A grammar of Komnzo

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For Nakre and Tayafe

Contents

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2 Phonology

In this chapter, I describe the phonological system of Komnzo. The chapter begins with the segmental phonology of consonants in §2.1 and vowels in §2.2. Each section contains a list of minimal pairs which establish the phonemic status of the segments. As Komnzo phonology is characterised by widespread epenthesis, a discussion of the non-phonemic status of schwa is given in §2.2.2. Regular phonological processes are described in §2.3. I address phonotactics in §2.4. This section consists of a description of the syllable structure (§2.4.1), consonant clusters (§2.4.2), syllabification (§2.4.3), minimal word constraints (§2.4.4) and stress (§2.4.5). Morphophonology is addressed in §2.5. The chapter closes with a discussion of loanwords in §2.6 and an account of the development of the orthography in §2.7.

2.1 Consonant phonemes

Table 2.1 gives an overview of the consonant phonemes in Komnzo. Graphemes are given in <angle brackets>.

Table 2.1: Consonant phoneme inventory

	bilabial	dental	alveolar	palato-alveolar	palatal	velar	labio-velar
stop/affricate			t̪~t <t>	ts <z>		k <k>	k^w <kw>
prenasalized stop/affricate	^{m}b <b>		^{n}d <d>	^{n}dz <nz>		^{ŋ}g <g>	^{ŋ}g^w <gw>
fricative	ɸ <f>	ð <th>	s <s>				
nasal	m <m>		n <n>			ŋ <ŋ>	
lateral			r~ɾ <r>				
semivowel					j <y>		w <w>

2.1.1 Obstruents

Obstruents in Komnzo are divided into stops, affricates, and fricatives. The stops and affricates belong to a chain of pairings of oral and prenasalised phonemes at four places of articulation: alveolar, palato-alvealor, velar, and labio-velar. This symmetry is broken at the bilabial place of articulation. The bilabial oral stop is lacking from the phoneme inventory. Since it occurs only in English loanwords and a handful of ideophones, I consider it a loan phoneme. As I will show below, the bilabial fricative /ɸ/ can be regarded as the structural counterpart of the prenasalised bilabial stop.

In the following section, I describe the oral and prenasalised stops, labialised velar stops, affricates and fricatives.

2.1.1.1 Stops

There are two voiceless stops (/t/ and /k/) and three prenasalised stops (/ᵐb/, /ⁿd/, and /ᵑg/). The voiceless stops are phonetically slightly aspirated, but aspiration is not phonemic in Komnzo. The two labialised velar stops and the two affricates follow the same pairing of voiceless and prenasalised manner of articulation, but these will be discussed in separate sections below.

All stops occur in word-initial, medial, and final positions. In only a small number of lexical items, the bilabial /ᵐb/ occurs word-finally. This phoneme is also deviant as it lacks a voiceless counterpart. There is evidence from loanword phonology (§2.6) and from surrounding Tonda languages that the bilabial fricative /ɸ/ occupies the same structural slot in the opposition of voiceless and prenasalised stops.

There is almost no allophonic variation within the stop series, but the prenasalised stops undergo final devoicing (§2.3.2). The /t/ phoneme varies between dental and alveolar points of articulation. In onset clusters where C_2 is /r/, /t/ is always alveolar. Elsewhere, it varies more or less freely.

/t/ →	[t] / $_{\sigma}$[_ɾ	*traksi*	[trakə̆si]	‘fall’
	[t]~[t̪] / elsewhere	*tüf*	[tɤɸ] ~ [t̪ɤɸ]	‘soft ground’
		rata	[ɾata] ~ [ɾat̪a]	‘ladder’
		kwot	[kʷɔ̆t] ~ [kʷɔ̆t̪]	‘properly’
/k/ →	[k]	*kata*	[kata]	‘bamboo knife’
		fokam	[ɸokam]	‘grave’
		safak	[saβak]	‘saratoga’

/ᵐb/ →	[ᵐp] / _]$_\sigma$	*gb*	[ᵑgəᵐp]	‘black palm’
	[ᵐb] / elsewhere	*bone*	[ᵐbone]	2SG.POSS
		gaba	[ᵑgaᵐba]	‘storage yam’
/ⁿd/ →	[ⁿt] / _]$_\sigma$	*kd*	[kəⁿt]	‘star’
	[ⁿd] / elsewhere	*deya*	[ⁿdeja]	‘tree wallaby’
		rdiknsi	[ɾəⁿdikəⁿsi]	‘tie around’
/ᵑg/ →	[ᵑk] / _]$_\sigma$	*nag*	[naᵑk]	‘grass skirt’
	[ᵑg] / elsewhere	*gau*	[ᵑgâu]	‘night heron’
		sagara	[saᵑgara]	proper name

2.1.1.2 Labialised velar stops

The labialised velar stops /kʷ/ and /ᵑgʷ/ show no allophonic variation due to their restricted distribution. Both occur only in syllable onsets, not in the coda. Consequently, we do not find these phonemes in word-final position.[1]

/kʷ/ →	[kʷ] / $_\sigma$[_	*kwan*	[kʷan]	‘shout, voice’
		ysokwr	[jəsokʷəɾ]	‘rainy season’
/ᵑgʷ/ →	[ᵑgʷ] / $_\sigma$[_	*gwä*	[ᵑgʷæ]	‘mosquito’
		fagwa	[ɸaᵑgʷa]	‘width’

I argue in favour of an analysis whereby the labialised velar stops are complex phonemes rather than a sequence of two phonemes (velar stop + high back vowel /u/ or velar stop + /w/). This argument is based on two lines of evidence: onset consonant clusters and reduplication patterns.

