This chapter is a general outline of Tzutujil phonology. In section 1.1 an inventory of phonological segments is given, and the orthography used to write them is presented. Section 1.2 is a discussion of Tzutujil phonetics and allophonic variation within phonemes. Stress is discussed in 1.3, syllable structure in 1.4, and juncture in 1.5. In section 1.6, on morphophonemics, the most important processes involving consonant and vowel alternations are presented. The discussion in 1.6 includes both general and more restricted morphophonemic processes, but it is not completely comprehensive. Many highly restricted morphological alternations involving only one or two morphemes are discussed individually in later chapters on the morphology and syntax. And no doubt some have been omitted either because they have not been discovered or because they have been overlooked.

Both allophonic and morphophonemic rules are discussed in prose, and they are also presented in formulas. The formulas use generally accepted linguistic conventions, which are discussed in detail in, for example, Chomsky and Halle (1968) and Hyman (1975). A few conventions are unique to this work, but they are explained when they are first introduced. Many of the rules are given in feature notation basically following Chomsky and Halle with modifications by Hyman and a few by this author. Often, however, cover symbols are used instead of features because they are less cumbersome for expository purposes, and because they are less of a burden to read (e.g. 'C' for [+consonantal, -syllabic]; 'V' for [-consonantal, +syllabic]; 'p' for [+consonantal, -syllabic, -continuant, +anterior, -coronal, -nasal], etc.).
### Table 1

#### Phonemic Inventory

| CONSONANTS |bilabial | alveolar | alveo- | palato- | velar | postalveolar | glottal |
|------------|---------|----------|affricate| alveolar| lip | lip | lip |
| Occlusives |          |          |        |         |      |      |      |
| Simple     | p       | t        | tz     | ch      | k    | q    |      |
| Glottalized| b'      | d'       | tz'    | ch'     | k'   | q'   | j    |
| Fricatives | s       | x        |        |         |      |      |      |
| Nasals     | m       | n        |        |         |      |      |      |
| Lateral    | l       |          |        |         |      |      |      |
| Trill      | r       |          |        |         |      |      |      |
| Semivowels | w       |          |        |         |      |      |      |
| Spanish loans | (b) | (d) |        |         |      |      |      |
| Stops      |         |          |        |         |      |      |      |
| Resonants  | (-w")  | (-l")   | (-y")  | (-r")  |      |      |      |
| (SA only)  |         |          |        |         |      |      |      |

#### VOWELS

<table>
<thead>
<tr>
<th></th>
<th>Short</th>
<th>Long</th>
<th>Broken Long (SA)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Front</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Back</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>High</td>
<td>i</td>
<td>u</td>
<td></td>
</tr>
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<td></td>
<td>u</td>
<td>i</td>
<td></td>
</tr>
<tr>
<td></td>
<td>e</td>
<td>e</td>
<td></td>
</tr>
<tr>
<td>Low</td>
<td>a</td>
<td>aa</td>
<td></td>
</tr>
</tbody>
</table>
1.1 PHONEMIC INVENTORY AND ORTHOGRAPHY

The phonemic symbols used to write Tzutujil throughout this work are presented in Table 1. The symbols were chosen as a practical orthography developed by the Proyecto Lingüístico Francisco Marroquín (PLFM) in Guatemala (see Kaufman 1976).

1.2 PHONETICS AND PHONEMICS

1.2.1 The Consonants

The simple occlusives are a series of four voiceless stops, p, t, k, and q, and two voiceless affricates, tz and ch. They are distinguished from each other by their respective points of articulation, and in the case of tz from t, by the former's delayed sibilant primary release. All of the simple occlusives have a strong aspirated secondary release in final position and before other consonants when in clusters. However, before vowels there is no aspirated release.

(1) Simple Occlusive Aspirated Release Rule:

\[
\begin{array}{c}
\text{[-continuant]} \\
\text{[-nasal]} \quad \rightarrow \quad \text{[+aspirated]}/ \quad \begin{array}{c}
\text{C} \\
\text{glottal}
\end{array}
\end{array}
\]

Examples of Simple Occlusives:

- p → [p] pojp [pʊb̪h] 'mat'
  → [pʰ] " "
  tapq'iiʃ [taph hiʃ] 'albino'
- t → [t] tut [tvt] 'palmera'
  → [tʰ] " "
  tkami [tʰkanɪ] 'that he die'
- tz → [ʣ] tzuum [duːm] 'skin'
  → [ʣʰ] utz ['ʊzʰ] 'good'
Contrasting with the simple occlusives is the series of glottalized occlusives. Glottalized occlusives function as unit phonemes and contrast with clusters of glottal stop plus a simple occlusive or a simple occlusive plus a glottal stop. $\text{ch}'$, $\text{ch}$, and $\text{k}'$ are voiceless ejectives with glottalization occurring simultaneously with the oral occlusion (i.e. $[$¢', $[$¢]$^h$, and $[$k]$^h$, respectively). $\text{b}'$ and $\text{d}'$ are imploded and voiced before vowels; in other environments (i.e. finally or before consonants) they are voiceless ejectives. Similarly, $\text{q}'$ is imploded and voiced before vowels, but only optionally; otherwise it is a voiceless ejective.

3(2) Glottalized Occlusive Implosion and Voicing Rule:

$$
\begin{align*}
\text{b}' & \rightarrow [\text{b}' \text{a}q] \quad \text{bone} \\
\text{d}' & \rightarrow [\text{d}' \text{o}d'] \quad \text{snail}
\end{align*}
$$

Optional with $\text{q}'$.

Examples of Glottalized Occlusives:

- $\text{b}' \rightarrow [6] \quad \text{b}'\text{a}q \quad \text{bone}$
- $\text{d}' \rightarrow [d'] \quad \text{d}'\text{o}d' \quad \text{snail}$
tz' -> [t']
meetz' [me:i'] 'eyebrow'

ch' -> [tch']
ch'ijch' [tch'i:ch'] 'metal car'
k' -> [k']
k'oooli [k'o:li] 'there is'
siik' [si:k'] 'tobacco'

q' -> [q']
q'aaq' [Ga:q'] 'fire'

Both of the velar stops, k and k', are palatalized in two different types of environments, one assimilatory, and the other dissimilatory. They are palatalized before the vowel i, and they are also palatalized when they are followed by a nonround vowel (i.e. i, e, or a) that is followed in turn by a postvelar consonant (i.e. q, 'q', or j).

(3) Velar Stop Palatalization Rule:

\[
\begin{array}{c}
\text{[-continuant] } \\
\text{[+high] } \\
\text{[+back] }
\end{array} \rightarrow [-\text{back}] /-\text{syllabic}\ \\
\text{[-round] } \\
\text{[-back] }
\]

i.e.,

\[
k' \rightarrow [k'(\ell)] /-\text{high} /-\text{back}\ \\
\text{i} \quad \text{e} \\
\text{a} \quad \text{j}
\]

Examples of Palatalized Velar Stops:

k -> [k'Y]
kaq [k'Ya] 'red'
kaq'aytin [k'Ya:j:t] 'cacañ plant'

keej [k'Ye:x] 'horse'

but k -> [k] koj [k'Ui] 'jaguar'

keem [ker:m] 'weaving'
Phonology

Phonology

k' → [k'Y]  k'aq [k'Yaq]h 'flea'
k’im [k'Yim] 'straw'

but k' → [k'] k'ojoj [k'o:x] 'mask'
k‘el [k’e1] 'parakeet'

Palatalization does not always occur before a nonround vowel followed by a postvelar consonant, however. For example, the k' in k'ajool [k'ax6:~] is not palatal. Dissimilatory palatalization apparently is not 100 percent productive.

In word-medial and word-final position glottal stop functions like any other consonant. In initial position, however, there is no contrast between its presence or absence. Nevertheless, most monosyllabic words beginning phonemically with a vowel are preceded by a phonetic glottal stop, and vowel-initial forms of more than one syllable may be optionally preceded by a phonetic glottal stop. However, the absolutive proclitics (see section 3.1) and the directional enclitics (see section 7.2.2) are exceptions to this rule: they are never preceded by a phonetic glottal stop even though they are monosyllabic. And forms of more than one syllable with an ergative prefix beginning with a vowel (see section 3.1) are never preceded by a phonetic glottal stop.

(4) Glottal Stop Insertion rule:

Ø → [ʔ/ʔ]v

Obligatory with monosyllabic vowel-initial forms except

the absolutive proclitics and the directional
enclitics;
Optional with forms of more than one syllable except those beginning with ergative prefixes that begin with a vowel.

