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0. Words have been borrowed and assimilated into Tataltepec Chatino¹ at various times from at least 3 other languages, namely Mixtec, Nahuatl and Spanish. Surprisingly, there does not seem to be any evidence of borrowing from Zapotec, even though it is spoken close by. This paper does not deal with loans in use throughout the Chatino area, although a few comparisons have been made between Tataltepec speech and that of the mountain town of Yaitepec.² The historic subjugation of the Chatinos by the Mixtecs, which continued when subsequently the Mixtecs became vassals of the Aztecs, makes it seem likely that the words of Mixtec and Nahuatl origin were borrowed earlier than those from Spanish. However, some words of Spanish origin show a much greater degree of assimilation than others, which indicates borrowing at different times, and/or indirect borrowing via Mixtec and Nahuatl, since direct contact with Spanish speakers probably came rather later for the Chatinos. With increasing educational opportunities, which mean a growing knowledge of the Spanish language, modern loans are modified often only by the strongest phonemic features of Chatino; conversely, the "Chatino accent" identifying Chatino speakers speaking Spanish has become less marked, but is still apparent from the influence of the strongest Chatino phonemic, grammatical and lexical patterns on the pronunciation, word order and vocabulary used when speaking Spanish.

The overwhelming majority of these borrowed words (about 90%) are nouns to cope with newly introduced animals, plants, officials, ways of life and concepts such as days of the week and months of the year. All personal names are borrowed also. Borrowed verbs may become Chatino nouns;

e.g. almorzar → msa: 'almuerzo'.

Such verbs are often used as the object of a native Chatino verb, and such verb-object combinations act as discontinuous lexical items (interrupted by the subject), which results in an increase in the verb lexicon. The Chatino verb most commonly used in this construction is 'make, do':

e.g. K^wa?ni ngu? msa: 'harán ellos almuerzo, i.e. van a almorzar'.

Nowadays the more bilingual speakers use Spanish verbs in this environment very frequently, although the majority of speakers continue to use the original Chatino equivalents, which are cited also for each of the examples below:

e.g., rociar → rosyā as in nd^yu?ni ngu? rosyā/ nsk^wĩ ngu? tana
hacen ellos rociar rocian ellos medicina

'están rociando (contra el paludismo)'.
servir → serwi as in ng^wa?ni yu serwi/ nda yu na kaku

hizo el servir dió el algo-de-comer,

'ya lo sirvió'.

Such verbs, which exhibit minimum predictable changes, are not cited in the corpus of loans given in 2.1.

Other borrowed words are used as modifier within the verbal phrase, and again add to the verb lexicon. The modifier in this construction is usually a special adverbial form of a Chatino verb, ^{or a body part} but several Spanish nouns have been adopted in this manner, and a few words from other grammatical categories:

e.g. / cuenta → k^went^ya as in ~~xxx~~ t^yu?u k^went^ya hi?ĩ yu 'van a juzgarlo'
saldrá cuenta de él

manso → masu as in ndu?ni masu hi?ĩ 'lo amansa'
hacen manso a-él

A very few descriptives and connectives have been borrowed ~~which continue to be used as such~~; e.g., azul → ?asu, más sea → masi 'aunque'.

At least three borrowed words in general use and well assimilated in Tataltepec have not introduced any new concept, but rather have replaced the original Chatino terms which are still in use in other areas:

e.g. Yaitepec - lak ^w isu?	'gaujolote'	Tataltepec - kolo
ča? k ^w iči	'conejo'	konehũ?
kuši?	'azul'	?asu

In the following pages an attempt will be made to illustrate the various phonological processes felt necessary by the Chatinos of Tataltepec in order to assimilate borrowed words and to shear them of their foreignness. All Chatino examples are given in phonemic script unless otherwise indicated, except that the tone is not marked.

1.0 A brief description of the phonemic system is given first as an explanation of the subconscious language pattern pressures that produce lexical items acceptable to Chatino ears and possible for Chatino oral apparatus to reproduce.

1.1 The minimum phonological phrase consists of one phonological word, which may be augmented to a maximum of 5 - 6 ^{phonological} words, one of which has a dominant stress, i.e. a phrase stress. Not every phonological word may occur as a minimum phonological phrase, however, as some modifiers occur only in expanded phrases. Phonological phrases are separated by a brief pause. Neither phonological phrase nor words necessarily coincide with lexical or grammatical phrases or words. This is illustrated by certain longer loan words with other than word-final syllable stress which split into 2 phonological words in order to assimilate to the Chatino word patterns: /h^{ya} kamō/;
 e.g. jícamā → [h^yã ka'mã], granada → [ngah^{na}: 'ra], /ngahna: ra/.

The minimum phonological word consists of one stressed syllable. This may be preceded by up to 4 unstressed syllables, although the most frequent word pattern is a disyllable. Longer words occur very infrequently and are most often verb forms, while the maximum phonological word of 4 unstressed syllables + the stressed syllable occurs as a very few compound verbs only. Some of the longer borrowed words exhibit quite startling phonological changes in order to conform to the shorter Chatino word patterns.

Word boundaries may be identified in a speech continuum as follows:

1. Two contiguous stressed syllables belong to 2 words, since each word has only one stressed syllable, which always occurs word-finally.
2. Non-stressed syllables belong to the same word as the following stressed syllable.

~~XXXXXXXXXXXXXXXXXX~~

The word pattern that occurs most frequently is CV.CV, and many loans are modified to conform to this pattern. Words that already conform, ^{when borrowed,} and include ^{often} no phonemes incompatible with Chatino inventories for such words, just have the stress moved to the final syllable and a tone pattern imposed:

e.g. taza → [ta'sa] high - low, mesa → [me'sa] high - low.

Such words with no further change are not cited in the corpus of loans given in 2.1.

The phonological word may be diagrammed as follows:

± Pretonic III ± Pretonic III/Pretonic II/Pretonic I ± Pretonic I + Stressed.

The minimum syllable consists of one consonant phoneme, but this never occurs as the stressed syllable in a word. There are 4 types of syllable, of which the stressed, pretonic I and pretonic II types involve a vowel peak preceded by a consonant onset, and which may or may not be followed by a consonant coda. The pretonic III type involves syllabic consonants only.

Stressed syllables always occur word-finally and may be of the constituent patterns CV, CV? or ?CV, in which the vowel peak may be short or long.

Pretonic I syllables are of the constituent pattern CV and immediately

precede the stressed syllable. The vowel peak may be short or long. There may be up to 2 pretonic I type syllables in a word.

Pretonic II syllables are of the constituent pattern CVC in which the vowel peak may be short or long, and they may precede a single pretonic I syllable in a word. *This is the syllable type that occurs most infrequently, but the frequency is considerably increased by its occurrence in loans.*

Pretonic III syllables are of the constituent pattern C, and occur only word-initially ~~xxxxxxx~~ or following another pretonic III syllable as there may be up to 2 such syllables in a word. A single pretonic III syllable may precede any other syllable type. The consonants included in this phoneme class are shown in the consonant table in 1.4 following. These syllabic consonants often are no longer phonetically syllabic in fast speech, but the native reaction is unambiguously able to give them syllabicity when required to pronounce words more slowly, or to hum or whistle a word. In the case of stops and affricates a transition vocoid is inserted to accentuate the syllable division, but this is much shorter than a phonemic vowel and does not necessarily have exactly the same phonetic shape as any ^{of the allophonic variants} of the 5 vowels that occur in non-stressed syllables.³

Apart from the pretonic III syllables, phoneme classes are most restricted within the ?CV stressed syllable pattern, and the CVC pattern of the pretonic II syllable, but ~~the~~ each consonant class inventory has been increased by the borrowed words. Where the loans have not increased the phoneme inventories for occurrence in a particular syllable type, they have increased the frequency of occurrence for the least common phonemes in a particular ^{phoneme} ~~class~~ inventory.

All syllables are characterised by pitch.⁴ Stressed syllables exhibit 7 possible contrasts: 3 rising glides - low ^{higher-than-} mid, ~~low~~ mid → high ~~mid~~, high mid → high; 2 falling glides, 2 level pitches - low, high. These contrasts are easier to perceive on long vowels but not otherwise altered. The penultimate syllable ^{exhibits} only 4 of these contrastive pitches: a rising glide, a falling glide, low, high. Other non-stressed syllables exhibit only the predictable level pitches low and high according to the environment, but all exhibit some pitch, including syllabic consonants. In the case of pretonic syllables involving only voiceless phonemes, the pitch may be actualised by intensity (which increases with higher tones) and/or by length in ordinary speech. However, if a speaker of Chatino is asked to hum or whistle an utterance including such syllables, they are unambiguously assigned a pitch. All borrowed words are also unambiguously assigned a word pitch pattern as they are assimilated. The most common is rising glide on the penult followed by low on the ultima, where the rising glide is often lengthened and always rises to high, which compensates for the stress having moved to the final syllable perhaps; this may be preceded by a pretonic III type syllable on a low tone:

e.g. docena → sen^yã, comadre → ma:li, ángel → ngahle.

When the ~~glide~~ vowel is lengthened, often because of phoneme loss, then the glide is more accentuated. This rising glide on the penultimate does not occur in recently borrowed verbs used in verbal expressions as mentioned in O. ~~1~~, but with these a falling glide occurs on the final syllable. Since the stress is already on the final syllable of a Spanish verb infinitive, this may be further evidence to support the suggestion that glides correlate with the original stress in borrowed words. Tone will not be indicated on individual examples in this paper.

