

28. Phonology

This chapter presents the phonemes (§28.1), basic facts about stress (§28.2), syllable structure (§28.3), discussion of the minimal word (§28.4), and the phonetic details that are not usually represented in the practical orthography (§28.5). This chapter continues to use the presentation of data using the “everyday use” practical orthography (using the conventions developed since about 1952, as explained in §1.1.4), but it also presents data using the conventions of the International Phonetic Association — the technical orthography in Table 1.

28.1 Phonemes

There are 22 or 26 phonemes (depending on how one counts the vowels), as shown in Table 1: four vowels (which may be short or long), and eighteen consonants (four oral stops, eight fricatives, two nasals, a central approximant, a glottal stop, a lateral approximant that is uncommon in the language, and a tap that occurs only in loanwords).¹ Other sounds from Spanish occur in

Table 28.1: Phonemes

	Technical Orthography	Practical Orthography
Vowels	i ε o u (and length)	i e o a (ii ee oo aa)
Oral stops	p t k k ^w	p t c/qu* cō
Fricatives	ϕ s ʃ x x ^w χ χ ^w	f s l z j jō x xō
Nasals	m n	m n
Central approximant	j	y
Glottal stop	ʔ	h
Lateral approximant	l	l̥
Tap	r	r

* The use of **c** and **qu** parallels the distribution in Spanish: **qu** before front vowels and **c** before back vowels and consonants. See the discussion of the alphabet in Marlett (2006b).

¹ See Marlett, Moreno Herrera, & Herrera Astorga (2005). This analysis is different in important ways from the one presented in E. Moser & M. Moser (1965). The inventory given in this grammar refers to “taxonomic” phonemes — those which are adequate to write the surface contrasts adequately. The “systematic” phonemes (Chomsky & Halle 1968) would include, perhaps, the so-called empty or abstract consonant in Seri (Stemberger & Marlett 1983); see §27.3.2. The systematic phonemes might also not include the labialized consonants; this position was taken in Marlett (1981b), but it no longer seems to be the appropriate step to take.

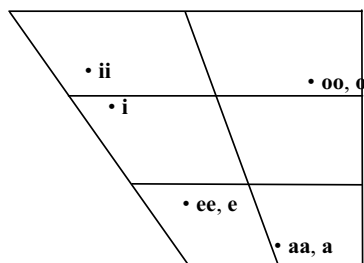
much more recent and obvious loanwords, but these are not included in the discussion here. A few other sounds occur in highly unusual words, including [w] in **cargüéyotim** [kar'wejo^{ti}m] (SN-wander) (from Spanish 'vagar') and [v] in **yova** [jova] *a breed of dog with long ears*.²

These phonemes fall into two important natural classes: the obstruents (oral stops and fricatives), which are all voiceless; and the sonorants (vowels, nasals, lateral approximant, tap, and glottal stop) which are all voiced, with the exception of the glottal stop.³ The glottal stop patterns with the sonorants with respect to the sonority scale and syllabification (see §28.2).

28.1.1 Vowels

The four vowel qualities occur short and long: **a**, **e**, **i**, **o** and **aa**, **ee**, **ii**, **oo**. Four simple words that illustrate the short vowels are: **cap** [kap] *palo blanco tree (Acacia willardiana)*, **cof** [kɔf] *San Juanico tree (Jacquinia pungens)*, **set** [set] *magnificent frigatebird (Fregata magnifica)*, **tis** [tis] *catclaw acacia (Acacia gregii)*.

(1) Vowels



The vowel **a** is a low central unrounded vowel: [a] and its long version have the same quality.

The vowel **e** is an open-mid front unrounded vowel: [ɛ]. It is sometimes somewhat more open than the similar vowel in English and somewhat more close than the vowel [æ] of English. The long version has the same quality. It is the least frequent of the vowels, and in some cases is

² These words both have lengthened consonants and vowels (see §28.5.1) although those details are not shown here.

³ Chomsky and Halle (1968:302) included glottal stop in the class of sonorants since it is “produced with a vocal tract cavity configuration in which spontaneous voicing is possible.”

demonstrably derived historically from the vowel cluster **ai**.⁴ The vowel **a** generally changes to **e** to harmonize with an **e** in the word (see §13.2.4, §13.6.4, §27.2.3, §27.7).

The vowel **i** is a close front unrounded vowel: [i]. Short **i** often varies to a somewhat more open quality, [ɪ], especially in a stressed syllable that is followed by a consonant, as in **ina** [ˈɪnɪ] (3P-fur/feather) *its fur/feather*.⁵

The vowel **o** is a mid-close rounded vowel: [o] and its long version has the same quality. This vowel very occasionally varies to a slightly closer sound. This may have been more common in centuries past; some words were transcribed with [u] in earlier transcriptions; today the symbol [u] would be rarely used in transcribing the language although outsiders do recognize that the **o** is closer than a Spanish or English **o**, for example.⁶

The four vowel qualities contrast phonologically on two parameters: low vs. nonlow, and front vs. back. The low vowels are **e** and **a**, and the nonlow vowels are **i** and **o**. The front vowels are **i** and **e**, and the back vowels are **o** and **a**. This phonological classification is justified in §14.3.1 and §14.4.1 using evidence from allomorphy of verb prefixes.

Many words show that the length of the vowel is distinctive both superficially and underlyingly. Some examples include:⁷

(2) Contrasting short and long **a**

a.	hap	[ˈʔap]	<i>mule deer</i>
b.	haap	[ˈʔaap]	<i>wild tepary bean</i>
c.	c-xap (SN-TR-dig.up)	[ˈkχap]	<i>one who digs it up</i>
d.	c-xaap (SN-spend.night)	[ˈkχaap]	<i>one who spends the night</i>
e.	cacni	[ˈkakni]	<i>wood ibis</i>

⁴ Two examples: **hantéezj** *mud*, from **hant haaizj** (land SN-PV-grind) *soil that has been ground up*; **hatéiectim** *rag*, from **hataái iictim** (SN-PV-wear.kilt 3P-AON-cut) *piece of cloth*.

⁵ This word is [ˈɪnɪ:a:] in a narrow phonetic transcription. See §28.5.1. This phonetic length is not represented in the phonetic transcriptions in this chapter generally.

⁶ Since Seri does not have a **u**, it is common to hear Seris interchange the vowels **u** and **o** when speaking Spanish, and to pronounce the two very similarly.

⁷ The underlying long vowels are transcribed here phonetically with a sequence of identical vowel symbols rather than with a sequence of a vowel symbol followed by a length diacritic, as in the IPA tradition. This convention is not meant to imply any particular theoretical or descriptive claim other than that the nuclei in question are longer than the ones without length indicated.

- f. **c-aacni** [kaakni] *what is bowed*
(SN-bowed)
- (3) Contrasting short and long e
- a. **zep** [ʃɛp] *golden eagle*
- b. **heep** [ʔɛɛp] *mesquite sap*
- c. **zel** [ʃɛʔ] *parrot*
- d. **zeel** [ʃɛɛʔ] *a rock clam (Chama sp.)*
- e. **t-oqué** [to'kɛ] *s/he hears well*
(RL-hear.well)
- f. **t-oquée** [to'kɛɛ] *they hear well*
(RL-hear.well.PL)
- (4) Contrasting short and long i
- a. **qu-i-p** [kiɪp] *one who digs it*
(SN-TR-dig) (√ap)
- b. **qu-i-p** [kiɪp] *one who bites it (like mosquito)*
(SN-TR-bite) (√ap)
- c. **qu-i-ip** [kiip] *one who carries it on the head*
(SN-TR-carry.on.head) (√ip)
- d. **qu-iip** [kiip] *one who straightens it*
(SN-TR-straighten) (√iip)
- e. **i-t-íp** [i'tɪp] *s/he carries it on head*
(3:3-RL-carry.on.head)
- f. **i-t-iíp** [i'tiiɪp] *s/he straightens it*
3:3-RL-straighten
- g. **i-yo-tís** [ijo'tɪs] *s/he signaled to him/her*
(3:3-DT-signal.with.finger)
- h. **i-yo-tíis** [ijo'tiiis] *s/he pushed him/her under water*
(3:3-DT-push.under.water)
- i. **i-t-ii** [ijo'tii] *s/he hears it/her/him*
(3:3-RL-hear)
- j. **i-t-iii** [ijo'tiii] *they hear it/her/him*
(3:3-RL-hear.PL)

- | | | | |
|---|-----------------------------|----------------------|---------------------------|
| k | t-ix
RL-juicy | [^l tiχ] | <i>it is/was juicy</i> |
| l | t-iix
RL-inflated | [^l tiiχ] | <i>it is/was inflated</i> |
- (5) Contrasting short and long **o**
- | | | | |
|----|--|--|-------------------------------------|
| a. | co-h-a
(3IO-SN-be) | [^l koʔa] ⁸ | <i>one who is with it</i> |
| b. | c-ooha
(SN-cry) | [^l kooʔa] | <i>one who cries</i> |
| c. | cö-c-acózit
(3IO-SN-TR-pay.for.with) | [^l k ^w ka'koʃit] | <i>one who pays for it with it</i> |
| d. | cö-c-acóozit
(3IO-SN-TR-help.rob) | [^l k ^w ka'kooʃit] | <i>one who helps him/her rob it</i> |

Since vowel clusters exist and are very common, as in **hai** [^lʔaĩ] *air*, **haait** [^lʔaaĩt] (ABS.blood) *blood*, **haaonam** [^lʔaaõnam] (ABS-hat) *hat*, and **yaolt** [^ljaõłt] (3P-muscle) *his/her/its muscle*, it is logical to consider the possibility that the long vowels are simply a sequence of two identical vowels pronounced as one prolonged vowel.⁹ Some facts would be straightforwardly interpreted in this way: compare the following stems:

- (6)
- | | | |
|----|-----------------|----------------------------|
| a. | √ ahca | <i>be located</i> |
| b. | √ aaahca | <i>cause to be located</i> |
| c. | √ eme | <i>depleted</i> |
| d. | √ eeme | <i>deplete</i> |
| e. | √ actim | <i>be cut</i> |
| f. | √ aactim | <i>cut</i> |

The causative stems could be analyzed as √**a-ahca**, √**e-eme** (from underlying {**a-eme**}), and √**a-actim** respectively. However, there is considerable evidence that the situation is more complex than this in the majority of cases, and that the long vowels are in some important way not simply a sequence of identical vowels.¹⁰ An analysis which tries to implement only sequences of identical vowels is much more complicated than one which posits long vowels. These facts are discussed in §§27.2-27.3.

⁸ As is clarified in §28.5.1 below, a more narrow phonetic transcription of this word would be [^lkoʔ:a:], and of the next word [^lkoʔ:a:]. Even so, the diacritics for length do not adequately portray the phonetic facts.

⁹ This was the analysis proposed in E. Moser & M. Moser (1965).

¹⁰ This is predicted by the Obligatory Contour Principle (Leben 1973 and much later work).

Vowel length is distinctive in stressed syllables but not in unstressed syllables.¹¹ Long vowels in unstressed syllables are common but are predictable; see §28.5.1.

28.1.2 Oral stops

The oral stops are all voiceless. One of these stops is a labialized velar. The stops vary in their pronunciation in utterance-final position, from unaspirated release, to unreleased, to nasal release, to lightly aspirated (especially following a consonant). The aspirated version of the labialized velar stop has a rounded quality to it. A velar stop may also have a glottalized variant utterance-finally.¹²

(7) Oral stops

Bilabial	Dental	Velar	Labialized velar
p	t	c, qu	cö
/p/	/t/	/k/	/k ^w /

The evidence from allomorphy strongly suggests that the labialized velar stop is a historical development from the sequence **co** /ko/, usually in the syllable after the stressed vowel. (See §13.2.1 and §17.1.3, for example.) The allomorph **cö-** of the 3IO prefix (§17.1.2.4) **co-** accounts for the vast majority of the cases of **cö** /k^w/ that occur before the stressed syllable. For these reasons, the distribution of /k^w/ is not as broad as other stops.

(8) Initial

paaza	/ ^l paaʃa/	<i>Gila monster</i>
taça	/ ^l taka/	<i>finescale triggerfish</i>
caanj	/ ^l kaanx/	<i>Gulf grouper</i>
cöihíin	/k ^w i ^ʔ iin/	<i>sanderling</i>

(9) Medial

xεpe	/ ^l xεpε/	<i>sea</i>
coote	/ ^l kootε/	<i>teddybear cholla</i>
taça	/ ^l taka/	<i>finescale triggerfish</i>
c-aacöim	/ ^l kaak ^w im/	SN-TR-prepare.reed.boat.to.carry.cargo

¹¹ The unstressed vowel in one root is noticeably and unaccountably long: **aaquéect ctam** (3P-parent.in.law male) *his/her father-in-law* and **aaquéect cmaam** (3P-parent.in.law female) *his/her mother-in-law*. There are also some cases of superficial length distinctions in unstressed syllables that are the result of a morphological condition on a phonetic rule; see §28.5.1.

¹² These details are laid out in E. Moser & M. Moser (1965).