Examples of Phonetically Inserted [?]:

- ak' ['ak'] 'chicken'
- ooj ['o:o:x'] 'avocado'
- utz ['u:x'] 'good'
- ittz ['i:t:h'] 'hex'
- eey ['e:y] 'day name'

Examples of Forms Which Never Have a Phonetically Inserted [?]:

- in winaq ['ln .@nq'] 'I am a person'
- xel eel ['xel .@:l'] 'he went out'
- aatz'ii7 ['a:i'i:?] 'your dog'

The initial glottal stop occurring phonetically on monosyllabic forms may become phonemic via certain derivational processes. For example, if the characterizing prefix aj- is added to a monosyllabic form, then the phonetic glottal stop remains and becomes phonemic (e.g. aj7iitz 'hexer, witch' < iitz 'hex'). On the other hand, if &- is added to a form with more than one syllable, then the glottal stop does not occur (e.g. aj7iitz 'hexer, witch' < iitz 'hex').

Morphologically, nouns and transitive verbs beginning with a vowel, with or without an initial phonetic glottal stop, are treated differently from forms beginning with a consonant. For example, there are two separate sets of ergative prefixes (see section 3.1), one for vowel-initial stems and one for consonant-initial stems (e.g. wooj 'my avocado' < w-prevocalic Al, ooj 'avocado'; nuuchee7 'my tree' < n- preconsonantal Al, chee2 'tree'). However, Spanish loans beginning with a stressed vowel always take the preconsonantal ergative prefixes with a glottal stop intervening between the prefix and the root (e.g. n7oro < n-
preconsonantal Al, (J)oro < Sp oro), and there are a handful of native forms that always take the preconsonantal prefixes even though in other respects they behave like any other vowel-initial forms (e.g. nuu?o7 'my poo-poo' (baby talk for 'shit') < (J)o7). It seems that these forms begin with a phonemic glottal stop rather than a phonetically inserted one (see discussion and examples in section 3.1).

Examples of Phonemic 7:

- chee7 [ɛ:e?] 'wood'
- chila7 [ɛi?la?] 'there'
- jo7 [xø?] 'let's go'
- jo7q [xø?qh] 'corn sheath'
- ja7ee7 [xa?6e?] 'they'
- si7ooj [søj6ix] 'to row'
- tza7n [sø?n] 'point'
- che7ewi7 [ɛe?cwI?] 'because of this'
- ki7 [kI?] 'sweet'
- ki7ii1 [kI?I:1] 'sweetness'
- sa7y [sa?y] 'type of banana'
- che7axik [ɛe?a?ik] 'to put sticks in the ground'
- (7)070n [?ø?øng] 'iguana'
- n070n [?ø?øng] 'my iguana'

The fricatives are all voiceless, and s [s] and x [k] exhibit no allophony. The fricative j is a glottal fricative, [h], in syllable internal position, that is, when it occurs after a vowel and before another consonant that is either word-final or precedes still another consonant. In all other environments j is postvelar [x].
(5) J Allophonic Rule:
\[ j \rightarrow [h] / V_C \]
\[ \rightarrow [x] \] elsewhere

Examples of Fricatives:
- \[ s \rightarrow [s] \] sijp [sihp] 'present, gift'
  - b'its'a [bi:s] 'sadness'
- \[ x \rightarrow [s\dot{\ddot{s}}] \] xa?r [xa?r] 'jar'
  - ixix [ixix] 'you all'
  - xtu7a [âtu?z] 'female turkey'
- \[ j \rightarrow [h] \] ojb' [¿I'l hp'] 'phlegm'
  - ch'ajt [č'sht] 'bed'
  - \[ \rightarrow [x] \] jamooj [xam6:x] 'to empty'
  - ojoj [I'lxllx] 'we'
  - ajq'ilij [axq'í:x] 'diviner'

The resonants (i.e. \( \ddot{a}, \ddot{e}, \ddot{u}, \ddot{a}, \ddot{e}, \ddot{u} \)) are voiceless in word-final position, and all of them except the two nasals, \( \ddot{m} \) and \( \ddot{n} \), are also voiceless before consonants. In word-final position, the two nasals actually start out voiced but end up voiceless. All of the resonants are always voiced when they occur before vowels.

(6) Resonant Devoicing Rule:
\[
\begin{align*}
\begin{array}{c}
\text{[+resonant]} \\
\text{[-voice]}
\end{array}
\rightarrow \begin{array}{c}
\text{[-voice]} \\
\text{[-nasal]}
\end{array}
\end{align*}
\]

Examples of Resonants:
- \[ y \rightarrow [y] \] ya7 [ya?] 'water'
  - \[ \rightarrow [y] \] Moysées [moysé:s] 'Moses'
  - way [way] 'tortilla'
W → [w] way [way] 'tortilla'
→ [ʃ] kow [kɔw] 'hard' (SA)

tewlaj [tewlʌx] 'very cold' (SA)

l → [l] laq [laːk] 'cup'
→ [l] jul [xjuːl] 'hole'

elnaq [ɛlnaŋ] 'he has left'

r → [ɾ] rex [rɛx] 'green'
→ [ɾ] xa7r [ɜxəɾ] 'jar'

warnaq [wɛrnɐŋ] 'he has gone to sleep'

m → [m] meem [mɛm] 'mute'
→ [mŋ] " " "

n → [n] naan [nænn] 'Señora'
→ [ŋŋ] " " "

W is [ʃ] before front vowels, and [w] before other vowels.

(7) W Allophonic Rule:

w → [ʃ] /

→ [w] elsewhere

Examples of w:

w → [ʃ] witty [ʃi:t] 'myself'

weey [wɛəy] 'my teeth'

→ [w] way [way] 'tortilla'

wuuj [wuːx] 'paper'

wooj [wɔːx] 'my avocado'
The three voiced stops, b, d, and g, are loans from Spanish and occur in many forms borrowed in recent times. Older loans, in general, were usually assimilated to native Tzutujil sounds. For example Sp b usually became either b' (e.g. b'ur 'donkey' < Sp burro; b'aka 'cow' < Sp vaca), or w, especially if Sp b occurred between or after vowels (e.g. alkaual 'sales tax' < Sp alcabala; arówa '25 lb. weight' < Sp arroba; Páwlo < Sp Pablo). Most Sp bs still are assimilated to b' if they are in initial position (e.g. b'kúuna 'vaccine' < Sp vacuna; b'ánko 'bank' < Sp banco). Sp d in early loans usually became t (e.g. Teeko < Sp Diego; tyox 'religious image' < Sp Dios; alkaalte 'mayor' < Sp alcalde). In later loans Sp d usually has become d', especially if it is in initial position (e.g. d'yoos 'God' < Sp Dios; d'oktoor 'medical doctor' < Sp doctor; d'emb'áalde 'in vain' < Sp de (en) balde). Note, however, that d [ɔ] occurs in one native word in Santiago Atitlán: ndta7 [nɔtaʔ] 'my father'. Occasionally, Sp d is incorporated into Tzutujil as g (e.g. paga 'priest' (SA) < Sp padre). In early loans Sp g usually became k (e.g. Keel < Sp Miguel; Teeko < Sp Diego). Some examples where Sp b, d, and g have not been assimilated are given below.

Examples of b, d, and g from Spanish:

b: b'íblya 'Bible' < Sp biblia
   álumbr 'wire' < Sp alambre
   glóobo 'hot air balloon' < Sp globo
   garbánso 'garbanzo bean' < Sp garbanzo

d: dífisko 'record' < Sp disco
   aldéeya 'village' < Sp aldea
   bodéega 'storage room' < Sp bodega
   dooble 'doble' < Sp doble

g: gōoma 'hangover' < Sp goma
   galoon 'gallon' < Sp galón
The four resonants, -w", -y", -l", and -r", are loans from Spanish and occur only in the Santiago Atitlán dialect of Tzutujil, and there only in word-final position. They must be distinguished from native Tzutujil ~, y, l, and r, since the borrowed resonants do not devoice (see rule 6) in word-final position like native resonants. Therefore, the borrowed resonants may contrast with native resonants in final position. In other dialects of Tzutujil Spanish resonants are fully assimilated to their native Tzutujil counterparts.