1.2 Tataltepec consonants are presented in the following table:

stops	voiced	d	d ^y	g	g ^w
	voiceless	p	t	t ^y	k
affricates		c	ç		
spirants		s	ç		r
glottal spirants		h	h ^y		h ^w
sonorants	nasal	m	n	n ^y	
	non-nasal		l	l ^y	
	semi-vowels	w		y	

Explanatory notes.

- a) All consonants within the box of solid lines may be syllabic, i.e. occur as the pretonic III type syllable; the consonant /r/ has been added to this inventory by a few well-assimilated loans from Spanish, which explains the broken lines round it to expand the original box, and it may well be that /m, p/ occur only in loans also.
- b) When 2 pretonic III syllables occur in the same word, the word-initial syllable always comprised /m, n/, ~~but~~ ^{until} certain words borrowed from Spanish ~~have~~ added /k^ys/ to this inventory; the following pretonic III syllable comprises any consonant within the smaller box of dotted lines, ~~and the~~ ^{but} Spanish loans ~~durazno → ngla~~ ~~have~~ added ~~/r, w/~~ ^{/r, w/} to this inventory.
- c) The phonemes /r, m, p/ each occur in very few words apart from borrowed words, and it may be that /p/ occurs only in loans, although some of these are very old loans and very well assimilated.

A question may arise in the reader's mind now as to why the glottal spirant and semi-vowels were not interpreted as vowels when they occur word-initially as syllabics. No other word in Tataltepec Chatino begins with a vowel. 3 words begin with [ʔi-] where the vowel is voiced, i.e. ʔiçũ? 'espalda de uno', ʔike 'cabeza de uno', ʔit^ya 'agua', but the 2 body parts have alternative shortened forms where the initial syllable is dropped, i.e. çũ? 'espalda de uno', ke 'cabeza de uno'; metathesis seems to have occurred in the word 'agua' since ~~the~~ other Chatino cognates ~~all~~ begin with t- or t^y-, e.g. Yaitepec: ti'a^h 'agu'. There is also some evidence from other cognates of pretonic III type syllables consisting of w- or y- being equated with CV type syllables consisting of wV- or

yV-. Other Tataltepec words exhibit a CV syllable initially where the Yaitepec cognate has a pretonic III type syllable:

e.g. Yaitepec:	yka	Tataltepec:	yaka	'palo'
	wta		wata	'vaca',
but:	hta		hata	'sudor',
but:	yk ^w a		yk ^w a	'atole'
	wča		wča	'pasado mañana',

(cf. wiča from Zenzontepec).

A further question may arise as to why /w/ was not interpreted as /b/, since it has variants ~~[b]~~ [b], [b̥], (see below) and there is no voiced bilabial stop phoneme. With more assimilation of loans it may be that this phoneme will split to become /b/ and /w/, but at present environmental conditions explain both the [b̥] and [b] variants, whereas [w] has a much wider distribution. ~~Also a s~~ ~~xxxxxxx~~ /p/ seems to have been introduced by loans, and the voiced stops appear to be fairly recent phonemes, it seems more reasonable to interpret this phoneme as /w/.⁵

The consonants /d, d^y, g^w, p, k^w, ʔ, s, h, h^y, h^w, m, n, n^y, l^y/ have no major variants. Phonetic variants of the remaining consonants, other than simple syllabics, are distributed as follows:

The voiced velar stop /g/ tends to be articulated as [g] with a palatalised variant [g^y] preceding front vowels.⁶ A fricative variant [g̥], which occurs intervocally as the onset of the stressed syllable, has been introduced with recent Spanish loans: e.g. /ngä/ [n'gã] 'coco',
/nge: ti?/ [n^wg^ye: 'ti?] 'se despertó'
/loga/ [lo'ga] 'lugar'.

The voiceless alveolar stop /t/ tends to be articulated as [t] with a slightly voiced variant [d̥] occurring as the non-word-initial pretonic III syllable in a word: e.g. /nti?/ [n'ti?] 'quiere',
/ntka?a/ [n.d̥.kʌ'ʔa] 'está prohibiendo'.

The voiceless velar stop /k/ tends to be articulated as [k] with a slightly voiced variant [g̥] occurring as the non-word-initial pretonic III syllable in a word, a voiced fricative variant [g] occurring initially in a monosyllabic enclitic when it follows a vowel-final word,⁷ and a palatalised variant [k^y] preceding front vowels: e.g. /nkũ/ [n'kũ] 'tortuga',
/nkl^yũ/ [n.g̥.l^yũ] 'me caí',
/ʃi ka ti/ [ʃi 'ga 'ti] 'poquito nada más',
/nke?/ [n'k^ye?] 'está cocido'.

The voiceless alveolar fricative /c/ tends to be articulated as [ts] with a voiced variant [dz] following a nasal or occurring initially in a monosyllabic enclitic that follows a vowel-final word:

e.g. /co?o ca/	[tso'ʔo "dza]	'muy bien',
/ncatĩ/	[n.dza'tĩ]	'ciruela'.

The voiceless alveo-palatal affricate /tʃ/ tends to be articulated as [tʃ̥] with a voiced variant [dʒ] following a nasal: e.g. /tʃa/ [tʃa] 'afilado',
 /nʃa/ [n'dʒa] 'tiene mareos'.

The voiceless palatal rill spirant /ʃ/ tends to be articulated as [ʃ̥] with a slightly voiced affricate variant [dʒ] when it occurs as a non-word-initial pretonic III syllable preceding the consonant /k/:

e.g. /kuleʃu/ [ku.le'ʃu] 'zopilote',
 /nʃkaha?/ [n.dʒ.kʌ'ha?] 'hace que duerma'.

The voiced alveolar flapped spirant /r/ tends to be articulated as [r̥] with a voiceless variant [R] occurring word-initially preceding high back vowels or as a pretonic III syllable preceding a voiceless consonant. The variant occurs only in borrowed words: e.g. /kru/ [k'ru] 'tortolita',
 /ru:/ [Ru:] 'arroz',
 /ma rtoma/ ['ma R.to'ma] 'mayordomo',
 /krsiya/ [k.R.si'ya] 'corazón'.

The voiced lateral sonorant /l/ tends to be articulated as [l] with a voiceless variant [l̥] occurring word-initially preceding voiceless consonants when it occurs as a pretonic III syllable: e.g. /la:/ [la:] 'iglesia',
 /lce?/ [l̥'tsɛ?] 'lengua de uno'.

The voiced bilabial sonorant /w/ tends to be articulated as [w] alternating with a very slightly fricative [b̥] which becomes more fricative when the word is being emphasised. A continuant variant [w̥] occurs following /?/, a voiceless variant [W] occurs as a pretonic III syllable preceding voiceless consonants, a stop variant [b] occurs following a homorganic nasal, and a fricative variant [b̥] occurs alternating with a stop [b] word-initially preceding front vowels ~~except in a disyllabic word where the onset of the stressed syllable is ?C:~~⁸

e.g. /kuwe?/ [ku'wɛ?] or [ku'bɛ?] 'marrano',
 /ha?wa/ [hʌ?wa] 'plátano',
 /wtʃi/ [W'tʃi] 'seco',
 /mwoho?/ [m.bo.'ho?] 'globo',
 /wilʃa/ [bi'lʃa] or [bi'lʃa] 'falta',
 /wi?yu/ [b̥.'?yu] 'pasado pasado mañana'.

The voiced palatal sonorant /y/ tends to be articulated as [y] with a voiceless variant [Y] occurring word-initially as a pretonic III syllable preceding voiceless consonants: e.g. /yu ki?yu/ ['yu kI''?yu] 'hombre',
 /ykʷa/ [Y'kʷa] 'atole'.

1.3 All vowels occur as the peak of a stressed syllable which is occupied solely by a single vowel phoneme, although this vowel may be lengthened. The 3 nasal vowels do not occur in non-stressed syllables except in a few compounds. The vowels /o, e/ are the least common, but their frequency of occurrence is increased considerably by the addition of borrowed words to the lexicon. The

vowels are presented in the following table:

	front	central	back
high	i		u
	ĩ		ũ
mid	e		o
low		a	
		ã	

All oral vowels are slightly nasalised following a nasal consonant, but there is contrast with heavier nasalisation in a few words, and the vowels with heavier nasalisation have been interpreted as nasalised vowels. These instances are augmented by loan words: e.g. /ma/ '¿donde?' cf. /mã/ 'ustedes',
/ma rtoma/ 'mayordomo' cf. /h^ya kamã/ 'jícama'
/ni/ 'pronombre para diós'
cf. /nĩ/ 'relata, dice'.

Also, when the oral vowels /e, o/ are nasalised (nasalisation is the alternative first person singular pronoun), they become /ĩ, ũ/ respectively, and they maintain a distinction following a nasal: e.g. yane na? ~ yanĩ 'mi pescuezo',
ko?o na? ~ ko?ũ 'beberé'.