(10)	Final		
	hap	/ ¹ ʔap/	<i>mule deer</i>
	xat	/ ¹ χat/	<i>hail</i>
	ziic	/ ¹ ʃiik/	<i>bird</i>
	sacö	/ ¹ sak ^w /	<i>toadfish</i>

The word-formation rules often concatenate a stop prefix before a stop-initial root, as in **t-tocnij** [¹t:oknix] (RL-round), **i-t-tís** [¹t:ís] (3:3-RL-point.at), and **c-cap** [¹k:ap] (SN-fly). These geminate consonant clusters are pronounced as phonetically long consonants; the occlusion is simply held longer before release. A **t**-initial suffix may also follow a **t**-final root: **c-aat-tim** (SN-TR-cook.in.coals-IMPF).¹³ This cluster is pronounced as a long **t**: [¹ka:t:im].

28.1.3 Fricatives

The fricatives are all voiceless. The labial fricative is perhaps typically and traditionally bilabial, but at least some speakers use a labiodental articulation.¹⁴ The labialized velar fricative **jö** is extremely lenis in the speech of most speakers and has been previously described as varying from “lightly spirant to vocoid articulation”.¹⁵ The uvular fricatives “feature marked trilling of the uvula” for some speakers.¹⁶

(11) Fricatives

	Bilabial / Labiodental	Alveolar	Alveolar	Palatoalveolar	Velar	Labialized velar	Uvular	Labialized uvular
	f	s	l	z	j	jö	x	xö
	/f/	/s/	/l/	/ʒ/	/x/	/x ^w /	/χ/	/χ ^w /

The labialized velar and labialized uvular fricatives are quite clearly recent historical developments from **jo** and **xo** (respectively) after the stressed vowel, with which they sometimes alternate morphophonemically (see §13.2.1 and §17.1.3, for example). For that reason, their distribution is not as broad as other fricatives. The lateral fricative and the velar fricative are

¹³ See §26.10 for evidence that the cluster may be split by a vowel under certain conditions.

¹⁴ Marlett, Moreno Herrera, & Herrera Astorga (2005).

¹⁵ E. Moser & M. Moser (1965:54). It was analyzed and transcribed as [W] (using an Americanist tradition, a voiceless labial-velar approximant in many earlier publications).

¹⁶ E. Moser & M. Moser (1965:54).

very uncommon in word-initial position. The contrast between the velar fricative (**j**) and the uvular fricative (**x**) is much more obvious in intervocalic or syllable-final position.

(12)	Initial		
	f eel	/ ¹ ʔεεɬ/	<i>mallard</i>
	ʃ iml	/ ¹ sɪmɬ/	<i>barrel cactus</i>
	—	—	
	z aah	/ ¹ ʃaaʔ/	<i>sun</i>
	j oéene ¹⁷	/ ¹ xoεεnε/	<i>dust</i>
	—	—	
	x at	/ ¹ χat/	<i>hail</i>
	x ōas ¹⁸	/ ¹ χ ^w as/	<i>s/he sang! (EM-sing)</i>
(13)	Medial		
	h apéfe	/ʔa ¹ pεʔε/	<i>harpoon point barb</i>
	c oʃi	/ ¹ kosi/	<i>thorn</i>
	x eele	/ ¹ χεεɬε/	<i>fog</i>
	c ozi	/ ¹ koʃi/	<i>bitter condalia</i>
	m ojet	/moxet/	<i>bighorn sheep</i>
	t -ajōámz	/ta ¹ x ^w amʃ/	RL-squirt.out
	h axoj	/ ¹ ʔaχox/	<i>shore</i>
	—	—	
(14)	Final		
	c of	/ ¹ koʔ/	<i>San Juanico tree</i>
	c oʃ	/ ¹ kos/	<i>Maytenus phyllanthoides</i> (a coastal shrub)
	o ol	/ ¹ ooɬ/	<i>organpipe cactus</i>
	x paaz	/ ¹ χpaaʃ/	<i>basalt</i>
	z aaj	/ ¹ ʃaax/	<i>cave</i>
	c aajō	/ ¹ kaax ^w /	<i>seep willow</i>
	i izax	/ ¹ iisaχ/	<i>moon</i>
	i -t-ixō	/i ¹ tix ^w /	3:3-RL-jump.over

The word-formation rule for independent irrealis (§17.1.1.3) may concatenate an **s** before an **s**-initial root, as **i-s-sánj** (3:3-IR.ID-carry.on.back) and **s-sanj** (IR.ID-carry.on.back) (finite and deverbal forms, respectively). These geminate consonant clusters are pronounced as phonetically long consonants.

¹⁷ One might think that this word begins with **jō**. However, the timing of the **o** is more like that of a short vowel than of simple labialization. This interpretation is also the one that has been confirmed with Seri consultants.

¹⁸ The labialized uvular fricative only occurs in initial position under very specific conditions in the conjugation of intransitive verbs; see §27.2.2.

The word **x** (§3.6.3) may follow an **x**-final root, although it may not be easily perceived: **po-háx x** (IR.DP-fatty UT).

28.1.4 Nasals

The nasals are **m** (bilabial) and **n** (dental).

- | | | | |
|------|---------------|-----------------------|----------------------------------|
| (15) | Initial | | |
| | <u>mas</u> | / ^h mas/ | <i>olive shell</i> |
| | <u>nas</u> | / ^h nas/ | <i>a milkweed vine</i> |
| (16) | Medial | | |
| | <u>cam</u> a | / ^h kama/ | <i>big skate</i> |
| | han <u>aj</u> | / ^h ?anax/ | <i>raven</i> |
| (17) | Final | | |
| | x <u>am</u> | / ^h χam/ | <i>squash</i> |
| | ha <u>an</u> | / ^h ?aan/ | <i>smooth Pacific venus clam</i> |

The word formation rules often concatenate a nasal prefix before a nasal, either another prefix or a root-initial consonant. The result is a phonetically long consonant.¹⁹

- | | | | | |
|------|----|----------------------|------------------|--------------------------|
| (18) | a. | i-m-mís | SN-Tr-N-resemble | { i-i-m-mis } |
| | b. | i-m-mám | SN-N-cooked/ripe | { i-m-mam } |
| | c. | i-n-nópin | SN-N-convex | { i-m-nopin } |
| | d. | i-m-mís | 3:3-Px-resemble | { i-mi-mis } |
| | e. | im-mám | Px-cooked/ripe | { mi-mam } |
| | f. | in-nópin | Px-convex | { mi-nopin } |
| | g. | im-m-amsisiin | 2sS-Px-love | { m-mi-amsisiin } |
| | h. | im-m-íih | 2sS-Px-be.FL | { m-mi-iih } |

The bilabial nasal, unlike the dental, assimilates to the point of articulation of a following consonant under the proper conditions, and utterance-finally may become velar. It also assimilates to a preceding velar stop and becomes a nasalized labial-velar approximant. It should be viewed as the unmarked nasal in the language. These facts are discussed in more detail in §28.5.2 and §28.5.4, respectively.

28.1.5 Central approximant and glottal stop

The only central approximant is palatal: **y** [j]. It patterns with the nasals and the glottal stop, **h** [ʔ], to form the class of sonorants referred to by certain syllable structure conditions (see §28.2). The palatal approximant generally has clear non-fricative articulation although, presumably

¹⁹ As pointed out in §17.1.2.3, the final nasal of the first person singular direct object prefix **him** exceptionally fuses with the second person subject prefix **m-** to form a single nasal.

under the influence of regional Spanish, some younger speakers give it a slight fricative or even affricate articulation.

- | | | | |
|------|---------------|---------|--------------------|
| (19) | Initial | | |
| | h aso | /ʔaso/ | <i>fishing net</i> |
| | y een | /jɛɛn/ | 3P-face |
| (20) | Medial | | |
| | ha h o | /ʔaaʔo/ | <i>road</i> |
| | iy a s | /ijas/ | 3P-liver |
| (21) | Final | | |
| | za h | /ʃaaʔ/ | <i>sun</i> |
| | ca y | /kaaj/ | <i>horse</i> |

It is almost always predictable whether the features of [i] will be taken as a syllable nucleus (the vowel *i*) or as a syllable onset (the approximant *y*), as discussed in §28.2. The word **caay** *horse* in the preceding list is an unusual example.

28.1.6 Lateral approximant and tap

A handful of words in the language sometimes are pronounced, or sometimes have been pronounced, with a voiced lateral, which is written as **l** (with underscore) in the practical orthography. The tap is found in a few loanwords from Spanish and Uto-Aztecan languages (see Appendix A).

- | | | | |
|------|------------------|------------------------|------------------------------|
| (22) | Initial | | |
| | l amz | /lamʃ/ | <i>large goliath grouper</i> |
| | r oocö | /rook ^w / | <i>crazy</i> |
| (23) | Medial | | |
| | xal l áa | /χa ^l laa/ | <i>cactus wren</i> |
| | par l éen | /pa ^l reɛn/ | <i>reins and bit</i> |
| (24) | Final | | |
| | — | | |
| | toot l ar | /tootar/ | <i>chicken</i> |

It should be noted that the **r** is a tap and not a trill both in initial position (as in **roocö** *crazy* and **raama**²⁰ *checkers*) and in medial position in the nickname **Baril** (from Spanish ‘barril’) that a certain man had.

²⁰ This word did not make it into the 2005 dictionary. Checkers is not a game that is played among the Seris in the past decades, but it was played at least in the first part of the 20th century. See C. Marlett (forthcoming).

28.2 Stress

Stress is a property associated with nouns, pronouns, adjectives, verbs, (most) adverbs, and post-positions although stress on any of these classes of words may be greatly reduced stress in normal contexts. Other word classes have stress only idiosyncratically. For example, most auxiliaries are unstressed, but some are stressed (see chapter 20).

Stress is generally limited to some syllable of the root. With the exception of a few highly irregular verbs (see §27.7) or as a result of vowel fusion (see §27.3), stress does not fall on a morpheme other than a root vowel.

Stress typically is the perceived effect of higher pitch on the vowel of the stressed syllable, greater intensity on the stressed syllable, and a lengthening effect (when conditions are met) on the *following* consonant and (when the conditions are met) on the vowel *after* that consonant (see §28.5.1).

Accents are overtly written on all stressed words in this section for the sake of explicitness. Otherwise the general practice in this grammar is to write accents following the conventions of the 2005 dictionary: when stress does not occur on the first syllable of the word, on question words (as in Spanish), and on a few small adverbs (such as **có**i *still*, to distinguish it from **coi** *the (plural)* and avoid mis-readings).

This section discusses where primary stress occurs. Few words are truly long enough to consider with respect to secondary stress, but four syllable words such as **tacazáca** *inchworm* and **coziháamaj** *a small non-flying biting insect* have detectable higher pitch and greater intensity on the first syllables: [₁taka'ʃaka] and [₁koʃi'ʔaamax].²¹ In a very few cases a phonetic fact (blocking of nasal assimilation) may be related to the presence of secondary stress (see §28.5.2).

28.2.1 Basic trochaic pattern

The following generalization is the basic stress rule.²²

- (25) Stress rule:
Construct a trochaic foot on the right edge of the root.

Some representative examples are given below. These examples are all nouns; verbs are discussed in §28.2.3.

²¹ The lengthening effects described in §28.5.1 are not included in these two phonetic representations.

²² This section reprises Marlett (2006, 2008e).

*Four-syllable roots*²³

- (26) **tacazáca** *inchworm*
cascamáma *a stinkbug*
coziháamaj *a small non-flying biting insect*
a-catazáta *3P-older.brother's.wife.ME*

Three-syllable roots

- | (27) <u>Short penultimate vowel</u> | <u>Long penultimate vowel</u> |
|--|---|
| coníjoj <i>Craveri's murrelet</i> | jomxéeziz <i>ocotillo</i> |
| xpasípip <i>dragonfly</i> | hamquífie <i>a burning stick</i> |
| comíma <i>Coulter brickell-bush</i> | contétxyat <i>stinkbug</i> |
| casópaj <i>Panamic pearl oyster</i> | comáanal <i>yerba mansa (a plant)</i> |
| zicázije <i>red-billed tropicbird</i> | conzéezla <i>a small unidentified ant</i> |
| catámax <i>cup-and-saucer limpet</i> | jomxéeziz <i>ocotillo</i> |
| xamátaj <i>broth</i> | camáaina <i>an unidentified manta ray</i> |
| hacálco <i>dolls and related items
that are played with</i> | catíija <i>common loon
in winter plumage</i> |
| mojépe <i>sahuaro</i> | hamíime <i>sky</i> |
| moxíma <i>yesterday</i> | xasáacoj <i>sina (cactus)</i> |
| sayána <i>common olive (snail)</i> | a-cmajéete <i>3P-wife's.older.sister</i> |
| canócní <i>Heermann's gull</i> | a-comíique <i>3P-stepchild</i> |
| tozípla <i>side-blotched lizard</i> | yacótni <i>3P-poisonous.barb</i> |
| camázjij <i>a venus clam</i> | |
| capóclim <i>chiton</i> | |
| zacápnij <i>ball of dirt or fruit</i> | |
| a-maquéete <i>3P-wife's.younger.sister</i> | |
| i-sajápo <i>3P-stomach (of mullet)</i> | |
| i-tamócní <i>3P-chin</i> | |
| yahípxat <i>3P-ink (from octopus)</i> | |

Two-syllable roots

- | (28) <u>Short penultimate vowel</u> | <u>Long penultimate vowel</u> |
|--|--|
| cáma <i>big skate</i> | séeten <i>pen shell</i> |
| cómot <i>a milkweed vine</i> | nóoni <i>pupa</i> |
| héhe <i>plant</i> | páaza <i>Gila monster</i> |
| cópas <i>Panamic pearl oyster</i> | sáapom <i>purple prickly pear</i> |
| cósi <i>thorn</i> | téepol <i>black-tailed jackrabbit</i> |
| héme <i>a century plant</i> | nóosi <i>mourning dove</i> |
| mójet <i>bighorn sheep</i> | quéepoj <i>horn shark</i> |
| hápap <i>octopus</i> | séenel <i>butterfly</i> |

²³ These are not common; this list may be exhaustive.