Examples of -w", -y", -l", and -r" (SA):

\[
\begin{align*}
\text{aaw" } & \text{ 'lima bean' } < \text{ Sp haba} \\
\text{uuw" } & \text{ 'grape' } < \text{ Sp uva} \\
\text{twww" } & \text{ 'towel' } < \text{ Sp toalla} \\
\text{b'asay" } & \text{ 'O.K.' } < \text{ Sp vaya} \\
\text{uul" } & \text{ 'rubber' } < \text{ Sp hule} \\
\text{alkaal" } & \text{ 'mayor' } < \text{ Sp alcalde} \\
\text{uor" } & \text{ 'hour' } < \text{ Sp hora} \\
\text{muor" } & \text{ 'Moor' } < \text{ Sp moro}
\end{align*}
\]

Minimal Pairs of Consonantal Contrasts:

\[
\begin{align*}
b' & \neq p \\
\text{ch}' & \neq \text{ch} \\
k' & \neq k' \\
w & \neq y \\
m & \neq n
\end{align*}
\]
b' # j # k # q # w # r
b'eeey 'road
jeey 'tail'
keey 'their teeth'
ch # tz # q # q # k # t # w
chiiij 'behind it'
tziiij 'word'
q'iiij 'sun, day'
qiij 'our backs'

qeeey 'our teeth'
weey 'my teeth'
reey 'his teeth'

kiiij 'their backs'
riij 'his back'
wiij 'my back'

7 # 8
chee7 'wood'
chee 'to it'
tz # k' # k
iiitz 'hex'
ilk' 'moon'
ilk 'chili pepper'

7 # b' # ch'
kaa7 'grinding stone'
kaab' 'honey'
kaach' 'gum'

ch' # k
k # ch # b'

7 # b' # ch'
jee7 'yes'
xeex7 'root, bottom'
chee7 'wood, tree'

r # y
b'aaar 'where'
b'aaay 'gopher'

p # m # s
jaay 'house'
chaay 'obsidian'
k'aay 'bile'
tax # k'
taxup 'a blow'

x # s
b'tiiix 'song'
b'tiis 'sadness'

b'eeey 'road
jeey 'tail'
keey 'their teeth'
ch # tz # q # q # k # t # w
chiiij 'behind it'
tziiij 'word'
q'iiij 'sun, day'
qiij 'our backs'

qeeey 'our teeth'
weey 'my teeth'
reey 'his teeth'

kiiij 'their backs'
riij 'his back'
wiij 'my back'

chee7 'wood'
chee 'to it'
tz # k' # k
iiitz 'hex'
ilk' 'moon'
ilk 'chili pepper'

kaa7 'grinding stone'
kaab' 'honey'
kaach' 'gum'

chee7 'wood, tree'

b'tiiix 'song'
b'tiis 'sadness'
1.2.2 The Vowels

With the exception of the Santiago Atitlán dialect, Tzutujil has ten vowels, five long (ii, ee, aa, oo, uu), and five short (i, e, a, o, u), which are distinguished by their height, backness, and roundness, as well as by their length. Long vowels are approximately twice as long as short vowels and, in general, are tenser. All of the long vowels, except aa, are somewhat higher than their respective short counterparts; long aa is somewhat lower than short a. Long ee and oo tend to be lowered before glottal stop. All of the vowels have creaky voice or laryngealization to a certain degree before glottal stop and glottalized occlusives.

Examples of Vowels:

<table>
<thead>
<tr>
<th>Long</th>
<th>Short</th>
</tr>
</thead>
<tbody>
<tr>
<td>ii</td>
<td>i</td>
</tr>
<tr>
<td>ee</td>
<td>e</td>
</tr>
<tr>
<td>aa</td>
<td>a</td>
</tr>
<tr>
<td>oo</td>
<td>o</td>
</tr>
<tr>
<td>uu</td>
<td>u</td>
</tr>
</tbody>
</table>

- **ii** $\rightarrow$ [iː] iis [?iːs] 'sweet potato'
- **i** $\rightarrow$ [i] is [?iː] 'body hair'
- **ee** $\rightarrow$ [eː] Keel [keːl] 'Miguel'
- **aa** $\rightarrow$ [aː] chaaj [caːx] 'ash'
- **a** $\rightarrow$ [a] chaj [caːx] 'pine'
- **uu** $\rightarrow$ [uː] quil [quːl] 'mother-of-corn-plant'
- **u** $\rightarrow$ [u] qui [quːl] 'throat, voice, sound'
- **oo** $\rightarrow$ [oː] q'oor [q:oː] 'corn dough'
- **o** $\rightarrow$ [o] q'or [q:oː] 'lazy'
In San Juan, a final vowel in a word is devoiced when it is not stressed; that is, when it follows some other stressed vowel in the same word. This situation arises only in loans from Spanish since in native Tzutujil words the final vowel is always the stressed one (see section 1.3 on stress).

(8) Vowel Devoicing Rule:
V → [-voice]/...v.../v

Restricted to Spanish loanwords

Examples:

b'aaka [ba:ka] 'cow' < Sp vaca
Páwlo [pa:wlo] 'Paul' < Sp Pablo
aláambre [ala:mbr̩] 'wire' < Sp alambre

In Santiago, final vowels occurring after stressed vowels (in loans) are dropped completely. This has led to the situation (discussed at the end of section 1.2.2) whereby final resonants in Spanish loans are not devoiced like native resonants. The lack of devoicing in final resonants in loans is probably due to dropping of the final vowel that followed the resonant.

It should be noted that the contrast between short e and a is somewhat weak in the sense that there are many words in which e alternates with a rather freely (e.g. rex ~ rax 'green', q'eq ~ q'aq 'black'). On the other hand, there are many words in which a never alternates with e (e.g. saq 'white', jab 'rain'), and there are some where e does not alternate with o (e.g. k'el 'parakeet', nech'el 'smashed (of ripe fruit)'). It may be the case, then, that short e is beginning to merge with a. There are also a number of cases of alternations between short o and a, although not nearly as common as the a ~ e alternations (e.g. top ~ tap 'crab', chopoq ~ chapoq 'to grab, hunt'). With o and a it is not clear in which direction the merger may be going. In any case, it is difficult to find minimal pairs contrasting short a with e and o, although there are many forms in which there are no alternations, and the use of one vowel for the other would be incorrect.
The Santiago dialect has twelve phonemic vowels, five short ones as in other dialects (i, e, a, o, u), and seven long ones (ii, ie, ee, aa, uu, oo, o). The two heterogeneous or 'broken' long mid vowels, ie and oo, occurring only in the Santiago dialect, correspond with long ee and oo, respectively, in other dialects of Tzutujil (e.g. chie7 (SA) and chee7 (SJ) 'wood'; puom (SA) and poom (SJ) 'incense'). However, the Santiago dialect also has plain long ee and oo, which contrast phonemically with broken ie and oo. In the Santiago dialect ee and oo originate from underlying and/or historical //e7// and //o7//, respectively.

*For minimal pairs of forms with short versus long contrasts, see the beginning of section 1.2.2.
before glottalized occlusives (see morphophonemic rule 37 in section 1.6.3). But since the rule that changes //e7// and //o7// to ee and oo before glottalized occlusives is not only synchronically productive but also has been in effect for some time, there are many forms today that do not display any morphological alternations between e7 and ee, and o7 and oo. In other words, where there are no morphological alternations the (previous) underlying forms are no longer recoverable. This situation has led to the development of two new long vowels in Santiago and the resulting contrast between ie and ee, and uo and oo. Compare the examples below.

Examples of ie, ee, uo, and oo from Santiago Atitlán:

\[
\begin{array}{ll}
\text{uo [uː]} & \text{tzk'uok' 'biscuit' < *tzok'oök'} \\
& \text{ch'uob' 'pineapple' < *ch'oob'} \\
& \text{uob' 'diviner's ritual word' < *oob'} \\
& \text{q'uuor 'corn dough' < *q'oor}
\end{array}
\]

\[
\begin{array}{ll}
\text{oo [ɔː]} & \text{tzk'oök' 'tostada' < *tzok'o7k'} \\
& \text{ch'oob' 'cajete tree' < *ch'o7b'} \\
& \text{oob' 'phlegm, cough' < *o7b'} \\
& \text{q'oob' 'earring' < *q'07b'} \\
& \text{xch'oob'a 'it was thought' < //xch'07b'a//} \\
& \text{(cp. xch'o7pa 'it was pinched')}
\end{array}
\]

\[
\begin{array}{ll}
\text{ie [iː]} & \text{chie7 'wood' < *chee7} \\
& \text{wiey 'my teeth' < *weey} \\
& \text{jie7 'yes' < *jee7} \\
& \text{tiew 'cold' < *teew} \\
& \text{pieq 'pataxte plant' < *peeq}
\end{array}
\]

\[
\begin{array}{ll}
\text{ee [eː]} & \text{ch'eech' 'metal, car' < *ch'e7ch'} \\
& \text{xb'eeq'a 'it was swallowed' < //xb'e7qa//} \\
& \text{(cp. xb'e7qa 'grains were removed')} \\
& \text{xd'e7b'a 'it was stained' < //xd'e7b'a//}
\end{array}
\]
1.3 STRESS

With one exception, all native Tzutujil words have stress on their last vowel. The only exception to this rule is the adjectival suffix -\( \tilde{V} \) (i.e. \( -\tilde{a} \sim -\tilde{i} \sim -\tilde{o} \sim -\tilde{u} \); see section 6.1.1) used on monosyllabic modifying adjectives when they precede the head noun in a noun phrase. The adjectival connector suffix \( -\tilde{V} \) is never stressed; rather the vowel of the adjective stem preceding \( -\tilde{V} \) carries stress. Since stress in native Tzutujil forms is completely predictable it is not written. However, stress in loans from Spanish is not predictable, so it is written in loanwords when it does not fall on the last vowel of the word.