Onset clusters are restricted to two consonants (C_1C_2V). If clusters occur, C_2 may only be /r/ or /w/ (§2.4.3). For this argument, only the /r/ is relevant. We do find words with an initial labialised velar stop (voiceless or prenasalised) in such a cluster, for example: *kwras* ‘Brolga’ or *gwra* ‘MacCulloch’s Rainbowfish’. If /kʷ/ and /ᵑgʷ/ were to be analysed as clusters of two phonemes, a separate syllable template (CCCV) would be required.

The second piece of evidence comes from reduplication. We find full and partial reduplication (§4.2). In full reduplication the entire word is repeated, as in *yam* ‘footprint,

[1] In the neighbouring language Nama which belongs to the Nambu subgroup, labialised velar stops may occur in coda position, as in [aukʷ] ‘morning’.

custom, event' → *yamyam* 'little feast'. Partial reduplication is more frequent, where only the first consonant of the initial syllable is copied, as in *zbär* 'night' → *zzbär* [tsət-sə^{m}bæɾ] 'dusk, twilight'. The domain of partial reduplication does not extend further than the first consonant. Thus, we get *frasi* 'hunger' → *ffrasi* [ɸəɸrasi] 'appetite, hunger', but not **frfrasi* [ɸrəɸrasi]. If the labialised velar stops comprised two separate phonemes, we would expect that in partial reduplication only the velar stop is copied without the semivowel. On the contrary, we find that the whole phoneme is copied, as in *kwayan* 'light' → *kwkwayan* [k^{w}ək^{w}ajan] ~ [kuk^{w}ajan] 'flickering light, dimmed light', but not **kkwayan* [kək^{w}ajan].

2.1.1.3 Affricates

The two consonant phonemes with the highest frequency are the affricates /ts/ and /^{n}dz/, which seem to give Komnzo its characteristic fricative sound. Both affricates occur initially, medially and finally, and show some allophonic variation. They are palatalised before front vowels, as in *zi* [tʃɪ:] 'pain' and *nzikaka* [^{n}dʒɪkaka] 'Whistling Kite'. In all other environments they are alveolar. There is some degree of variation between speakers. Some speakers always palatalise, while most speakers follow the allophonic rules as formalised below. The prenasalised affricate is affected by final devoicing (§2.3.2).

/ts/ →	[tʃ] / _V$_{+\text{FRONT}}$	*zena*	[tʃena]	'now'
		ezi	[ʔetʃi]	'morning'
	[ts] / elsewhere	*zane*	[tsane]	DEM:PROX
		mazo	[matso]	'ocean'
		müz	[mʏts]	'phallocrypt'

/^{n}dz/ →	[^{n}dʒ] / _V$_{+\text{FRONT}}$	*nzigfu*	[^{n}dʒi^{ŋ}gɸu]	'rain stone'
		snzä	[sə^{n}dʒæ]	'crayfish'
	[^{n}ts] / _]$_{\sigma}$	*mnz*	[mə^{n}ts]	'house'
	[^{n}dz] / elsewhere	*nzun*	[^{n}dzun]	1SG.DAT
		rnzam	[rə^{n}dzam]	'how many'

2.1.1.4 Fricatives

There are three fricatives at the bilabial, dental and alveolar places of articulation. The dental fricative is voiced, while the other two are voiceless. The bilabial fricative has a voiced allophone, which occurs intervocalically. Although voiced in most environments, the dental fricative is affected by final devoicing (§2.3.2). The alveolar fricative is always voiceless in all environments. These rules are formalised below.

/ɸ/ →	[β] / V_V	*zafazafa*	[tsaβatsaβa]	‘vine stick’
	[ɸ] / elsewhere	*fid*	[ɸɪⁿt]	‘bushrope’
		zarfa	[tsarɸa]	‘ear’
		karaf	[kaɾaɸ]	‘paddle’
/ð/ →	[θ] / _]$_{\sigma}$	*süsübäth*	[sʏsʏᵐbæθ]	‘darkness’
	[ð] / elsewhere	*thamin*	[ðamin]	‘tongue’
		ŋatha	[ŋaða]	‘dog’
/s/ →	[s]	*saisai*	[sa͡ɪsa͡ɪ]	‘drizzle (n)’
		fisor	[ɸisoɾ]	‘turtle’
		fis	[ɸis]	‘husband’

2.1.2 Nasals

There are nasal stops at three places of articulation: bilabial, alveolar, and velar. These three show differences in their frequency and distribution. The velar nasal /ŋ/ occurs only word-initially, while bilabial /m/ and alveolar /n/ are found initially, medially and finally. There is no allophonic variation with the nasals.

