, w, y/ and
before /-, #/#/, in all of which environments it is in free variation with [k'].
(For a discussion of the monophonemic status of the cluster see Section 4.2).
e.g., [ʔaʃaːkʰiŋaʔ~aʃaːkʰaʔ] : /ʔaʃaːkʰaʔ/ 'palma'; [ʔakʰuʔaʔ~aʃaːkʰuʔaʔ]:
/ wakuʔaʔ / 'me viene tos';
(cf.[ʔakʰuʔaʔaʃuʔaʔ] : /ʔakʰuʔaʔuʔaʔ / 'te voy a curar')

and elsewhere as

[k] 
 e.g., [ʔaʃaːpʰaʔ] : /ʔaʃaːpʰaʔ / 'macho'

/q/ occurs as

[qʷ] before consonants and junctures
 e.g., [ʔa.tsaːqʷ~aʔaʔaʔ] : /ʔaʔaʔaʔ / 'aguila'

[qʰ] before internal close juncture except when [ʔ] is followed by / a, ə, i, w, y / and before / - , ≠ , # /, in all of which environments it is in free variation with [qʷ] . (For a discussion of the monophonemic status of the cluster see Section 4.2).

e.g., [kiʔaqaʃtanu~ʔaqaʃtʰ] / kiaqtaʔanu / 'mi sombrero'; but [ʔaqaʃtʰaʔam] :
/ʔaqaʃtam / 'un peso'

and elsewhere as

[q] 
 e.g., [ʔaʃaːqʰaʔ] : /ʔaʃaːqʰaʔ / 'casa';
[ʔaʃaːqʰaʔaʔiʔ] : /ʔaʃaʃtaʔiʔ / 'un tipo de frijol'
Glottalized Stops (for contrast with the unglottalized series see Section 4.3):

/ p' / occurs as [ph]
  e.g., [phn] → /p'ún / 'chile'
/ t' / occurs as [tʰ]
  e.g., [tʰun] → /t'ún / 'tierra'
/ k' / occurs as [kʰ]
  e.g., [kʰu'n] → /k'ulún / 'arbol'
/ q' / occurs as [qʰ]
  e.g., [qʰulun] → /q'ulún / 'ejote'

Affricates (see Section 4.4):

Unglottalized:

/ č' / occurs as [ćʰ]
  e.g., [ćʰun] → /ć'ún / 'mojarra'

Glottalized:

/ č' / occurs as [ćʰ]
  e.g., [ćʰit] → /ć'iti / 'negro'
/ č' / occurs as [ćʰ]
  e.g., [ćʰun] → /ć'ún / 'zopilote'
Glottal Stop:

/ʔ/ occurs as [ʔ]

e.g., [tʰaʔaʔ] : /caʔan / 'hormiga'
   (cf. /caqã/ /'casa/);
   [ʔáʔ] : /ʔáʔ / 'cabellos'
   (cf. /qãʔ/ /'grande/)

Voiced Stops (see Section 4.6):

/b/ occurs as

[ɓ] internally before consonants

e.g., [xu♭på♭ree] : /hu♭póbre / 'el pobre individuo'

and elsewhere as

[b]

e.g., [ba♭le:] : /ba♭yleh / 'ocasión de bailar'

/d/ occurs as [d]

e.g., [diåkô] : /dyåkoh / 'Diego';
   [qådåkô] : /qådyåkoh / 'Dios'

/g/ occurs as [g]

e.g., [?qåmågô] : /qåmågoh / 'amigo'

Spirants:

/s/ occurs as [s]

e.g., [sî:] : /sî / 'todo'; [pû.ś] :
   /pû.ś / 'pues'
/ ñ / occurs as [ ñ ]
e.g., [ ñ a  ɔ ñ ] : ñ a / 'temazcal'

/ h / occurs as

[ x∗ ] , [ x̂∗ ] , [ x̂ ] in conformity with the follow-
ing vowel when occurring before vowels, and in
conformity with the preceding vowel when the
initial member of a consonant cluster
e.g., [ ? ikli-tax- u ] : / ? ikli-tahu /  
'encountre'; [ pa-sax-ñ ] : pa-sañi /  
'estomago'
a voicing of unstressed short vowels between
consonants and / # /, i.e., in the environment
/ C # / (v, Section 4.6)
e.g., [ # matşi-ta-ñ ] : mačí-tah / 'machete':
[ *  ʃ a  ̃  ʃ u # ] : sálu / 'jarro'

Nasals:

/ m / occurs as [ m ]:
e.g., [ puma-tám ] : puma-tam / 'uno'

/ n / occurs as

[ ñ ] before back velar stops, and in free var-
ation with [ n ] before velar stops
e.g., [ tanqalí-n ] : tanqali-n / 'canasta':
[ tinkwskus ~ tinikwskus ] :
/ tink'usk'us / 'teponaste'
[ ñ ] between voiceless consonants and final un-
stressed short vowels
e.g., [ ñ akán ] : / ñ akñi / 'sangre'
and elsewhere as
[ n ]
e.g., [ na-ná? ] : na-ná? / 'abuela'
Vibrants:

/ r / occurs as [ɾ]
  e.g., [morá·ru] : /morá·ruh/ 'plátano morado'

/ s / occurs as [ʂ]
  e.g., [pú·ʂu] : /pú·ʂu/ 'burro'
  (cf. [laqatikú·ru] : /laqatiku·ruh/ 'diablo')

Laterals:

/ l / occurs as [ɬ]
  e.g., [laqatáɬ] : /laqatáɬ/ 'uno'
  (cf. /laqatiku·ruh/ 'el diablo')

/ z / occurs as [ʒ]
  e.g., [tʃáuʒ] : /tʃáuʒ/ 'mango';
    [tʃi·niʃə] : /ciwi·niə/ 'hablo'

Semivowels:

/ w / occurs as

[ʊ̃] , a cluster of homologous segments10 before open juncture
  e.g., [l'íuʃ] : /l'íuʃ/ 'árboles, leña'

  between vowels where it is in free variation with (see Section 4.5)
  e.g.,
  : /ca·way/

  'ahora, hoy'

---

10. Since the voiceless segments [ɭ] and [ɾ] occur only after their respective voiced counterparts, this constant association allows them to be considered as forming monophonemic clusters with the preceding segments. So considered they are in complementary distribution with the other allophones of /w/ and /y/ respectively.
and elsewhere as

\[ \text{[u]} \]
e.g., \[\text{[uá·t'ú̪á̃]}\] : /wa·čú?/ 'también'

/ y / occurs as

\[ \text{[i]} \] a cluster of homologous segments before open juncture

e.g., \[\text{[#tastúí]}\] : /#tastúy# / 'sale'

(cf. \[\text{[#na·tastúí+xwuk'i-ta'k'ešá]}\] : /#na·tastúy huki'ak'éšáni# / 'esta saliendo mi sangre')

and elsewhere as \[ \text{[i]} \]
e.g., \[\text{[iaq·áq]}\] : /yaqáqa/ 'blanco'

Vowel Phonemes:

Short Vowels:

/ i / occurs as

\[ \text{[i]} \] before open juncture (see Section 4.6)
e.g., \[\text{[#pú·ti]}\] : /#pú·ti# / 'yerno, nuera'

\[ \text{[e]} \] before and after back velar stops / q, q/ and before cluster of nasal and back-velar stop (see Section 4.7)

e.g., \[\text{[kəŋ'á·tú̪á̃]}\] : /kinq'a·tú̪á̃/ 'mi pierna'

\[?amunáqi\] : /?amuníqi / 'zapote prieto'

\[ \text{[i]} \] before syllable-final semivowels
e.g., \[\text{[k'iú̪á̃]}\] : /k'iw/ 'árbol, leña'

Cf. \[\text{[k'iú̪á̃n]}\] : /k'iwi'í·n/ 'monte'
[i] in other stressed syllables
  e.g., [șîl] : /šíl / 'moco'
  [maqší'an] : / maqší'an / 'frente'
and elsewhere as

[i] 
  e.g., [kîtîn] : / kitîn / 'yo'

/a/ occurs as 

[a] before syllable-final semi-vowels 
  e.g., [laqâyw] : / laqáw / 'hermano,-a,
  amigo,-a'; (cf. [kîlaqâwí:n] :
  / ki?alaqawi:n / 'mis hermanos, mis
  amigos')

[æ] before open juncture (unstressed)
  e.g., [tam'tâqáta:] / tamçaqáta / 'hace
  un año'
and elsewhere as

[a] 
  e.g., [la·pának'] : / la·pának / 'hombre'
  [laqápan] : / t'aq'ap'án / 'borracho'

/u/ occurs as 

[o] before and after back velar stops 
  e.g., [puqo'ú:] : / puqu'ú / 'viejito'

[œ] in other stressed syllables except those 
  closed by semi-vowels 
  e.g., [ma·qki·jú'] : / ma·akiyú / 'luna, mes'
[u] before open juncture
  e.g., [kjik'kúk'ku'] : /kinkúku/ /mi tío/;
  [ma't'su*] : /ma'cu/ /macho/ and elsewhere as
  [u] 
  e.g., [laqá'túi] : /laqat'uy/ /dos/;
  [kusti'ru] : /kusti'ruh/ /costillas/ Long Vowels: i, a

/ i, a occurs as:

[i:] and [i:] before and after back velar stops
  e.g., [qo'cípi'qi] : /qu'cipi'qi/ /jején/ and elsewhere as
  [i:] 
  e.g., [ni'tat*i] : /ni'tač/ /muerte/ 
  [šišni'pín] : /šišni'pín/ /chile seco/ 

/ a / occurs as

[a:] before and after back-velar stops
  e.g., [?a'qáti'k] : /a'qáti/ /cabeza/ 
  [qa'spát*] : /qa'spát/ /espinilla/ 

II. The unique segment [a] occurs only before or after
  [i:] and separates the long vowel from a back velar stop. 
  When considered as monophonemic clusters [i:] and [a:], 
  are in complementary distribution with the other allophones 
  of /i, a/ and conform to the patterned lowering of front and 
  back vowels in contact with back velar stops.
and elsewhere as

\[ \text{[a\text{\textcdot}]} \]
\[ \text{e.g., } [\text{sk\text{\textacute{a}}\text{\textcdot}n}] : / \text{sk\text{\textacute{a}}\text{\textcdot}n} / '\text{agua}' \]
\[ \text{(cf. } [\text{sq\text{\textacute{a}}n}] : / \text{sq\text{\textacute{a}}n} / '\text{mosca}'; \]
\[ [\text{sk\text{\textacute{a}}\text{\textacute{u}}}]: / \text{sk\text{\textacute{a}}\text{\textacute{u}}} / '\text{conejo}') \]

/ u / occurs as

\[ \text{[o\text{\textcdot}]} \quad \text{before and after back velar stops} \]
\[ \text{e.g., } [\text{po\text{\textcdot}qapa\text{\textacute{i}}}]: / \text{pu\text{\textcdot}qapay} / '\text{vacio'} \]
and elsewhere as

\[ \text{[u\text{\textcdot}]} \]
\[ \text{e.g., } [\text{pu\text{\textcdot}t\text{i}}]: / \text{pu\text{\textcdot}ti} / '\text{yerno, nuera}'; \]
\[ \text{(cf. } [\text{pu\text{\textcdot}tix\text{\textacute{o}}\text{\textacute{a}}}]: / \text{pu\text{\textcdot}tihu\text{\textacute{o}}\text{\textacute{a}}} / '\text{suegro}') \]

Vowels of Non-Distinctive Length (see Section 4.7):

/ e / occurs as

\[ \text{[e\text{\textcdot}]} \quad \text{in stressed syllables} \]
\[ \text{e.g., } [\text{tampe\text{\textacute{s}}u}]: / \text{tamp\text{\textacute{e}}\text{\textacute{s}}u} / '\text{un peso}'; \]
\[ [\text{arri\text{\textacute{e}}\text{\textacute{r}u}t\text{\textacute{e}}}]: / \text{arri\text{\textacute{e}}\text{\textacute{r}u}t\text{\textacute{e}}} / '\text{arriero}' \]
and elsewhere as

\[ \text{[e]} \]
\[ \text{e.g., } [\text{kump\text{\textacute{a}}\text{\textacute{r}e}}]: / \text{kump\text{\textacute{a}}\text{\textacute{r}e}h} / '\text{compadre}' \]
/ o / occurs as

[ɔ:] in stressed syllables.

E.g.: [kɔ-βɾa] : / kóbre / 'cobre'

[ʔɔɾo] : / ¿oro / 'oro'

And elsewhere as

[ɔ]

E.g.: [miyɔɾtɔˈmo] : / miyortomoh /

'mayordomo'; [morəˈru] : / morə'rəh /

'plátano morado'; [diáˈko] : / dyaˈkoh /

'Diego'

4.1 The Sequence Stop plus Glottal Stop. The rare sequences / pʰ, tʰ, kʰ, qʰ / are distinguished from the glottalized stop series by the location of internal close juncture.

4.2 Aspirated Allophones of the Voiceless Stops. The clusters [pʰ, tʰ, kʰ, qʰ] are monophonemic allophones of the voiceless unglottalized stop series. The occurrence of the voiceless "schwa" vowel in utterance final position in contrast to the unvoiced allophones of the short vowel series / i, a, u / prevents it from being subsumed under any one of the vowels. It occurs only after stops. When considered as forming a unit phoneme cluster with the preceding stop, the clusters
are in free variation with the allophones of the respective stops without audible release, \( [p^s], t^s, k^s, q^s ] \). (See Section 4.0 under Unglottalized Voiceless Stop).

4.3 Glottalized Stops vs. Unglottalized Stops. The following minimal, or near minimal, pairs should illustrate adequately the distinction throughout the series.

\[
\begin{align*}
[k\acute{i}\mathring{n}'] : & / k\acute{i}\mathring{n} / 't\acute{i}a', \\
[k\acute{u}\mathring{u}] : & / k\acute{u}\mathring{u} / 'arbol, leña', \\
[t\acute{a}\mathring{a}] : & / t\acute{a}\mathring{a} / 'casa', \\
[t\acute{a}\mathring{\acute{a}}\mathring{n}] : & / t\acute{a}\mathring{\acute{a}}\mathring{n} / 'escalera', \\
[k\acute{u}\mathring{\acute{a}}\mathring{n}] : & / k\acute{u}\mathring{\acute{a}}\mathring{n} / 'mojarra', \\
[t\acute{z}\mathring{\acute{a}}\mathring{n}] : & / t\acute{z}\mathring{\acute{a}}\mathring{n} / 'zopilote', \\
[k\acute{i}\mathring{\acute{a}}\mathring{n}] : & / k\acute{i}\mathring{\acute{a}}\mathring{n} / 'mi semilla', \\
[k\acute{v}\mathring{\acute{a}}\mathring{n}] : & / k\acute{v}\mathring{\acute{a}}\mathring{n} / 'yo'.
\end{align*}
\]

The glottalized series is somewhat less frequent in occurrence than its unglottalized counterpart. Each member is limited to a single allophone.

4.4 Affricates. The clusters \([t\acute{s}]\), \([t\acute{u}]\), \([t\acute{\acute{a}}]\), \([t\acute{\acute{e}}]\) are monophonemic. The following facts lead to their being so considered:

1) They exhibit the patterned contrast of "glottalized vs. unglottalized" that is characteristic of the two series of voiceless stops (see Section 4.3). In particular the glottalization of the series lends
weight to this classification for the continued stopping of the glottis during the pronunciation of both segments in the clusters \([t̃\text{-}]\) and \([t̃\text{-}]\) gives them a very real phonetic unity (see Section 2). None of the otherwise comparable clusters exhibit this contrast.

2) Considered as monophonemic they exhibit a distribution parallel to that of the stop series, among which they are classified (see Section 5).

3) In contrast to the otherwise comparable consonant clusters, such as \([ps, p\text{̃}, ks, k\text{̃}, q\text{̃}, q\text{̃}\text{-}]\), they do not show a point of syllable division between the segments (see Section 3.1).

4) The clusters \([st, st, st, st\text{-}]\) occur showing all characteristics of bi-phonemic clusters.

5) The sequences \([t̃\text{-}\text{-}]\) and \([t̃\text{-}\text{-}]\) occur, though rarely, showing a contrast between the unitary cluster and that which may be divided (see Section 3.3).

4.5 Voiced Stops. The most frequently occurring member of this rare series is /b/ which, according to the analysis selected here, has the allophones \([b]\) and \([\text{-}]\). This latter segment is an allophone of two phonemes. It occurs only internal to the form. Intervocally it is in free variation with the nearly homologous
segment [u].

  e.g., [tʰiɣuʃ]~[tʰiɣiʃ] 'habla'
  [b] and [u], however, contrast before consonants,
  e.g., [tʰaɣlāt] 'gallina'; [kʊɾ-] 'cobre'.
  [b] and the phonetically similar [β] are in comple-
  mentary distribution, [b] occurring only after jun-
  ctures /ɾ/ and /#/ (where it contrasts with [u]),
  and [β] never so occurring.

  e.g., [#báje#] 'ocasión de bailar'; [ay-a.niŋ] 'cercas'; [#bí-βli-ʃa#] 'biblia';
  [kwaŋ-βli-ʃa#] 'la biblia';
  [kʷaŋ-βli-ʃa#] 'la biblia';

This anomalous distribution is analyzable in at
least three ways. A simplistic analysis would classi-
fy each segment separately, giving three phonemes,
*/ b /, */ β / and */ w /. This possibility has been
rejected since */ b / would be the sole voiced fri-
cative in the pattern, */ b / would have an unparal-
leled narrowness of distribution (cf. distribution
of other stops, Chart 3) and it would still be neces-
sary to posit morphophonemic free variation of */ w /
and */ β / between vowels. In a transcription based
on this analysis the above examples would appear as follows:

*/ čiwí-n / ~ */ čibi-n / */ čawlat /
*/ kóbre / */ báyle / */ wá-ním /
*/ bi-bliya / */ hu-bi-bliya /.

A second possible analysis would establish the phoneme */ b / with the allophones [b] and [t] in complementary distribution, and the phoneme */ w / having a single allophone [u]. Between vowels, morphophonemic free variation would allow the alternation of */ b / and */ w /.