(9) Stress Rule:
\[
V \rightarrow (+\text{stress})_1 \ (C^n) \ #
\]
Exceptions: (a) adjectival suffix \( -\tilde{V} \) never carries stress; (b) some Spanish loanwords.

Examples of Stress in Native Forms:

<table>
<thead>
<tr>
<th>Word</th>
<th>Pronunciation</th>
<th>Meaning</th>
</tr>
</thead>
<tbody>
<tr>
<td>wa7iim</td>
<td>[wa?imʍ]</td>
<td>'to eat'</td>
</tr>
<tr>
<td>wa7naq</td>
<td>[wa?nɑːl]</td>
<td>'eaten'</td>
</tr>
<tr>
<td>xwa7i</td>
<td>[ʃwa?ɪ]</td>
<td>'he ate'</td>
</tr>
<tr>
<td>ch'eyooj</td>
<td>[ɛ'c'yɔːʃ]</td>
<td>'to hit'</td>
</tr>
<tr>
<td>ch'eyoon</td>
<td>[ɛ'c'yo:n]</td>
<td>'hit'</td>
</tr>
<tr>
<td>xuuch'ey</td>
<td>[ʃuːc'ɛy]</td>
<td>'he hit it'</td>
</tr>
<tr>
<td>xch'eyooni</td>
<td>[ʃɛ'c'yo:nɪ]</td>
<td>'he hit'</td>
</tr>
<tr>
<td>tach'eya7</td>
<td>[tac'e:yaʔ]</td>
<td>'hit it!'</td>
</tr>
<tr>
<td>tii7iij</td>
<td>[ti:iʃiː]</td>
<td>'meat'</td>
</tr>
<tr>
<td>nuuti7</td>
<td>[nu:tiʔ]</td>
<td>'my meat'</td>
</tr>
<tr>
<td>aachi</td>
<td>[a:cɪ]</td>
<td>'man'</td>
</tr>
<tr>
<td>achajloom</td>
<td>[ačaxilőːm]</td>
<td>'husband'</td>
</tr>
</tbody>
</table>
wachajiil [wa:tʃa:jil] 'my husband'

səq [sə'q] 'white'

səqireem [səqirə:me] 'to whiten'

səqil [səqi:il] 'whiteness'

səqa jaay [səqa xa:y] 'white house'

Examples of Stress in Spanish Loanwords:

b'əaka [ba:ka] 'cow' < Sp vaca

aróowa [aɾo:wə] '25 lb. weight' < Sp arroba

serb'îlsyo [səɾb'îlsyo] 'service' < Sp servicio

b'yaaja [ba:jaxa] 'trip' < Sp viaje

Teeko [te:k6] 'James' < Sp Diego

kape [kapə] 'coffee' < Sp café

galoon [ga:ln] 'gallon' < Sp galón

lugaar [lu:gər] 'place' < Sp lugar

It should be noted that directionals (see section 7.2.2) and a number of verbal or adverbial enclitic particles (see section 7.2.1) take the stress when they are appended to a preceding word (e.g. na nee, irreal, eel 'going out': xinwə7 na 'I had to eat', ma xinwə7 ta 'I didn't eat', xinwə7 eel 'I ate going out').

1.4 SYLLABLE TYPES

The majority of roots in Tzutujil are monosyllabic of the form CVC, or one of three expanded versions of this form: CVVC, CVJC, and CVJC. Monosyllabic roots of the form VC, or expanded versions: VVC, VJC, and VJC, are also common. These basic root syllable types can be represented with the formula:
Examples of Basic Root Types:

- **CVC:** saq 'white'  
  ki7 'sweet'
- **CVVC:** ch'aak 'flesh'  
  kunak 'squirrel'
- **CV7C:** ch'a7k 'a boil'  
  si7k 'lizard'
- **CVjC:** ch'ajt 'bed'  
  kujk 'stake'
- **VC:** ak 'chicken'  
  o7 'poo-poo' (baby talk)
- **VVC:** ocj 'avocado'  
  iitz 'hex'
- **V7C:** ijx 'day name'
- **VjC:** ajq 'pig'
- **VC:** ak' 'chicken'
- **VVC:** ooj 'avocado'
- **V7C:** i7x 'day name'
- **VjC:** ajq 'pig'

Santiago Tzutujil has lost syllabic internal -j-. Syllables that historically were CVjC have become CV7C (e.g. ch'a7t 'bed', ku7k 'stake', ajq 'pig' (SA)). Syllabic internal -j- seems to be changing to vowel length in San Pedro (e.g. ch'ajt ~ ch'aat 'bed' (SP)).

With the exception of the broken long vowels, ie and uo, in Santiago, nonidentical vowel clusters do not occur in native Tzutujil words, although they have been recorded in a few loanwords (e.g. aoora 'now' < Sp ahora; reaal 'Real' (monetary unit)).

In general, there are few restrictions on the possible combinations of consonants that may co-occur as the first and last consonants in the same syllable. However, it may be stated that nonidentical glottalized occlusives do not co-occur in the same syllable unless one of them is b'. Also, sibilants and affricates co-occur with other sibilants and affricates, respectively, only if they agree in the value of the feature anterior; that is, s does not co-occur with x, and ts(7) does not co-occur with ch().

There are a few root syllables that begin with a consonant cluster, the first consonant normally being a sibilant and the second a stop or resonant; e.g.
Two onomatopoetic forms have been recorded that have stops as the initial consonant of the cluster (e.g. tlintlin 'dingding' and tlantlan 'ding-dong'). Normally, root syllables do not end in clusters other than -JC or -JC, but one root has been recorded with a triconsonantal cluster ending the syllable (e.g. pijxk' 'white oak').

Roots ending in vowels are extremely rare; the following forms are the only ones recorded:

\[ \begin{align*}
aachi & \quad 'man' \\
k'aak'a & \quad 'new' \\
\end{align*} \]

Although the majority of roots are monosyllabic, there are a large number of bisyllabic roots as well, most of them nouns. Some examples are given below.

Examples of Bisyllabic Roots:

\[ \begin{align*}
CCVCVC: & \quad \text{xkoya7 'tomato'} \\
CVCCVC: & \quad \text{b'ajlam 'jaguar'} \\
CVVCVC: & \quad \text{chakach 'basket'} \\
CVVCVVC: & \quad \text{kaamiik 'now'} \\
VCVC: & \quad \text{uleep 'earth, land'} \\
VCVC: & \quad \text{ib'och' 'nerve, vein'} \\
VVCV: & \quad \text{aachi 'man'} \\
VVCVVC: & \quad \text{oochooch 'house' possessed form}
\end{align*} \]

Completely unanalyzable native roots of greater than two syllables are extremely rare or nonexistent. However, some borrowings that are now recognized as native forms are trisyllabic (e.g. tinaamit 'town' < Aztec tenamitl 'fortification'; armiita 'cofradia house' < Sp ermita).

Affixes may be a full syllable, or, occasionally, they are bisyllabic in the case of a few suffixes, but often they are only a single vowel or consonant. Many suffixes are comprised of one or more
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reduplicated segments of the root (see section 1.6.4, rule 39). Examples of the forms of a representative number of affixes are given below.

**Suffixes**

-VCVC: \(-V, C, \hat{a}\) TV derivational
-CVC: \(-naq\) IV perfect
-VC: \(-ow\) RTV focus antipassive
-VVC: \(-i\hat{l}\) nominal
-V: \(-i\) IV phrase-final
-C: \(-x\) DTV passive

**Infix**

-C-: \(-j\) (\(\sim \sim \sim \sim\) V) RTV passive

**Prefixes**

CVV-: nuu- A1 preconsonantal
CV-: ki- A3p prepolysyllabic
C-: x- completive aspect
CC-: xk- potential aspect
VV-: ee- B3p
VVC-: aaw- A2 prevocalic
VC-: aj- characterizer

1.5 JUNCTURE

Word juncture is indicated fairly clearly phonetically: (1) by stress on the final vowel of a word (except in the case of some loanwords, and in the case of a few enclitic particles that take stress instead of the last vowel of the preceding word); (2) by final resonant devoicing; (3) by the fact that the glottalized occlusives \(b', d',\) and \(g'\) are voiceless in final position; and (4) by the possibility of a pause before or after words.