/m/ →	[m]	*mifum*	[miβum]	‘nose ornament’
		zimu	[tʃimu]	‘snot’
		thm	[ðə̆m]	‘nose’
/n/ →	[n]	*no*	[no:]	‘water, rain’
		mane	[mane]	‘who’ (ABS)
		minmin	[minmin]	‘Emerald Dove’
/ŋ/ →	[ŋ] / $_{\text{WORD}}$[_	*ŋazi*	[ŋatʃi]	‘coconut’

2.1.3 Trill, tap - /r/

The alveolar trill /r/ is often realised as a single tap [ɾ] depending on speech rate and speaker. In onset consonant clusters where /r/ is occupying C_2 position, it is always tapped. Elsewhere, the trill and the tap are in free variation. Word-finally /r/ may also become voiceless. This variation between [ɾ] and [r̥] seems to be conditioned by age. Older speakers use the voiceless variant more frequently.

/ɾ/ →	[ɾ]~[ɻ] / _]$_{\text{WORD}}$	*msar*	[mə̥saɾ] ~ [mə̥saɻ̊]	‘green ant’
	[ɾ] / $_{\sigma}$[C_	*frasi*	[ɸɾasi]	‘hunger’
	[ɾ]~[ɾ] / elsewhere	*rnz*	[rə̥^{n}ts] ~ [ɾə̥^{n}ts]	‘ember’
		ŋare	[ŋare] ~ [ŋaɾe]	‘woman’

2.1.4 Approximants

The two approximants /w/ and /j/ occur in initial, medial and final position. In final position, they may be realised as a short offglide or become part of a diphthong. For both approximants, but especially for the palatal /j/, we find only a handful of lexical items where they do occur word-finally.

/w/ →	[_u͡]~[_^{w}] / V_]$_{\sigma}$	*daw*	[^{n}da͡u] ~ [^{n}da^{w}]	‘garden’
	[w] / elsewhere	*wm*	[wə̆m]	‘stone, gravel’
		fewa	[ɸewa]	‘odour, stench’

/j/ →	[_ɪ͡]~[_^{j}] / V_]$_{\sigma}$	*fäy*	[ɸæ͡ɪ] ~ [ɸæ^{j}]	‘payment’
	[j] / elsewhere	*yusi*	[jusi]	‘grass’
		nzöyar	[^{n}dʒœjaɾ]	‘bowerbird’

There are a number of reasons why the two approximants are analysed as consonants rather than high vowels which alternate according to their environment. Evidence comes from case allomorphy and phonotactics. In stem final position /w/ and /j/ select the same allomorph of the locative case as other consonants. This can be seen in the word *daw* [^{n}da͡u] ~ [^{n}da^{w}] ‘garden’ which selects *=en* as its locative case marker, thus forming *dawen* [^{n}dawen] ‘in the garden’. Words which end in a vowel select the *=n* allomorph of the locative case. Furthermore, the rules of syllabification (§2.4.3) treat these two phonemes like consonants. Thus, we find examples like *ys* [jɨ̆s] ‘thorn’ and *ky* [kə̆^{j}] ‘yam species’, where epenthesis occurs after and before /j/, respectively.

2.1.5 Minimal pairs for Komnzo consonants

The following minimal pairs and near minimal pairs in Table 2.2 illustrate the phonemic contrast between consonants in initial, medial and final position.