Consonant-initial rootswith short vowel

a-cámaz	3P-daughter-in-law
a-máhaj	3P-father's.older.brother
a-tcmáhaj	3P-ygr.sister's.child.FE

Roots beginning with V²⁴

ámaz	3P-grandmother.ME
ápaz	3P-grandfather.ME
ápxaz	3P-ol.sister's.child.FE
áta	3P-mother
ípot	3P-calf.of.leg
ítac	3P-bone
ító	3P-eye

Monosyllabic roots(29) Short vowel

cóf	<i>San Juanico (tree)</i>
cós	<i>Maytenus phyllanthoides</i>
pát	<i>southern cattail</i>
háp	<i>mule deer</i>
stácj	<i>pumice</i>

Consonant-initial rootswith a short vowel

a-ctám	3P-sister's.husband.ME
i-cáp	3P-stalk (of century plant)
i-lít	3P-head

Roots beginning with V²⁵

ís	3P-seed
ám	3P-father.FE

Consonant-initial rootswith long vowel

a-cáasac	3P-son's.child
a-cóome	3P-younger.sister.ME
a-quéemez	3P-mother-in-law.FE
i-téepni	3P-front.tooth

Roots beginning with VV

áacaz	3P-ygr.brother.FE
ífnij	3P-nostril
íime	3P-home/nest
ípajö	3P-tail (of fish, bird)
ípni	3P-forehead
íixax	3P-snout
íixuij	3P-cartilage

Long vowel or diphthong

háan	<i>smooth Pacific venus clam</i>
háap	<i>wild tepary</i>
záah	<i>sun</i>
péen	<i>carrying pole</i>
háait	<i>blood</i>

Consonant-initial rootswith a long vowel or diphthong

a-cáac	3P-daughter's.child.FE
a-máac	3P-older.brother.FE
a-ntáac	3P-mother's.ygr.sister
a-quéetz	3P-husband's.ygr.brother
i-háait	3P-blood

Roots beginning with VV

íif	3P-nose
áac	3P-father's.sister

Exceptionally, some words have stress on the *antepenultimate* syllable of the root; the final syllable of each root is (exceptionally) extrametrical.

²⁴ See §13.2.3 for discussion of this conjugation pattern.

²⁵ See §13.2.3 for discussion of this conjugation pattern.

(30)	cótotaj	<i>boojum tree</i>	cahícosa	<i>a variety of mule deer</i>
	hásotoj	<i>grunt (fish)</i>	catápora	<i>robber fly</i>
	háacala	<i>bedrock mortar</i>	Honápota	(place name)
	háamoja	<i>antelope</i>	satómatox	<i>mesquite driftwood</i>
	sóocajam	<i>winged pearl oyster</i>	i-táamalca	3P-horn(s)/antler(s)
	cáamopxa	<i>sphinx moth</i>	xahícosa	<i>Haustellum elenensis</i> (a rock shell)

Roots beginning with V

íleca	3P-drool
--------------	----------

Roots beginning with VV

ínepoj	3P-marrow
íiseja	3P-wing/branch
ípajöam	3P-dry.flower.on.cactus

Suffixes do not affect the placement of stress. Compare the stress pattern of singular nouns and their corresponding plurals; it is obvious that stress does not shift to the right. (Since the complications involved with pluralization are numerous, the hyphens given here are only suggestive; see §13.2.1.)

(31)	Singular	Plural	
	háaho	háaho-lcam	<i>road</i>
	comítin	comítij-a	<i>desert ironwood (living tree)</i>
	hacázol	hacázol-cam	<i>piece of cloth</i>
	haitámoc	haitámo-joj	<i>a small wood-boring insect</i>
	hatépen	hatépej-a	<i>Mexican basket with handles</i>
	hatxánoj	hatxánol-oj	<i>cradle, swing</i>
	hazípop	hazípop-oj	<i>immature century plant</i>
	cascamáma	cascamáma-toj	<i>a stinkbug</i>
	tacazáca	tacazáca-taj	<i>inchworm</i>
	zóozj	zóozal-ca	<i>sack</i>
	hást	hásat-oj	<i>stone</i>
	quéelx	quéelx-olca	<i>short paddle</i>
	hamcáaxat	hamcáaxat-alca	<i>smoke</i>
	hóopatj	hóopat-alca	<i>wave (noun)</i>

28.2.2 Quantity-sensitivity

The stress-assignment rule is more complicated, however, in that it can be shown that stress is quantity-sensitive. If the final syllable contains a long vowel or a diphthong, stress typically occurs on the final syllable.

(32)	comcáac	<i>Seri people</i>	mentoxiil	<i>a hydrozoan</i>
	pajíi	<i>obsidian</i>	xomcahíift	<i>oregano</i>
	maxáa	<i>sand snake</i>	xomcahái	<i>a small round flounder</i>
	mahyáai	<i>opposite coast</i>	xomcahóij	<i>Grusonia spp. (cactus)</i>
	conée	<i>grass</i>	patpayóo	<i>juvenile zebra-tailed lizard</i>
	copsíij	<i>by-the-wind-sailor</i> <i>(hydrozoan)</i>		
	a-tcmajéem	<i>3P-younger.sister's.husband.FE</i>		

Similarly, stress occurs on the final syllable if the words ends in a consonant cluster. The regularity of this pattern suggests that the final consonant is usually extrametrical for the purpose of calculating syllable weight; when there are two consonants, one of them must be moraic and therefore contributes to syllable weight.

(33)	hamácj	<i>cliff spurge</i>	hanzáijpj	<i>plate</i>
	hamísj	<i>ashy limberbush</i>	hasahcápjō	<i>sinita (cactus)</i>
	mojéptxō	<i>curve-billed thrasher</i>	icocáxz	<i>gypsum</i>
	cacájōc	<i>bagworm moth</i>		
	moxhámt	<i>last year</i>		
	cocásjc	<i>tropical beach-grass</i>		
	sapátx	<i>sweetbush</i>		
	conámj	<i>a large grasshopper</i>		
	xazépl	<i>a porpoise</i>		
	i-hiscácj	<i>3P-scab</i>		
	yacácj	<i>3P-gall.bladder</i>		

Words with final stress on a light syllable (no long vowel, no diphthong, no consonant cluster) are exceptional and few. The following list includes most of them.

(34)	†coláxō	<i>goliath grouper</i>	hamíp	<i>spiderling (a plant)</i>
	joját	<i>saya (a plant)</i>	hamác	<i>fire</i>
	coqué	<i>chili</i>	haznám	<i>a very large totoaba</i>
	saxáp	<i>a bittersweet clam</i>	a-cacám	<i>3P-son-in-law</i>
	xojmás	<i>a land snail</i>	yamác	<i>3P-blow (as of whale)</i>
	najmís	<i>a desert phacelia</i>	i-mozít	<i>3P-half</i>
	otác	<i>frog, toad</i>		

Roots with non-final stress and which have a final heavy syllable are exceptional and few. The following list includes most of them.

(35)	hápats	<i>Apache</i>	hóopatj	<i>wave</i> (noun)
	xnícatl	<i>Colorado snapper</i>	íiholx	3P-cud
	tajísipl	<i>Panamic sergeant major</i>	xpałéemele	<i>olive shell; cone shell</i>
	xpanómalc	<i>octopus (coyote's speech)</i>	xpasíticel	<i>Harris' antelope squirrel</i>
	tojquítajc	<i>great horned owl</i>		
	zicázijc	<i>red-billed tropicbird</i>		
	yasámict	3P-tail (of sea turtle)		
	ítizx	3P-penis		

28.2.3 Stress on verbs

The stress pattern on verbs is similar to that of nouns: typically trochaic and quantity-sensitive.

As with nouns, the prefixes and suffixes on verbs — whether derivational or inflectional — do not affect stress placement except for a handful of highly irregular verbs (see §27.7). For example, the monosyllabic root $\sqrt{\text{zam}}$ *put (vertical item), attack* will always bear the stress no matter what affixes occur.²⁶

(36)	in-t-con-zám	2SS-RL-N-put.VT
	i-t-zám-lcam	3:3-RL-put.VT-PL
	mazi t-zám-lcam	2PDO-RL-put.VT-PL
	mazi t-con-zám-lcam	2PDO-RL-N-put.VT-PL

Some plural suffixes on verbs are disyllabic; they are never stressed and their presence never affects the placement of stress. Consider the plural stem of $\sqrt{\text{cázit}}$ *take away forcibly*, $\sqrt{\text{cázit-olca}}$, which has penultimate stress on the root despite the syllables that the number marking introduces.

Verb roots are often multisyllabic. Many lose a posttonic vowel as part of the formation of the singular or plural stem (see §17.1.3) and as a result the length of the root varies within the paradigm. Nevertheless, stress remains on the same vowel in all of the paradigm.

28.2.3.1 Trochaic pattern

Trisyllabic stems have either final stress (not common, but due to a heavy syllable) or penultimate stress.

(37)	Final stress	
	$\sqrt{\text{ihicóomzj}}$	<i>have a kind of skin lesion</i>
	$\sqrt{\text{italháa}}$	<i>buy/sell</i>
	$\sqrt{\text{ihicáai}}$	<i>have abscess</i>

²⁶ The morpheme **mazi** in these examples is a prefix although it is written with a space in the practical orthography. See §17.1.2.3.

(38)	Penultimate stress		
	√ apámiz	<i>rock</i>	√ acáaso <i>see (by power of shaman)</i>
	√ amátis	<i>put to burn in the fire</i>	√ atáaca <i>send</i>
	√ asápot	<i>knock out of one's hand</i>	√ aláahi <i>want to have</i>
	√ ozáca	<i>move a boat with a pole</i>	√ acáatol <i>dangerous</i>
	√ mozíme	<i>drunk</i>	√ iháaso <i>have pocket</i>
			√ ihíiha <i>pure</i>
			√ ihíihyo <i>pretend</i>
			√ imáaxat <i>gray-brown</i>
			√ imóoni <i>dance victory dance</i>
			√ oqueepe <i>comfortable</i>
			√ moquéepe <i>sick</i>

No tryllabic stems clearly have antepenultimate stress, suggesting that there is no extrametricality in the verbs, unlike that which appears occasionally in nouns. Three verbs appear to have antepenultimate stress, but comparison with the plural forms suggests that the last syllable of the singular stem is actually a suffix. If this is not the correct analysis, stress must be lexically marked in these cases.

(39)	Singular	Sing. Imperf.	Plural	
	√ opísi-ca		√ opísij-øj	<i>unusually small [opening]</i>
	√ otísín-an	√ otísín-im	√ otísij-am	<i>babble</i>
	√ imónalc-a		√ imónalc-øj	<i>become tangled up with feet</i>

Many roots in the language actually appear to be disyllabic, and most have penultimate stress. The list here is only representative, as they are very numerous.

(40)	√ átax	<i>go</i>	√ áaco	<i>build house</i>
	√ ámzo	<i>want</i>	√ áacoj	<i>big</i>
	√ ásim	<i>laugh</i>	√ tóoj	<i>grow in one place</i>
	√ cánaj	<i>chew with back teeth</i>	√ péetij	<i>circular</i>
	√ émen	<i>shake from side to side</i>	√ íitij	<i>curve upwards</i>
	√ ímoz	<i>think</i>	√ íixaz	<i>make clinking sounds</i>
	√ másij	<i>burst open</i>	√ méesom	<i>intact</i>
	√ íxoz	<i>scrape (to clean hide)</i>	√ óopol	<i>black</i>

Some of these verbs have a final consonant cluster and yet still have penultimate stress.

- (41) √émetx *turn with screwing motion*
 √ácatx *abandon*
 √ésijc *probe for thorn* (singular imperfective stem: √ésijqu-im)
 √átajc *vomit* (singular imperfective stem: √átalqu-im)
 √hóopatj *be wavy [sea]*
 √íitilc *curled up at the edges*
 √quésejc *gnaw*

28.2.3.2 Quantity sensitivity

Most verbs with a final consonant cluster have final stress. Comparison with the imperfective (§17.1.8) or plural stem (§17.1.3) often shows that in these forms the stress is actually penultimate because there is an additional vowel in these forms which is dropped in the singular.