The vowels /o, ã/ are articulated only as [o, ã] respectively. Phonetic variants of the remaining vowels are distributed as follows:

High front unrounded /i/ tends to be articulated as [i] with a more open variant [ɪ] occurring in pretonic syllables with a voiced consonant onset where the following stressed syllable onset is /?/. A voiceless variant [I] occurs in unstressed syllables with a voiceless consonant as the onset, and a voiceless consonant other than /?/ following, except that this devoicing is suspended in loan words from Nahuatl. A more open voiceless variant [ɪ] occurs in unstressed syllables with a voiceless consonant onset and no coda, where the following stressed syllable onset is /?/: e.g. /kin^yi/ [ki'n^yi] 'pajáito',
/wi?yu/ [wɪ?yu] 'el cuarto día',
cf. /piti/ [pi'ti] 'chico' (?from Nahuatl),
/kit^yũ?/ [kɪ't^yũ?] 'olla',
/si?i/ [sɪ?'i] 'no es'.

The exception of the voiceless bilabials not causing devoicing mentioned above is necessary to accommodate 2 borrowed words discussed in 3.1 below, i.e. piti 'chico', pipi? 'muy, muy chico'.

Mid front unrounded /e/ tends to be articulated as [e] with a more open variant [ɛ] occurring in unstressed syllables or stressed syllables with a coda:

e.g. /ʃkuwe/ [ʃ.ku'we] 'huevo',
/kuwe?/ [ku'wɛ?] 'marrano', or [ku'ɔɛ?] ,
/kuleʃu/ [ku.lɛ'ʃu] 'zopilote',

Low central unrounded /a/ tends to be articulated as [a] with a higher variant [ʌ] occurring in pretonic syllables where the following consonant is voiceless, especially if /a/ is the peak of both the unstressed penultimate syllable and the final syllable: e.g. /hat^ya/ [hʌ't^ya] 'esperará',
 /kalu/ [ka^hlu] 'va a crecer',
 /ka[?]yu/ [kʌ'[?]yu] 'cinco'.

High back rounded /u/ tends to be articulated as [u] with a voiceless variant [U] in pretonic syllables where the consonant onset is voiceless and the following consonant is also voiceless. This conditioning is analagous to that for the parallel variant of the phoneme /i/, but no exceptions have been necessitated by loans in this case: e.g. /salu/ [sa'lu] 'tirará',
 /kuwi[?]/ [ku'^{bi}?] or [ku'^{wi}?] 'nene',
 /tuk^wã/ [tU'^kwã] 'tenate'.

High front unrounded nasalised /ĩ/ tends to be articulated as [ĩ] with a lower more open variant [ĩ̃] following alveolar consonants /t, d, s, n/ and a mid unrounded variant [ẽ] where /e/ is the peak of the preceding syllable:

e.g. /takĩ/ [tʌ'kĩ] 'va a quemar',
 /k^watĩ/ [k^wʌ'tĩ̃] 'loma',
 /k^we[?]ĩ/ [k^wɛ'[?]ẽ] 'viento'.

High back rounded nasalised /ũ/ tends to be articulated as [ũ] with a lower more open variant [ũ̃] following alveolar consonants /t, d, s, n/ when /u/ is not the peak of the preceding syllable, and following any consonant when /o/ is the peak of the preceding syllable: e.g. /kat^yũ/ [kʌ't^yũ] 'escopeta',
 /satũ/ [sʌ'tũ̃] 'arrancará',
 /lo[?]ũ/ [lo'[?]ũ̃] 'conmigo (nasalisation 'yo')',
 /kusũ/ [kU'sũ] 'gastado'.

All 8 vowels may occur lengthened, and contrast with the short vowels in stressed syllables, *Vowel length in the penultimate syllable appears to correlate with tone glides. However* ~~and is contrastive~~ *in borrowed words vowel length seems to compensate for loss of phonemes during assimilation, and is contrastive* both in the stressed syllable and the penultimate syllable:

e.g. kn ^y i 'dinero'	kn ^y i: 'picante'	ɕpi: 'persona blanca'
ku [?] še 'juego'	ku [?] še:?' 'mapache'	ɕe:re 'tijeras'
k ^w al ^y a 'payaso'	k ^w al ^y a 'kebar de cintura'	la: 'iglesia'
		ma:li 'comadre'
ngo [?] 'espuma'	ngo:?' 'garza'	lo:ra 'libra'
yũ 'él'	yu: 'tierra'	ru: 'arroz'
ku ^y ĩ 'molera caña'	ku ^y ĩ: 'novia'	sĩ: 'cena'
n ^y ã 'comal'	n ^y ã: 'viene de'	
kũ 'tirará'	kũ: 'camote'	

Phoneme co-occurrence between consonants and vowels has the following restrictions which cause a number of modifications in loans, although very modern loans are less affected by such restrictions:

1. Back vowels ~~xix~~ /u, ũ, o/ do not occur following the labialised consonants /w, g^w, k^w, h^w/ in native words.

2. High front vowels /i, ĩ/ do not occur following /y/, but may occur following palatalised consonants.

3. Low central nasalised /ã/ does not occur following spirants /s, š/.

One harmony restriction for vowels is that a front vowel does not occur as the peak of a penultimate syllable when ~~the~~ ^a back vowel is the peak of the following stressed syllable unless the penultimate syllable onset is labialised, or is preceded by a further pretonic syllable with /u/ as its peak, and/or the onset of the final syllable is one or both of the consonants /ʔ, y/. Loans add the consonant /r/ to this ~~restricted~~ ^{small} inventory for the final syllable onset which waives the above harmony restriction.

2.0 Words borrowed from Spanish often include phonemes or phoneme sequence foreign to the Chatino system. This does not seem to have added to the Chatino phoneme inventory, with the possible exception of /p/, until recent years. Recently [p] has become a fairly standard pronunciation of the Spanish β f/, as in café → [ka'pe] ^{which} ~~but~~ is still pronounced [ka'h^we] by older people who did not have the benefit of school as youngsters; also /p^wʃ has been added from the word puente → p^went^ye. However, the borrowed words have appreciably altered the frequency count of some of the less common Chatino phonemes, so that some which occur very infrequently in native words are now used quite commonly because of their occurrence in commonly used loans.

Loan assimilation does mean the addition of an unambiguous tone pattern to each borrowed word, and other quite radical changes in some words which may concern actual phonemes, and/or word stress, and/or word length, and/or syllable patterns and combinations.

A corpus of words borrowed from Spanish is now cited, and followed by more detailed discussion of the phonological changes.

2.1 A further gloss other than the source word is cited only where there is disparity between the current meaning of the word as used in Tataltepec and the original meaning. Words exhibiting the tone pattern rising glide on the penult and low on the ultimá mentioned in 1.1 are marked £. Alternate Chatino forms (separated by ~) do not indicate free variation in the speech of a particular speaker, but idiolectal ^{to} variation between speakers.

- | | | | | |
|-----------|---------------------|-------------|------------------------------|-----------------------|
| 1. aceite | set ^y e£ | 5. alcalde | kale ~ lkale£ | alcalde (m) |
| 2. aguja | kuša | 6. almorzar | msa: 'almuerzo' | almazalwa
(Tor, T) |
| 3. ahora | ?ora | 7. ángel | ngahle£ | ángel |
| 4. ajo | ?ašue£ | 8. ánima | l ^y uma 'difunto' | ánima - alma en pena |

9. apostar posta 'apuesta'
10. arroz ru:
11. atarraya trayaɛ
12. avión wiyũ
13. azúcar ska azuca (Tot)
14. azul ?asu atazul - Aguarzul. (CZ)
15. becero ʔkeruɛ
16. burro ?uru polo (T)
17. caballo kʷayuɛ cahuaɔ (A)
18. cadena krenaɛ
19. café kape ~ kahʷeɛ
20. caldo kantuɛ
21. calle kayeɛ
22. camisa kamsaɛ camisa (Tot)
23. candelero kandʷe:ru ^{candela (A)}
_{candela}
24. canela kanelʷaɛ
25. cantor kando:re
26. capilla la: 'iglesia'⁹
27. castilla ʃlʷa 'español, de España'
^{castillan}
28. cazuela sʷelʷaɛ ^{cazuela (A)}
29. cena sī: cenarua (C.T) (Tot)
30. centavo sntawu
31. ciento [si'yẽ "tu] siyẽ tu
32. cinta sintʷa
33. cohete petʷeɛ
34. cocina kosnʷã ~ snʷã
35. comadre ma:liɛ ^{comadre, comalle}
36. compadre mba: ^{compadre, compadre}
37. conejo konehũ?
38. corazón krsiya ~ kresyaɛ
39. cruz krusi ~ krsi ^{cruce, crutze}
40. cuchillo ʃlʷu ^{cuchio}
41. cuenta kʷentʷaɛ ^{cuenta, cutter}
42. cuento kʷentʷuɛ
43. dios ndʷosiɛ ^{Dioxe}
44. docena senʷãɛ
45. domingo tumĩ ku ^{domingo}
46. durazno ngla ^{durazno (M)}
47. escribano skaranu
48. escuela skʷelʷaɛ
49. fiscal ʃkaliɛ
50. fuerza hʷersaɛ ^{cachopin, cachupí}
51. gachupín ʃpi: 'gente blanca'
52. ganar nganã
53. garabato ngratuɛ 'grapa, gancho'
54. gente nʷatĩ
55. gobierno ngu? wiyernu
56. granada ngahna ra ^{granada (M)}
57. goma ngoma 'cosa de plástico'
58. hacha ?ača ^{acha, tepozacha (CZ)}
59. hora ?ora ^{hora (A) (T)}
60. jícama hʷa kamã ~ nʃkomã
61. jueves hʷeweɛ
62. juez weseɛ
63. justicia tisyaaɛ
64. lazo lsu 'fleco(de rebozo)' ^{lazo}
65. libra lʷu:ra ~ lo:ra ^{libra (M)}
66. limón mĩ 'fruta cítrica' ^{limón (A)}
_{limo}
mitiye? 'limón agrio'
ncmĩ tʷihi 'limón dulce'
ncmĩ tonũ 'limón enorme (citró)
67. lima (limón) ncmĩ lʷuma (seg₆ also)
68. limosna m̃stã⁴⁵
69. lugar loga
70. lunes luniɛ ^{lunes (M)}
71. maestra mstra
72. maestro mstru
73. mango mã kũ
74. manso masuɛ ^{manso (A)}
75. maquila milʷaɛ
76. martes marteɛ
77. más sea masi 'aunque'
78. mayordomo ma rtoma ^{mayordomo (A)}
79. melón mwlʷinʷi ^{melón (M)}
80. micho ʃumĩ 'gato'
81. miércoles merku ~ mirkuɛ
82. misa mša ^{missa ... (M)}
83. mosca mška?
84. mozo m̃su⁴⁵
85. música muska