There is also another type of juncture, which is called phrase juncture and which is indicated by certain kinds of morphophonemic and morphological alternations. Basically, phrase juncture marks the end of certain kinds of phrases or clauses, and it may also indicate the degree
of syntactic closeness that certain words in a phrase have, as opposed to
the words in other similar syntactic constructions. One important
indicator of phrase juncture is the intransitive verb phrase-final suffix
-\text{i}, which occurs on an intransitive verb only if the verb is at the end
of the clause, or if it immediately precedes a definite noun phrase (see
section 4.1.2.2 for details and examples). In other words, -\text{i} may func-
tion like a period or semicolon, indicating clause boundary on the one
hand; on the other, it also indicates that the following NP is definite
and I suspect in a more distant syntactic relationship to the verb than
an indefinite NP or some other nondefinite phrase. Another indicator of
phrase juncture is morphophonemic vowel shortening (see rule 23, section
1.6.2). Long vowels of verbs (and verbal forms) and relational nouns
remain long only at the end of a clause or before definite NPs; otherwise
they are shortened. Thus, long vowels of verbs and relational nouns
indicate clause boundary, and they indicate that the following NP is
definite and thus perhaps not as closely related syntactically as an
indefinite NP or some other type of nondefinite phrase.

1. 6  MORPHOPHONEMICS

1. 6. 1  Consonant Alternations

In San Juan, when two identical consonants become contiguous because
of morphological processes, they are reduced to one if they are in the
same word or word plus clitic construction. This rule may not apply,
optionally, in slow, very careful speech.

(10) Geminate Consonant Reduction Rule (SJ):

\[ C_i C_i \rightarrow C_i \]
Obligatory in rapid speech;
Optional in slow, careful speech.
Examples:

\[
\begin{align*}
//\text{xtopoon na}/* & \quad \rightarrow \quad \text{xtopia 'he'll arrive there'} \\
//\text{rraxaal}/* & \quad \rightarrow \quad \text{raxaal 'its greenness'} \\
//\text{ma xb'olq'o}t\,ta/* & \quad \rightarrow \quad \text{ma xb'olq'o}ta 'it didn't twist'}
\end{align*}
\]

The nasal \( n \) assimilates to \( m \) before a labial occlusive or \( m \). The rule is not obligatory but usually occurs in rapid speech. However, the first person singular ergative prefix \( -n^* \) occurring before stems of more than one syllable never assimilates (see rule 24).

(11) \( N \)-Assimilation:

\[
\begin{align*}
n & \rightarrow [+\text{anterior}]/[+\text{anterior}]-\text{coronal} \\
\text{Optional except: } n^* & \text{Al prepolsyllabic}
\end{align*}
\]

Examples:

\[
\begin{align*}
//\text{nimb'e}/* & \quad \rightarrow \quad \text{nimb'e 'I go'} \\
//\text{nimpeeti}/* & \quad \rightarrow \quad \text{nimpeeti 'I come'} \\
//\text{in mooy}/ & \quad \rightarrow \quad \text{im mooy 'I am blind'} \\
\text{Cp. } //\text{nuub'aqiqil}/* & \rightarrow \quad \text{nb'aqiqil 'my body'}
\end{align*}
\]

The \( r \) of the third person singular ergative prefix \( ruu- (~-r-) \) is deleted after the preposition and complementizer \( \text{chi} (~-\text{ch}) 'at, to; that'. The rule is optional when \( r^* \) precedes a vowel initial stem (see sections 7.1.2 and 7.1.3).

(12) \( R \)-Deletion (restricted):

\[
\begin{align*}
\tau & \rightarrow \emptyset/ \text{chi}_- \\
\text{Optional before vowel initial stems.}
\end{align*}
\]

Examples:

\[
\begin{align*}
//\text{chi rch'ejylik}/* & \quad \rightarrow \quad \text{ch'i ch'ejylik 'its being hit'} \\
//\text{chi ruuxee7}/* & \quad \rightarrow \quad \text{chuuxee7 'under it'} \\
//\text{chi ritij}/* & \quad \rightarrow \quad \text{chitij ~ chriij 'in back of it'}
\end{align*}
\]

In San Juan only, \( w \) becomes \( p \) in word-final position.
(13) \( w \) to \( p \) Rule (SJ):
\[
\begin{align*}
w & \rightarrow p/\emptyset \\
\end{align*}
\]

**Examples:**

- `//kow//` → `kop` 'hard'
  - cp. `kowireem` 'to harden', `rkowiil` 'hardness'
- `//teew//` → `teep` 'cold'
  - cp. `teewarem` 'to cool', `tteewuul` 'coldness'

There are two exceptions to this otherwise general rule: `d'oow` 'goodbye' and `myeaw` 'cat'. The \( w \)s here neither change to \( p \), nor do they devoice like other resonants, or as \( w \) does in other dialects (see rule 6, section 1.2.1).

The passive infix \( -\mathfrak{i} \) becomes \( -\mathfrak{I} \) before \( \mathfrak{i} \) and vowel length (\(-V\)) before \( \mathfrak{I} \) (see section 9.6.1).

(14) \(-\mathfrak{i}^{-}\) Alternation (restricted; SJ):
\[
\begin{align*}
-\mathfrak{i}^{-} & \rightarrow \begin{cases} -\mathfrak{I}^{-} & \text{if } j \text{ precedes } \mathfrak{i} \text{ in the same word.} \\
-\emptyset & \text{otherwise} \end{cases}
\end{align*}
\]

**Examples:**

- `xch'eji` 'it was hit' cp. `xuuch'ey` 'he hit it'
- `xto7ji` 'it was paid' `xuutoj` 'he paid it'
- `xyaa7i` 'it was given' `xuuya7` 'he gave it'

In Santiago, \( x \) optionally assimilates to \( s \) if \( s \) precedes \( x \) in the same word.

(15) \( x^{-} \)-Assimilation Rule (SA):
\[
\begin{align*}
x & \rightarrow s/\ldots s/\ldots\quad \text{Optional}
\end{align*}
\]

**Examples:**

- `//xksamxaxa//` → `xkmsasa` 'it was killed'
- `//xjoseq'ixa//` → `xjas'isa` 'it was cleaned'
- `//xmsstaxa//` → `xmsstasa` 'it was swept'
An epenthetic \( r \) is inserted at the end of the definite article \( ja \) and the contrasting/topic-shifting particles \( k'aa \) and \( k'ii \), both meaning 'with respect to, as for' (see section 7.1.7.3), when they precede vowel-initial stems of more than one syllable. \( r \) also replaces the \( j \) of the fronting enclitic particle \( wi7 \) (see section 7.1.7.2) when it precedes a vowel-initial stem of more than one syllable. This rule works in conjunction with Vowel Lengthening (rule 26, section 1.6.2).

\[
\begin{align*}
\phi &\rightarrow r/ \quad \{ja \\
&\quad ja \ k'aa \\
&\quad ja \ k'ii \\
&\quad wi(?)/\ \ Y V C V
\end{align*}
\]

'\( C \)' indicates a minimum of one consonant with no upper limits.

Examples:

- \( ja \ aachi \) 'the man'
- \( ja \ \ k'aa \ Aa \ Teeko \)
- \( ja \ k'ii \ tz'i? \) 'the dog'
- 'with respect to Diego'
- 'with respect to the dog'
- 'with respect to the women'
- 'with respect to the people'
- 'Where are the corn plants?'
- 'Where is the tree?'

The next five morphophonemic rules (17-21) account for consonant alternations that are restricted to a small number of lexical items. They are not general rules that apply throughout the language whenever their structural descriptions are met.

In a number of forms \( q \) becomes \( j \) before a consonant. The rule is obligatory in some cases and optional in others.

\[
\begin{align*}
q &\rightarrow [+\text{continuant}] /C
\end{align*}
\]

Examples:

- saj\(b\)\(utub'uj \sim saq\(b\)\(utub'uj \) 'very white' < \(saq\) 'white'
- naj chee \sim naq chee 'why' < naq 'what', chee 'to it'
In a few forms m becomes n finally.

(18) M to N Alternation (restricted):
   m → [ bombard ]

Examples:
   / npaan/ → npaan 'my shit' cp. paamaaj 'shit'
   /ruutza7m/ → ruutza7n 'its point', ruutza7m 'its nose'
   cp. tza7maaj 'nose; point'

In a few forms b' alternates with ?.