- (42) Final stress (on heavy syllable, with consonant cluster)
- √acóml *pierce* (plural stem: √acómal-**oj**)
 √acóxl *tend* (singular imperfective stem: √acóxal-**im**)
 √ahntáxl *be near* (plural stem: √ahntáx**ax**)
 √ahpízl *have projection* (singular imperfective stem: √ahpízal-**im**)
 √ahzínz *immature [mesquite pod]* (plural stem: √ahzínaz-**oj**)
 √ajcápt *shoot at close range* (singular imperfective stem: √ajcápot-**im**)
 √ajőázip *mushy [fruit]* (singular imperfective stem: √ajőázip-**im**)
 √apópt *throw off sparks* (singular imperfective stem: √apópat-**im**)
 √apxázl *cover* (singular imperfective stem: √apxázal-**im**)
 √atáxl *catch up with* (singular imperfective stem: √atáxal-**im**)
 √azáplc *paralyzed (in the legs)* (singular imperfective stem: √azápalqu-**im**)
 √icótlj *rancid* (singular imperfective stem: √icótal-**im**)
 √ifáhzx *make a short sob to indicate unhappiness*
 (singular imperfective stem: √ifáhazx-**im**)
 √ifóhzx *cough with hacking cough* (plural stem: √ifóhazx-**oj**)
 √ihízlj *connected* (singular imperfective stem: √ihízal-**im**)
 √ihízlc *dirty* (singular imperfective stem: √ihízalqu-**im**)
 √ihócl *protrude* (singular imperfective stem: √ihócal-**oj**)
 √ijcácz *form ball on bone* (plural stem: √ijcácaz-**oj**)
 √inápt *curve down sharply with short radius*
 √ocásjc *walk with high steps* (singular imperfective stem: √ocáslc-**oj**)
 √ojást *hop* (singular imperfective stem: √ojásit-**im**)
 √omíhj *slippery* (singular imperfective stem: √omíhil-**im**)
 √oquéht *bounce* (singular imperfective stem: √oquéhet-**im**)
 √otófz *close up [round thing]* (singular imperfective stem: √otófaz-**im**)
 √ozáclc *stand on tiptoes* (singular imperfective stem: √ozácalqu-**im**)
 √motómn *weak* (plural stem: √motóman-**oj**)

- (43) Final stress (on heavy syllable with no evidence of disyllabicity)
- √**acápjc** *hurry to do*
 - √**ixónj** *become loose*
 - √**anámj** *hurry to do something carelessly*
 - √**ihímz** *have ringworm*
 - √**imázc** *mangy*
 - √**ixósjc** *messy*

Verbs with a long vowel or diphthong in the final syllable of the root have stress on that syllable.

- (44)
- √**acáaix** *carry with yoke*
 - √**amáai** *cook with fire on top*
 - √**acáant** *counsel*
 - √**ahái** *cause rippling on the surface of the sea [generally fish]*
 - √**ihíiin** *protected from the wind*
 - √**icséenpx** *carry a large thing under the arm*
 - √**oféaa** *have good eyesight*
 - √**onáaaij** *return*
 - √**onéaax** *wash one's hands*

A few disyllabic verb roots have final stress on a light syllable. The following list may be exhaustive.

- (45)
- √**acáp** *be able to pick up (something heavy)*
 - √**amác** *blow [whale or dolphin]*
 - √**amós** *squint*
 - √**apát** *make meat-drying rack*
 - hant** √**atín** *crouch down*
 - √**atóm** *make noise in the water with strikes*
 - †√**axát** *hold breath*
 - √**ayáx** *be out of shape physically*
 - √**oqué** *hear well (plural stem is √oquéé)*

28.2.4 Stress in compounds

In synthetic compounds (those written as single words) as well as analytic compounds (those written as more than one word), the last primary word stress is retained (marked explicitly in these examples).

- (46) **xóop** + **inl** > **xopínl**
Bursera microphylla 3P-finger-PL *Bursera hindsiana*
- (47) **xóop** + **cáacöl** > **xopcáacöl**
Bursera microphylla SN-big-PL *Bursera laxiflora*

- (48) **zǐx páaij ano cóom** > **ziix paaij ano cóom**
 thing driftwood 3P.in SN-lie *striped tail scorpion*
- (49) **zǐx hapx cóom** > **ziix hapx cóom**
 thing outside SN-lie *whale*

Vowel length is lost (in the synthetic compounds) or greatly reduced (in the analytic compounds) on the syllables that do not have primary stress.

For examples of compounds that use the compounding form of adjectives, see §13.5.6. These also retain the last primary stress.

28.2.5 Stress in phrases

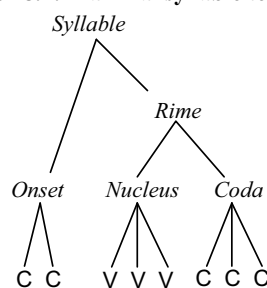
In a noun phrase, stress is reduced on all non-final primary stresses, and with this reduction, the distinguishability of long vowels is reduced as well. In a phrase like **xiica comcáac cmis** *Indians* (things person/Seri.PL SN-TR-resemble), primary stress occurs on **cmis**. With the reduction of stress in the other syllables, vowel length is also superficially lost to a significant degree. The lexicalization of a phrase therefore is a direct path to compounds since the stress patterns are the same.

In the verb phrase itself, stress most commonly occurs on the verb, but in some special situations the primary stress occurs on the preverbal postposition (see §5.7 and §7.3).

28.3 Syllable structure

Setting aside extra consonants which are permitted by word-margin extra-metricity or by morphology (§28.3.2), the maximal syllable has two consonants in the onset and three in the coda. See Figure 28.1. The nucleus commonly has up to three moras (usually as two vowel qualities, but sometimes as one), and in some rare cases even four.²⁷ Onsets, codas and nuclei are taken up individually below. No specific interaction between these constituents of the syllable is known

Figure 28.1: Maximal syllable template



²⁷ This discussion reprises Marlett (1988) with some revisions. Some key ideas, such as the idea of a nucleus with three vowels, are found in E. Moser & M. Moser (1965). The root **voaij** *hang free* arguably has four vowels in the nucleus, but this example is set aside here.

Two-consonant onsets may include combinations of consonants that are not common cross-linguistically although some of these are found only as the result of word-formation rules.³⁰ Geminate clusters occur only with an intervening morpheme boundary. The examples below show these clusters in word-initial position, when possible.³¹ The parenthesized examples show these clusters in word-medial position on the assumption that the onset of a stressed syllable is maximized.

(52)	Stop-Stop		Stop-Fricative	
	pp	— ³²	pf	—
	pt	ptaact <i>Colubrina viridis</i>	ps	psaac <i>hunger</i> (in idiom)
	pc	(ihapcóoyo) 3P-AON-AUG-taste-PL	pz	—
			pj	—
			px	pxaahom <i>three</i> (interjection)
			pl	(capláactim) SN-make.slapping. sound.by.hitting.water
	tp	t-panzx RL-run	tf	t-fit RL-stand.up
	tt	t-tapjö RL-disintegrated	ts	t-saamij RL-curled.up
	tc	t-cam RL-full	tz	t-zih <i>bullseye puffer</i>
			tj	t-jamoja <i>Gulf opaleye</i>
			tx	t-xana RL-flavorless
			tl	(i-tléen) 3P-palm.of.hand.
	cp	c-poot <i>sierra mackerel</i>	cf	c-fit SN-stands.up
	ct	c-tam <i>man</i>	cs	cset <i>magnificent frigatebird</i>
	cc	c-cam SN-full	cz	c-zaz SN-dive.into.sea
			cj	c-jip SN-flat
			cx	c-xap SN-TR-dig
			cl	—
(53)	Fricative-Stop		Fricative-Fricative	
	fp	—	f + Fricative	—
	ft	—		
	fc	(i-fcóocl) 3:3-AON-wear.blouse-PL		
	sp	s-pitj <i>coastal saltbush</i>	sf	s-fit IR.ID-stand.up
	st	s-tac <i>pumice</i>	ss	s-saamij IR.ID-curved.up
	sc	s-cozim IR.ID-hot.(weather)	sz	s-zaahox IR.ID-shine

³⁰ See Morelli (1997) and Morelli (1999) for discussion of the two-consonant onsets in this and other languages.

³¹ Labialized consonants are omitted here because of their limited or special distribution.

³² One might expect this sequence when the prefix **hp-** (first person singular subject, intransitive) precedes the dependent irrealis prefix **po-**. However, this sequence of geminates (unlike most others) is simplified to a single bilabial stop.

		sj	<u>s</u>-jip	IR.ID-flat
		sx	<u>s</u>-xana	IR.ID-flavorless
		sl	<u>s</u>leecoj	<i>heron</i>
zp	—	zf	—	
zt	—	zs	—	
zc	† <u>z</u>capcoj	zz	—	
	<i>a small manta ray</i>	zj	—	
		zx	(i-<u>z</u>xóca-tim)	3P-AON-chop-IMPF
jp	—	j + Fricative	—	
jt	—			
jc	<u>j</u>coa			<i>globemallow</i>
xp	<u>x</u>paaz	xf	—	
xt	<u>x</u>taasi	xs	—	
xc	<u>x</u>coctz	xz	—	
	<i>basalt</i>	xj	<u>x</u>jii	<i>bottle gourd</i>
	<i>estuary</i>	xx	—	
	<i>burro-weed</i>	lf	—	
l + Stop	—	ls	—	
		lz	—	
		lj	—	
		lx	<u>L</u>xeecej	(name of a mountain) ³³

Other sequences of consonants in an onset show an increase of sonority toward the nucleus of the syllable. Complex onsets may not begin with a nasal, approximant or glottal stop (the latter being taken as a sonorant in part because of this fact).³⁴ When such onsets might arise through affixation and the sequence is not preceded by a vowel (whether in the same word or in the immediately preceding word), a vowel is epenthesized: {**m-po-caa**} (2SS-IR.DP-look.for) > **impocáa** *if you look for it*.³⁵

³³ See also **i-lxáai** 3P-lower.part.of.back.of.head.

³⁴ The lateral approximant is very rare and is not included in this discussion. The tap occurs only in a few loanwords and is also omitted from this discussion.

³⁵ This vowel is most commonly **i**, but it is **o** in one situation. See §27.1.1 and §27.1.3.

(54)	Stop-Nasal		Stop-Approximant/Glottal
	pm —		py pyooque <i>a sun star</i>
	tm t-mam RL-cooked/ripe		ty t-yeeno RL-HAVE.face
	cm cmaam <i>woman</i>		cy c-yeeno SN-HAVE.face
	pn pnaacoj <i>mangrove</i>		ph —
	tn t-nopin RL-convex		th t-heemt RL-stink
	cn c-nopin SN-convex		ch c-heemt SN-stink
(55)	Fricative-Nasal		Fricative-Approximant/Glottal
	sm s-mam IR.ID-cooked/ripe		sy s-yeeno IR.ID-HAVE.face
	zm (a-zmii) 3P-maternal.uncle		zy —
	jm — ³⁶		jy —
	xm —		xy —
	sn snaazx <i>a shrub</i>		sh s-heemt IR.ID-stink
	zn znaxpöl <i>Mexican palo verde</i>		zh —
	jn —		jh —
	xn xnoois <i>eelgrass grain</i>		xh (moxhámt) <i>last year</i>
(56)	Nasal-Approx./Glottal	Nasal-Nasal	Approx./Glottal-Approx./Glottal
	my —	mm —	yy —
	ny —	mn —	yh —
	mh —	nm —	hy —
	nh —	nn —	hh —

Therefore the language obeys the general principles of the Sonority Sequencing Principle, which favors an increase in sonority as one goes from the edge of a syllable towards its nucleus, despite obvious violations when only obstruents are involved.³⁷ A straightforward statement of this language-specific situation would be something like the following:

(57) Obstruent-Obstruent is permitted.

28.3.2 Extrametricality on the left

Two nouns have three consonants in the onset, despite the expectation from a maximal syllable template that permits only two. The first consonant in these words may be considered extrametrical: **ptcamn** *Cortez spiny lobster* and **xptacámn** *slipper lobster* (dialectal variant of **tacámn**).

³⁶ This onset may be attested in **xojmás** *a land snail*. Some words like this, however, are clearly compounds. The syllabification of the clusters in these cases may be uncertain and for that reason have not been included in the examples listed.

³⁷ The Sonority Sequencing Principle and the notion of a sonority hierarchy have a long history in phonology. See Selkirk (1984), for example.

The extrametrical consonant may be found as the result of morphology. Some unusual roots begin with two consonants, and some plural stems begin with two consonants because of infixation (§17.1.3.1); inflected forms of these verbs may have three consonants. (The word-medial sequences of these consonants are assumed to be syllabified in different syllables.)

(58)	SN-(Tr-)-	IR.ID-	(3:3)-RL-	
	<u>c-zxoc</u>	<u>s-zxoc</u>	<u>i-t-zxoc</u>	<i>hack off</i>
	<u>c-xnoois</u>	<u>s-xnoois</u>	<u>t-xnoois</u>	<i>characterized by small garbage</i>
	<u>c-xtamt</u>	<u>s-xtamt</u>	<u>t-xtamt</u>	<i>abundant</i>
	<u>c-jcooil</u>	<u>s-jcooil</u>	<u>i-t-jcooil</u>	<i>make fall (plural subject)</i>
	<u>c-xtoopc</u>	<u>s-xtoopc</u>	<u>t-xtoopc</u>	<i>spend the night (plural subject)</i>
	<u>c-zcoomt</u>	<u>s-zcoomt</u>	<u>i-t-zcoomt</u>	<i>appreciate (plural subject)</i>

When a verb is inflected for third person oblique/indirect object (§17.1.2.4), a common allomorph of which is **cö-**, it is quite easy for a three- or even four-consonant onset to be formed.

(59)	a.	<u>cö-t-c-aahit</u>	3IO-RL-US-fish
	b.	<u>cö-t-pacta</u>	3IO-RL-be.in.appearance
	c.	<u>cö-s-m-aacoj</u>	3IO-IR.ID-N-big
	d.	<u>cö-t-p-aii</u>	3IO-RL-PV-make
	e.	<u>cö-s-m-oii</u>	3IO-IR.ID-N-be.FL.PL
(60)	a.	<u>cö-s-zxoc</u>	3IO-IR.ID-hack.off
	b.	<u>cö-s-zcoomt</u>	3IO-IR.ID-appreciate-PL

28.3.3 Codas

Any consonant (except for the lateral approximant) may appear in a simple coda, as shown in §28.1.2-§28.1.6 above, although the central approximant **y** occurs in codas only in two loanwords (see discussion in §28.3.4 below).