86. naranja $\check{S}n^{y\tilde{a}}$ *nanxa < nánahxa* 104. santo santu \check{e} 'niño difunto'
 used only in ncmĩ $\check{S}n^{y\tilde{a}}$ 'limón naranja' (see also 66)
87. na \check{J} lon nayilo 'plástico por metro'
88. panela prel $^{y\tilde{a}}$ \check{e} *panela* 105. sardina satĩ
89. paño payũ \sim pan $^{y\tilde{u}}$ 'rebozo' - *payo* 106. semana sma na *semana*
90. papaya paya 107. soldado sndaru \sim staru
91. pasear pasya 'caminata' 108. sombreo smal $^{y\tilde{u}}$ \check{e} *xumpelo*
92. perico periku? 109. tela late?
93. pero pana 110. tiempo t y ampu \sim t y empu \check{e}
94. peso (moneda) pa \check{S} u *pexouia, pesouia (m)* 111. tienda [ti'yē "ta] *tiyē ta*
95. pila (pozo) pil $^{y\tilde{a}}$ \check{e} 112. tijeras $\check{C}e:re\check{e}$ *tijeras (m), tiseras (m)*
96. pinto, pintado pint $^{y\tilde{u}}$ 113. tinta tint $^{y\tilde{a}}$ \check{e}
97. presidente srente 114. tomín kn y i 'dinero' *tomĩ < tomín (c)*
98. puente p w ent $^{y\tilde{e}}$ 115. tripas tri
 used only in tri se?ĩ 'intestinos'
99. queso ka \check{S} u *queso*
100. reata reta \check{e} 116. vaca wata *huacax*
101. regidor hiro: \check{e} 117. vara ruwe \check{e} 'violín' *vara (n)*
102. sábado sa:ru *sabado (m)* 118. viernes wiyerne *viernes (m)*
103. sacristán \check{S} irta 119. zapato \check{S} patu *zapato (c2)*

Perhaps a few of the older loans were borrowed via Nahuatl or Mixtec, e.g. 78, which appears as *maurtumo* in Tetelcingo Aztec,¹⁰ and 45, which appears as *tumingu* in Jamiltepec Mixtec.¹¹ This would mean that d- became devoiced before any further Chatino adaptation took place.

In this corpus of loans there are at least 2 unresolved points: In the examples 66 and 86 the origin of *mĩ* is plain, but the origin of the rest of the word *ncmĩ* is not at all clear. It compares with *ncatĩ* 'ciruela (i.e. Spondias)', which is probably not a loan as they grow wild in the area, so perhaps the prefix *nc-* is a fruit classifier of some kind; however, no other fruit names begin with this *nc-*, and it is quite uncommon for any noun to begin with *n-*. In example 45 *domingo* \rightarrow *tumĩ ku* for the day of the week, but the name *Domingo* \rightarrow *mingu*. Vocatives are a special case in Chatino, and also the terms may have been borrowed at different times, which is sufficient reason for the difference perhaps.

For the rest of this paper all examples from this corpus of borrowed words will be cited by number.

2.2 Chatino phonological phrases and words described in 1.1 above have a considerable influence on the final shape of words borrowed into the language. The constant word-final stress necessitates one of the following options when a word with non-final stress is borrowed:

1. The word may be split at the end of the stressed syllable into 2 phonological words, i.e. a phonological phrase. 31. *siyē tu ciento*, 45. *tumĩ ku día*

2. Stress may be shifted to the final syllable. (majority of two syllable words)
3. A final non-stressed syllable may be lost.
4. Metathesis may occur so that the original stressed syllable becomes word-final. *no čamĩ micho (gate)*

Options 1, 3 and 4 usually apply to words of 3 syllables or more, and option 2 to disyllables, but not exclusively. Words of 4 syllables are tolerated only as verbs, ^{in Tataltepec Chatino} and the initial syllable of such a word is always of the pretonic III type consisting of the consonant n-, so the number of syllables and the position of the word stress in a word borrowed are very relevant data when investigating the treatment of loans.

Option 1 is illustrated by examples 31, 45, 56, 60, 73, 106, 111: e.g. domingo → tumĩ ku, mango → mã kū. The examples 78 and 55 also split into phonological phrases, but the split comes after the first syllable which is non-stressed but voiced. In this case a new stress is added to the first syllable of the borrowed word, rather than the final non-stressed syllable, and the original stress is shifted to the final syllable as for option 2. In 78 the new stress perhaps compensates for the loss of phonemes at that point, i.e. mayordomo → ma rtoma; whereas in 55 the addition of the initial n- makes the beginning of this unfamiliar word seem familiar. Logical Chatino designation for such people would be ngu' 'gente' followed by a word specifying the kind of people: e.g. ngu' tisja 'autoridades' (see 63), so the folk etymological result is that gobierno → ngu' wiyernu. Such phrases fit the Chatino lexical pattern in that many lexical items consist of more than one phonological word, and in some frozen forms at least one word of the complex is used no longer as an individual lexical item, i.e. it no longer has meaning as a free form outside the lexical complex form.

Option 2 is illustrated by the majority of shorter loans, and it is many of these, particularly those where the consonant onset of the final syllable needs to be palatalised, that exhibit the tone pattern marked £ in the corpus of loans. A few 3 syllable Spanish words that fit the Chatino word pattern and phoneme classes with only minor modification have shifted the stress to the final syllable and added a word-final glottal stop, e.g. perico periku? (92), and 37. This phenomenon is not confined to Tataltepec Chatino; e.g. Yaitepec where chamaco → čamakũ? although the Chatino word specifically means 'araña ⁿzácuda'.

Option 3 is illustrated by examples ~~46, 80, 86, 109, 117~~ 29, 36, 81, 105, 1 e.g. sardina → satĩ, tripas → tri. This last word is used only in combination with the word se?ĩ 'defeco' in the phrase tri se?ĩ 'intestinos', which is a frozen form.

Option 4 is illustrated by examples 46, 80, 86, 109, 117, e.g. micho → čum tela → late?. All words encountered to date that have followed this option are very old loans.

Chatino words are characteristically short, and further reduction continues to take place, especially in the Nopala and Panixtlahuaca areas where the town of Yaitepec is situated:

e.g. Yaitepec - 30 years ago	now	
nguti?ĩ	mdi?ĩ	'vivió (en un lugar)'
ška ya?	šiya?	'otra vez'
ku?ni	w?ni	'hará'

Tataltepec speech shows reduction in the treatment of loans, but less often and to a lesser extent than Yaitepec:

e.g.		Tataltepec	Yaitepec
taza	→	tasa	sa
semana	→	sma na	sna

The commonest word patterns in Tataltepec are CV.CV, CV.CV?, C.CV and C.CV. although CV.CV.CV is not rare. The glottal stop is a very frequent phoneme which occurs approximately every second word. Where the Spanish words do not fit the Chatino word patterns according to the phoneme classes and phoneme co-occurrence restrictions within those classes and patterns, elimination of syllables, consonants and/or vowels usually occurs, although occasionally addition is required in this Chatino-isation process.

1. The initial syllable of a ~~xxxx~~ polysyllabic loan:

a. may be lost if non-stressed and of the constituent patterns

V, VC, CV, CVC, or precedes a medial syllable beginning with -m-:

e.g. V-initial - 1, 2, 3, 9, 10, 11, 12, 13, and also Amelia → meya, Elías → li

VC-initial - 5, and also Ignacia → nasya.

CV-initial - 27, 28, 40, 44, 54, 97, 101, 112, and also Nicanor → kanu,
Dionisia → nisyá.

CVC-initial - 63,

pre-m- - 35, 66, 68, and also Herminia → min^ya, Filomeno → min^yũ.

b. may be reduced to ~~xxxxxxx~~ ^{a single} consonant, i.e. a pretonic III

~~xxxxxxxxxxxx~~ type syllable, if non-stressed and of the constituent patterns

VC, CVC, or CV:

e.g. VC-initial - 7, 47, 48, and also Antonio → ndayũ.