Table 2.2: Minimal pairs of consonant phonemes

segments	examples			
/kʷ/ vs. /k/	*kwafar* place name	[kʷaβaɾ]	[kaβaɾ]	*kafar* ‘big’
	sakwr ‘he hit him’	[sakʷəɾ]	[sakəɾ]	*sakr* ‘mustard vine’
	kwath ‘crow’	[kʷaθ]	[kaθ]	*kath* ‘ankle’
/ᵑgʷ/ vs. /ᵑg/	*gwra* ‘rainbowfish’	[ᵑgʷra:]	[ᵑgra:]	*gra* ‘tree sp’
/kʷ/ vs. /w/	*kwath* ‘crow’	[kʷaθ]	[waθ]	*wath* ‘dance (n)’
	kwf ‘stone club’	[kʷəɸ]	[wəɸ]	*wf* ‘shirt, blouse’
/ᵑgʷ/ vs. /w/	*gwth* ‘nest’	[ᵑgwəθ]	[wəθ]	*wth* ‘faeces’
/k/ vs. /w/	*kath* ‘ankle’	[kaθ]	[waθ]	*wath* ‘dance (n)’
/ɸ/ vs. /w/	*far* ‘housepost’	[ɸaɾ]	[waɾ]	*war* ‘top layer’
	kafar ‘big’	[kaβaɾ]	[kawaɾ]	*kawar* pers. name
	tfitfi ‘whirlwind’	[təβitəβi]	[təwitəwi]	*twitwi* ‘bird sp’
/s/ vs. /t/	*süfr* ‘tree sp’	[sʏɸər]	[tʏɸər]	*tüfr* ‘many’
	kisr ‘lizard sp’	[kisər]	[kitər]	*kitr* ‘pandanus’
	wsws ‘grass sp’	[wəswəs]	[wətwət]	*wtwt* ‘itchy’
/s/ vs. /ð/	*sirsir* ‘glider’	[sirsir]	[ðirðir]	*thirthir* ‘pig tusk’
	bis ‘bird sp’	[ᵐbi:s]	[ᵐbi:θ]	*bith* ‘honey bee’
	mus ‘leech’	[mu:s]	[mu:θ]	*muth* ‘(sago) grub’
/s/ vs. /ts/	*si* ‘eye’	[si:]	[tʃi:]	*zi* ‘pain’
	srminz ‘rainbow’	[sərmints]	[tsərmints]	*zrminz* ‘roots’
	ksi kar ‘savannah’	[kəsi kar]	[kətʃi]	*kzi* ‘barktray’
	fs ‘fish sp’	[ɸəs]	[ɸəts]	*fz* ‘forest’
/ð/ vs. /t/	*thruthru* ‘bamboo sp’	[ðruðru]	[trutru]	*trutru* ‘stream’
	füth ‘rotten tuber’	[ɸʏθ]	[ɸʏt]	*füt* ‘pouch’
/ð/ vs. /r/	*thusi* ‘fold (v.t.)’	[ðusi]	[ɾusi]	*rusi* ‘shoot (v.t.)’
	bthan ‘magic’	[ᵐbəðan]	[ᵐbəɾan]	*bran* ‘line’
	yathizsi ‘die’	[jaðitsəsi]	[jaɾitsəsi]	*yarizsi* ‘hear, listen’
	zithzith ‘slickness’	[tʃiθtʃiθ]	[tʃiɾtʃiɾ]	*zirzir* ‘wetness’
	wath ‘dance (n)’	[waθ]	[waɾ]	*war* ‘top layer’
/r/ vs. /t/	*rar* ‘for what’	[ɾaɾ]	[taɾ]	*tar* ‘friend’
	ŋarr ‘bandicoot’	[ŋaɾəɾ]	[ŋatəɾ]	*ŋatr* ‘rope’
	ft ‘dead tree’	[ɸət]	[ɸəɾ]	*fr* ‘palm stem’
/r/ vs. /ts/	*rinaksi* ‘pour’	[ɾinakəsi]	[tʃinakəsi]	*zinaksi* ‘put down’
	wari ‘plant sp’	[waɾi]	[watʃi]	*wazi* ‘side’
	mür ‘grass sp’	[mʏɾ]	[mʏts]	*müz* ‘phallocrypt’
/ᵐb/ vs. /m/	*bith* ‘honey bee’	[ᵐbiθ]	[miθ]	*mith* ‘face’
	bä 2.ABS	[ᵐbæ:]	[mæ:]	*mä* ‘where’
	züb ‘depth’	[tʃʏᵐb]	[tʃʏm]	*züm* ‘centipede’
/ⁿd/ vs. /n/	*dasi* ‘bulge’	[ⁿdasi]	[nasi]	*nasi* ‘long yam’
	badabada ‘ancestor’	[ᵐbaⁿdaᵐbaⁿda]	[ᵐbana]	*bana* ‘pitiful’