(19) B' to ? Alternations (restricted):
   b' → ?

Examples:
   q'ab'aaj 'hand' nuuq'a7 'my hand'
   ka7i7 'two' ruukaab' 'second' kab'lajuuj 'twelve'

In a couple of forms a cluster with a simple occlusive followed by a glottal stop (even if a phonetic [?], not phonemic; see rule 4, section 1.2.1) becomes a glottalized occlusive.

(20) Glottalization Rule (restricted):
   C + ? → C'
   C = simple occlusive here

Example:
   rwachiuleep 'world' < rwach 'its face', [?]uleep 'earth'

Metathesis occurs in a very few forms.

(21) Metathesis Rule (restricted):
   S1...S41 → S1...S41
   S = segment
Examples:
chwi’le 'Chichicastenango (town)' < chwl 'on top of',
yel 'stinging nettle' (Sp chichicaste)
tzejxik ~ tzojxik //tzejxik// 'to talk' (SA)

1.6.2 Vowel Alternations

Root transitive verb (RTV) suffixes (see section 4.1) that have a basic vowel ə harmonize with a preceding root vowel u. And the vowel of the RTV suffix -a7 harmonizes with both root vowels ə and u.

(22) RTV Suffix Vowel Harmony Rules:

(A) [-ooj] → [-uuj]
    [-oon ~ -oy] → [-uun ~ -uy]
    [-óu ~ -uy] → [-ouu ~ -uy]
    [-V, yoon] → [-V, yuun]

(B) -a7 → [-o7] / [-u7]

Examples:
ch’eyooj 'to hit'  muquuj 'to bury'
ch’eyoon 'hit'    muquun 'buried'
ch’eyool+ 'hitter of'  muquul+ 'burier of'
ch’eyeyoon 'one who has hit'  muquyuun 'one who has buried'
xch’eyowi 'he was the one who hit it'  xmuquwi 'he was the one who buried it'
tach’eya7 'hit it!'  tamuqu7 'bury it!'
choyooj 'to cut'  tachoyo7 'cut it!'

Basic or underlying long vowels of verbs and verbal forms like participles and infinitives (see section 4.1) remain long only if the verb occurs before a definite noun phrase or at the end of the clause. Basic or underlying long vowels of relational nouns (see section 5.2.1) remain long only at the end of a clause or before (their) definite objects. In other words, long vowels of verbs and relational nouns are shortened in
clause-internal position if they do not precede definite NPs. Also, long vowels of possessed nouns are shortened before indefinite possessors (see sections 1.5, 4.1.2.2, 5.1).

(23) Vowel Shortening Before Nondefinite Phrases:

(A) \( V_{i+1} V_i \rightarrow V_i/ \) anything that is not a definite NP, and that is not a clause boundary

(B) \( V_{i+1} V_i \rightarrow V_i/ \) [indefinite possessor]

Examples:

Vowel Shortening in Relational Nouns:
- rumaal 'by her'
- rumaal jar lixoq 'by the woman'
- rumal ixoq 'by women'
- rumal jun ixoq 'by a woman'

Vowel Shortening in Possessed Nouns:
- tz'uumaal 'skin'
- rtz'uumaal ja masaat 'the deer's skin'
- rtz'umal masaat 'deerskin = skin of deer'
- rtz'umal jun masaat 'a deer's skin'

Vowel Shortening in Verbs:
- rb'ixaxiik 'for it to be sung'
- rb'ixaxiik ja b'iix 'for the song to be sung'
- rb'ixaxik jun b'iix 'for a song to be sung'
- b'iixaan 'sung'
- b'iixaan ja b'iix 'the song is sung'
- b'ixan jun b'iix 'a song is sung'
- xb'ixaj 'he sang it'
- ma xb'ixaj ta 'he didn't sing it'
- xb'ixaj ja b'iix 'he sang the song'
- xb'ixaj b'iix 'he sang songs'
- xb'ixaj jun b'iix 'he sang a song'
The ergative prefixes (see section 3.1) have short forms that are used when they are prefixed to noun and verb stems of more than one syllable. In the short forms, the vowels of the prefixes are either deleted (e.g. with nuu- and (r)uu-), shortened (e.g. with aa(w)-, qaa-, and ee(w)-), or shortened and changed (e.g. with kee-).

(24) Ergative Prefix Shortening Rule:

Examples:

nuutz'ii7 'my dog'  nztz'uumaal 'my skin'
aatz'ii7 'your dog'  atzt'uumaal 'your skin'
ruutz'ii7 'his dog'  rztz'uumaal 'his skin'
qaatz'ii7 'our dog'  qatz'uumaal 'our skin'
eetz'ii7 'you all's dog'  etzt'uumaal 'you all's skin'
keetz'ii7 'their dog'  kitz'uumaal 'their skin'
xatn muuch'ey 'I hit you'  xatnkuunaaj 'I cured you'
xuuch'ey 'he hit it'  xkuunaaj 'he cured him'
xatruuch'ey 'he hit you'  xatrkuunaaj 'he cured you'
There are a few monosyllabic stems that function as if they were of more than one syllable in that they take the shortened prefixes only (e.g. paq 'money', napaq 'our money', never *qapaq).

The long uu of the ergative prefixes nuu- and ruu- is deleted before a few rather common monosyllabic nouns that begin with p or w.

(25) UU-Deletion (restricted):
\[
\text{uu} \rightarrow \emptyset/\{w\}
\]

Examples:

<table>
<thead>
<tr>
<th>Monosyllabic Noun</th>
<th>Ergative Form</th>
</tr>
</thead>
<tbody>
<tr>
<td>nwii7 'my head'</td>
<td>rwi7 'his head'</td>
</tr>
<tr>
<td>nwach 'my face'</td>
<td>rwach 'his face'</td>
</tr>
<tr>
<td>npaan 'my shit'</td>
<td>rpaan 'his shit'</td>
</tr>
</tbody>
</table>

That the rule is not general may be seen with the following two examples: nuuwuuj 'my paper' < wuuj 'paper'; nuupojp 'my mat' < pojp 'mat'.

The initial vowels of vowel-initial stems of more than one syllable are lengthened when they are immediately preceded by the definite article ja or one of the contrasting/topic-shifting particles k'ii and k'aa (see section 7.1.7.3). This rule works in conjunction with -Epenthesis (rule 16, section 1.6.1).

(26) Vowel Lengthening Rule (SJ restricted):
\[
V_1 \rightarrow \begin{cases} \text{ja(r)} & \text{ja k'ii(r)} \text{ or ja k'aa(r)} \end{cases} C_i V
\]

'\(C_i\)' indicates a minimum of one C with no upper limits.

Exception: inapplicable before the prefix aq-.
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Examples:

//ja ixoq// → jar iixoq 'the woman'
//ja k'ii iixoq// → ja k'iiir iixoq 'with respect to the woman'
//ja k'aa iixoq// → ja k'aaar iixoq 'with respect to the woman'

This rule is completely general with one important exception: it never applies to forms beginning with the characterizer prefix aj- (see section 5.3.1). That is, the a of aj- is never lengthened (e.g. jar ajq'iij 'the diviner').

Vowels of nouns in noun class SI A (see section 5.1.2.1) are lengthened when the nouns of this class are possessed. The lengthening of vowels here occurs only when the possessor is definite. It may be that the vowels of class SI A nouns are not lengthened before indefinite nouns, or that they are lengthened but then shortened by rule 23, Vowel Shortening Before Nondefinite Phrases.

\[
V_i^1 \rightarrow V_i^1 [\text{possessive prefix}] \ldots \ldots [\text{definite possessor}] \\
\text{[SI A noun]}
\]

Examples:

tz'i7 'dog'
ruutz'i7 'his dog'
ruutz'i7 jar aachi 'the man's dog'
rtz'i7 jun aachi 'a man's dog'
chikop 'animal'
rchii koop 'her animal'
rchii koop jar iixoq 'the woman's animal'
rchikop jun iixoq 'a woman's animal'
winaq 'people'
swinaaq 'my people'

Basic or underlying vowels of verb stems are shortened whenever the stems are followed by the passive suffix -x, the locative/instrumental suffix -(Y)b'ae, the agentive suffix -l, and the IV perfect suffix -maq.
(28) Verb Stem Vowel Shortening Before Certain Suffixes (restricted):

\[ V_{\text{I}} V_{\text{I}} \rightarrow V_{\text{I}} /\ldots \left\{ \begin{array}{c}
X \\
-(V)b'al \\
-\text{naq}
\end{array} \right. \]

Examples:

//eel// 'go out'
- eeel 'go out'
- xeeli 'he went out'
//k'aayi// 'sell'
- k'aayiineen 'to sell' IV
- k'aayiini 'he sold'
- k'aayiin 'sold'
- xk'aayiiij 'he sold it'

In the Santiago dialect, basic or underlying long vowels are shortened when they occur in nonfinal syllables. However, vowel shortening does not apply to long vowels created by rule 36, which are derived from a vowel plus glottal stop before glottalized occlusives (see discussion of rule 36). It should be noted that if there is no allomorphic alternation in a given form between long and short vowels, then the original long vowel is never realized as such, rather only as a short vowel. But since, generally speaking, underlying noninitial short vowels are deleted in nonfinal syllables (see rule 30), if a short vowel appears in a nonfinal syllable and is not word-initial, one can assume that it is an underlying long vowel or, at least historically, that it was a long vowel.
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(29) Vowel Shortening Rule (SA):

\[ VV \rightarrow V/_C_1V \]

i.e. 

\[
\begin{align*}
\text{ii} & \rightarrow \text{i} \\
\text{ie} & \rightarrow \text{e} \\
\text{aa} & \rightarrow \text{a} \\
\text{uo} & \rightarrow \text{o}
\end{align*}
\]

Condition does not apply to long vowels created by rule 36.