CVC-initial - ³⁶49, and also Faustino → stinu, Justino → stinu.

CV-initial - 18, 30, 38, 46, 53, 64, 71, 72, 79, 82, 83, 84, 88, 106, 107,
108, 114, 119, and also Lucas → lka, Chico → šku.

c. may metathesise if stressed and of the constituent pattern VC, so that the resulting word is consonant-initial:

e.g. 7, 8, and also Ángel → ngahle.

d. may gain a word-initial ?- if stressed and of the constituent pattern V:

e.g. 4, 58, 59, and also Eva → ?ewa.

2. The final syllable of a loan:

a. may be lost if non-stressed and of the constituent pattern CV:

e.g. 29, 46, 68, 105, and also Aureliano → rel^yu, Cástulo → kastu.

b. may lose the consonant coda if the constituent pattern is VC or CVC, whether the syllable is stressed or not? *If the final C was n, then the preceding vowel tends to become nasalised:*

e.g. 6, 9, 10, 12, and many others as well as such names as Isaac → ?isa, Malaquíás → kiya.

c. may become 2 syllables by the addition of a word-final vowel if stressed and of the constituent pattern CVC or VC:

e.g. 25, 39, 43, 49, 62 79, and also Luz → lusi, Flor → hlore ~ hlora.

3. The medial syllable of a loan of 3 or more syllables:

a. may be lost if (tʃ) involves the consonant -b- and non-front vowels:

e.g. 17, 47, 53, 102, 108. No proper nouns have been encountered in this category to date.

b. may become a pretonic III type syllable if the ~~initial~~ ^{c'} consonant is -s-, -ʃ-, -t-, or -l- and the preceding syllable is lost:

e.g. 68, 6, ~~13, 40, 51, 68, 79, 85, 102, 108, 113, 114, 115, 116, 117, 118, 119, 120, 121, 122, 123, 124, 125, 126, 127, 128, 129, 130, 131, 132, 133, 134, 135, 136, 137, 138, 139, 140, 141, 142, 143, 144, 145, 146, 147, 148, 149, 150, 151, 152, 153, 154, 155, 156, 157, 158, 159, 160, 161, 162, 163, 164, 165, 166, 167, 168, 169, 170, 171, 172, 173, 174, 175, 176, 177, 178, 179, 180, 181, 182, 183, 184, 185, 186, 187, 188, 189, 190, 191, 192, 193, 194, 195, 196, 197, 198, 199, 200~~ and also Felipe → lpe.¹²

c. may lose the vowel peak if the word is of the constituent pattern CV.CV.CV and the onset consonant of the medial syllable is from the inventory of consonants that may occur as the coda of a Chatino CVC pattern syllable, ^{and} while the peak is a high vowel, so that the resulting word is of the constituent pattern CVC.CV:

e.g. 22, 34, 85. Again no proper nouns have been encountered in this category.

Features of the syllable described above in 1.1 also have their effect on the assimilation of loans. The reinterpretation of non-familiar syllable patterns such as word-initial V or VC has been illustrated above in the discussion of the adaptation of word shapes deemed necessary for borrowed words, but as the syllable patterns V and VC never occur in Tataltepec Chatino other adaptations need to be made also. Further, a syllable peak of VV does not consist of dissimilar vowels, but only of a vowel + length; there are no vowel glides or diphthongs, so disparate vowels occurring together in loans must be accommodated to one vowel per syllable separated by a consonant, which may mean reduction or addition to the original number of syllables in the word. These restrictions in the syllable have caused the following assimilation processes:

1. Reduction:

a. one vowel of a VV sequence may be lost:

e.g. 81, 100, and also Maura → mara.¹³

b. the first vowel of a VV sequence may become labialisation of the preceding consonant if it is -u- or palatalisation of the pre-

ceding consonant if it is -i-, especially if the second vowel in the sequence is the peak of the stressed syllable in the word:

e.g. -u- →labialisation - 41, 42, 48, 50, 61, 98, and also a similar process is at work in examples 17 (where the medial -b- of 'caballo' is heard as the vowel /u/) and 33 (where the -o- in 'cohete' is heard as /u/).

-i- →palatalisation - 43, 110, and also a similar situation with example (where the second vowel of the VV sequence is -i- and unstressed so the following consonant is palatalised to compensate in set^ye). In the examples 60, 65, and 67 the vowel -i- becomes palatalisation since a new vowel which is more compatible with that phoneme environment has been introduced as the syllable peak.

2. Addition: the consonant /y/ may be added to separate vowels when the peak of the stressed syllable in a loan is immediately preceded by -i-, or when the stressed syllable peak is -i- immediately followed by another vowel; similarly /w/ may be added when the vowel is -u-:

e.g. 12, 31, 55, 111, 118, and also María →mariya, Luís →luwi.

3. Vowel becomes consonant: if the initial vowel in a VV sequence in a word-final syllable is -i- or -e- and follows a consonant that is in the inventory of consonants that occur as the cod of a Chatino syllable of the CVC type, then that vowel may be replaced by the consonant /y/:

e.g. 38 (variation kresya), 63, 91, and also Hilaria →larya, Anastasio →tasyu, and many other proper names ending -ia or -io.

Palatalised and labialised consonants, as well as the consonants /y, w/ occur very frequently in Tataltepec Chatino, so it is not surprising that Chatin hearing interprets vowel sequences involving -i- and -u- according to these phenomena. It is also interesting to note that the frequency of the least common syllable pattern CVC is increased considerably by borrowed words, i.e. that the infrequent closed pretonic syllable provides a Chatino solution to many unfamiliar phoneme sequences.

The matter of pitch on borrowed words has been mentioned, i.e. that each word is unambiguously assigned a tone pattern. Loans do not seem to provide a need to introduce any new tones or word tone patterns; however, as indicated by £ in the corpus of loans (2.1), one particular word tone pattern appears to be more appropriate than the others, although it does not correlate with any particular word shape, type of syllable, or choice of phonemes. One general observation is that very few borrowed words seem to merit other than falling glide or low tone on the final syllable; this is still a feature of words borrowed nowadays, that a falling glide or low tone is used for the final syllable along with the stress shift to the final syllable if a syllable earlier in the word

was stressed originally. Tone is not marked on individual examples in this paper.

2.3 Spanish consonants may be completely foreign to the Tataltepec Chatino inventory, they may have phonetic variants that do not occur in Chatino, the conditioning for the phoneme variants may not coincide, or they may have a different distribution. Some of these factors have been discussed incidentally above as they affected syllables and word shape, but will be re-examined here from the viewpoint of actual consonant modification. Spanish alphabet consonants which are reproduced in Tataltepec Chatino with approximately the same pronunciation are: b (before front vowels), c, ch, l, ll (in old loans when the pronunciation was [l^y]), m, n, ñ, p, q, r, s, t, v (before front vowels), x, y, z, so that any change in these is because of modification to the word shape, syllable pattern type, or phoneme co-occurrence restrictions, rather than a problem with the phonetic reproduction of the consonant. This means that b and v (in other environments), d, f, g, j, ll, rr, all need some modification, although the current pronunciation of j and ll in the Tataltepec area needs very little adjustment.

b. Intervocalic [b] does not occur before central or back vowels, and tend to be heard as a vocoid in such a context; in longer words it tends to be merged with the associated vowels which often eliminates a syllable, or at ~~max~~ the most remains as labialisation:

e.g. caballo → k^wayu (17), escribano → skaranu (47), and 53, 102.

Similarly the initial b- of 'burro' (16) is heard merged with the following vowel so it is replaced by /?/. In the non-initial onset -br- the -b- is perceived as a vocoid leaving the -r- as the following syllable onset. This may result in a new syllable peak if the preceding phoneme is a consonant, or in vowel length if a vowel:

e.g. sombrero → smal^yu (108), Abram → ?arã, and 65.

One would expect some kind of labialisation from Pablo, but the compensatory factor for the -b- in this case is palatalisation of the -l-, i.e. pal^yu, ~~max~~ whereas Pablina → palina when the palatalisation seems to be unnecessary, even though the sequence l^yi does occur, e.g. tikil^yi 'pegajoso'. Word-initial b- before a front vowel occurs in 'becero' (15), but with me^htathesis and de-voicing it becomes -k- in çkeru. *The modern loan 'centavo' (30) has not been affected by this restriction (see below under v).*

d. Intervocalic [d] is reproduced as /r/:

e.g. Arcadio → karyu, Alfredo → hreru, and 18, 56, 97, 101, 102, 107.

The non-initial syllable onset -dr- is reproduced as /l/ in example 35 and Rodrigo → ligu, but -d- as the onset of a word-final syllable following -n- is devoiced:

e.g. Raymunda → menta, Alejandra → hantra, ~~max~~ Andrés → hante.¹⁴

-dr- following a front vowel is treated differently; ~~so that~~ Pedro → pet^yu, ~~but~~ Isidro → siru ~ sigru, with devoicing and the preceding front vowel causing palatalisation which ousts the -r-; ~~in the former,~~ ^{the} while the -r- is retained, ~~the~~

~~the latter~~ and when preceded by another consonant ~~it~~^{is /g/} which does not have a palatalised counterpart. However, -d- following -n- ^{remains an alveolar and} ~~between non-stressed~~ syllables, retains the voicing and as onset of the stressed syllable if the following vowel becomes nasalised:

e.g. candelero → kand^ve:ru (23), and Blandino → mandĩ.