Many kinds of consonant clusters also appear in codas. None of these are geminate clusters.³⁸

(61)	Stop-Stop		Stop-Fricative	
	pp	—	pf	—
	pt	<u>coéep<u>t</u></u>	ps	<u>cops</u> <i>lightning bug</i>
	pc	† <u>xlequ<u>pc</u></u> <i>fog</i>	pz	<u>c-xap<u>z</u></u> SN-congeal
	pcö	<u>c-map<u>pcö</u></u> SN-burst.open	pj	<u>yanó<u>pi</u></u> 3P-fist/hoof
			pjö	<u>c-tap<u>jö</u></u> SN-disintegrated
			px	<u>hap<u>x</u></u> <i>place outside</i>

³⁸ A geminate cluster in a coda arises when the enclitic **x** (UT, §3.6.3) follows an **x**-final root.

			pxö	iipxö	<i>desert Christmas cholla</i>
			pl	c-aapl	SN-cold
	tp	i-t-átp	3:3-RL-spit.out	tf	—
	tt	—		ts	c-oots SN-sizzle
	tc	caatc	<i>grasshopper</i>	tz	aaitz 3P-ygr.paternal.uncle
	tcö	tatcö	<i>leopard grouper</i>	tj	cotj <i>round stingray</i>
				tjö	c-motjö SN-tender
				tx	cotx <i>brittlebush</i>
				txö	quitxö <i>a species of fish</i>
				tl	xnicatl <i>Colorado snapper</i>
	cp	c-oo^cp	SN-emerge	cf	—
	ct	aact	3P-mother's.mother	cs	tacs <i>iodine bush</i>
	cc	—		cz	zacz <i>pink cockle</i>
	ccö	—		cj	c-oo^cj SN-two
				cjö	—
				cx	hacx <i>apart, alone</i>
				cxö	—
				cl	heec^l <i>a limberbush</i>
	cöp	—		cöf	—
	cöt	haacö-t	house-PL	cös	anícös <i>snake-eyes (a shrub)</i>
	cöc	—		cöz	xazácöz <i>prickly poppy</i>
	cöcö	—		cöx	c-sicöx SN-TR-rock
				cöl	pnaacöl <i>jojoba</i>
(62)	Fricative-Stop			Fricative-Fricative	
	fp	t-afp	RL-arrive	ff	—
	ft	coáaft	<i>whirlwind</i>	fs	—
	fc	c-aafc	SN-TR-pound	fz	c-nifz SN-TR-kick
	fcö	—		fj	qu-ifj SN-have.constipation
				fjö	—
				fx	—
				fxö	—
				fl	—
	sp	—		sf	—
	st	hast	<i>stone</i>	ss	—
	sc	hasc	ABS-body.louse	sz	—
	scö	†xatóscö	<i>eared grebe</i>	sj	haasj <i>spiny lizard</i>
				sjö	qu-eesjö SN-barefoot
				sx	c-paaisx SN-be.clean
				sxö	i-t-ísxö 3:3-RL-hide
				sl	c-masl SN-yellow.PL

zp	xtooz<u>p</u>	<i>desert ground-cherry</i>	zf	—
zt	c-o<u>zt</u>	SN-loose	zs	—
zc	ii<u>zc</u>	3P-front	zz	—
zcö	—		zj	mi<u>zj</u> <i>well, correctly</i>
			zjö	—
			zx	itcá<u>zx</u> 3:3-RL-rip
			zxö	—
			zl	az<u>l</u> star-PL
			j + Fricative	—
jp	t-co<u>jp</u>	RL-jump		
jt	—			
jc	c-aa<u>jc</u>	SN-yawn		
jcö	cacá<u>jöc</u>	<i>bagworm moth</i>	jö + Fricative:	only jöz
jöp	—		jöz	c-o<u>jöz</u> SN-round
jöt	—			
jöc	Tahé<u>jöc</u>	<i>Tiburón Island</i>		
jöcö	—			
xp	c-oo<u>xp</u>	SN-white	x + Fricative:	only xz and xl
xt	c-ax<u>t</u>	SN-young/tender	xz	hax<u>z</u> <i>dog</i>
xc	—		xl	hantá<u>xl</u> <i>near</i>
xcö	—			
xöp	heex<u>öp</u>	<i>musical rasp</i>	xö + Fricative:	only xöl
xöt	ii<u>xöt</u>	<i>sea current</i>	xöl	hax<u>öl</u> <i>multicolored clam</i>
xöc	c-zoo<u>xöc</u>	SN-four		
xöcö	—			
lp	haa<u>lp</u>	<i>a woody shrub</i>	l + Fricative:	only lx
lt	yaol<u>t</u>	3P-muscle	lx	col<u>x</u> <i>very high up</i>
lc	t-masi<u>lc</u>	RL-burst.open-PL		
lcö	—			

As with onsets, therefore, obstruent clusters are permitted. But unlike in onsets, nasal clusters are also permitted in codas but only word-finally and only **mn**, as in **ptcamn** *lobster*, and **queemn** (SN-curve.downward), **c-aamn** (SN-TR-toast (corn in basket with coals)), **c-motómn** (SN-weak). Otherwise, there must be a decrease in sonority away from the syllable nucleus. Therefore, clusters in the coda of obstruent followed by sonorant are not permitted.

- (63) Not permitted in codas:
- *Obstruent-Sonorant
 - *Nasal-y
 - *Nasal-h
 - *h-Nasal
 - *h-y

When clusters of Obstruent-Nasal arise in a derivation, which is rare, an *i* is inserted after the cluster. An example is the formation of the singular stem for *hold in lap*, $\sqrt{\text{nex}\ddot{o}\text{ni}}$ (compare the imperfective stem $\sqrt{\text{nexon-a}}$). This epenthesis takes place regardless of whether the following word begins with a vowel or a consonant, unlike the epenthesis which takes place word-initially (§27.1.1): **Cói onexöni oo ha** (still 3P-ON-TR-hold.in.lap DL DCL) *S/he is still cuddling him/her/it (something small) while lying down.*

The coda may have a sequence of consonants with decreasing sonority — either glottal stop followed by obstruent or nasal followed by obstruent.

- | | | |
|------|--|--|
| (64) | h – Stop
c-oquéh <u>t</u> SN-bounce
qu-i-h-t SN-TR-see-PL
c-noohcö SN-concave | Nasal – Stop
c-heem <u>t</u> SN-stink
han <u>t</u> <i>land</i>
Cmaam <u>c</u> <i>Pleiades</i> |
| (65) | h – Fricative
hahjö <i>desert wolfberry</i>
c-omíhi SN-slippery
†qu-ihs SN-be.firstborn.child | Nasal – Fricative
sim <u>l</u> <i>barrel cactus</i>
caamjö ^o <i>screech-owl</i>
cö-c-aamx 3IO-SN-TR-speak
anxö INTNS
c-ani SN-thunder |

Three-consonant codas are not uncommon. A sample of those which are attested in word-final position is given below.

- | | | |
|------|--|--|
| (66) | Stop-Stop-Fricative
atcz 3P-younger.sister.FE
c-aptxö SN-punctured
c-aptj SN-wide
c-maptx SN-burst.open
i-t-áctz 3:3-RL-sift
xcactz <i>burro-weed (Ambrosia)</i> | Stop-Stop-Stop
— |
| (67) | Fricative-Stop-Fricative
azcz 3P-younger.brother.ME
c-ooocl SN-gray
izcl 3P-gonads.of.fish
c-apázipx SN-defecate.from.fear
c-noftj SN-jagged
istj 3P-leaf
i-t-áxp 3:3-RL-be.mad.at | Fricative-Stop-Stop
isct 3P-lung
t-oizct RL-enter.PL |

- | | | |
|------|---|---|
| (68) | Stop-Fricative-Fricative
<u>c-acsx</u> SN-wake.up
<u>c-capxöl</u> SN-brittle
<u>c-capxl</u> SN-sour
<u>c-apzx</u> SN-chipped
<u>c-matsj</u> SN-tell.lies
<u>haçözi</u> <i>sea catfish</i>
<u>yatóotxöl</u> 3P-kidney
<u>qu-icsj</u> SN-unripe.(fruit)
<u>i-t-áčösj</u> 3:3-RL-shake
<u>t-itxl</u> RL-disintegrate
<u>slenápzi</u> <i>little blue heron</i> | Stop-Fricative-Stop
<u>c-oopxöt</u> SN-loose
<u>c-tiipjök</u> SN-TR-squeeze.w.hand
<u>c-taaplc</u> SN-be.early.in.day |
| (69) | Fricative-Fricative-Fricative
<u>c-aafzx</u> SN-fast
<u>c-aazxl</u> SN-cough
<u>Hastóosxöl</u> (name of a mountain) | Fricative-Fricative-Stop
<u>cocásjc</u> <i>tropical beach-grass</i>
<u>iflc</u> 3P-knee
<u>haxlc</u> <i>arrow</i>
<u>najcáazjc</u> <i>reedstem milkweed</i>
<u>qu-ihízl</u> SN-dirty
<u>i-t-ázjc</u> 3:3-RL-pile.up |
| (70) | <u>h</u> -Fricative-Stop
<u>cö-c-aahjök</u> 3IO-SN-sit.with.knees.raised
<u>comhlc</u> mesquite.seed.embryo-PL | <u>h</u> -Fricative-Fricative
<u>c-aahzx</u> SN-sneeze
<u>c-peehzx</u> SN-concave.&.shallow |
| (71) | <u>h</u> -Stop-Fricative
<u>qu-ihti</u> SN-cone.shaped | <u>h</u> -Stop-Stop
— |
| (72) | Nasal-Fricative-Stop
<u>i-t-ámjc</u> 3:3-RL-bring
<u>t-amjök</u> RL-think.PL
<u>t-monlc</u> RL-curly
<u>t-pamlc</u> RL-form.into.balls | Nasal-Fricative-Fricative
<u>t-panzx</u> RL-run
<u>t-ihicóomzx</u> RL-have.skin.lesion
<u>t-inlx</u> RL-return.empty.handed |
| (73) | Nasal-Stop-Fricative
<u>c-omtxö</u> SN-straight
<u>c-aanpx</u> SN-return.home
<u>c-ancl</u> SN-pitted
<u>c-asóompx</u> SN-TR-carry.under.arm.Hz
<u>imti</u> 3P-vein/artery
<u>hantx</u> <i>at base</i> | Nasal-Stop-Stop
— |

28.3.4 Nuclei

The nucleus of a syllable may contain a simple vowel or a long vowel; see the examples in §28.1.1. It may also contain a cluster of two short vowels; most of these clusters are not robustly

attested. The sequences heard as **ie** and **io** are analyzed as **ye** and **yo** for reasons explained below.³⁹ Stress is marked in the following examples on the true phonetic peak of the syllable.

(74)	a+V		e+V	
	a. há í	<i>air, wind</i>	d. (ei)	—
	b. (ae)	—	e. sé a	<i>teddybear cholla</i>
	c. yá olt	3P-muscle	f. (eo)	—
	o+V			
	g. c-oá laj i	SN-flap		
	h. to é rc	<i>willet</i>		
	i. xomca hó ij	<i>Grusonia reflexispina (a cactus)</i>		

Stress is perceived a bit differently on these diphthongs. The vowel **i** is never the strong member of the diphthong; it is perceived as shorter and not stressed. When **i** is not involved, an **o** is the shorter and unstressed member of the diphthong. The remaining attested bimoraic diphthong, **ea**, is perceived as having stress on the first vowel.

(75)		Second vowel			
		a	e	i	o
First vowel	a		—	ái	áo
	e	éa		—	—
	o	oá	oé	ói	

Two-vowel clusters appear more commonly in earlier transcriptions of many words, but many examples such as **c-aític** (SN-soft) were changed to **c-aaitic** by the committee working on the 2005 dictionary. It is clear that a root such as $\sqrt{\text{aaitic}}$ *soft* conjugates as if it begins with a short low vowel, not a long one. (For that reason the conjugation field in the dictionary presents it as **táaitic**, with the circumflex to indicate that the root does not conjugate like a long vowel, despite its phonetic length.) It seems to be clearly the case that a phonetic lengthening of a vowel in a diphthong is happening; this extra vowel length is perceived and written by some proficient Seri writers. This “diphthong effect” is not across the board, however; note the word **hai** *air, wind*. It is, however, a pervasive — and complicating — factor in the pronunciation and transcription of many words.

The nucleus of a syllable much more commonly contains a trimoraic diphthong — one long

³⁹ The word **tacasióla** *pipit* made it into the 2005 dictionary. Today it would be taken as **tacasyóla**, analogous to **pyeest** *fiesta*.

vowel and one short vowel, in either order.⁴⁰ The examples presented below utilize morphemes in which length is not due to the diphthong effect described in the preceding paragraph (in order to present a clear picture of the facts). Stress is marked on the vowel which is perceived as being more prominent.