segments	examples			
	kd ‘star’	[kə̆nt]	[kə̆n]	*kn* ‘yam sp’
/ᵑg/ vs. /ŋ/	*gathagatha* ‘bad’	[ᵑgaðaᵑgaða]	[ŋaðaŋaða]	*ŋathaŋatha* ‘quoll’
	game ‘tongs’	[ᵑgame]	[ŋame]	*ŋame* ‘mother’
/m/ vs. /n/	*mä* ‘where’	[mæː]	[næː]	*nä* ‘some’
	mawan ‘tree sp’	[mawan]	[nawan]	*nawan* ‘waterhole’
/ⁿdz/ vs. /ⁿd/	*nzga* ‘vagina’	[ⁿdzə̆ᵑga]	[ⁿdə̆ᵑga]	*dga* ‘gills’
	ŋanz ‘planting row’	[ŋaⁿts]	[ŋaⁿt]	*ŋad* ‘rope’
	ymnz place name	[jə̆mə̆ⁿts]	[jə̆mə̆ⁿt]	*ymd* ‘bird’
/ⁿdz/ vs. /n/	*nzä* 1SG.ABS	[ⁿdʒæː]	[næː]	*nä* ‘some’
	gonz ‘place name’	[ᵑgɔnts]	[ᵑgɔn]	*gon* ‘hips’
/ᵐb/ vs. /ɸ/	*bä* 2.ABS	[ᵐbæː]	[ɸæː]	*fä* DIST
	bira ‘axe’	[ᵐbiɾa]	[ɸiɾa]	*fira* ‘betelnut’
	bis ‘bird sp’	[ᵐbiːs]	[ɸiːs]	*fis* ‘husband’
/ⁿd/ vs. /t/	*düfr* ‘headdress’	[ⁿdʏɸə̆ɾ]	[tʏɸə̆ɾ]	*tüfr* ‘plenty’
	drari ‘container’	[ⁿdɾaɾi]	[tɾaɾi]	*trari* ‘strong man’
	kadakada ‘yamcake’	[kaⁿdakaⁿda]	[katakata]	*katakata* ‘grass sp’
	sd ‘yam sp’	[sə̆ⁿt]	[sə̆t]	*st* ‘plant sp’
/ⁿdz/ vs. /ts/	*nzä* 1SG.ABS	[ⁿdʒæː]	[tʃæː]	*zä* PROX
	nzanza ‘insect sp’	[ⁿdzaⁿdza]	[tsatsa]	*zaza* ‘carrying’
	nzr ‘leftover’	[ⁿdzə̆ɾ]	[tsə̆ɾ]	*zr* ‘tooth’
	rbänzsi ‘prohibit’	[ɾə̆ᵐbæⁿdzə̆si]	[ɾə̆ᵐbætsə̆si]	*rbäzsi* ‘untie’
/ᵑg/ vs. /k/	*gd* ‘mud’	[ᵑgə̆ⁿt]	[kə̆ⁿt]	*kd* ‘star’
	gafar ‘fish sp’	[ᵑgaβaɾ]	[kaβaɾ]	*kafar* ‘big’
	gursi ‘break off’	[ᵑguɾsi]	[kuɾsi]	*kursi* ‘split’
	tag ‘bee sp’	[taᵑk]	[tak]	*tak* ‘pandanus’
	srag pers. name	[sɾaᵑk]	[sɾak]	*srak* ‘boy’
/w/ vs. /j/	*warsi* ‘chew’	[waɾsi]	[jaɾsi]	*yarsi* ‘tired’
	wf ‘shirt’	[wə̆ɸ]	[jə̆ɸ]	*yf* ‘name’
	fäw ‘arrow shaft’	[ɸæ̂ù]	[ɸæ̂ì]	*fäy* ‘payment’

2.2 Vowel phonemes

The articulatory space for vowels can be divided into four levels of height (high, mid, mid-low, and low) and three levels of backness (front, central, and back). The absence versus presence of lip rounding is phonemic for front vowels. Figure 2.1 provides an overview of the vowel space, while Table 2.3 lists the segmental features and shows the graphemes with < >. Note that I include the epenthetic schwa in parentheses. This is because there is some evidence that schwa constitutes a marginal phoneme in word-final environment. That being said, in all other contexts it is created by epenthesis (§2.2.2).

Nasalisation is not phonemic, and nasal vowels are a marginal phenomenon. Only two words are attested, in which we find nasal vowels. These are the conjunctions *a* [ã:] ‘and’

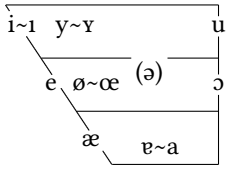

Figure 2.1: Komnzo vowel space

Table 2.3: Vowel phoneme inventory

	front		central	back
	unrounded	rounded		
high	i	y		u
	<i>	<ü>	<u>	
mid	e	œ	(ə)	o
	<e>	<é>	<o>	
mid-low	æ			
	<ä>			
low			a	
			<a>	

and *o* [ɔ̃ː] ‘or’. Both have a second, much rarer variant with an initial velar nasal: *ŋa* [ŋaː] and *ŋo* [ŋɔː], respectively. This suggests that nasalisation of the vowel was caused by the loss of the preceding consonant.

There are no diphthongs in Komnzo. All diphthongs which occur on a phonetic level end in high offglides. These are analysed as allophones of the two approximants /w/ and /j/ in coda position (§2.1.4). In the practical orthography these are sometimes written as diphthongs, e.g. <ai> or <au>. Two words which exemplify this are *saisai* ‘drizzle’ and *kaukau* ‘Mouth Almighty’.

2.2.1 Phonetic description and allophonic distribution of vowels

Table 2.4 shows that there this free variation for some most of the vowel phonemes.

There is no phonemic contrast between short and long vowels. However, vowels tend to be phonetically longer in monosyllabic roots, especially if the monosyllable is light/open, as in *nzä* [ⁿdʒæː] ‘I’ or *se* [seː] ‘bark torch’. This process of vowel lengthening is caused by minimal word conditions in combination with syllable weight. I address this topic in §2.4.1 and §2.4.4.