Devoicing of the -d- again occurs with an x -rd- sequence as in 78, and 105, but with an -ld- sequence either the -d- is lost or the -l- becomes /n/ which shifts the word into the categories described above for an -nd- sequence:

e.g. 107, 20, 5, and also Leopoldina → polina.

As mentioned earlier, some of these words may have been borrowed via Mixtec or Nahuatl, so that the -d- or d- ^{may have been} ~~was~~ devoiced before the Chatino assimilation processes were applied; this may be true of example 45 also. Where a would-be

initial d- is retained, ^{if any eliminated syllables included n, it} /n/ must precede it; ~~it~~^{is} retained also as a syllabic, ^{it may be added:} e.g. 43, and also Adela → ndela, Dimas → ndima, and Secundina → ndina (although local Spanish speakers use Dina).

The word-initial d- of 'durazno' (46) is no longer initial after metathesis, and although ndla is acceptable in Yaitepec, ndl- is a non-sequence in Tataltepec, so the velar /g/ replaces the -d- in ngla.¹⁵

f. This phoneme is completely unfamiliar to the Chatino speaker, but nowadays it is reproduced as [p] by those somewhat familiar with Spanish:

e.g. (k^wa?ni yu) pelisita '(hará el) felicitar', i.e. 'él va a dar felicitación'

In older loans f- is usually reproduced as /h/ or /h^w/ before ~~the~~^{front} vowels:

e.g. 19, 50, and also Félix → h^weli, Felícito → h^weli, Florencia → hloce, Fortino → hortinu, Alfreda → hrera.

g. Intervocalic [g] is reproduced as [g] where it continues to be intervocalic in the Chatino word that results, and therefore has introduced a new phonetic variant for the phoneme /g/ (see above in the description of /g/ in 1.2)

e.g. 69, and also Santiago → sn^yagu, Rodrigo → ligu.

Where the original [g] becomes the word-initial consonant in the Chatino word because of syllable loss, it is reproduced as /k/:

e.g. Gregorio → koryu, Oligario → karyu, and ex. 2.

In the examples tumĩ ku (45) and mã kũ (43) the -ng- sequence is split between the 2 phonological words, so that the -n- has become nasalisation of the preceding vowel which is now word-final, and the -d- is devoiced as the word-initial k. In Ángela the word-initial vowel is lost, even though it is the peak of a stressed syllable, and the -ng- sequence becomes initial, i.e. ngi:la, but in ángel (7), and also the proper name Ángel, metathesis takes place retaining both the velar and fricative features of the original word, but separated, i.e. ngahle.

Where word-initial g- is retained, like d-, it must be preceded by /n/:

e.g. 52, 53, 55, 56, 57, and also Goya → ngoya, Goña → ngoni.

j. Together with g- before -i- or -e-, -j- is reproduced as [ʃ] at the

onset of the final syllable in association with non-front vowels, and as [h] word-initially in association with front vowels and in all environments in modern loans: e.g. 2, 4, 37, 60, 61, 101., and also Alejandro → hantru, Virginia → hiny. The examples 8 and 86 follow the same rule even though the phoneme order has been rearranged by metathesis to a pattern more compatible with Chatino. In tijeras (1) the entire sequence tij- is reduced to /tʃ/. It is interesting to compare the treatment of jueves (61) and juez (62), where 61 follows the rule above but the j- is lost from 62 in favour of the vowel -u- which follows and is interpreted as [b]

ll. The old Spanish pronunciation of ll [as [l^y]] is reproduced in examples 27 and 40, but it is reduced to [l] in 26, which has become a monosyllable. This word la: 'iglesia' is fairly constant throughout the whole Chatino region, but it is interesting to note that in the Nopala-Yaitepec area the form l^ya: 'adentro de la iglesia' is also in use. In the other examples cited, i.e. 17, 21, it is reproduced as [y], as also in modern loans and the name Guillermina → giye.

rr. This phoneme is reduced to the flap [ɾ] as in examples 10, 11, 16.

v. The treatment of intervocalic [b] mentioned above under b does not apply to the modern loan centavo (30), which is reproduced as ~~xx~~[s^ʔn.ta'bu]. Examples 116, 117 provide the only loans encountered to date with word-initial [b] before the vowel -a-. This is a permitted sequence when reproduced with the variant [w] so vaca → wata, and vara → ruwe after metathesis. /w/ does not usually co-occur with /k/ which accounts for the replacement by the alveolar stop in the former, ^{of -c-} the vowel change in the latter is more difficult to explain.

It is perhaps worth noting that in Tataltepec Chatino, ^{a)} word-initial syllabic variants of most of the consonant inventory (see table in 1.2) occur very frequently, also ^{b)} ~~that~~ words with 2 pretonic III type syllables are usually n- initial, and occasionally m-; however, Spanish loans have increased the number that begin with m-, and have added those with phonemes /s, k/ word-initial; e.g. 68, 71, 72, 79, 83, and 30, 107, and 38, 39.

Loans have also added /g, r, w/ to the inventory of those that may occur as the non-word-initial pretonic III syllable in such words:

e.g. 46, 53, and 38, 39, and 79.

The inventory of consonants which may occur as syllabics in words with a unique pretonic III syllable has been increased by the addition of the consonants /m, p, e.g. 6, 36, 82, 84, and also Miguel → ^{mge}~~mx~~, and 38, and 78.

Another very frequent consonantal phenomenon in Tataltepec Chatino is palatalisation, so it is no surprise to find it a frequent feature of borrowed words. In polysyllabic words where the penultimate syllable is stressed and consists of any consonant followed by either of the front vowels /i, e/, the onset consonant of the final syllable will become palatalised if a palatalised counterpart exists in the Chatino inventory:

e.g. 1, 24, 28, 33, 44, 48, 75, 82, 88, 94, 95, 99, 108, 104, and also pedro → pet^yu, although in many names the consonant /y/ becomes the onset of the

final syllable and thus obviates the need for further palatalisation:

e.g. *Emilio* → milyu, *Amelia* → meya, etc.

Where the penultimate syllable is of the pattern CVn this also holds true:

e.g. 32, 41, 42, 96, 98, 113.

The word *gente*(54) provides an interesting variation where the original word-initial CV is dropped, but the influence of the -e- is maintained in the Chatino word-initial n^y ; this consonant does not occur as a pretonic III type syllable, so the vowel /a/ is inserted, i.e. $n^yatĩ$. This appears to be an older loan than the others cited with the -nt- sequence, although all of these others began with a voiceless stop. Occasionally the preceding consonant becomes palatalised to compensate if there is no palatalised counterpart of the consonant following:

e.g. 15, 23.

The word *melón*(79) is unusual in that it ends up with 2 palatalised consonants as the onsets of consecutive syllables, i.e. $mwlin^yi$, and so has become a longer word than it was to start with, unless the source word in this case was the plural *melones*. This contrasts markedly with *limón*(66), which involves almost the same set of phonemes in a different combination, and the same original word pattern.

This tendency to the palatalisation of consonants is much greater in Tataltepec than in the neighbouring Chatino dialects, and the phoneme co-occurrence restrictions differ also:

e.g. <i>panela</i> (88) →	Tataltepec: $prel^ya$	Yaitepec: <i>pnela</i>
<i>gente</i> (54) →	$n^yatĩ$	<i>ntě</i>
<i>cinta</i> (32) →	$sint^ya$	<i>sinta</i>
<i>canela</i> (24) →	$kanel^ya$	<i>knela</i>
<i>tomín</i> (114) →	kn^yi	<i>tn^yi</i>
<i>durazno</i> (46) →	<i>ngla</i>	<i>ndla</i>
<i>vaca</i> (116) →	<i>wata</i>	<i>wta</i>
<i>cohete</i> (33) →	pet^ye	<i>kute</i>

The velar/alveolar or labial alternation is seen in the last 4 examples; in the final word an initial t- would mean duplication with the t^y , so the bilabial ~~is~~ factor of the initial $[k^w]$ (from the usual Spanish pronunciation $[k^wete]$) is adopted as /p/ instead.

2.4 The tendency for vowels to be dropped from pretonic syllables to leave syllabic consonants only has already been discussed. A few older loans also exhibit the voiceless variants of the high vowels (described in 1.3 above) which are retained from the stressed syllable:

e.g. $[kU\text{ʃ}a]$ (2), $[tIsya]$ (63), and 38, 39.

The Spanish vowels i, e, a, u, correspond fairly closely to the Chatino /i, e, a, u/, but the Spanish o is higher than the Chatino /o/ and tends to be interpreted and reproduced as /u/, especially word-finally:

e.g. 4, 10, 12, 15, and many others, as well as *Chico* → *ʃcu*, *Antonio* → *ndayũ*.