*/ čiwí-n / ~ */ čibi-n / */ čawlat /
*/ kóbre / */ báyle / */ wá-ním /
*/ bi-bliya / */ hu-bi-bliya /

The third possibility (employed here) would make the segment [b] a member of two phonemes: / b / in its appearance before consonants, and / w / inter-vocalically, [t ~ u] .

/ čiwí-n / / čawlat / / kóbre /
/ báyle / / wá-ním / / bi-bliya /
/ hu-wíbliya /

This alternative also requires morphophonemic data,
e.g., the alternation of /w/ for /b/ between vowels, as in /bi·bliya/, /hu·wi·bliya/. It does not, however, involve free variation, which it seems preferable to restrict to the phonemic level.

Further support is given to this analysis by the occurrence of the forms [bá·ta] (the meaning is unclear; it seems to mean either the traditional embroidery upon a woman's blouse, or the blouse itself) and, with the addition of the second person singular possessive prefix [mi·tä·ta]. (The forms are rendered phonemically /ba·tah/ and /mi·wa·tah/.) If the bilabial fricative [f] were phonemically a 'stop' it would require the allomorph /mim-/, of the second person singular possessive prefix which occurs as /mim-/ before bilabial stops, /min-/ before dental, velar and back velar stops, and elsewhere as /mi-/. 5

The even more extreme rarity of the other voiced stops [dʒ] / d/ and [ɡ] / g/ in the data at hand makes the absence of fricative allomorphs questionable, increasing the possibility of simple errors in transcription (but see Section 6.2).
4.6 The Analysis of the Voiceless Vowels.

An analysis of the Tepehua vowels must take into consideration the rarity of occurrence, within the sound system as a whole, of a contrast of voice vs. voicelessness (see Section 6). Voiceless vowels occur only unstressed after voiceless consonants and before open juncture.

e.g., \([k\acute{a}\cdot \xi tu]\) 'caldo' (cf. \([\acute{a}k\cdot \xi\ u]\) 'jarro')

They contrast with long vowels in the same environment.

e.g., \([k\acute{u}k\cdot u]\) 'arena'; \([k\acute{u} k\cdot u]\) 'tío'

Short vowels appearing in final syllables are divided between the voiced variety occurring in closed syllables and their voiceless counterparts occurring in open syllables. But a few examples of short voiced vowels do occur in this critical environment: unstressed after voiceless consonants and before open juncture. Forms such as \([ma\acute{t}\acute{e}k\cdot ta]\), 'machete', and \([p\acute{e}z\cdot u]\), 'peso (-s)', deviate from the otherwise well-attested pattern with the result that a contrast does exist between voiced and voiceless short vowels.

If one proceeded quite mechanically it would
be necessary to set up a series of voiceless vowel phonemes with extremely limited distribution and to describe such alternations as that between [i\textsuperscript{'}] and [i] in [\#\texttt{u\textasciitilde s\textasciitilde t\textasciitilde n\textasciitilde}] , 'tú' , and [\#\texttt{u\textasciitilde s\textasciitilde t\textasciitilde n\textasciitilde}] , 'tú hablas'; in morphophonemic terms. However "correct" in terms of procedure, the resulting description does profound violence to the pattern as attested by the overwhelmingly greater part of the data.

The second alternative provides a description which conforms to the remainder of the pattern by minimizing the importance of the voiced-voiceless contrast. The existence of voiced and voiceless allophones of a single phoneme indicates the possibility of analyzing voiced vowels into elements of voice and voiceless syllabic qualities of various types and of establishing a correlation between the elements of voice and environment. In the overwhelming majority of cases of the appearance of voiced short vowels in final syllables the syllables are closed. By describing the voicing of the minority of form-final short vowels in terms of a subsequent sequential segment the form of the final syllable
is regularized as is the alternation of the allophones within a single short vowel series. The appropriate sequential segment is described as an allophone of /h/ appearing after weak stressed short vowels and before open juncture. Other allophones of /h/ [x', x'a, x'a'] never appear before close or open juncture, thus establishing a condition of complementary distribution. Subsuming this feature under an already established phoneme provides a solution for the problem of the statistically slight irregularity of the vowels, while retaining an unambiguous description. By postulating the appearance of /h/ after weak stressed short vowels following voiced as well as unvoiced consonants we are able to generalize and economize in the description as a whole. The examples are then rendered:

/ka·tú /, /šá·luh /, /kúku /, /kúku· /;
/mací·tah /, /pešuh /; /'ušin'ti#/,
/'ušint'iʃdíwi·ni#/.

4.7 Vowels of Nondistinctive Length. The phonemes /e/ and /o/ are classed separately from both long and short vowels. As analyzed here they have allophones of both lengths complementarily distributed according to the occurrence of stress, and can thus
be considered as peripheral to the system in which the contrast of vowel quantity is an important one. They deviate further from the other vowels in lacking the voiceless allophones seen in the series /i, a, u/.

It will be noted that the long allophone of /e/, [ɛː], corresponds in quality with one of the allophones of the /i/, [ɛ]. These two segments are assigned to different phonemes for the following reasons:

1) Their contrast in length makes them phonetically different.

2) The short member of the pair is in complementary distribution with the remainder of the allophones of /i/ in accordance with the patterned lowering of high vowels contiguous to velar stops.

3) The long member of the pair does not occur in the neighborhood of back velar stops.
5.0 The Phonemes -- Distribution. Distributional data is presented in tabular form in order to facilitate comparison. Chart 3 lists all two-phoneme sequences which are attested by one or more examples in the data at hand. (The examples will be found in Appendix A.) Table 1 lists all three-consonant sequences which occur in the data, together with an example of each. There are no clusters of four or more consonants.

The distribution of the phonemes may be generally described as follows:

5.1 Clusters. Consonants cluster in groups of two or three (being divided syllabically according to the manner described in Section 3.1.), clusters of three being relatively rare and of a limited nature. It will be seen from Table 1 that the medial element of a tri-consonant cluster is almost without exception one of the three phonemes /s, ś, ą/. These are quite thoroughly parallel in their general distribution and can be considered as a structural set. Their appearance as the medial element of tri-consonant clusters is correlated with their appearance in bi-phonemic clusters after junctures.

Certain phonemes do not occur as the first elements of consonant clusters. These are the voiced
lateral / l /, the stops of the glottalized series / p', t', k', q' /; the glottal stop / ? / and the affricates, glottalized and unglottalized / ŋ, ʃ, ʒ, ʃ', ʒ' /. These last may be considered as members of the two stop series, according to the presence or absence of glottalization. The non-appearance of these phonemes in this specific environment is correlated, except in the case of the glottal stop, with their non-appearance in syllable-final position (i.e., before internal close juncture). Certain other phonemes are rare as the initial members of consonant clusters. These are the unglottalized stops, / p, t /.

Germinate clusters of consonants do not occur. Nor do homologous clusters of stop plus glottalized stops.¹²

Vowel clusters do not occur.

5.2 Distribution with regard to Open and Close Junctures. This is most easily described by listing

¹² In constructions such potential clusters as */ -kk- / and */ -kkʰ / seem to follow a pattern of morphophonemic reduction to the form of the second element (e.g., / ki-tahu / 'encontré', / 'ik'í-tahu / 'encontré' but / k'uč'uyan / 'te va a curar', / 'ik'ucuyan / 'te voy a curar').
the exceptions. All phonemes occur before open and close juncture (i.e., form-final) except:
the voiced lateral /l/, glottalized stops, voiced stops, and the vibrants /r/ and /r'/.
All phonemes occur after open and close junctures (i.e., form-initial) except vibrants and
vowels. 13 No example is available of the appearance of /g/ in form initial position; it is
included among the phonemes possibly occurring there on the basis of pattern congruence.

13. A few instances of form initial vowels occur in my own vocabulary, and in that of
McQuown. These instances do not coincide, and are in most cases contradicted by transcriptions
in other examples showing an initial glottal stop. It is fairly safe, then, to ascribe these infre-
quent examples to error in transcription.
Page 41 is represented in the original copy by a chart showing the distribution of the phonemes. A copy of this chart is unavailable. The main conclusions to be drawn therefrom are mentioned in the text. The chart was abstracted from the vocabulary occurring in the appendix, and so may be abstracted again if necessary.
Table 1: Tri-Consonant Clusters

/-psw-/ / 'aḡ'apswa·yanti / 'hilera'
/-kst-/ / kiʔakskitit / 'mis sesos'
/-kst'-/ / laqat'ikst'i / '(esta) chiquito'
/-káp-/ / 'ukápuʔ / 'cara'
/-kst-/ / 'uksti·n / 'patrón'
/-ksq'-/ / na·kšq'úptaq / esto muy cansado'
/-kaw-/ / makawák'a / 'hígado'
/-qst-/ / k'aqstinaqmayaʔ hu·kinčaqáʔ /
 '(voy a) techar mi casa'
/-qep-/ / 'aqépin / 'hombros'
/-qét-/ / laqetán / 'cachetes'
/-qék-/ / laqékati / 'arroyo'
/-qét'-/ / kインq·qét'aq'ʔa / 'mis labios'
/-qát-/ / kalaqátatawč / 'vamos a dormir'
/-skw-/ / skwėla / 'escuela'
/-mpt-/ / pušlimpti / 'pariente'
/-şák-/ / ašqcušká·n / 'ojo de agua'
/-ydy-/ / q'aydyoa / 'Dios'
/-ysk-/ / q'ayská·n / 'rio'
5.3 Relative Frequency of the Phonemes. A certain number of phonemes display an unusually low frequency of occurrence: the voiced stops /b, d, g/, vowels of nondistinctive length /e, o/, and the vibrants /r, s/. Though no actual statistical analysis has been done, a rough estimate should make clear their non-conformity.