'\( C_1 \)' here indicates a minimum of one C with no maximum of Cs.

Examples:

- b'iix 'song'
- b'ixaniem 'to sing'
- jeyasj 'tail'
- nujiej 'my tail'
- b'aq 'bone; skinny'
- b'aqtil 'body'
- b'aqriem 'to get skinny'

\[ \langle /b'iixaaniem// \rangle \]
\[ \langle //b'ixaniem// \rangle \]
\[ \langle //jeyasj// \rangle \]
\[ \langle //nijiej// \rangle \]
\[ \langle //b'aqtil// \rangle \]
\[ \langle //b'aqriem// \rangle \]

- muuj 'shadow, shade'
- nmuaal 'my shadow'
- chuom 'fat'
- rchomaal 'fatness'
- chomeriem 'to fatten'
- wnaq 'people'

- eyaaj 'tail'
- chuom 'fat'
- rchomaal 'fatness'

- < //b'ixaaniem// >
- < //b'ixaniem// >
- < //jeyasj// >
- < //nijiej// >
- < //b'aqtil// >
- < //b'aqriem// >
- < //winaq// >

In Santiago Atitlán, generally speaking, short vowels are deleted in nonfinal syllables if they are not word-initial, and if they are not followed by a final open syllable. If no allomorphic alternations occur in a given form then the vowel is simply not recoverable synchronically.

(30) Short Vowel Deletion Rule (SA):

\[ V \rightarrow O/C_1V(V)C \]

'\( C_1 \)' indicates a minimum of one C with no upper limit of Cs.

There are a number of exceptions to this rule (all of which I do not fully understand yet), which require further comment and qualification. A vowel is not deleted before a glottal stop plus another consonant; the
glottal stop is deleted (see rule 35) instead. Vowels are always deleted in the penultimate syllable before a closed final syllable, but never deleted in a penultimate syllable before an open final syllable. Vowels in syllables preceding the penultimate are often but not always deleted. Some of the cases where they are not deleted follow: (1) When the vowels of the antepenultimate and penultimate syllables are identical (especially because of reduplicating processes, see section 1.6.4), the vowel of the antepenultimate is not deleted unless it is followed by a resonant. (2) Vowels of the absolutive prefixes (see chapter 3) are usually not deleted, although they may be. (3) Vowels shortened by rules 28 and 29 are not deleted. (4) When consonant clusters resulting from vowel deletion seem unpronounceable to the speaker, a given vowel may not be deleted (i.e. deletion occurs only if there is clear morphological motivation for knowing what the deletable underlying vowel is). However, what is unpronounceable is rather subjective and seems to depend on factors like the speaker's age, place of residence, and perhaps worldview. Younger speakers, people living closer to the center of town, and less conservative people tend to delete more vowels. In any event, some people tolerate rather long clusters of 7-10 consonants, while others only strings of 4-5 consonants. For example, one speaker might say m xtkatqkmsaaj ta while another m xtkatqakmsaaj ta/ /xtkatqakmsaaj ta/ 'we wouldn't kill you'.

Examples:

aqan 'leg'
wqan 'my leg' /waqan/
chkop 'animal' /chikop/
nchikuop 'my animal' /nchikuloop/
exoq 'woman'
wxoqfil 'my wife' /wxoqfil/
chyuoj 'to cut' /choyuoj/
xuchoy 'he cut it' /xuuchoy/
choyk 'to be cut' /choyik/
xchoyja 'it was cut'
chyuon 'cut' /choyon/
chyonlem 'to cut' IV /choyonlem/
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\[ \text{xchyona 'he cut'} \ (//xchoyuona//)\]
\[ \text{xchyowa 'he was the one who cut it'} \ (//xchoyowa//)\]
\[ \text{xchoytaja 'it was already cut'} \ (//xchoytaja//)\]
\[ \text{kmik 'to die, death'} \ (//kamik//)\]
\[ \text{kmnaq 'dead'} \ (//kamnaq//)\]
\[ \text{xkama 'he died'}\]
\[ \text{ktkm na ~ tkatkm na 'hope you die'} \ (//(t)katkm na//)\]
\[ \text{kmxaxik 'to be killed'} \ (//kamxaxik//)\]
\[ \text{xkmssaxa 'it was killed'} \ (//xkmssaxa//)\]
\[ \text{xkmssaj 'he killed it'} \ (//xkmssaj//)\]
\[ \text{xkmstaja 'it was already killed'} \ (//xkmstaja//)\]
\[ \text{kmssan 'killed'} \ (//kmssan//)\]
\[ \text{kmssaniem 'to kill' IV} \ (//kmssaniem//)\]
\[ \text{xkmssana 'he killed'} \ (//xkmssana//)\]

The vowels \(e\) and \(a\) both assimilate optionally to following \(o\) and/or \(u\) when there is only an intervening glottal stop.

\[ (31) \text{Vowel Assimilation Rule I:} \]
\[ \begin{align*}
\{e, a\} \rightarrow [^0^u] \quad & \text{Optional} \\
\end{align*} \]

Examples:
\[ \text{xu7ujqalasaaj - xe7ujqalasaaj 'we came to get them out'} \]
\[ \text{yo7ool+ - ya7ool+ 'giver of'} \]

In Santiago, the vowels \(e\) and \(o\) become \(i\) and \(u\), respectively, when they precede \(ie\) and \(uo\), respectively, with only a single intervening consonant. The assimilation in this rule is governed strictly by surface phonetic constraints. Thus, assimilation does not occur before underlying \(ie\) and \(uo\) if they are realized on the surface as short \(e\) and \(o\) because they are in a nonfinal syllable (see rule 29). And, the vowels \(e\) and \(o\), which are assimilated by this rule, may be shortened forms of \(ie\) and \(uo\) (via rule 29). In other words, \(e\) and \(o\) from any underlying source become \(i\) and \(u\), only before surface \(ie\) and \(uo\).
(32) Vowel Assimilation Rule II (SA):

\[
\begin{align*}
\text{[e]} & \rightarrow \text{i} \quad / \quad [\text{e}\text{u}] \\
\text{Conditions:} & \text{ applies only when ie and uo appear on the surface as such.}
\end{align*}
\]

Examples:
- porxik 'to be burned' < //poroxik//
- poroniem 'to burn' IV < //puoruoniem//
- xporona 'he burned (something)' < //xpuroruona//
- xporoxa 'it was burned' < //xpuroxa//
- puruon 'burned' < //poruon// rule 29 < //puoruon//
- xporuoj 'he burned it' < //xpurouoj// rule 29 < //xpurouoj//
- tzeb'xik 'to be laughed at' < //tzeb'exik//
- tzeb'iniem 'to laugh' < //tzeb'ieniem// rule 29 < //tzieb'ieniem//
- xteb'ena 'he laughed' < //xtzieb'iena//
- xteb'exa 'it was laughed at' < //xtzieb'exa//
- tzieb'ien 'laughed at' < //tzieb'ien// rule 29 < //tzieb'ien//
- xteb'iej 'he laughed at it' < //xtzieb'iej// rule 29 < //xtzieb'iej//

Note that in the form tzieb'ieniem not only has the ~irrunediately preceding ie been assimilated, but also the ~two syllables away. Perhaps the rule is more general than has been stated. It seems likely that once assimilation has started, all es and os in the word must be assimilated as well.