(76)	a	e	i	o		
aa		—	áai	áao	√ aa i	<i>make</i>
ee	—		—	éeo ⁴¹	√ aa o	<i>pass</i>
ii	—	—		íio	√ zi om ⁴²	<i>singe</i>
oo	—	—	óoi ⁴³			

(77)	aa	ee	ii	oo		
a		—	áii	—	caii	<i>mature</i>
e	éaa		éii ⁴⁴	—	√ oféaa	<i>have good eyesight</i>
i	—	—		—	coáan	SN-murky
o	oáa ⁴⁵	oée	óii		coécept cóii coíiz	<i>quail</i> SN-be.FL.PL <i>spider</i>

The difference between **óii** and **oii** seems to be related to open versus closed syllables. Some variation between speakers has also been observed.

A few words have trimoraic nuclei with only one vowel quality.

⁴⁰ This claim runs afoul of theoretical proposals which limited the Nucleus of a syllable to only one position (Goldsmith 1990:109ff), or maximally two (a position that is more commonly assumed and illustrated, if not explicitly claimed). Blevins' (1996:239, note 35) framework explicitly allows for three units in the Nucleus.

⁴¹ This is only attested by the archaic verb √**eeolim** *look for organpipe cactus fruit diligently, at the end of the season, and bring the ripe fruit with the thorns removed*; since the conjugation pattern cannot be verified, the example is not presented with the other data.

⁴² The loanword **ionam** (3P-hat, see Appendix A) is common but the length on the first vowel of the root (√**VVonam**) may be due to the diphthong effect.

⁴³ Many examples of **ooi** are found but they may all be due to the diphthong effect. The root √**ooil** *blue/green*, for example, was written earlier as √**oil**.

⁴⁴ This is found in the compound **hatéiictim rag**; see §13.5.2.

⁴⁵ This diphthong usually has perceivably greater stress on the vowel **aa**; in words such as **canóaa** *boat* and **itóaa** (3P-foot), with open syllables, the stress is perceived on the **o**.

(78)	a.	√ aaa	call	
	b.	√ aaaxoj	go.away.from-PL	cf. √ aiix go away from
	c.	caaa	<i>firedrill</i>	
	d.	√ aaaj	wide-PL	cf. √ aaail wide
	e.	√ aaasxim	clean-IMPF	cf. √ aaaisx clean
	f.	√ amaaat	cause.be.quiet	cf. √ maai quiet
	g.	√ caaat	toast in hot sand or in frying pan	
	h.	√ neeej	curled.up	
	i.	heesam	<i>seahorse</i>	
	j.	√ neeen	blunt and unusable	
	k.	√ queeex	cut.hair	
	l.	√ cooo	entire, whole	
	m.	√ miit	ask	
	n.	√ siin	sit.near	
	o.	√ iii	hear-PL	cf. √ ii hear

In a few cases these are demonstrably due to the ablaut of **i** to **a(a)** as part of imperfective aspect or plural formation, and the result is a sequence of vowels that happen to have the same quality.

A complex nucleus is generally possible only in stressed syllables, however. Examples such as **haitámoc** *a small wood-boring insect*, **coaxáac** *bark scorpion*, and **haitáapa** *northwest wind* are rare exceptions, and the latter is a compound (compare **hai** *wind* and **aapa** *strong*).

When the features of [i] occur postvocally (and not intervocally), they are generally analyzed as vowels. Native morphemes, such as √**aaí** *make*, are all demonstrably vowel-final rather than consonant-final. One piece of evidence for this is the fact that the glottal-initial modals have epenthetic vowels before them when they follow consonants, but not when they follow vowels or strings such as **aaí**; see §20.5. Therefore the result is **caai ha** (SN-TR-make DCL) *s/he is making it* and not ***caay iha** (the latter actually being *it is a horse*).⁴⁶

Also, consonant clusters following stressed vowels may be broken up under certain circumstances (see §26.10, for example) but strings such as **aaít** do not behave as if they were **aayt**.⁴⁷

Two exceptions to the generalization that vowel followed by [i] is always analyzed as /Vi/ are the loanwords **caay** *horse* and **hapáay** *member of the O'odham tribe*. These words occur

⁴⁶ In recent years and with certain speakers I have heard a slight glide and very short epenthetic vowel pronounced even in cases like **caai ha**, however.

⁴⁷ This has been the case generally during the years of investigation. However, occasionally a consultant has given an initial response which suggests yC. There may be speaker variation on this point of analysis.

with the allomorph **iha** of the declarative modal (see §20.5). The contrast between **c-aaí ha** (SN-TR-make DCL) *s/he is making it* and **caay iha** (horse DCL) *it is a horse* is clear.

Whenever the features of [i] occur prevocally within a morpheme, they are analyzed as being linked to an onset position. That is [i]-vowel is generally analyzed as /j/-vowel. The evidence comes from two sources. First, consider suppletive allomorphy that is sensitive to whether something is a vowel or a consonant. The passive prefix, for example, has one shape (**p_{Abl}-**) before vowel-initial roots and another shape (**ah-**) elsewhere (§17.1.5). A root such as [i a a] *own* takes the allomorph **ah-**: **i-m-ah-yáa** (SN-N-Pv-own); this is true of all similar roots. Second, phonologically-conditioned non-suppletive allomorphy that is sensitive to the difference between consonants and vowels points to the same analysis. For example, while the dependent irrealis prefix **po-** loses its vowel before vowel-initial stems (see §27.2.1), it does not lose its vowel before roots such as [i a a]: **i-po-yáa** (3:3-IR.DP-own).

28.4 Minimal word

A word belonging to a major lexical category (noun or verb) must have at least two moras; all of the postpositions (chapter 22) and adjectives (chapter 23), though few in number, also have two moras. For this purpose, a vowel contributes a mora and a consonant in the coda contributes a mora.⁴⁸ Therefore, nouns and verbs of the shape V or CV are not possible. Some possible words with only two moras include the following:

(79)	Two moras in the nucleus	One mora in nucleus, one mora in coda
	coo <i>shovelnose guitarfish</i>	ac <i>canvasback (duck)</i>
	hee <i>antelope jackrabbit</i>	cam <i>a bark boring beetle</i>
	xjii <i>bottle gourd</i>	cos <i>Maytenus phyllanthoides</i>
	hai <i>wind, air</i>	hax <i>water</i>
	xaa <i>soon</i>	hap <i>mule deer</i>
	cói <i>still</i>	tom <i>money</i>
	tee <i>wrinkled spineflower</i>	nas <i>a small milkweed vine</i>
	One mora in each syllable	
	taca <i>finescale triggerfish</i>	cama <i>big skate</i>
	cozi <i>bitter condalia</i>	hehe <i>plant</i>
	xepe <i>sea</i>	tazo <i>one</i>
	haso <i>net</i>	cosi <i>thorn</i>

Words that are auxiliaries (chapter 20), NP/DP adverbs (chapter 24), certain postverbal

⁴⁸ See §28.2.2 where it is shown that the final consonant of a coda does not contribute to syllable weight for the purpose of stress assignment.

heeesam *seahorse*, **catiiija** *common loon in winter plumage*, **caaitoj** (SN-fish-PL) *who go fishing*.

It may be appropriate to view this process not as one of lengthening *per se* but as one of “strengthening” since even in words such as **hap** *mule deer* and **hast** *stone* the consonant following the stressed vowel is perceptibly more intense.⁵² This strengthening becomes obvious length when a vowel follows the consonant. In the case of a CVC word like **hap**, this may be in a context as simple as **Hap iha** (mule.deer DCL) *It is a mule deer*. In the case of a word with a consonant cluster, where normally no vowel follows the first consonant of the cluster, special conditions provide just the right context. Consonant clusters may be split up by the infix **-a-** as part of a way of expressing disbelief or sarcasm (see §26.10) that also includes a postnominal **a**. This infixation provides the conditions to hear the strengthened consonant as a long consonant. Some examples include:

(81)			Expressed with sarcasm	
	a.	hast <i>stone</i>	hasat a	[s:]
	b.	haxöl <i>clam</i>	haxöäl a	[χ ^w :]
	c.	ctooiclca <i>zebra-tailed lizard</i>	ctooicalca a	[k:]
	d.	quicöt SN-Tr-kill-PL	quicöät a	[k ^w :]

Morphological condition

There is an important morphological condition on the lengthening (or strengthening) process. Consonants and vowels which are after the root are not eligible for lengthening. Suffix consonants do not lengthen: **coo-taj** (guitarfish-PL) *guitarfish (pl.)*; **c-aa-tim** (SN-grind-IMPF) *who grinds*.⁵³ The infix **-a-** (§26.10) does not lengthen. Similarly, consonants and vowels which are part of enclitics do not lengthen under any condition.⁵⁴ Moreover, vowels which may be epenthized before enclitics, such as the declarative modal **ha** (§20.5), do not lengthen, as illustrated by the examples in (82).

(82)	a.	Hap iha.	[¹ ʔap: iʔa]	<i>It is a mule deer.</i>
	b.	Ctam iha.	[¹ ktam: iʔa]	<i>It is a man.</i>
	c.	Cmaam iha.	[¹ k ^w ããm' iʔa]	<i>It is a woman.</i>

⁵² Native speakers have described these consonants in quite similar ways and sometimes have written double consonants in these positions, indicating their feeling that these are unlike Spanish.

⁵³ The lengthening which occurs in certain noun plurals provides additional evidence that the vowels in the plurals are part of the root: **zacáam**, **zacáama-lc** *young woman*, **siip**, **siipi-lc** *young man*, **hax**, **haxa-jam** *water*, **xtiip**, **xtiipo-lc** *giant Panamic cockle*, **poosj**, **poosi-lca** *cord*, **cool**, **coolo-loj** *twine jug holder*.

⁵⁴ It may be thought that the enclitics are obviously outside of the domain of the process, but these morphemes were analyzed as suffixes in previous descriptions. The facts here underscore the brilliance of the suggestion by René Montaña Herrera, during the preparation of the 2005 dictionary, to write the enclitics as separate words.

Lengthening does occur, however, in the irregular verbs described in §27.7; the stressed vowel in these words precedes the root and the lengthened segments are either part of prefixes or part of the root.

- | | | | | | |
|------|----|-----------------|-------------------------|----------------|---------------------------------|
| (83) | a. | mo-c-a-t | [^l mok:a:t] | TWD-SN-move-PL | <i>ones who come</i> |
| | b. | mo-h-a | [^l moʔ:a:] | TWD-IM-move | <i>Come!</i> |
| | c. | ca-m-al | [^l kam:a:ɬ] | IM-N-accompany | <i>Don't accompany him/her!</i> |

The morphological condition on the lengthening process produces some examples which are in essence minimal pairs for vowel length in an unstressed syllable, although the contrast is a derived one and not due to underlying length, of course.⁵⁵

- | | | | | | |
|------|----|--|---------------------------|--------------------------|---|
| (84) | a. | cootaj | [^l koot'aːx] | <i>ant</i> | |
| | b. | coo-taj | [^l kootax] | guitarfish-PL | |
| (85) | a. | lixöt | cöquiti | ha. | [^l k ^w kit:i:ʔa] |
| | | sea.current | 3IO-SN-connected | DCL | |
| | | 'Está viajando con la corriente.' | | | |
| | | <i>S/he/it is going with the sea current.</i> | | | |
| | b. | lixöt | cöquit | iha. | [^l k ^w kit:i:ʔa] |
| | | sea.current | 3IO-SN-go.against.current | DCL | |
| | | 'Está viajando contra la corriente.' | | | |
| | | <i>S/he/it is going against the sea current.</i> | | | |
| (86) | a. | Quisi | ha. | [^l kis:i:ʔa] | |
| | | SN-TR-drink | DCL | | |
| | | 'Lo está tomando.' | | | |
| | | <i>S/he is drinking it.</i> | | | |
| | b. | Quis | iha. | [^l kis:i:ʔa] | |
| | | SN-raw | DCL | | |
| | | 'Está crudo/a.' | | | |
| | | <i>It is raw.</i> | | | |
| (87) | a. | Sita | ha. | [^l sit:a:ʔa] | |
| | | IR.ID-sharp | AUX-DCL | | |
| | | 'Estará filoso/a.' | | | |
| | | <i>It will be sharp.</i> | | | |

⁵⁵ Examples such as these led to the analysis of phonemic length in unstressed syllables that was an important part of the phonological description in E. Moser & M. Moser (1965).

- b. **Sit** **aha.** [ˈsit:aʔa]
 IR.ID-dull AUX-DCL
 ‘Estará sin filo.’
It will be dull.
- (88) a. **Cooha** **ha.** [ˈkooʔ·aʔa]
 SN-cry DCL
 ‘Está llorando.’
S/he is crying.
- b. **Coo** **ha.** [ˈkooʔa]
 guitarfish DCL
 ‘Es pez guitarra.’
It is a guitarfish.
- (89) a. **Tiima, ...** [ˈtiim·aʔ]
 RL-sleep-PL
 ‘Dormían, ...’
They were sleeping, ...
- b. **Itii** **ma, ...** [iˈtiima]
 3:3-RL-hear DS
 ‘Lo oía, ...’
S/he heard it, ...

Lexical conditions

Lengthening does not generally apply to loanwords. The following words are pronounced without lengthened consonants and vowels in the post-tonic syllable: **tooro** *bull*, **pazáatoj** *shoe(s)*, **trooqui** *automobile*. A few loanwords, presumably with a longer history in the language, such as **capota** *jacket*, **caamiz** *shirt* and **siimet** *bread*, display lengthening.⁵⁶

28.5.2 Nasal Assimilation

An **m**, but not an **n**, assimilates to the point of articulation of a following consonant under certain conditions.⁵⁷ This assimilatory process and the velarization rule described in §28.5.3

⁵⁶ As in other languages that have a vowel length distinction, loanwords are most commonly taken into the language with length on the vowel that is stressed.