Nearly all Tepcohua free forms, simple or complex, contain at least one representative of the two unvoiced stop series (the affricates are here considered as stops). The unglottalised stops are somewhat more frequent than the glottalized, and velar and back velar stops are of a slightly higher frequency than the corresponding bilabial and dental stops. However, these variations are insignificant when compared with the unusual infrequency of the voiced stops. These last are judged to occur less than 1% of the total number of times in which stop phonemes of any type occur.

A parallel situation exists with respect to the relative frequencies of occurrence of the various vowels. The distinctively short vowels occur with greater frequency than the distinctively long, and
the central vowels /a, a:/ more frequently than the front and back varieties of the same length. The vowels of non-distinctive length amount to roughly less than 1% of the total occurrences of all the vowel phonemes.

It is somewhat more difficult to compare the frequency of the vibrants, since they fail to conform to other consonant phoneme sets either in terms of phonetic similarity or in terms of distribution. If they are compared with all of the consonant phonemes other than stops they may be judged to show a frequency of occurrence of less than 2% of the frequency of any other non-stop consonant.

Together with the frequency of occurrence of these disparate phonemes, there is to be considered the frequency of their mutual association. In nearly every form in which one of these phonemes occurs there is to be found one or more of the others. They seem then to form a natural unit for consideration, yet one that is not entirely separable from the remainder of the system since the members of the group not only occur together
but also in association with the more frequently occurring members of the system as a whole.

It is to be suggested therefore that these phonemes can best be considered as peripheral to the pattern of Tepehua phonemics as a whole. The significance of such a distinction will be considered in the next section where the material presented heretofore in completely descriptive terms will be considered in its bearing upon the history of the language.

5.4 Forms of the Syllable. The syllable takes the forms CV, CVC, CVCC, CCV, and CCVC. They are distributed according to the restrictions stated in Section 3.1. The most freely and frequently occurring forms are CV and CVC. CVCC occurs only form final or before compound juncture. These occurrences are rare.
5.6. Charting of the Phonemes.

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<td>u</td>
</tr>
<tr>
<td>a</td>
<td>a</td>
<td></td>
<td></td>
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<tr>
<td>[ɛ]</td>
<td>[o]</td>
<td></td>
<td></td>
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<tr>
<td>œ</td>
<td>æ, -j, #</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Chart 4. The various types of lines dividing phonemes, or the lack of lines, indicate a subjective estimation of the structural "distance" between elements of the pattern. Degrees of distance are shown from least to most in the order: absence of line, dotted line, wavy line, heavy line. Brackets indicate the phonemes which have been termed "peripheral."
6.0 Historical Considerations. The analysis presented in the preceding sections has been carried out by descriptive methods for descriptive ends. At times the maintenance of a pose of ignorance of Spanish has introduced a measure of artificiality, which, if somewhat uncomfortable, is safer than intruding "obvious" historical considerations upon the analysis. But borrowing has clearly occurred from Spanish into Tepehua. The borrowings have not always been accommodated in the same manner (we have, of course, no assurance that any particular form has been borrowed, or if borrowed, borrowed directly), nor have they always been accommodated without the intrusion of sounds foreign to the Tepehua system.

6.1 Spanish Loan Words. Table 2 lists fairly clear Spanish loan-words and their presumed Mexican Spanish sources. Glosses are given only where the meaning is appreciably different from that of the source. Spanish forms are given in the conventional orthography.
<table>
<thead>
<tr>
<th>No.</th>
<th>Term</th>
<th>Spanish Equivalent</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>plá·tah</td>
<td>'plata'</td>
</tr>
<tr>
<td>2.</td>
<td>pú·s</td>
<td>'pues'</td>
</tr>
<tr>
<td>3.</td>
<td>pú·fu·h</td>
<td>'burro'</td>
</tr>
<tr>
<td>4.</td>
<td>pú·yu·s</td>
<td>'pollos'</td>
</tr>
<tr>
<td>5.</td>
<td>péšuh</td>
<td>'peso'</td>
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<tr>
<td>6.</td>
<td>támpu·</td>
<td>'tambor'</td>
</tr>
<tr>
<td>7.</td>
<td>?amí·goh</td>
<td>'amigo'</td>
</tr>
<tr>
<td>8.</td>
<td>kawayuh</td>
<td>'caballo'</td>
</tr>
<tr>
<td>9.</td>
<td>kóbreh</td>
<td>'cobre'</td>
</tr>
<tr>
<td>10.</td>
<td>kuć·luh</td>
<td>'cuchillo'</td>
</tr>
<tr>
<td>11.</td>
<td>kustí·ruh</td>
<td>'costillas'</td>
</tr>
<tr>
<td>12.</td>
<td>kumá·lič</td>
<td>'comadre'</td>
</tr>
<tr>
<td>13.</td>
<td>kwéntan</td>
<td>'cuentas'</td>
</tr>
<tr>
<td>14.</td>
<td>ká·štu</td>
<td>'caldo'</td>
</tr>
<tr>
<td>15.</td>
<td>ku·mpusá·ntu</td>
<td>'campo santo'</td>
</tr>
<tr>
<td>16.</td>
<td>dyus</td>
<td>'Dios'</td>
</tr>
<tr>
<td>17.</td>
<td>?abrí·á</td>
<td>'abril'</td>
</tr>
<tr>
<td>18.</td>
<td>?anatiwa·kaš</td>
<td>'vacas'</td>
</tr>
<tr>
<td>19.</td>
<td>?a·řýéruc</td>
<td>'arriero'</td>
</tr>
<tr>
<td>20.</td>
<td>bi·bliyah</td>
<td>'biblia'</td>
</tr>
<tr>
<td>21.</td>
<td>hu·wi·bliyah</td>
<td>'la biblia'</td>
</tr>
<tr>
<td>22.</td>
<td>bayleh</td>
<td>'baile'</td>
</tr>
</tbody>
</table>

14. McQuown suggests the rustic form 'pos' as a better possibility.
23. / dyakoh / < Sp. 'Diego'
24. / skwélah / < Sp. 'escuela'
25. / ?oro / < Sp. 'oro'
26. / sa·ntuh / < Sp. 'santo'
27. / sa·ntuhni / 'imagen' / < Sp. 'santo'\(^{15}\)
28. / miyortómoh / < Sp. 'mayordomo'
29. / mač·tah / < Sp. 'machete'
30. / morá·ruh / < Sp. 'morado'
31. / ma·cu / < Sp. 'macho'
32. / /aqatiku·ruh / 'diablo' / < Sp. 'cura'(?):\(^{15}\)
33. / kumpá·reh / < Sp. 'compadre'
34. / kumpa·lipáy / 'padrino' / < Sp. 'compadre'
35. / kumpa·lináti / 'madrino' / < Sp. 'compadre'
36. / pa·líh / 'cura' / < Sp. 'padre'
37. / bá·tah / < Sp. 'bata' (?)

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\(^{15}\) Most probably a construction on the borrowed form 26.

\(^{16}\) McQuown suggests a possibility of borrowing from the Nahua /tekólo/.
6.8 If we examine these presumably post-contact Tepehua forms in relation to the Spanish forms after which they are modelled, certain regularities and differences of correspondence become apparent. In the interpretation of these there are theoretically two factors to be considered -- the date of borrowing and the degree of assimilation of a form in the light of this date. In fact, however, there is little possibility of separating the two without a fairly complete knowledge of the history of Spanish phonology. Without this knowledge we are able to do little more than suggest a few possible explanations of the different handling of the same Spanish sound. Consider for example the differential treatment of '1l' (= y) in the examples 8, 10, and 11.17

The primary concern of this paper, however, is with the influence of Spanish upon Tepehua phonology, and in this sense we are interested in the specific loan forms only as they provide information

17. These might be taken to illustrate stages in the change of the Spanish sound from a lateral to a palatalized lateral and finally to a palatalized semivowel.
regarding the changes in Tepehua resulting from this influence. The previously presented description enables us to see that certain elements of the Tepehua phonemic pattern are relatively slightly integrated. Assuming this to be indicative of change we can, on the basis of the occurrence of these phonemes in the examples of Table 2, attribute the change to Spanish influence. If we seek out correspondences after the manner of treating related languages these peripheral elements provide a means for the classification of the correspondences.

Classifications are of two main types; examples of both and the criteria which determine them follow:

1) Correspondences in which the Spanish phoneme or phoneme cluster has been modified to fit within the most highly integrated portion of the pattern (i.e., the pattern exclusive of the peripheral elements /b, d, g, r, f, e, o/).

   e.g., Sp. 'b' > T /p/ in #3 /pu·ruh/,

   #6 /támpu·/
Sp. \( 'dr' \) > T / l / in #12 / kumá·lič / #36 / pa·lih /

(This may constitute a change in the distribution of / l /, i.e., before form final short vowels. The appearance of voiced consonants in this position is much more frequent in loan-words than/ostensibly pre-Columbian Tepehua.)