In a few words where the -o- is associated with r or l it is reproduced as /o/:
 e.g. 3, 25, 59, 101, and also Apolinar → poli, Rotilo → tilo, Gregorio → koryu.
 In lugar(69) the -u- → /o/, while in libra(65) the -b- may be reproduced as /o/

The vowel harmony restriction(mentioned in 1.3 above) is illustrated in the words queso → kaʃu(99), tiempo → t^yampu(110), and 67, 79, 94, and perhaps 93. However, in some other words the palatalisation of the intervening consonant appears to compensate for the lack of harmony:

e.g. 42, 96, and Pedro → pet^yu where a parallel restriction was in operation. Personal names do not appear to be affected by this restriction:

e.g. Frederico → liku, Bernardino → ninu, which indicates perhaps that the restriction operates in older loans but not in words more recently borrowed.

The restriction applies in the old loan sombrero → smal^yu(108), but in the examples 15, 23, 101, where -r- is retained, it does not apply. These examples add /r/ to the short inventory /ʔ, y/ of consonant onsets for the stressed syllable which waive the harmony restriction; it also appears that /r/ as the coda of the penultimate syllable waives the restriction:

e.g. 55, 81, 118, and also Anselmo → ndermu, Elpidio → piryu.

Metathesis applied to the syllables of micho(80) obviate the vowel problem, while disharmony is avoided in examples 31 and 45 by the split to form phonological phrases, and in 47 by the duplication of -a- from the following syllable rather than the retention of -i- from the stressed syllable; the extensive phoneme changes in 66 and 79 result in front vowels only.

In order to accommodate the words ciento(31) and tienda(111) a further problem arises, namely /e/ when nasalised becomes /ĩ/, but /ĩ/ does not occur following the consonant /y/. This has led to the introduction of the phonetic variant [ẽ] of the vowel /ĩ/ when it follows the consonant /y/:

i.e. ciento → [si'yẽ "tu], and tienda → [ti'yẽ "ta].

All 3 nasalised vowels occur in borrowed words:

e.g. wiyũ(12), sī:(29), mstã(68).

Nasalisation is usually compensation for the loss of -n which would have been word-final (in the resulting Chatino word):

e.g. 12, 31, 45, 66, 73, 86, 111, and also Odilón → lũ, Julian → ~~ɟɟɟ~~ hl^yã, or for loss of the final syllable -na:

e.g. 29, 68, 105;

but sometimes the nasalisation reflects -n- from earlier in the word:

e.g. 37, 54, ~~73~~ and 73 where the nasalisation is repeated.

cf. mango → mã kũ(73) with domingo → tumĩ ku(45) where the nasalisation is not repeated. Phonemic nasalisation may also accompany the consonant /m/:

e.g. 60, 80, which contrast with 8, 57, 78, where this heavy nasalisation does not occur. On the other hand, some older loans from words with final syllable stress lose the word-final -n but the preceding vowel is not nasalised to compen

sate: e.g. sacristán → širta(103), gachupín → čpi:(51), corazón → krsiya(38), and also the very recent loan nayilo(87), although this word is often pronounced without the final -n in rural Mexico, so the Chatinos may never have heard the - to start with.

The words kn^yi(114) and mwl^yin^yi(79) both have the nasal consonant but the following vowel is not heavily nasalised like sn^yã(34) and mī(from the name Crispín). One word masu(74) is surprising in its lack of compensation for the loss of the medial-n-, but nasalised vowels do not occur in non-stressed syllables, and -n- may occur as the coda of a CVC type syllable only before a stop.

The resolution of vowel sequences in borrowed words was dealt with in 2.2 above.

2.5 Some proper nouns have been cited already as examples of the various assimilation processes that have been discussed above, since all names in Tataltepec are Spanish loans. There is a further complication that affects proper names, since all names are also vocatives, which does not apply to the other borrowed words. Single word vocatives present a distinct word type which is characterised by certain phonological features of the penultimate syllable, whether they are nouns used only as vocatives, or common nouns that may be used as vocatives:

- a. The peak is lengthened.
- b. If the peak consists of a voiceless vowel, this becomes voiced.
- c. A syllable of the pretonic III type may have a voiced vowel peak supplied, which may basically be a continuant consonant.

e.g. [ku'wɛʔ] 'marrano' → [ku:'wɛʔ], kU'suʔ 'anciano' → [ku:'suʔ],
[š'ngʔ] 'perro' → [š'u'ngʔ], [s'n^yiʔ] 'mi hijo' → [sⁿ'yĩʔ].

Where the vowel is supplied this is done consistently, so perhaps the vowel was dropped fairly recently, which left the syllabic consonant in the usual form of that noun. The lengthening and voicing of the penultimate syllable peak in the vocative form gives the aural illusion of stress on both this and the final syllable. Several of the strictly vocative terms are disyllabic with a high vowel between voiceless consonants in the initial syllable; usually such a vowel would be voiceless in that environment, but these are lengthened and voiced as described above:

e.g. [či:'ʔi] 'papá', [ču:'k^wa] 'amiga (among females)'.

This special pattern of voicing and non-stressed syllable vowel length affects the syllable timing. It is applied also to proper nouns when they are used as vocatives, but seems to continue to affect their pronunciation in all contexts. Names with voiceless consonants occur very infrequently, so examples of this voicing are rare; they are usually monosyllables:

e.g. [ti:'to] from Felícito, [ho:'se] from Josefina, but [se] from Ascención,
and [po] from Hipólito.

Most of the polysyllabic names follow this special vocative pattern while still following the usual loan assimilation processes in other ways. However, in common with several other names where a front vowel is the peak of the penult, the onset consonant of the following syllable of the name ?itu (from Margarito) has not become palatalised, unlike other borrowed words; this is also true for tilo (from Rotilo), hilo (from Filemón), tenu (from Atenodoro), stinu (from Justino or Faustino), but cf. 24, 28, 32, 33, 34, etc.

Names ending -ia and -io are usually treated as described in 2.2 above under point 3 to do with syllable features. This is parallel to the example already cited which shows the modification of 'mi hijo' to the vocative form, i.e.

[s'n^yi?] → [sn'yĩ?]. This phenomenon adds the consonant /l/ to the inventory of consonants that occur as the coda of a CVC type syllable:

e.g. Emilio → [mi:l'yu], Basilia → [si:l'ya].

There is contrast between mi'l^ya (75) and mi:l'ya from Emilia. In the former the peak of the penult appears slightly lengthened because of the tone glide, but in the latter the vowel is lengthened and the stress begins with the consonant /l/. Also [m'ša] (82) contrasts with [ni:s'ya] from Dionisia, since the -s- in the latter did not become the palatal form /š/ as would be expected.

3.0 As mentioned earlier, historically the Chatinos had more contact with the Mixtecs than with the Aztecs, since Mixtec land borders on Tataltepec land. However, Aztec envoys came to the Mixtec royal seat of Tututepec, and probably passed through Tataltepec on the way, as a stellar milestone lies at the edge of the town of Tataltepec marking the route. It is interesting to note that several words seem to be of Nahuatl origin, and others to have come from Spanish very early on via Nahuatl, while only 2 words have been identified with Mixtec, and perhaps a very few others may have come from Spanish via Mixtec.

3.1 In Nahuatl the words are generally longer than Chatino words, so loans are subject to reduction, as are the longer words from Spanish. Also the Nahuatl word stress is always on the penult which conflicts with the Chatino system. Again, many words have final consonants unlike Chatino words, where the only consonant to occur word-finally is /ʔ/. The most obvious loans are:

~~chiquibitl~~
 chiquibitl 'canasta, chiquihuite'¹⁶ → ŧkuwi 'canasta grande, chiquihuite'
 chocolōtl 'chocolate'¹⁶ → ŧkula 'chocolate'
 pilisol 'cobija, sarape'¹⁷ ple 'cobija de algodón'

Very few words in Tataltepec Chatino use the phoneme /p/, and several of these have already been identified as loans from Spanish. It does not seem impossible that the rest came from Nahuatl, perhaps via Spanish in some cases. Only one word ple 'tonto' (a tone pair with ple 'cobija'), which is an expletive used in anger or frustration, so far eludes the search for a source.

The word tzipitl 'el niño que es el más chico cuando nace otro'¹⁸ seems

to be the source of nu piti 'niño', so that piti has taken the meaning 'chico' by analogy, and gives rise to the further derivative pipi? 'muy, muy chico'. The tone pattern adopted is rising-to-high on the penult and falling on the ultima; ~~where~~ ^{on the penult} the glide ^{probably} compensates for the stress shift to the final syllable. The features that indicate the probability of these words being loans are the word-initial p- and the voicing of the high vowel which is the peak of the penultimate syllable, since /p/ probably does not occur other than in borrowed words and /i/ in this context ^{usually} is articulated as [i].¹⁹ There is an alternative word suwe 'chico' which has cognates in all the other Chatino dialects. This is used interchangeably with piti in Tataltepec, but the latter has no cognates in other Chatino areas.

The other word that seems to have a Nahuatl source is perhaps more dubious, but bearing in mind that precious necklaces were used as tribute, and also were evidence of riches and power, the connexion may not be too obscure:

icopöc 'su garganta'²⁰ → poho which is always used in the phrase
poho yane (yu) '(su) garganta', from yane 'pescuezo'.

The loss of the initial vowel and the final consonant, and then metathesis to put the stressed syllable word-final are all normal assimilation processes. This leaves the problem of why /k/ would become /h/, but in Chatino /h/ or /?/ are the only consonants to occur both preceded and followed by /o/. Perhaps it is surprising that a body part should be a loan word, but there is the analagous example of tri se?ĩ 'intestinos'(115) from the Spanish.