⁵⁷ This process apparently came into the language sometime in the twentieth century, if not slightly earlier, since transcriptions of the word **comcáac** were made in 1850 and 1862, by different people from different backgrounds and without doing phonological analysis, as kumkak (McGee 1898:310).

directly account for almost all occurrences of velar and uvular nasals which occur superficially.⁵⁸ The phonetic velar and uvular nasals are, therefore, allophones of **m** and not of **n**. The fact that both of these processes apply to **m** alone suggests that **m** is the unmarked nasal in Seri rather than **n**. (For what happens before glottal stop, see §28.5.10.)

Some variation on this assimilation process is found within the community, as detailed below. In this section, however, unless explicitly mentioned, there is no known variation among the current population.

The primary condition on assimilation is that the nasal be in an *unstressed* syllable; both primary stress and secondary stress block the process. Cases with secondary stress blocking the assimilation are few. If it were not for secondary stress on the syllable in which **m** occurs in the following examples (among others of these verb paradigms), assimilation would have been expected: **itamsisiin** (3:3-RL-love) *s/he loved him/her/it* and **xomsisiin** (EM-pitiable) *s/he/it is a poor thing*.

Generally only velar nasals occur word-medially (in an unstressed syllable) before velar consonants in monomorphemic examples.⁵⁹

(90)	a.	comcáac	<i>Seri people</i>	[kɔŋ'kaak]
	b.	comcáii	<i>old woman</i>	[kɔŋ'kaii]
	c.	hamcanóin	<i>pan</i>	[ʔaŋkano'iin]
	d.	xomcahúft	<i>oregano</i>	[χɔŋka'ʔiiɸt]

Other examples of this type include: **xomcahái** *an unidentified species of flounder* and **xomcahóij** *a cactus (Grusonia spp.)*, and **Xomcatáaj** *a camp on Tiburon Island*.

One word of this type displays considerable variation within the community; the word for *ocotillo (Fouquieria splendens)*.⁶⁰ Alternate forms include: **jomjéeziz**, **xomjéeziz**, **xomjéezij**, and **mojéeziz**. For most people (apparently) the sequence **mj** in these words is pronounced [ŋx]; for at least a few people, however, the sequence is pronounced [mx].

⁵⁸ E. Moser & M. Moser (1965) did not notice the relevance of the position of stress and for that reason concluded that the language had a velar nasal that contrasted with /m/ and /n/, despite the tenuousness of the evidence. They therefore wrote the name of the ethnic group as **congáac**.

⁵⁹ Examples with uvular nasals before uvular consonants have not been found; this is presumed to be an accidental gap. Examples with the coronal nasal (in unstressed syllables) before back consonants have also not been found in monomorphemic examples other than the loanword **sancáac** *brown sugar* (see Appendix A).

⁶⁰ Most words in the language do not show as much variation as this one.

Examples with phonetic labial or phonetic coronal nasals in stressed syllables preceding consonants of distinct point of articulation are common. Such examples show the importance of factoring stress into the description of nasal assimilation.

- (91) Tautomorphemic examples with **m** [m]
- | | | |
|----|-----------------------------|-----------------------------|
| a. | xpanáams | <i>seaweed</i> |
| b. | i-téems | 3P-beard |
| c. | i-t-ámzo | 3:3-RL-want |
| d. | i-hicóomz | 3P-pinworm |
| e. | siml | <i>barrel cactus</i> |
| f. | ptcamn | <i>spiny Cortez lobster</i> |
| g. | c-motómn | SN-weak |
| h. | i-t-ámjc | 3:3-DT-take |
| i. | Cmaamc ⁶¹ | <i>Pleiades</i> |
| j. | c-comca | SN-noisy |
- (92) Tautomorphemic examples with **n** [n]
- | | | |
|----|----------------------------|--------------------------------|
| a. | honc | <i>seagull</i> |
| b. | c-anel | SN-pitted |
| c. | Haanc ⁶² | <i>Punta San Miguel</i> |
| d. | qu-inco | SN-torn.into.shreds |
| e. | tincl | <i>canyon ragweed</i> |
| f. | c-aanpx | SN-return.home |
| g. | c-osánpx | SN-race |
| h. | c-sanj | SN-TR-carry.child.on.back |
| i. | c-acónxot | SN-TR-help.carry.several.items |
- (93) Polymorphemic examples with **m** [m]
- | | | |
|----|---------------------|------------------------|
| a. | am-ta | 3P-father.FE-PL |
| b. | i-t-acám-tim | 3:3-RL-cause.live-IMPF |
| c. | i-t-ámla | 3:3-RL-hunt.IMPF |
| d. | teem-yo | PX-say-PL |
- (94) Polymorphemic examples with **n** [n]
- | | | |
|----|------------------|---|
| a. | an-coj | 3P-area-PL |
| b. | c-pancojc | SN-run-PL (singular stem √ panzx) |

Examples with **m** that assimilates (in an unstressed syllable) to the point of articulation of a following consonant are found with all four prefixes that have an **m** in their underlying form.

The proximal realis prefix **mi-** (§17.1.1.7) loses its vowel before a consonant and assimi-

⁶¹ This might be based on an archaic plural of **cmaam** *woman*.

⁶² This might be based on an archaic plural of **haan** *smooth Pacific venus clam*.

lates to the place of articulation of that consonant.

- | | | | | |
|------|----|--------------------|------------------------|--------------------------|
| (95) | a. | i-m-cáa | 3:3-PX-look.for | [iŋ'kaa] |
| | b. | im-xápz | PX-freeze/harden | [iN'χapʃ] |
| | c. | ma h-n-zaxö | 2SDO 1sS.TR-PX-discuss | [maʔŋ'ʃaχ ^w] |
| | d. | i-n-tís | 3:3-PX-point.at | [in'tis] |
| | e. | i-n-yáa | 3:3-PX-own | [iŋ'jaa] |

The second person singular subject prefix **m-** (§17.1.2.1) almost always precedes a consonant and assimilates to the point of articulation of that consonant.

- | | | | | |
|------|----|-------------------|--------------------|-------------|
| (96) | a. | m-im-pánzx | 2sS-PX-run | [mim'panʃχ] |
| | b. | im-po-cáa | 2sS-IR.DP-look.for | [impo'kaa] |
| | c. | in-t-cáa | 2sS-RL-look.for | [int'kaa] |
| | d. | in-yo-cáa | 2sS-DT-look.for | [injo'kaa] |
| | e. | im-xo-cáa | 2sS-EM-look.for | [iNχo'kaa] |

The negative prefix **m-** (§17.1.4) assimilates to the point of articulation of a following consonant.

- | | | | | |
|------|----|-------------------|----------------------|------------|
| (97) | a. | i-m-áa | SN-TR-N-grind | [i'maa] |
| | b. | i-m-píi | SN-TR-N-taste | [im'pii] |
| | c. | i-n-síi | SN-TR-N-smell | [in'sii] |
| | d. | i-n-tís | SN-TR-N-point.at | [in'tis] |
| | c. | i-n-yáa | SN-TR-N-own | [iŋ'jaa] |
| | d. | i-m-cáa | SN-TR-N-look.for | [iŋ'kaa] |
| | e. | i-po-m-cáa | 3:3-IR.DP-N-look.for | [ipoŋ'kaa] |
| | f. | i-m-xápz | SN-N-harden/freeze | [iN'χapʃ] |

The directional prefix **mo-** TWD loses its vowel under certain conditions (see §17.1.6) and assimilates to the point of articulation of the following consonant.

- | | | | | |
|------|----|-------------------------|---------------------------|------------------|
| (98) | a. | im-c-óozi | TWD-SN-TR-send | [iŋ'koofi] |
| | b. | in-s-iin a-ha | TWD-IR.ID-go AUX-DCL | [in'siin aʔa] |
| | b. | xaa n-s-iin a-ha | soon TWD-IR.ID-go AUX-DCL | [χaa n'siin aʔa] |

Some roots have allomorphs showing nasal assimilation before a suffix consonant.

- | | | | | | |
|------|----|----------------|-------|------------------|----------|
| (99) | a. | √ iixim | fear | √ iixan-t | fear-PL |
| | b. | √ asim | laugh | √ asin-t | laugh-PL |

The next groups of examples discussed all have **m** at the end of a word that is followed by another word (or clitic). And these examples are those where there is some phonetic variation within the community. When the **m** is in a stressed syllable, the **m** is phonetically [m] for all speakers.

- (100) a. **ctam -ya** man/male-QM
 b. **siim caha** IR.ID-sleep AUX.SN-DECL
 c. **siim ta** IR.ID-sleep AUX.RL
 d. **saaom caha**⁶³ IR.ID-UO.beg AUX.SN-DECL

When the **m** is in an unstressed syllable, the **m** is phonetically [m] for some speakers (a very small minority, it would seem);⁶⁴ for the majority of speakers, the **m** assimilates to the point of articulation of the following consonants. These facts show that the domain of Nasal Assimilation is the phonological phrase for most speakers, but it is limited to the word for a few speakers.⁶⁵

	Majority	Minority
(101) ¿Cootpam -ya? herring QM '¿Es anchoveta?' <i>Is it a herring?</i>	[¹ kootpanja]	[¹ kootpamja]
(102) ¿Caalim -ya? SN-play QM '¿Está jugando?' <i>Is s/he playing?</i>	[¹ kaaɬinja]	[¹ kaaɬimja]
(103) ¿Caaitom -ya? SN-speak QM '¿Está hablando?' <i>Is s/he talking?</i>	[¹ kaaitonja]	[¹ kaaitomja]
(104) ¿Hepem -ya? white-tailed.deer QM '¿Es venado de cola blanca?' <i>Is it a white-tailed deer?</i>	[¹ ?ɛpenja]	[¹ ?ɛpɛmja]

⁶³ Examples such as this are relevant for the claim that a word such as **saaom** is monosyllabic. If it were bisyllabic, on the other hand, somehow stress must be assigned to the vowel **o** as well in order to block Nasal Assimilation.

⁶⁴ The minority happens to include a key consultant for this grammar, René Montaña Herrera. I was surprised to hear these pronunciations and was skeptical of them at first as they struck me as “reading” pronunciations. But during the time that I worked on the grammar, I was convinced that they were real. I am unable to say if many other people have these pronunciations.

⁶⁵ Word-final nasals are written in their unassimilated form. They are also written (by decision of the dictionary committee) in their unassimilated form when the preceding the enclitic **ya** (QM). The latter is the only enclitic that the dictionary committee decided to write as a suffix.

- (105) **cootpam com** [ˈkootpaŋ kom] [ˈkootpam kom]
 herring the.HZ
- (106) **hepem cop** [ˈʔεpeŋ kop] [ˈʔεpeɪm kop]
 white-tailed.deer the.VT
- (107) **Saalim caha.** [ˈsaʔiŋ kaʔa] [ˈsaʔim kaʔa]
 IR.ID-play AUX.SN-DCL
- (108) **saalim ta** [ˈsaʔin ta] [ˈsaʔim ta]
 IR.ID-play AUX.RL
- (109) **poosim ta** [ˈpoosin ta] [ˈpoosim ta]
 IR.DP-laugh DS

An underlying **n** does not assimilate to a following consonant even when it follows an unstressed vowel.

- (110) a. **soomen caha** IR.ID-UO-toss.sideways AUX.SN-DCL *s/he will winnow*
 b. **siiscan caha** IR.ID-hard AUX.SN-DCL *it will be hard*
 c. **hesen com** dry.ironwood the.HZ *the dry ironwood*
 d. **seeten quij** pen.shell the.CM *the pen shell*
 e. **hesen pac** dry.ironwood some *some dry ironwood*
 f. **zazan quij** grackle the.CM *the grackle*

28.5.2.1 Exceptions

One noun unexpectedly has a velar nasal, despite being in a stressed syllable: **ctoo[ŋ]c** *immature double-crested cormorant*. The word is written **ctoonc** in the dictionary with a note that the pronunciation is onomatopoeic.⁶⁶

The **m** in the distal locative morpheme **him** (§21.3) also assimilates in the demonstrative adjectives (not surprisingly) and even when these words are used pronominally and have stress on the first syllable: **hincop** (DT-VT), **himquij** (DT-CM), **himcac** (DT-LC).⁶⁷

⁶⁶ At one time I was told about a verb that has a velar nasal— actually a labialized velar nasal — in all occurrences, despite being in a stressed syllable: √**ahi[ŋ^w]** and was told that it meant *to pronounce “m” with a bilabial nasal rather than with a nasalized labialized velar* (such as pronouncing **cmaam** *woman* as [k m a a m] rather than [k w̃ a a m], see §28.5.4). This meaning seems backward. I was unable to confirm the existence of this word in 2007.

⁶⁷ When these words are tested with the infix **-a-** (§26.10), two results have been recorded. For at least some speakers, the use of the infix results in a velar nasal occurring intervocalically:

- (i) **ɿꞤCtam hi[ŋ]-a-cop a?!**
 man DT-RHET-VT AUX
 ‘Ese hombre, ɿja!’
 That man, my eye! RRR

28.5.3 Nasal velarization before pause

In the dialect of many (but not all) speakers, a labial nasal in an unstressed syllable becomes a velar nasal before pause. This may occur when a word is pronounced in isolation or when it occurs in sentence-final position before an appropriate pause.