Sp. \( 'd' \) > T / t / in #28 / miyortómo /
Sp. \( 'g' \) > T / k / in #23 / dya·ko /
Sp. \( 'l' \) > T / a / in #14 / ka·lú / #17 / ?abra·a /

(The replacement in this case excludes / l / from environments in which it does not occur in Tepehua. See Chart 3, p. 41.)

Sp. \( 'o' \) > T / u / in #31 / ma·cu / #10 / kucí·luh /

(As will be seen in this and the following example Spanish \( 'a' \) and \( 'e' \) become members of Tepehua phonemes whose allophones they very nearly approximate. See Section 4.0, under / i / and / u /.)

Sp. \( 'e' \) > T / i / in #36 / pa·lih /

18. cf. ## 8, 10, 11, Tabla 2.
2) Correspondences in which the peripheral phonemes occur, with or without modification of the Spanish model.

E.g., Sp. 'b' > T / b / in #22 / baylah /
    #20 / bi-bliyah /
    #37 / ba-tah /

(T / b /, however, does not seem to have assumed all of the structural aspects of a genuine stop, but rather appears to be only in part assimilated. This position may, of course, become regularized into a stable series of voiced phonemes having allophones among both stops and fricatives. If the data allowed the establishment of this condition for / d / and / g / it would be possible, by the weight of the contrast with / b /, to postulate such a series, and increase the estimate of the degree of assimilation of each of the members.

The possibility of error in transcription as an explanation for the lack of fricative allophones of / d / and / g / has been mentioned in Section 4.5. If, however, these sounds actually prove to be lacking the situation is one that could be expected on the basis of the pre-Columbian phonemic
system. If we assume that there was originally a phoneme /w/ in Tepehua then it is seen that there was a point in the system similar to the Spanish bilabial fricative, while there is no indication of points analogous to the Spanish dental and velar stops and fricatives. It should not then be unexpected that the sound more easily replaceable in Tepehua should be absorbed into the phonemic system in a different manner than those not so easily replaced.)

Sp. 'd' > T / d / in #23 / dyá·keh /

#16 / dyós /

Sp. 'g' > T / γ / in #7 / ?amí·goh /

Sp. 'o' > T / o / in #30 / morá·ruh /

#25 / ?oroh /

(Here as in some of the previous examples two "types" of correspondence occur within the same form. It is clear that the criteria used in classifying correspondences do not reflect the date of borrowing.)

Sp. 'e' > T / e / in #33 / kumpá·reñ /

(Here again is an example of the retention of one Spanish vowel and the modification of another, 'o' > / u /.)

Sp. 'd' > T / r/ in #30 / morá·ruh /
The peripheral phonemes / r, r̃ / resulting from the Spanish tapped and trilled vibrants appear to have been incorporated unmodified into Tepehua phonemics very early in the borrowing process. With the exception of the correspondence of final Sp. 'r' with 'zero' as in T / tēmpu /< Sp. 'tambor' there are no examples of the modification of the vibrants. It is only in the case of the cluster 'dr' that a traditional Tepehua phoneme has been substituted, as in T / pā-lih/ Sp. 'padre'. Thus the earliest stage would appear to have been one of simple acceptance, there being no Tepehua sound similar enough for convenient replacement, / l / being pre-empted by the cluster 'dr'.

Another fairly consistent group of correspondences is that of Spanish stressed vowel and Tepehua strong stressed long vowel. Thus it may be seen in examples 1, 3, 4, 5, 7, etc., that Spanish stress is supplemented by length in Tepehua.

19. It may also be suggested that these two correspondences are of an earlier date than 'Sp. 'dr' > T / r /, as in / kumpā-re /.
There are, of course, exceptions to this, as there are to all of the formulas written. One group of exceptions, however, shows another form of regularity within itself. These are the correspondences to Sp. 'e' and 'o' represented by the Tepehua vowels of non-distinctive length. They show the correlation of Spanish stress and Tepehua length on the phonetic level, stressed allophones of these phonemes being phonetically longer than unstressed allophones. For this reason we might at this point bring to bear our extra-systemic knowledge and describe these segments as pairs of phonemes contrasting in length, albeit predictable in terms of stress (see Section 4.7). This would of course render the description somewhat more symmetrical, but it must be remembered that the short vowel phonemes would not have the voiceless allophones which would render them strictly parallel to the "integrated" series of short vowels.

The treatment of unstressed vowels is of importance in producing the changes in Tepehua phonemics that have resulted in the condition of
imbalance as seen in the description. For here unstressed final vowels — being unstressed, consequently short — have in some cases retained their Spanish voice before open juncture and have required the normalizing procedure of postulating the final /h/ in the description. These are correspondences of type 2 and occur in examples 1, 27, and 30 (morphophonemics bears out the analysis, at least in part, as will be seen in examples 27 and 28).

6.3 There is assuredly some degree of inaccuracy in these formulations through my own unfamiliarity with the history of Spanish in the New World. It must also be recognized that the writing of these formulas is not a process of reconstruction as in the treatment of related languages. We are here dealing with language change that involves extra-systemic influences such as we assume active in those cases of change that do not conform to the regular correspondences resulting from phonetic change. In a sense we are attempting to show that even where extra-systemic influences are operative there are regularities to be discovered.
But in outline, at least, the situation as described here is not too unexpected under conditions of long continued and intense contact, especially where the lending language is a subject of formal instruction and the urge toward its acquisition is reinforced by obvious social and economic advantages. That this should find expression in the formal structure (in this case the phonemic pattern) of the borrowing language is perhaps less predictable but still not astonishing. There will be other considerations of interest when a thorough treatment of the morphology and syntax of Tepehua allows the description of parallel influences on these levels.
7. Conclusions. Regular analytic procedures have been adequate in providing a relatively simple description of Tepehua phonology, one in which it has been necessary to posit only a single phonemic system. If it is recognized that all of the phonemes of a system are not equivalently related one to another, then there is no need to posit a plurality of systems in order to encompass the data.

Consideration of the relative degree of integration of the various phonemes and a rough estimate of their relative frequencies allows the specification of points in the system where change is going on most rapidly. The end products of the changes in progress are too much dependent on the influence of extra-systemic factors to warrant any attempt at their prediction.

Comparison of loan words in Tepehua with the presumed Spanish sources allows the distinction of two types of treatment of Spanish model forms: 1) modification to correspond to the native Tepehua pattern, and 2) acceptance of non-Tepehua distinctions, partially integrating them
within a modified pattern. Type 2 would appear to follow 1 in time and be the consequence of lengthy contact, the extension of bilingualism, etc.

Further Tepehua data would make possible a number of related research projects: a clarification of the extent of participation of peripheral phonemes in the pattern, a statistical formulation of the concept of degree of integration, and an examination of the possibility of Spanish influence on morphology and syntax. Materials from other dialects of Tepehua (several of which are reported) would allow the study of the recent history of the language and perhaps allow a parallel examination of Spanish influence on reasonably comparable systems. A detailed study of Tepehua-Totonac relations would give a respectable time-depth to available knowledge of both languages. Both Tepehua dialect study and comparison with Totonac would allow us to go beyond this preliminary attempt at systematization of the study of structural influences between languages.
Appendix

Items 1 - 343 are listed here in the order in which they appear in my files. The remainder are by way of errata, having been previously omitted, or gleaned from unfiled materials to fill gaps in the distribution diagram where possible. Letters in parentheses following the glosses indicate the provenience of the form, or a part thereof. (w) refers to my own materials and (m) to the vocabulary in Dr. McGowan's field notes. Where (w) and (m) have shown differing transcriptions of a form, the selection has sometimes been influenced by a Potsomac cognate from Aschman (1949). Where this has been the case it is indicated by (a). In cases where selection between alternatives has been more or less arbitrary the difference of the other transcription has been indicated after the gloss.