If indeed mayordomo → maurtumo¹⁰ before being borrowed into Chatino, as suggested in 2.1 above, and possibly caldo → cölto,²¹ and mango → mönco,²² then the voiced stops in these words had already been devoiced before the Chatino assimilation began. This may have been the route of acquisition for some of the other early loans from Spanish also.

3.2 The Mixtec phonemic system in general has many similarities to the Chatino system so that when words are borrowed from Mixtec it may be necessary only to shift the stress from the penult to the ultima, and to make minor phonetic adjustments to some of the phonemes. No new word patterns need to be generated, and reduction is unnecessary. The only reason to suspect any words of a Mixtec origin is the lack of cognates in other Chatino dialects. So far 2 words only have been found in this category:

sa?wa 'sapo' from zahva 'rana' and zahva ndihy? 'sapo',²³
(it should be noted that h = /?/ in this Mixtec orthography),
kolo 'guajolote' from colo 'guajolote',²⁴ (where c = /k/).

It has been suggested that kolo is onomatopoeic rather than borrowed, which would account perhaps for pi: 'female turkey' also, but it is interesting to note that it has exactly the same form as its Mixtec counterpart, which differs radically from other Chatino words for turkey, e.g. Yaitepec: la k^wi su?.

However, pi: is fairly constant throughout the area. Kolo is the only word in Tataltepec Chatino where /l/ is both preceded and followed by /o/, as either /h/ or /ʔ/ usually occur in this environment. ^{However,} /l/ does occur as ~~the~~ syllable onset preceding /o/ in both stressed and unstressed syllables, and in both monosyllabic and polysyllabic words.

As mentioned above in 2.1 the Spanish name for the day 'domingo' may have become tumĩ ku via tumbingu (Mixtec), ¹¹ or ^{perhaps} romincu (Nahuatl), ²⁵ or a combination of both, or neither. The fact that the proper name 'Domingo' → mingu does suggest some other factor in the assimilation - perhaps a different time of borrowing. However the rest of the names for days (all borrowed from Spanish, i.e. 70, 76, 81, 61, 118, 102) do not appear to have gone through any intermediate transition, but were borrowed direct.

4.0 The following words also appear to be loans but their origin is less obvious:

- i. k^wayũ ~ k^wan^{yũ} 'cuaño, ardilla'
- ii. ʃĩ kã 'chinche'
- iii. mayu 'centavos, cobre'
- iv. mboho? 'globo, vejiga'
- v. korel^ya 'tlacuache, zarigüeya'

These words do not seem to be derived from either Mixtec or Nahuatl, and do not resemble their Zapotec equivalents, although Zapotec-speaking areas border the Chatino area.

i. The word 'cuaño' is used locally in Tataltepec and the surrounding district by Spanish speakers, although many recognise the word 'ardilla' also. It may be a corruption of the word 'cuandú' even though the latter is not a squirrel. Apart from the similarity to the locally used Spanish equivalent there is no phonological reason to think of this word as a loan.

ii. It is possible to see a resemblance to the Spanish equivalent here, but various difficulties present themselves when one tries to reconstruct the changes made. The ch of the Spanish word is repeated and this would not be permissible in such a context in Chatino; however -nç is a permissible sequence, so why was it not retained? If the word-initial ç- reduced to t- which in turn became k-, the result would be a fairly common word pattern, i.e. ki.çV, but this does not represent the Chatino word for 'chinche'. ~~***~~ The only Chatino words where a nasalised vowel occurs in a pretonic syllable are either compounds or loans, and in the latter it (s) often compensates for the loss of the following -n. If such an -n is word-medial, then 2 phonological words may result from the one original, which has happened in this example (cf. example 73). That the final vowel should become nasalised ^{two} even with an intervening stop, is not strange, but that the final vowel should change from e → a has no precedent or parallel. It is also possible that this word is a compound, but identification of the con-

stituent morphemes eludes us.

iii. This is an archaism used only by the very elderly in its original sense of 'small change' although it is retained in modern speech to mean 'fish scales'.

This word looks like a loan, but the source is uncertain, unless it ~~can be derived from the~~ ^{came from the} Nahuatl *mieleyo* √ 'dinero', ~~which~~ ^{which appears to be the old Spanish word} *medio* 'real'. 26

iv. With metathesis of the syllables, as in some other older loans, *globo* → *mbo* word-initially, but why *gl-* → *h/* is quite puzzling. The addition of a word-final glottal is not unknown, especially in conjunction with metathesis (cf. 109, 83, e

v. Again with metathesis it is possible to reconstruct *korel^ya* from 'zarigüeya' with the medial *-l-* added for some reason, but since 'tlacuache' from the Nahuatl is the usual designation for this animal, such a source word seems very strange.

Of this short list (i) is the only Tataltepec Chatino-looking word, while all the rest exhibit features associated with unmistakably borrowed words.

Footnotes

¹ Data from Chatino as spoken in Tataltepec de Valdez, distrito de Juquila, Oaxaca, were gathered under the auspices of the Summer Institute of Linguistics during various stays in that town since 1964.

² Data from Chatino as spoken in Yaitepec, Juquila, were gathered during various stays in that town in 1960 - 1963, and short visits since.

³ Having recognised this initial consonant syllabicity, the investigators found that their own pronunciation of Tataltepec Chatino was vastly improved, and the improvement was noted by the local speakers with satisfaction. However, the fact of 2 contiguous pretonic III type syllables initiating a word was not perceived until some time later when an exasperated friend said one day: "We don't say [ns.'k^wa?], we say [n:.s:.'k^wa?], 'corn'. The investigators modified their pronunciation accordingly, and checked all the other words that had appeared to have such a consonant cluster. The local population beamed approval that at last they were able to pronounce these simple words. This all points to longer Chatino words at an earlier stage from which the vowels in pretonic syllables were dropped and this is borne out also by the treatment of loan words where reduction is a major part of assimilation.

⁴ ~~Gliding losses~~ *Tone contrast on the Penultimate* in Tataltepec Chatino, Leslie G. Pride, 1980 (manuscript).

⁵ The voiced stops appear to be fairly recent phonemes, as probably there was no contrast with voiceless stops before the reduction of many verb forms caused the loss of a syllable:

e.g. kata 'sembrará', nd^yata 'está sembrando', nt^ya 'siembra regularmente'
ta 'dará', nda 'está dando', nd^ya 'está pagando'.

⁶ Due to the loss of ~~the~~ entire syllables, especially in some verb forms, there is now contrast between voiced and voiceless stops following a nasal, and the initial nasal has become syllabic preceding another consonant. Doubtless there was a series /mb, nd, ng/ originally. *the variants [d], [g] & [g] are*

⁷ Perhaps the reader wonders why ~~this is~~ not interpreted as ~~a~~ variants of */d/ & /g/ respect* chiefly because of native reaction, as writers write */k/*, and the slower and more emphatic the speech, the more devoicing is apparent. ^{/t/ or} Following a word with final -? it is always [k] that initiates such clitics.

⁸ The word [bɔ'ʔyu] 'pasado pasado mañana' cited last in the examples is perhaps an exception in that it occurs only with a slightly fricative [b] word-initially and no alternative [b] form. It seems likely that words like bi'l^ya 'falta' have lost an initial m-; the Yaitepec cognate is just l^ya 'falta', and the words [bi:'šũ?] 'dear Girl (vocative)', and [bi:'ʃi?] 'dear Boy (vocative)', have idiosyncratic variants [mbi:'šũ?] and [m.bi:'ʃi?], as well as [šũ?] and [ʃi?].

⁹ I am indebted to my colleague Dan Case for this suggestion.

¹⁰ Forrest Brewer y Jean G. Brewer, 1962, p.63.

¹¹ Brenda J. Pensinger, 1974, p151.

¹² Perhaps this persistence of the phoneme /m/ accounts for the loss of the medial syllables in 75 also, i.e. maquila → mil^ya.

¹³ The word 'miercoles' (81) is interesting in that some people have chosen to adopt one vowel of the VV sequence, and some the other in the idiolectical variation, i.e. merku ~ mirku.

¹⁴ One wonders why Andrés did not get reproduced as ntre, i.e. lose the word-initial vowel, the final consonant and the voicing from the -d-, but everyone uses hante for this name. The initial h- could be analagous to hantru (from Alejandro but what has happened to the -r-?

¹⁵ Phoneme alternation between alveolar and velar stops is quite common in the verb stems, and historically the association between these phonemes is very close. The cognates between Chatino dialects of ten equate alveolar stops with velar stops (Note also Isidro → sigru cited above.)

¹⁶ Brewer, 1962, p.125.

¹⁷ Brewer, 1962, p.174.

¹⁸ Brewer, 1962, p.243.

¹⁹ It is for these words only that the exception phrase 'other than bilabial' had to be included in the phonemic statement for the vowel /i/ in 1.3.

²⁰ Brewer, 1962, p. 128.

²¹ Brewer, 1962, p.117.

²² Brewer, 1962, p.62.

²³ Pensinger, 1974, p.63.

²⁴ Pensinger, 1974, p.7.

²⁵ Brewer, 1962, p.220.

²⁶ 1 peso = 8 reales.

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