(111)			Pronunciation A	Pronunciation B	
	a.	cootpam	<i>sardine</i>	[^l kootpaŋ]	[^l kootpam]
	b.	icáaitom	3P-AON-US-speak	[i ^l kaaitoŋ]	[i ^l kaaitom]
	c.	iyonípatim	3:3-DT-hit-IMPF	[ijo ^l nipatiŋ]	[ijo ^l nipatim]

The coronal nasal does not velarize; it is always [n].

(112)	a.	hesen	<i>dry ironwood</i>
	b.	seeten	<i>pen shell</i>
	c.	ihípon	3P-AON-HAVE-voice
	d.	yaticpan	3P-AON-work
	e.	zazan	<i>grackle</i>

The **m** of a stressed syllable does not velarize.

(113)	a.	ctam	<i>man</i>
	b.	cmaam	<i>woman</i>
	c.	miim	Px-sleep
	d.	heem	<i>pencil cholla</i>

28.5.4 Nasal Lenition

In the modern dialect of Seri, unlike the dialect of some previous generations, a labial nasal following a tautosyllabic velar stop is pronounced as a nasalized labial-velar approximant.⁶⁸ Nasalization spreads to any tautosyllabic vowels.

(114)	a.	cmiique	[^l k w̃ iĩkɛ]	<i>person/Seri</i>
	b.	cmaam	[^l k w̃ ããm]	<i>woman</i>
	c.	intemámzo	[in ^l tk w̃ ãmʃo]	2SS-RL-N-want
	d.	intemáho	[in ^l tk w̃ ãho]	2SS-RL-N-see
	e.	acmáhaj	[a ^l k w̃ ãʔax]	3P-younger.brother's.child.ME

One consultant could not produce and would not accept this form (which his wife did accept and produce); he used the un-infixed form hi[ŋ] **icap a**.

⁶⁸ Word lists from the nineteenth century do not give evidence of this rule. E. Moser & M. Moser (1965) observed the lenition rule as it was spreading through the lexicon and the speech community in the mid twentieth century, and they contrasted forms to which the rules had applied with forms to which the rules had not yet applied. Therefore they considered nasalization phonemic, although considerable alternation was noted (1965:55). Since then, the rule has generalized to the entire lexicon for all speakers so far as I am aware.

Examples where the **m** is not tautosyllabic with a preceding velar stop are rare, but the **m** does not lenite in these cases.

- (115) **acmajéete** [akma'xeete] 3P-wife's.older.sister

These facts support the claim that syllabification maximizes the onset of stressed syllables, as in (114e) **a.cmá.haj**, but not in unstressed syllables since (115) **acmajéete** must be syllabified **ac.ma.jée.te**.

28.5.5 Nasal syllabification

In a very restricted context — between a glottal stop and a consonant — a nasal consonant is syllabic.

- (116) a. **ma hnzáxō** [maʔŋ'ʃax^w] 2sDO 1sS.TR-PX-discuss
 b. **ihmpfi** [iʔm'pfi] 1sS.TR-PX-taste
 c. **ihmcáa** [iʔŋ'kaa] 1sS.TR-PX-look.for

This syllabification is another way of enforcing the condition that a syllable onset cluster cannot begin with a sonorant and that a word-internal coda cluster does not end with a nasal.

28.5.6 Labialization

A back consonant is labialized when it follows a labialized consonant. The entire sequence is pronounced with lip-rounding; the labial off-glide is perceptible only before a vowel. A sequence of stops is pronounced, as expected, as a single long consonant.

- (117) a. **anxō catícpān** [χ_wk^w] INTNS SN-work
 b. **cō-c-atícpān** [k_wk^w] 3IO-SN-work
 c. **c-zooxōc** [χ_wk^w] SN-four
 d. **cō-xo-pánzx** [k_wχ^w] 3IO-EM-run
 e. **haquéjōc** [x_wk^w] ABS-firewood
 f. **Tahéjōc** [x_wk^w] *Tiburón Island*
 g. **s-xapjō caha** [x_wk^w] IR.ID-tremble AUX.SN-DCL
 h. **¿zimjōc xepe iti ...?** [x_wk_wχ^w] when? sea 3P-on
 i. **mayócō quij** [k_wk^w] American.bittern the.CM

Forms such as **cōtootij** (3IO-RL-dry) *Is/was it dry?* among many others, show that non-back consonants do not become round. (However, see §28.5.9 for what happens with glottal stop; this might be analyzed as the spread of labialization to the glottal stop.)

In the case words such as **haquéjōc** (ABS-firewood) and **Tahéjōc** *Tiburón Island* in which the back consonants are tautomorphic, the decision to write labialization on the **j** and not on

the **c** was based on our understanding of the development of labialization in the language.⁶⁹ The words end in a cluster that is all rounded, as shown in (117) above. A priori, one might just as easily analyze these as phonemically **jöcö** or **jcö**. However, there is actually direct evidence for the analysis **jöc**. When infix **-a-** is used (§26.10), the labialization appears *only* on the velar fricative in these words.

- (118) a. **¡;Haquéj~~ö~~-a-c a -ya?!** *Firewood, my eye!*
 b. **¡;Tahéj~~ö~~-a-c a -ya?!** *Tiburón Island, my eye!*⁷⁰

The sequence **xöc** in the word **czooxöc** in (117c) is justified in part by comparison with **c-zooxolcam** (SN-eight), but it also can be made explicit by the infix **-a-**.

- (119) **¡;Czoox~~ö~~-a-c a -ya?!** *Four, my eye!*

28.5.7 Velarization of **p**

A **p** completely assimilates to a tautosyllabic preceding labialized velar stop in the dialect of many speakers. The result is a long labialized velar stop (transcribed phonetically here as [k^w:]) with prolonged velar occlusion). This is observed when a dependent irrealis form is prefixed with the third person indirect/oblique object prefix: **cö-po-pánzx** [k^w:o'panʃX] (3IO-IR.DP-run), **cö-p-atépan** [k^w:a'tikpan] (3IO-IR.DP-work), **cöpopácta** [k^w:o'pakta] (3IO-IR.DP-be.in.appearance), **toc cöpoohca** [tok 'k^w:ooʔka] (there 3IO-IR.DP-be.located), **cöpoozcam** [k^w:ooʃkam] (3IO-IR.DP-arrive.PL), **toc cöpiij** [tok 'k^w:iix] (there 3IO-IR.DP-sit).⁷¹

28.5.8 Diphthongization (anticipatory labialization)

A non-round vowel diphthongizes when it precedes a labialized consonant (**cö**, **jö**, or **xö**); a short back round vowel is inserted as the second part of the diphthong, and is perceptibly higher following **i** than following **e** or **o**. The resulting diphthongs are [i^h], [ii^h], [a^h], [aa^h], [ε^h], and [εε^h]. This diphthongization is more noticeable in the speech of some speakers than in that of others, but it has been a clear part of the phonetic structure of Seri at least since the middle of the twentieth century.

- (120) a. **quicö** SN-Tr-kill [k^w:i^hik^w]
 b. **iixöni** 3P-placenta [i^hi^hχ^wni]

⁶⁹ The labialization and anticipatory labialization (§28.5.8) are phonetically such that the Mosers had written these words earlier as **haquéojc** and **Tahéojc**, respectively.

⁷⁰ Labialization should be written after the cluster in the interjections **cajcöi** *seven* and **pxajcöi** *eight* (§26.8) for etymological reasons (the second syllable of these interjections derives from **cöquiih** 3IO-SN-be.FL), although they were written **caj~~ö~~qui** and **pxaj~~ö~~qui**, respectively, in the 2005 dictionary. It has not been investigated whether there is synchronic evidence for treating these archaic words differently.

⁷¹ Earlier materials written by the Mosers had words such as **cöpatépan** written as **cöcatépan**.

c.	itácö	3:3-RL-kill	[i ¹ taö ^w k]
d.	caacöl	SN-big-PL	[¹ kaaö ^w kʰ]
e.	Tahéjöc	<i>Tiburón Island</i>	[ta ¹ ʔeö ^w x ^w k ^w]
f.	haquéjöc	<i>firewood</i>	[ʔa ¹ keö ^w x ^w k ^w]
g.	heexöp	<i>musical rasp</i>	[¹ ʔeεö ^w χ ^w p]
h.	sleecöl	heron-PL	[¹ sʰeεö ^w kʰ]
		(compare singular sleeco [¹ sʰeεk ^o ʰ])	
i.	xeecöl	wolf-PL	[¹ χeεö ^w kʰ]
		(compare singular xeeco)	
j.	iixöt	sea current	[¹ iiö ^w χ ^t]
		(compare plural iixota)	
k.	heexöl	torch-PL	[¹ ʔeεö ^w χ ^w ʰ]
		(compare singular heexo)	

The diphthongization is an important phonetic clue for perceiving labialized consonants that precede fricatives, since the labialization is acoustically overshadowed by the fricative.⁷²

(121) a.	cacösxaj	SN-tall/long	[¹ kaö ^w sχax]
b.	icös	3P-thorn	[¹ iük ^w s]
c.	iixözaj	3P-placenta-PL	[¹ iiüχ ^w ʃax]
d.	Xeecös	(a place near Punta Santa Rosa)	[¹ χeεö ^w s]

This diphthongization does not happen if the vowel and labialized consonant are in different words: **haa cöiifp** [ʔaa¹k^wiiϕp] (there 3IO-3P-AON-arrive).

28.5.9 Glottalization

A consonant followed by glottal stop is realized phonetically as a glottalized version of the consonant. This process is observed most clearly in the phonetic realization of sequences of **cö** plus **h**: **cö-h-aas** (3IO-IM-cause.drink) [¹k^waas]. The labialization leads into the articulation of the vowel and follows the glottalization.⁷³

28.5.10 Nasal-Glottal metathesis

A nasal consonant and an immediately following glottal stop metathesize, or at least are pronounced in a way that makes them sound as if they had metathesized. Therefore a word such as **i-m-héel iha** (SN-N-red DCL) *it is not red* is pronounced [¹iʔ¹mεεʰ iʔa]. The rule is completely productive word-internally. Other examples include:

⁷² Some materials written by the Mosers had words such as **icös** (3P-spine) written as **ioes**. Later investigation clarified that these are indeed words with labialized consonants and no full vowel **o**. Romero (1994) also includes similar transcriptions, and other naïve writers sometimes write the epenthetic **o**. The committee for the 2005 dictionary confirmed, however, that the **o** does not have the status of a full vowel.

⁷³ It is possible that these facts should be subsumed under the spread of labialization discussed in §28.5.6 above.

(122)	a.	imhéeł	(Px-red)	[iʔ' m e e ɬ]
	b.	mimhác	(2sS-Px-blind)	[m i ʔ' m a k]
	c.	imháa	(SN-N-EQ)	[i ʔ' m a a]
	d.	imháait	(Px-bloody)	[i ʔ' m a a i t]
	e.	imhá moc	(Px-be.night)	[i ʔ' m a m o k]

This metathesis seems to apply with some variability across word boundaries where the **mh** is followed by a stressed vowel: **ihsáapxölim haa hi** (1sS.Tr-Ir.ID-cause.be.broken AUX DCL) *I will break it* is sometimes heard as [iʔ'saapχ^wiʔ'maaʔi]. Metathesis is not heard in examples such as **ctam hipcop** (man Px-VT); this may be due to the lack of stress on **hipcop**.

28.5.11 e-Raising

The speech of a younger generation of Seri speakers can be partially characterized by a rule which applies less frequently in the speech of older speakers: raise an unstressed **e** to **i** in the syllable after a stressed syllable. Some common examples include **cmiique** (conservative) > **cmiiqui** (innovative) *person/Seri*; **quiipe** (conservative) > **quiipi** (innovative) SN-good; **miime** (conservative) > **miimi** (innovative) Px-end; **mojet** (conservative) > **mojit** (innovative). This raising seems to be dispreferred when the stressed vowel is **e**. Compare various forms of the verb $\sqrt{\text{eme}}$ *depleted*.

(123)	Conservative	Innovative	
	queme	(same)	SN-depleted
	teme	(same)	RL-depleted
	yoome	yoomi	DT-depleted
	xoome	xoomi	EM-depleted
	siime	siimi	IR.ID-depleted
	miime	miimi	Px-depleted

Most of the documents in Seri have used the more conservative representations of these words, but the 2005 dictionary recognized both forms and some documents have included words written in a way that reflects the innovative pronunciation.

28.5.12 Sibilant assimilation

When the **s** of the independent irrealis prefix is followed by a root beginning with **z** [ʃ], the **s** tends to assimilate (in place of articulation) to the **z**, at least for some speakers and in some faster rates of speech.⁷⁴

⁷⁴ Earlier materials written by the Mosers had words such as **szatx** written as **zzatx**. It was later decided to write these words with the **s-** (since **si-** is the underlying form of the Independent Irrealis prefix) as, in fact, some speakers actually pronounce it.

- (124) a. **s-zatx ca-ha** IR.ID-have.glochids AUX.SN-DCL *it will have glochids*
 [ʃ:atχ kaʔa]
- b. **s-ziim ca-ha** IR.ID-appreciate AUX.SN-DCL *s/he will enjoy it*
 [ʃ:iim kaʔa]
- c. **in-s-záxö a-ha** 2SS-IR.ID-discuss AUX-DCL *you should talk about it*
 [inʃ:aχ^w aʔa]