Numerals and numerical affixes are attested in a brief article by Miss Bethel Bower (1948). These are not referred to here unless points of difference occur. The appearance of other forms in this article is indicated by (b).
1. / pukiáwti / 'vapor' (w, m)
2. / pušquya? / '(el va a) buscar' (w, m, a)
3. / pumpú? / 'ropa' (w, m)
4. / puma·tam 'adi? / 'una niña' (w, m)
5. / puma·tam la·panak / 'un hombre' (w)
6. / pa·sahni / 'estómago' (w, m)
7. / pa·šqa / 'comel' (w, m)
8. / pu·tahún / 'cuna, un tipo de canasta para desgranar el maíz' (w, m)
9. / pa·nimak / 'algodón' (w)
10. / pu·qapéy / 'vacío' (m)
11. / pu·s / 'pues' (w, m)
12. / pu·sat·aškáti / 'arroyo chico' (w)
13. / pu·1a·č'í·n / 'cárcel' (w, m)
14. / pu·yuš / 'gallo, pollo' (w, m)
15. / pu·hitat / 'iglesia' (w, m)
16. / titàán / 'ellos van' (m)
17. / tink'úšk'úš / 'teponastle' (w, m)
18. / tapakawut / 'nombre' (w, m, a)
19. / tapú·n / 'quechquemitl' (w, m)
20. / tap'a·snišká·n / 'orilla del río' (m)
21. / tusa wá /
21. / tas'aú /  
22. / tupalay / 'que él existe el macho' (w)  
23. / hu·nima /  
24. / má·cu./  
25. / tampé'suh / 'un peso' (w, cf. b)  
26. / tampa / 'tambor' (w, m)  
27. / tampa-k'á·ta /  
28. / 'u·ahún / 'ya hace un año' (m, m: / tampa·ta / 'año', a)  
29. / hu·caway. /  
30. / taminta / 'ellos vienen' (m)  
31. / tamiácatayá? / '(ellos van a) bajar' (w)  
32. / tamuyá? / '(ellos van a) comprar' (w)  
33. / tanq'álí·n / 'canasta' (w, m)  
34. / taalaahá / 'ganaron (ellos)' (m)  
35. / taallaahádí / 'ya ganaron (ellos)' (m)  
36. / taallá-naá / '(ellos) están sentados' (m)  
37. / tahúm laqpuq·ə·mú? / 'se están cayendo [lagrimas]' (w)  
38. / tuquisíaí ·hu·caway / 'ya está la tarde' (w)  
39. / tumi' ·n / 'dinero' (w, m)  
40. / tumkuáci / 'ya amaneció' (w, m, a)  
41. / tiháí / 'rana' (w, m)  
42. / tí·n / 'semilla' (w)
43. / ta·saúnciéc / 'cuánto?' (w)
44. / ta·saú·'ancaéc / 'dónde?' (w)
45. / ta·swánanc / 'cuándo?' 'w, m)
46. / sapapat'ún / 'tierra colorada' (w)
47. / cuqu·uñf / 'indígena' (w)
48. / fulúnti / 'orina' (m)
49. / ci·siéc / 'anoche' (w)
50. / sa·siniškā'n / 'lluvia' (m)
51. / ciwi·n /.
52. / wa·'cu'ù?/ 'hable yo mas primero que tu'
53. / peró / (w)
54. / 'ikéiwí·n /
55. / ciwi·níá / 'hablo' (w)
56. / čana· / 'coa' (w, m)
57. / čawlát / 'guajalote' (w, m; / čawlá? /)
58. / čah'ít / 'granizo' (w, m)
59. / ci·lát / 'gallina' (w)
60. / ci·wá / 'piedra' (w)
61. / čú·esti / 'todo' (w, m)
62. / čú·n / 'mojarra' (w, m)
63. / káhsá / 'gané' (m)
64. / káhsá·wói / 'ya ganamos' (m)
65. / kwa·štulaqpu·tam / 'bisco' (w)
66. / kiʔašukuni / 'mi vida' (w)
67. / kiʔakásak / 'mis canas' (w)
68. / kiʔaksítit / 'mis sesos' (w)
69. / kiʔaqámuʔt / 'mi sombrero' (w, m)
70. / kiʔaqáwiliʔn / 'mi quechquemitl' (w)
71. / kiʔaqásqu’a / 'mi oreja' (w, m)
72. / kiʔak’áni / 'mi sangre' (w, m)
73. / kiʔami’goʔ / 'mi amigo' (w)
74. / kiʔami’goʔán / 'nuestro amigo' (w)
75. / kiʔukápuʔ / 'mi cara' (w, m)
76. / kisi-maq’áti / 'mi lengua' (w, m; / si-maq’áti /
77. / kisq uy / 'mi perro' (w)
78. / kišiʔa / 'mi mocó' (w)
79. / kimpóšiliʔ / 'mis muelas' (w)
80. / kimpistúʔ / 'mi cuello' (w, m)
81. / kimpahán / 'mi barriga' (w, m; / pa-hán /)
82. / kimpá:luʔ / 'mis tripas' (w, m)
83. / kimpá:ya / 'mi padre' (w, m)
84. / kimpú-laqíʔan / 'mi espalda' (w)
85. / kimaqastaʔ / 'mi piel' (w, cf. mi / ?ašáq’a / 'pelaje')
86. / kimaqšaqaʔ / 'mi esperanza' (?) (w)
87. / kimahq'í-sit / 'mi uña' (w, m)
88. / kinta·kašán / 'mi sien' (w)
[Transcription not visible]
111. / kaš' _uqnumá? / 'escribistes' (?) (w)
112. / kaš'a·ákaniw / 'trabajamos' (w)
113. / kaš'a·ná? / 'va' (m)
114. / kaš'a·wó / 'vamos' (m)
115. / kalaqdiwi·náw / 'hablemos' (w)
116. / kalaqka·ma·náw / 'quebremos' (w)
117. / kalaqítatawá húa·caway / 'vamos a dormir, ahna' (w)
118. / kawanayu / 'caballo' (w, b)
119. / kobreh ka·suh / 'paila de puro cobre' (w)
120. / kući·luh / 'cuchillo' (w, m)
121. / kusti·ruh / 'costillas' (w, m)
122. / kumpá·reh / 'compadre' (w)
123. / kumpá·lipá·y / 'padrino' (w, m)
124. / kumá·lič / 'comadre' (w)
124.5 / ka·qčuhnana? / 'escupistes (?) (w)
125. / ka·p'añana·w / 'barremos' (m)
126. / ka·t'i·ni·wó / 'vamos a bailar' (w)
127. / ka·nádiyáwá kwentan / 'vamos a hacer cuentas' (w)
128. / ka·nalaqdi·ni hu·kinta·tá / 'voy a ir a ver a mi papa grande' (w)
129. / ka·nawiya? / 'vamos a hacer un baile en esta noche' (w)
130. / laqatám / 'vamos a hacer un baile'
131. / bayle / 'vamos a hacer un baile en esta noche' (w)
132. / tatá·i·sá /
133. / kaśtu / 'caldo' (w, m)
134. / ka-wayhi-wé / 'vamos a comer' (w)
135. / ku-mpusántu / 'campo santo' (m)
136. / ku-tanco / 'ayer' (w, m)
137. / galuqu-stápu / 'frijol torito' (w)
138. / galatáhi / 'esco' (m)
139. / qaystán / 'cal'
140. / qu-d'ipi-ga / 'jejen' (w, m)
141. / p'ín / 'chile' (w, m)
142. / p'inchí / 'vete' (m)
143. / p'ina-p'í-t'it / '(Uds.) van' (m)
144. / p'asá-p'í / 'te bañas' (m)
145. / p'úkení / 'cedro' (w, m)
146. / t'ákt'a / 'elote' (w, m)
147. / t'ac'ay'n / 'borracho' (w, m; / taq' - /
148. / t'ánt'ac / 'vienes' (m)
149. / t'ánt'a-t'it / '(Uds.) vienen' (m)
150. / t'uypé'su / 'dos pesos' (w, m, cf. b)
151. / t'u-samchí / 'anteayer' (w, m, cf. b)
152. / t'ú'n / 'tierra' (w)
153. / ñ'ítí / 'negro' (w, m)
154. / ñ'ink'i / 'pesado' (m)
155. / ñ'i-staó / 'la noche' (w)
156. / #'a·spú? / 'pantorrilla' (m)
157. / #'u·q'u / 'pájaro' (w, m)
158. / d'isñi / 'zapote blanco' (m)
159. / c'ulúš / 'tejón' (m)
160. / é'a·aka·tnría? / 'trabajador' (m)
161. / d'ú·n / 'zopilote' (w, m)
162. / k'íw / 'árboles, leña' (w, m)
163. / k'agstinaqmayá? hu·kincaqá? / 'voy a techar' ni casa (w)
164. / k'úš'u / 'remedio' (w, m)
165. / k'a·?uí / 'plato' (m)
166. / q'ayk'iwi·n / 'mote grueso' (w)
167. / q'ay'ú·n / 'salzón' (w)
168. / q'aydyós / 'Dios' (w)
169. / q'ayška·n / 'río' (w)
170. / q'aya·s'isí? / 'viruela' (w, m)
171. / q'ulú·n / 'ejote' (w, m)
172. / 'ikciwi·n? / 'voz' (w)
173. / 'ikái·tahu·am / 'encontré' (w)
174. / 'ístalaqciwi·nín wa·čuí? / 'hablaban también' (w)
175. / 'ísta·ahay / '(ellos) ganaban' (m)
176. / 'isq'aqsavili·n / 'su quechquemiti' (w)
177. / 'is'anú? u·q'asni / 'es suya la jicara' (w)
178. / 'iia·aysí·t'it / '(Uds.) ganaban' (m)
179. / 'ilahayá·w / 'ganabamos' (m)
180. / 'atapú·s'a? / 'nubes' (w, m)
181. / 'akpu • ā' / '(voy a) cortar' (w)
182. / 'aktamaqa • štuq' / 'me voy a casar' (w)
183. / (?a)ktuq'ayá' / 'me voy a levantar' (?) (w)
184. / 'akmišpayá' / 'me voy a cantar' (w)
185. / 'aklaqdi • ná' / 'voy a ver' (w)
186. / 'aqáš'túy / 'dos pesos' (w)
187. / 'ad'ú' • š'ú • nún / 'tú fumas' (m)
188. / 'ad'íti • n / 'hierba' (m)
189. / 'aqú • utnút / 'trago' (w, m)
190. / 'abri • á / 'abril' (w)
191. / 'asa • na? / 'música' (w, m)
192. / 'aštašknú / 'palma' (w, m)
193. / 'amaqeni • t / 'triste' (w, m)
194. / 'amumiqí / 'zapate prieto' (w, m)
195. / 'amí • goh / 'amigo' (w)
196. / 'amatiwa • kaš / 'vaca' (w, m)
197. / 'amí • č / 'aquí' (w, m)
198. / 'alapná? / 'llama' (w, m)
199. / 'ala • saní • n / 'un muerto' (w, m)
200. / 'alñu • quín / 'tú roncas' (m)
201. / 'alñi • ki / 'papel' (w, m)
202. / 'alu • mú? / 'corazón' (w, m) / 'ašímu • t' /
203. / 'awi·nt'í / 'allá' (w, m)
204. / 'awi·á / 'vaton' (w, m)
205. / 'uśkú·t / 'tabaco' (w, m)
206. / 'uśín / 'barro' (w)
207. / 'uśint'í / 'tú' (w, m)
208. / 'a·šaq / 'aguila' (w, m)
209. / 'a·kakayán / 'va 'áORDER'io' (?) (w)
210. / 'a·q'ašmáʔ / 'eyes' (m)
211. / 'a·la·ačí·á / 'ciego' (w)
212. / bi·bliya / 'biblia' (w)
213. / hu·bliya / 'la biblia' (w)
214. / dyá·koh / 'Diego' (w)
215. / stápu / 'frijol' (w, m)
216. / staq'áw / 'verde' (w, m)
217. / sti·mús kinčáhaʔ / 'mi talón' (w)
218. / sta·šúka / 'alacrán' (w, m)