Table 2.4: Vowel allophones

phoneme	description	→ allophones
/i/	high front unrounded vowel	→ [i]~[ɪ]
/y/	high front rounded vowel	→ [y]~[ʏ]
/u/	high back rounded vowel	→ [u]~[ʊ]
/e/	mid front unrounded vowel	→ [e]~[ɛ]
/œ/	mid front rounded vowel	→ [ø]~[œ]
/o/	mid back rounded vowel	→ [o]~[ɔ]
/a/	low central unrounded vowel	→ [a]~[ɐ]
/æ/	low front unrounded vowel	→ [æ]

2.2.1.1 Allophones of /o/

There is further allophonic variation for /o/, which is related to vowel lengthening. In heavy, closed syllables, /o/ is realised as a short, centralised, rounded vowel [ŏ], whereas in light, open syllables it is realised as a mid back rounded vowel of normal length [ɔ]. Two words which show this allophonic variation are the language name *Komnzo* [kŏmⁿdzɔ] and *komon* [kɔmŏn] 'maybe'. We find the two allophones [ŏ] and [ɔ] conditioned by syllable weight in the syllables of the two words respectively. There are two rules which may override this allophonic distribution. The first is a minimal word constraint which produces [ɔ] even in closed syllables if the root is monosyllabic, as in *gon* [ᵑgɔn] 'hips'. The second rule overrides syllable weight and the impact of the minimal word constraint. After the labio-velar approximant (/w/) and the two labialised-velar stops (/kʷ/ and /ᵑgʷ/) /o/ is always realised as short, centralised, rounded vowel [ŏ], as in *woz* [wŏts] 'bottle'. Leaving the influences of the minimal word constraint to §2.4.4, we can formalise these observations in the following rule:

$$/o/ \rightarrow \begin{cases} [ŏ] \,/\, \_C]_\sigma & \textit{emoth} \quad [ʔe{:}mŏθ] \quad \text{'girl'} \\ & \textit{ymorymor} \quad [jŏmŏɾjŏmŏɾ] \quad \text{'desire'} \\ & \textit{thomgsi} \quad [ðŏmᵑgŏsi] \quad \text{'help'} \\ [ɔ] \,/\, \_]_\sigma & \textit{nibo} \quad [niᵐbɔ] \quad \text{'six'} \\ & \textit{dokre} \quad [ⁿdɔkɾe] \quad \text{'frog'} \\ [ŏ] \,/\, C_{\text{+labio-velar}}\_ & \textit{kwosi} \quad [kʷŏsi] \quad \text{'dead'} \\ & \textit{woku} \quad [wŏku] \quad \text{'skin'} \end{cases}$$

There are some irregularities with these rules when it comes to other bilabial consonants, like /ɸ/. There is *fofot* [ɸɔɸŏt] 'single child' which follows the rule, but there are a handful of words which do not follow the rule, like: *fothr* [ɸŏðər] 'eucalyptus species' or *fokufoku* [ɸŏkuɸŏku] 'small patch of vegetation'.

2.2.1.2 Analytic problems with /œ/

The vowel /œ/ poses a problem because there are no minimal pairs between /œ/ and some of its immediate neighbours (/e/, /o/, /æ/) in the corpus. There are minimal pairs distinguishing /œ/ from /i/, /y/, /u/, /a/. The lack of minimal pairs with the former group along with the effects of vowel harmony (§2.5.1) invites an analysis in which /œ/ is a variant of other phonemes, for example a rounded allophone of /e/ or a fronted allophone of /o/. However, no conditioning environment (e.g. vowel harmony or quality of adjacent consonants) can be established. The main problem lies in the fact, that occurences of /œ/ are much rarer than all other vowels.[2] For the current description, /œ/ is set up as an independent vowel phoneme. Further research will have to settle this question.

2.2.2 The non-phonemic status of schwa

The most frequent vowel in Komnzo is a short schwa [ə]. I will argue here that this is not a phoneme, but that it is inserted through epenthesis in order to create a syllable nucleus where there is none underlyingly. That being said, I will make an argument at the end of this section that schwa can be analysed as a marginal or emerging phoneme in word-final context. The rules of epenthesis will be laid out in §2.4.3.

Epenthetic vowels are known from many Papuan languages. The best documented case is certainly Kalam (Biggs 1963; Pawley 1966; Blevins & Pawley 2010), but epenthetic vowels have been described for other languages of the Yam family, e.g. Nen (Evans & Miller 2016). In Komnzo, the main arguments for schwa as an epenthetic vowel rather than a phoneme come from syllabicity alternations, the predictability of schwa, and its restricted distribution.

Syllabicity alternations which cause changes in the place of schwa insertion are influenced by affixation. Two examples are the verb *ttüsi* [təʈʏsi] 'print, paint' and the noun *fzenz* [ɸəʈʃeⁿts] 'wife'. In both stems schwa occurs in the first syllable. When we inflect the verb with an undergoer prefix, the first consonant is syllabified as a coda and schwa needs to be inserted in a different position: *yttünzr* [jəttʏⁿdzəɾ] 's/he paints him'. When we add a possessive prefix to *fzenz*, e.g. *bufzenz* [ᵐbuɸtʃeⁿts] 'your wife', again the first consonant of the stem becomes a coda. In this case schwa disappears entirely because the possessive prefix ends in a vowel. It follows that schwa cannot be present in the underlying representation of these two lexemes.