In San Juan, an epenthetic i is inserted (1) between an initial consonant and a following cluster of x plus another consonant, and (2) between the verbal prefixes t- or xt- (see section 4.1.2.2) and a following consonant. (2) is optional for some speakers.

(33) I-Epenthesis (SJ):

\[
\emptyset \rightarrow i/ \left\{ (x)t \_ \_ C \right\}
\]
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Examples:

- xkin 'ear'
- xtikami //xtkami// 'he would die'
- nixkin //nxkin// 'my ear'
- tikami //tkami// 'that he die'
- axkin 'your ear'

That the i in nixkin is not organic is clear since the preconsonantal possessive prefix n- is required, not the prevocalic w- (see section 3.1).

1.6.3 Glottal Stop Alternations

In rapid speech, glottal stop is deleted in word-final but phrase-medial position in a number of common forms (e.g. b'aarkii? 'where', wi? fronting particle, -a7 root transitive imperative/directional suffix, ja?ee7 'they'), when a following word begins with a consonant. In slow, careful speech the glottal stop optionally may not be deleted.

(34) Glottal Stop Deletion Rule I:

7 → θ/\_\_\_ÇX

Examples:

- b'aarkii(7) k'o wi(7) jaay? 'Where is the house?'
- b'aarkii(7) k'o wi7? 'Where is it?'
- tach'eya(7) jar aachi! 'Hit the man!'
- tach'eya7! 'Hit him!'

In Santiago, glottal stop is deleted before a closed syllable, that is, before a syllable that begins and ends with a consonant. Note, however, that the underlying glottal stop that is deleted prevents a preceding short vowel from being deleted by rule 30.

(35) Glottal Stop Deletion Rule II (SA):

7 → θ/\_\_\_ÇV(V)C

'Ç1' indicates a minimum of one C with no upper limit of Cs.
Examples:
//wa7naq// → wanaq 'he has eaten' cp. xwa7a 'he ate'
//ch'e7yik// → ch'eyik 'to be hit' cp. xch'a7ya 'he was hit'
//to7jik// → tojik 'to be paid' cp. xto7ji 'it was paid'

In Santiago, a glottal stop preceding a final glottalized occlusive, or preceding a glottalized occlusive plus a final vowel, is converted to length of the preceding vowel. Note that long vowels created by this rule are not subject to vowel shortening in nonfinal syllables by rule 29.

(36) Glottal Stop to Length Rule I (SA):
$7 \rightarrow V_{\frac{1}{2}} V_{-\frac{1}{2}} (V)$

Examples:
//xch'o7b'a// → xch'oob'a 'it was thought'
//xb'e7q'a// → xb'seq'a 'it was swallowed'
//xyi7tz'a// → xyiitz'a 'it was squeezed'
//xnu7k'a// → xnuuk'a 'it was arranged neatly'
//xma7q'a// → xmaaq'a 'it was heated'

All examples above are passives of RTVs formed with the infix -7- (which is cognate with the passive infix -1- in SJ; see sections 4.2.1 and 9.6.1). For example, if -7- is not followed by a glottalized occlusive it appears (e.g. xch'e7ya 'it was hit', xto7ja 'it was paid').

In San Juan, a glottal stop preceding b' is optionally converted to length of the preceding vowel.

(37) Glottal Stop to Length Rule II (SJ):
$7 \rightarrow V_{\frac{1}{2}} V_{-\frac{1}{2}} b'$ Optional

Examples:
//xpa7b'a7// → xpaab'a7 ~ xpa7b'a7 'he stood it up'
//wa7b'a1// → waab'a1 ~ wa7b'a1 'eating dish'
A glottal stop is inserted between a long vowel and some following vowels. In some cases the long vowel is then shortened; in other cases the long vowel remains long. Whether or not the long vowel is shortened is apparently determined by the particular morpheme involved (see discussion below).

(38) Glottal Stop Insertion Rule:
\[
\emptyset \rightarrow \text{7}/ \text{V}_{1}\text{V}_{2}\text{V}
\]

Because of the general structure of Tzutujil syllables and the pervading tendency in Tzutujil for morphemes to end in consonants, or if not consonants then short vowels, but not long vowels (see 1.4), the situations in which long vowels might occur before other vowels are not common. However, there are three important morphological situations in which long vowels do occur before other vowels. Rule (38) is primarily meant to account for the occurrence of glottal stop in these three situations:

(1) When third person plural absolutive ee (see 3.1) occurs before vowels, it is realized as e\text{7}. Here the long ee is shortened when glottal stop is inserted. (2) When the 'go' directional prefix (b')ee- (see 4.1.4) occurs before verb stems beginning in a vowel, glottal stop is inserted but the long ee of the prefix is never shortened. (3) When either obligative k- or potential xk- (see 4.1.2.2) precede first person plural absolutive oo (see 3.1), they fuse with oo forming qoo- (< k- + oo) and xqoo- (< xk- + oo), respectively. However, when qoo- and xqoo- occur before verbs beginning in a vowel, glottal stop is inserted and the long oo of qoo- and xqoo- is shortened (i.e. qoo- > q07- and xqoo- > xo7-). Compare the examples below.

Examples:

\begin{align*}
\text{xee\text{7}}aach'ey //\text{xee-aach'ey}// & \ 'you hit them' \\
\text{cp. } \text{xee\text{7}}enuuch'ey & \ 'I hit them' \\
\text{e7 oknaq //} \text{ee oknaq//} & \ 'they have gone in' \\
\text{cp. ee warnaq } & \ 'they have slept' \\
\text{xinee\text{7}}ooki //\text{xinee-ooki}// & \ 'I went to go in' \\
\text{xinee\text{7}}ejtz'aani //\text{xinee-ejtz'aani}// & \ 'I went to play' \\
\text{cp. xineewari } & \ 'I went to sleep'
\end{align*}
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Reduplication, as a productive process, is used only in the formation of certain suffixes. These suffixes are used only on monosyllabic roots of either verbs, positionals, or adjectives. They are formed by repeating one or more segments of the preceding root. In addition, they may be comprised of one or more fixed segments, that is, segments that are not repetitions of part of the root. The reduplicated portions of these suffixes are indicated with \( V_I \) and \( C_X \) with subscript numbers on \( C_X \) denoting whether the first or second consonant of the root syllable is repeated. The vowel is always identical with the root vowel, so the subscript number with reduplicated vowels is always '1'. For example \(-V_1 C_1 1 k\), deriving adjectives from positional roots, is formed by repeating the vowel and first consonant of the root plus \(-ik\) (e.g. \( wuq + -V_1 C_1 1 k \rightarrow wuquwik\) 'hunchbacked'). The rule accounting for reduplication is given in (39).

\[
\text{(39) Reduplication Rule:}
\begin{align*}
[C_X] & \rightarrow [C_1 V_I] / [\ldots C_1 \ldots V_I \ldots] \\
\text{[suffix]} & \text{[root]}
\end{align*}
\]

Examples:
- \(-C_1 oj\) 'ish': \( kaqkoj \) 'reddish', \( rexroj \) 'greenish', \( saqsoj \) 'whitish'
- \(-V_1 C_1 1 k\) Adj: \( b'olob'ik \) 'cylindrical', \( tzub'utzik \) 'conical', \( sanasik \) 'naked'
- \(-V_1 C_2 V_I\) TV: \( nuk'uk'u- \) 'arrange well', \( kach'ach'a- \) 'crunch your teeth together'
Notes to Chapter 1

1. The symbols are phonemic in the 'taxonomic' or 'autonomous' sense (see Postal 1968, Chomsky and Halle 1968, and especially the discussion and references in chapter 3 of Hyman 1975). Taxonomic phonemes are viewed herein as the most practical way of writing Tzutujil (see Jones 1931:28).

2. 'Simple occlusive' is a cover term for [+consonant, -syllabic, -continuant, -glottal]. 'Aspiration' as used here is equivalent to Chomsky and Halle's (1968:326) 'subglottal pressure'. 'Glottalization' is likewise equivalent to their (1968:323) 'glottal pressure'. Glottalized occlusives have the same distinctive features as simple occlusives except that they are [+glottal].

3. 'Implosion' is equivalent to Chomsky and Halle's (1968:322) 'suction'.

4. 'Resonant' is a cover term used here that includes the liquids, semivowels, and nasals. All of these sounds are [+sonorant, -syllabic] in Chomsky and Halle (1968:354). However, Chomsky and Halle also include ʔ and h as sonorants, which is unfounded (see arguments in Hyman 1975:45).

5. The following remarks on syllable structure do not hold for the Santiago Atitlán dialect of Tzutujil, which has lost many nonfinal short vowels (see rule 30, section 1.6.2), drastically changing basic syllabic structure and making it virtually impossible to generalize.