219. / ská·ta / 'piojo' (w, m, a)
220. / sku·miá / 'olla' (w, m: /u·/)
221. / skwélaʔ / 'escuela' (w, m)
222. / aq'úá / 'flauta' (m)
223. / st'áku / 'estrella' (w, m)
224. / sq'ulí / 'chiflaś' (m)
225. / alap'úá / 'rojo' (w, m: /lapúá /)
226. / si· tami·n pla·tah / 'el dinero es de plata pura' (w)
227. / si· kóbreh hu·nimán / 'es todo sobre' (w)
228. / si· óroh hu·nimán / 'es todo de oro' (w)
229. / sa·ntuh / 'santo' (w, m)
230. / sa·ntuhni / 'imagen' (w, m)
231. / sa·wk'asánta / 'ligero' (m)
232. / átalapuq'u·lut kinč'ahá'/ 'mi tobillo' (w)
233. / škawa·w / 'amarillo' (w, m)
234. / šku·ná' / 'fosilo' o 'concho' (w)
235. / sqán / 'mosca' (w, m)
236. / šquípat / 'pólen' (w, m)
237. / šk'iwi·nišp'ás / 'jaba' (w)
238. / šwá·ti / 'metate' (w, m)
239. / šišni·p'ín / 'chile seco' (w, m)
240. / šákšahiy / 'ganaba (yo)' (m)
241. / šanúi / 'un salatución' (w)
242. / šump'íp'í / 'cucaracha' (w, m)
243. / ša·qa / 'temascal' (w, m)
244. / ša·náí kišq'úy / 'mi perra' (w)
245. / mi· anú· u·q'asni / 'es tuya la jícara' (w)
246. / mi· anú· u·aqšawilí·n / 'es tuya la quechquemitl' (w)
247. / ?a·fyéruc / 'arriero' (w)
248. / miāpayá? / 'voy a cantar' (w)
249. / miyortómoh / 'mayordomo' (w, m)
250. / mačí·tah / 'machete' (w, m)
251. / maklúk’a / 'hígado' (m)
252. / maqtilí? / 'tigre' (w, m)
253. / maqstúma·d’iti / 'pinto' (m)
254. / maqywá / 'frijolnegro' (w)
255. / maqstuquáš hu·?anú· óqu’úá / 'ya se caso o mu
mujer' (w)
256. / maqka·wa·kaá / 'un tipo de canasta' (w)
257. / mak’iti·sqam / 'sancudo' (m)
258. / morá·ruh / 'plátano morado' (w)
259. / musni / 'mecapál' (w, m)
260. / ma·pašá? / '(el va a) pagar' (w)
261. / ma·tic hu·?išpuqu’úá ni·tač / 'ya no tiene marido;
está muerta' (w)
262. / ma·tupík / 'mariposa' (w, m)
263. / ma·ti·wi·n / 'no esta' (w)
264. / má·ču / 'macho' (w)
265. / ma·qtuqušá·y / 'buenas tardes' (w)
266. / ma·ští·čí / 'puerta' (m)
267. / ma·aki·yu? / 'luna, mes' (w, m)
268. / ma·ái·yuńu / 'araña' (w, m)
269. / ma·qšnu? / 'tecolote' (w, m)
270. / ma·ño·ni / 'meno' (w, m)
271. / nípél / 'calabaza' (w, m)
272. / nakaquntí-ní? / '(tengo) catarro' (w)
273. / ní-taec / 'muerte' (w, m)
274. / nata'amán / 'esta muy alto' (w)
275. / nakaquptae / 'estoy muy cansado' (w)
276. / nakaqupteani / 'quijada' (w)
277. / naiqúpa / 'aliento' (w)
278. / na'achaniyan alí-chu'ka'ahu-nú? / 'te quiero mucho, con todo corazón' (w)
279. / nailín 'u-chi-wá / 'hay muchas piedras' (w)
280. / na'uschaqakan / 'está muy limpio' (w)
281. / na'siesta / 'está muy seco, -flaco' (w)
282. / naliyak'uch'u-núm hu'anan la'panak /
   'sabe curar aquel hombre' (w)
283. / na'laqat'ikst'i / 'está muy chicito' (w, m)
284. / cháshán 'ucaway / 'ya está' (w)
285. / nali-tusisit humi't / 'está muy sucio' (w)
286. / na'ikakáé / 'está muy caliente' (w)
287. / nai'k'asni'nt / 'hace frío' (w)
288. / na'uu / 'mucho' (w)
289. / na'uu'alin'ukiw / 'hay muchos árboles' (w)
290. / na'uu'ma'chi-wá / 'hay muchas piedras' (w)
291. / pú-fuh / 'burro' (w)
292. / hu-kit'in mítahu / 'encontré' (w)
293. / laqak'íwi'n / 'monte' (w, m; -a-ki-/i, a)
294. / laqki'si pešuh / 'cinco pesos' (w, cf. b)
295. / laqti'ya'n / 'cielo' (w, m)
296. / laqskiškaw't / 'pelo blanco' (w)
297. / laqsumúy / 'sopla' (m)
298. / laqadahin / 'ocho' (w, m)
299. / laqada'sán / 'seis' (w, m)
300. / laqaki'a / 'cinco' (w, m)
301. / laqaki'sp'ušás / 'ciento' (w, m)
302. / laqaka'wtám / 'once' (w, m)
303. / laqaka'uki's / 'quince' (w, m)
304. / laqaka'wt'utú / 'trece' (w, m)
305. / laqaka'wnahá'f / 'dies y nueve' (w, m)
306. / laqap'ušás / 'veinte' (w, m)
307. / laqap'ušamtám / 'veintiuno' (w, m)
308. / laqap'ušamk'w / 'setenta' (w, m)
309. / laqst'tútú / 'treinta' (w, m)
310. / laqst'a-t'í / 'quatro' (w, m, cf. b)
311. / laqac'ušín / 'cascabel' (w)
312. / laqawiq'íáč / 'arruga' (w)
313. / laqtašpán / '(donde) hay muchos cerros' (w)
314. / laqtačaq'n / 'pueblo' (w, m)
315. / laq'uliki-stápu / 'frijoles (tipo de)' (w)
316. / la·kimu·nnan / 'en mi frente' (w)
317. / la·q'ayti / 'pleito' (m)
318. / la·išmu·nnan / 'en su frente' (w)
319. / la·nimu·nnan / 'en tu frente' (w)
320. / la·am·ma·kuku / 'en donde hay mucho arena' (w)
321. / apaw / 'mango' (w)
322. / akapun / 'macho' (w)
323. / aqatiku·ruh / 'diablo' (w)
324. / la·a·t'it / 'Uds. ganaron' (m)
325. / lit'anta / 'tú traes' (m)
326. / a·šin / 'nariz' (w, m)
327. / wa·ti / 'tortilla' (m)
328. / wa·sí·sin / 'ya está la mañana' (w, m) / wa·d'i·sin / 'temprano'
329. / wa·cup'ú·la talaq·qiwí·níl / 'hablaron antes también' (w)
330. / wa·k'uh'um / 'me viene tos' (w)
331. / wa·fikwí·či / 'estoy sentado' (m)
332. / wa·aq'ašawa'ñ / 'es ladrón' (w, m)
333. / wa·wik'íči / 'estás sentado' (m)
334. / wa·laqapu·qawí·añ / 'ya está ciego' (w)
335. / yaqáá / 'blanco' (w, m)
336. / yú·c / 'él' (w, m)
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<td>yu·ù·néc / 'ellos' (w, m)</td>
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<td>hípi / 'fuego' (w, m)</td>
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<td>340.</td>
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<td>341.</td>
<td>hu·kit·ín akwaynéč / 'vivo a comer' (w)</td>
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<td>'ikciwi·nín / 'hablo' (w)</td>
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<td>'ikč·ánit / 'ya sembré' (w)</td>
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<td>'ikq·asmač / 'oigo' (m)</td>
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<td>'iškamí·sa hu·t·akút / 'es la camisa de la mujer' (w)</td>
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<td>'ist·akút hu·t'anú·la·pañak / 'es la mujer de aquel hombre' (w)</td>
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<td>354.</td>
<td>'akt·asayá? / 'voy a gritar' (w)</td>
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<td>'akša·wayá? / 'quemará' (w)</td>
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<td>'akma·āči·tq·aya? / 'voy a abrirlo' (w)</td>
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</table>
360. / 'akamaqni-nina' / 'voy a matar.' (le) / (w)
361. / 'ak'um'uyán / 'te voy a curar' / (m)
362. / 'u-tusaityut / 'pendentes' / (w)
363. / 'a-qéú / 'cabeza' / (w, m) / akú /)
364. / 'a-qéúm / 'hombros' / (w)
365. / 'a-t'á-a / 'tinte' / (w)
366. / 'u-daway hánte / 'ya no!' / (w)
367. / 'apu-kiá'uc'un / 'beso' / (m)
368. / kinqiqést'áq'a / 'mis labios' / (m)
369. / taqiaq'á-ti / 'vos' / (m)
370. / qaá'san / 'barbas' / (w, m)
371. / siz'ik'ít / 'senos, tetas' / (m)
372. / 'aqál'isán / 'estornudar' / (m)
373. / élaqcuñáka-n / 'ojo de agua' / (m)
374. / pu'aq'úm / 'lodo' / (w, m)
375. / ñmáqpu / 'rana' / (m)
376. / li'uti / 'fruta' / (m)
377. / ésiñi-pin / 'chile seco' / (w, m)
378. / pu'dinkakas / 'horno' / (m)
379. / pa'saqi-n / 'molcajete' / (m)
380. / pa-maqlawa'i-n / 'anzuelo' / (m)
381. / 'aq'apswa-yanti / 'hilera' / (m)
382. / t'a-hi-n / 'trueno' / (m)
383. / ta-šá-ntí / 'miedo' (m)
384. / 'ik'í-n / 'te enarre' (m)
385. / ta'sák'íp'íp'í-tniá / 'tremblaron' (m)
386. / tihú·ó hu· laq's'int'a / 'que has visto?' (w)
387. / pa'sák'ítkín / 'peine' (m)
388. / pa-qastaq'atpa·mat / 'robalo' (m)
389. / 'ama·laka·mumu·tpá? / 'Dios' (m)
390. / laq-tááp / 'cerro' (w, m)
391. / ma·qašúq / 'es casado' (m)
392. / 'a·t'amt'íć / 'pase·sendentro' (w)
393. / kimplsuq / 'mi hermana mayor' (w)
394. / kint'ala·pušátimptí wa·ćú? / 'es también mi
pariente' (w)
395. / payta·t-šá·luh / 'céntaro' (w, m)
396. / 'ukští·n / 'patron' (w)
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Trager, G.L. (1945), "Map of North American Indian Languages", *LAL* 11, 186-89. (Also see Mason, 1940).