Schwa has a very restricted distribution compared to specified vowels. It does not occur word-initially and it is very limited word-finally. I will show below that word-final schwas should be analysed as a marginal phoneme. Elsewhere, schwa is entirely predictable and therefore not represented in the orthography of Komnzo. The rules of schwa insertion are discussed as part of syllabification and possible consonant clusters (§2.4.3). There are many roots which lack specified vowels altogether.[3] A few examples

[2] Among the 1700 entries in the dictionary, only 30 contain /œ/. Compare this number with 730 for /a/. This is a conservative count, in which reduplications and their respective bases, as well as simple forms and compounds have been counted once.

[3] Among the 1700 entries in the dictionary, we find 105 without specified vowels. The number of entries in which the epenthetic vowel occurs together with specified vowels is much higher.

are: *mnz* [mə̆ⁿts] ‘house’, *zfth* [tsə̆ɸə̆θ] ‘base, reason’, and *ggrb* [ᵑgə̆ᵑgə̆ɾə̆ᵐp] ‘small, unripe coconut’. The quality of the epenthetic vowel shows only little variation. In almost all enviroments, it is realised as a mid central vowel of very short duration [ə̆]. However, there is one exception. When the epenthetic vowel is inserted preceding the two approximants /w/ and /j/, it is realised as a high back or high front vowel. respectively. Two examples are *thwak* [ðŭwak] ‘shoulder’ and *nyak* [nĭjak] ‘we go’.

There is one caveat to the analysis of schwa as epenthetic: It cannot be predicted in word-final context. Although word-final schwa is very rare in terms of types, it cannot be dismissed as the aberrant behaviour of a few lexical items. This is because it is not rare at all in terms of tokens. For example, word-final schwa shows up in the verb morphology (1SG *-é*), in the case marking (ERG.NSG *=é*) and in the adjectivaliser suffix *-thé*.[4] For the first singular suffix on verbs, I argue in §5.5.1.1 that this is the result of vowel reduction (a>ə) because neighbouring varieties have a corresponding *-a* suffix. Moreover, the first person suffix *-é* disappears if other suffixal material is added to the verb. This is also found with some of the lexical items. For example, when *kayé* ‘yesterday’ is marked with a temporal possessive case (*=thamane*), word-final schwa disappears, as in *kaythamane dagon* ‘yesterday’s food’. This does not happen with full vowels, as in *ezithamane dagon* ‘food from the morning’ from *ezi* ‘morning’. Thus, I analyse schwa in word-final contexts as a marginal phoneme, which emerged or is emerging from vowel reduction. In these word-final cases schwa is represented orthographically by <é>.

2.2.3 Minimal pairs for Komnzo vowels

The following minimal pairs and near minimal pairs illustrate the phonemic contrasts between vowels. Each vowel phoneme is set apart from its immediate neighbours in the vowel space. Each vowel phoneme is contrasted with the epenthetic vowel, i.e. the absence of a specified vowel (∅). Some combinations are redundant (e.g. /i/ vs. /e/ and /e/ vs. /i/) and not repeated in the table.

Table 2.5: Minimal pairs of vowel phonemes

phonemes	examples			
/i/ vs. /u/	*mith* ‘face’	[miθ]	[muθ]	*muth* ‘(sago) grub’
	grigri ‘maggots’	[ᵑgɾɪᵑgɾɪ]	[ᵑgɾu:]	*gru* ‘shooting star’
/i/ vs. /y/	*minzaksi* ‘paint (vt.)’	[miⁿdzakə̆si]	[mʏⁿdzakə̆si]	*münzaksi* ‘allow’
	di ‘back of head’	[ⁿdi:]	[ⁿdʏⁿdʏ]	*düdü* ‘in good shape’
/i/ vs. /e/	*si* ‘eye’	[si:]	[se:]	*se* ‘torch’
/i/ vs. /œ/	*di* ‘back of head’	[ⁿdi:]	[ⁿdœ:]	*dö* ‘monitor lizard’
/i/ vs. ∅	*biribiri* ‘plant sp’	[ᵐbiɾiᵐbiɾi]	[ᵐbə̆ɾiᵐbə̆ɾi]	*bribri* ‘weeding’
	with ‘banana’	[wiθ]	[wə̆θ]	*wth* ‘faeces’
/u/ vs. /y/	*futhfuth* ‘scrapes’	[ɸuθɸuθ]	[ɸʏθɸʏθ]	*füthfüth* ‘hatched bird’
	but ‘kava sticks’	[ᵐbut]	[ᵐbʏt]	*büt* ‘amputated limb’

[4] The latter could be historically related to the similative case marker (*=thatha*).