Pg 15. "Cuerno" he has written in isolation as [galogu]. It is really [ga:logot]. Therefore "cuerno" & "gujiol" become [ga:logot stapu].


Pg 22. /sag:qa/ not /sa:qa/ for "temazcal".

Pg 21. /ca:lu:n/ for hormiga not /ca:an/ as he chose.

Pg 26. /a/ occurs before and after back vowels, but /o/ does /a/ of /gra:y/ big

Pg 27. The word for "nuna; nuna" should be /puti:horo:qa/ not /puti:hurqa/ as he chose.

Pg 29. The word for escaleras should be /ca:ka:n/ not /ca:han/ as he chose.

The word for "mi semilla" should be /kintin/ not /kintin/ as he chose.

Pg 31. [tšau la:t] is not gallina but turkey & is written /tšaw la:/
pg 42

1. Kst/ /lakinakst/ not /lacakikst/ 1
2. Kst/ /maktwak/ not /maktwaka/ 1
3. Gsk/ /lakšgat/ not /lagškati/ 2
4. Gtt/ /lakšhattawuč/ not /lakšhattawuč/ 1
5. Ydy/ /g'ay dyos/ not /g'aydyos/ 1
6. Ysk/ /g'ay škem/ not /g'ayškem/ 1

pg 48
10. Kčiño/ not /Kčiño/ 1
12. Kumaši/ not /Kumaksi/ 1
15. Kapmsantua/ not /Kapmsantua/ 1
15. Wakiš/ not /Kanišk/ 1

pg 49
27. Santua/ not /Santuhni/ for "imagery" 1

pg 62
5. Pumatau/ Lapaña/ 1
1. Pašqa/ 1
15. Pukitač/ 1
15. Tapagačuč/ 1

pg 63
27. Tamokaču/ 1
32. Tamuqaču/ 1

These are written as I think they should be accredited.
42./tʃi:n/

43./tʃiːtʃunːəˈɛə/

44./dʒuːˈnʌn/

51-54

/cha:ˈniːn in waːtə pər ʔi:kəwiːniŋ/

59./tʃiːləd/ means turkey

61./tʃuːˈʃni/

63./tʃiTKəhət/

64./tʃiTKəhaːwɛ/

65./ʔi:kwaːstit ləg puːtəm/

66./tʃi:ˈʃək ʃiːKuntu:

67./tʃiːk ʻʃək ʃəsət/

68-109 all words should begin /ki:/

77./tʃiːˈʃiːɡər/

83./kiːmpəɡ/

84./kiːmpuːˈtəkən/

86./kiːˈmaɡaʃtaɡa:

89./kiːntəntsəˈtəkniː/

91./kiːn ɛuχut/

98./kɪŋɡəˈdʊn/

101./kɪŋɡəˈʃni/
107. 

108. 

110. 

111. 

112. 

113. 

115. 

116. 

117. 

120. 

124. 

124a. 

125. 

126. 

128. 

129. 

-132. 

133. 

135. 

137. 

139. 

147.
3

Pg. 148. Ṛántāći

Pg. 149. 17ak'agstimnegmaya? hu. Kinčagāj

165. Kčuna

167. /lgayunu'n/ (the way he has it means big wind)

168. /lgaydyoc/

169. /lgayša:n/

172. /̱I, Kčwi'in/ I am talking

174. 17istalakčwi'in waču?

177. 17ušanu? hu. głašni

179. 17ukhāya:w/

Pg. 183. It means me voy a salir

186. /wa.Kaš /

202. 17atunut/

192. 17amii /

205. 17ušKut /

208. /Ta.ingu /

209. 17ak'akayan) voya morderte

211. 17alaq'a:čişi

Pg. 227, 228. /--- hu. ni:ma /

230. 18u:ntuk /

231. 13aw K'a:hān /

235. 15qa:n/
239 /šišni-pin/
241 /šanēi/
243 /ša.qa/.
245 /mišanu² hu. qa.šnii/
246. /— — hu. — — /
248 /žakmit pa. ya²/.
251. /maštwalk/
255 /magaštugta² hu. ṣanu. ṣagudut/
256. /ma. fawa. kαt/
257 /ma. haši ti šėgan/
260. /ka. ma. pa₁a²/.
261. /mat₁i. c/
263. /mat₁i w₁i/.
264. /na. ₁i. ḳakštunti. ni²/.
274. /na. ta. taimi. /
277. /means the same as 276
278 /na. ta. qaščani. yan. ši. ŋu. ši. ḳatuny/.
279. /na. tašin hu. ŋi. w₁ə/.
282. /na. lay ta. ŋu. ti. ṣanu. ni ḳanu. laša. n/.
283. /na. la. ḳat. ḳaši²/.
284. /šešahun hu. ŋaway/
286. /na. ti. kαf/
289. /na. tu. tašin hu. ŋi. w₁ə/.
290. /na. tu. ma. ḳ. ŋi. w₁ə/. 
292. /hu. kitin niktii tahu./

295. /lak'ti...yan/

308. /means tso but gente/

313. /lak'ti...tapi/n/

316. /la. Kii mun'yan/

319. /la. mi...mun'yan/

321. /means pawaw? (sorta like an avocado)/

323. /la. Kii Kuru../

328. /wa'd'osin/

329. /wa'eu? pulin talakëiwini?

337. /yu. ñe xat'ti tahwy/

341. /hu. kitin da'keiwani?/

342. /hu. yunë...tala'keiwini...tad/

343. /hu. yu.ë ka'ëïwi...n/

347. /sik'as mat/

352. /--- hu...takü?/

353. /kit'tii...hu...tana...lapana.../

354. /Da'ke...sa...ya?/

355. /Da'kang'a...ya?/

358. /Da'kswa...ya?/

359. /Da'Kma...tö'ga...ya?/

361. /Da'Kwu...yan/

363. /Tagfu...t/
364. /yagšpūn/
366. /hu· ěaway hantee/
378. /iš-the place where male brown sugar, not a break over.
383. /tatanti: /
384. /diši'iyaw/
386. /t•hu· ʃhu· lašṭintal /
390. /lakat'atpa /
391. /mašaštugtač/
392. /našanu·tič /
393. /kimπisiga /
394. /kinta·la·puštimpti· wacu ／
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