phonemes	examples			
	rusi ‘shoot (vt.)’	[ɾusi]	[ɾʏsi]	*rüsi* ‘rain (v.)’
/u/ vs. /o/	*muramura* ‘medicine’	[muɾamuɾa]	[mɔɾamɔɾa]	*moramora* ‘tree sp’
	muth ‘(sago) grub’	[muθ]	[mə̆θ]	*moth* ‘path’
	tru ‘palm sp’	[tɾuː]	[tɾɔː]	*tro* ‘python sp’
/u/ vs. ∅	*kursi* ‘split (vt.)’	[kuɾsi]	[kə̆ɾsi]	*krsi* ‘block (vt.)’
	fuk ‘in a group’	[ɸuk]	[ɸə̆k]	*fk* ‘buttocks’
/y/ vs. /e/	*fünz* ‘arm muscles’	[ɸʏⁿts]	[ɸeⁿts]	*fenz* ‘puss’
/y/ vs. /œ/	*nümä* ‘one week away’	[nʏmæ]	[nœmæ]	*nömä* ‘yamcake’
	düdü ‘in good shape’	[ⁿdʏⁿdʏ]	[ⁿdœⁿdœ]	*dödö* ‘plant sp’
/y/ vs. ∅	*sün* ‘dirt, dust’	[sʏn]	[sə̆n]	*sn* ‘yam sp’
	tüfr ‘plenty’	[tʏɸə̆ɾ]	[tə̆ɸə̆ɾtə̆ɸə̆ɾ]	*tfrtfr* ‘tree sp’
/e/ vs. /o/	*fethaksi* ‘dip in’	[ɸeðakə̆si]	[ɸɔðakə̆si]	*fothaksi* ‘take off (bag)’
	game ‘tongs’	[ᵑgame]	[ᵑgamɔ]	*gamo* ‘magic spell’
/e/ vs. /a/	*yem* ‘cassowary’	[jem]	[jam]	*yam* ‘event’
	fetr ‘dangerous’	[ɸetə̆ɾ]	[ɸatə̆ɾ]	*fatr* ‘shoulder’
	gwre ‘bird sp’	[ᵑgʷreː]	[ᵑgʷraː]	*gwra* ‘fish sp’
/e/ vs. /æ/	*fenz* ‘puss’	[ɸeⁿts]	[ɸæⁿts]	*fänz* pers. name
	nze 1SG.ERG	[ⁿdʒeː]	[ⁿdʒæː]	*nzä* 1SG.ABS
/e/ vs. ∅	*menz* ‘story man’	[meⁿts]	[mə̆ⁿts]	*mnz* ‘house’
	fethaksi ‘dip in’	[ɸeðakə̆si]	[ɸə̆ðakə̆si]	*fthaksi* ‘take from fire’
	ŋakwire ‘we run’	[ŋakʷiɾe]	[ŋakʷiɾə̆]	*ŋakwiré* ‘I run’
/æ/ vs. /a/	*näbi* ‘one’	[næᵐbi]	[naᵐbi]	*nabi* ‘bow, bamboo’
	fätr ‘left’	[ɸætə̆ɾ]	[ɸatə̆ɾ]	*fatr* ‘shoulder’
	mafä ‘with whom’	[maɸæ]	[maɸa]	*mafa* ‘who’
/æ/ vs. /o/	*bärbär* ‘half’	[ᵐbæɾᵐbæɾ]	[ᵐb̥ɾ]	*bor* ‘rat’
	nä ‘some’	[næː]	[nɔː]	*no* ‘water’
/æ/ vs. ∅	*fäk* ‘jaw’	[ɸæk]	[ɸə̆k]	*fk* ‘buttocks’
	märmär ‘slope’	[mæɾmæɾ]	[mə̆ɾmə̆ɾ]	*mrmr* ‘inside’
	bnä ‘with you’	[ᵐbə̆næ]	[ᵐbə̆nə̆]	*bné* 2NSG.ERG
/a/ vs. /œ/	*namä* ‘good’	[namæ]	[nœmæ]	*nömä* ‘yamcake’
/a/ vs. /o/	*zan* ‘fight’	[tsan]	[tsɔn]	*zon* ‘plant sp’
	karfa ‘from village’	[kaɾɸa]	[kaɾɸɔ]	*karfo* ‘to village’
	far ‘house post’	[ɸaɾ]	[ɸ̊ɾ]	*for* ‘riverbank’
/a/ vs. ∅	*ngath* ‘friend’	[nə̆ᵑgaθ]	[nə̆ᵑgə̆θ]	*ngth* ‘young sibling’
	tharthar ‘next to’	[ðaɾðaɾ]	[ðə̆ɾðə̆ɾ]	*thrthr* ‘intestines’
	sakwra ‘I hit him’ (PST)	[sakʷə̆ɾa]	[sakʷə̆ɾə̆]	*sakwré* ‘I hit him’ (RPST)
/o/ vs. ∅	*borsi* ‘laugh’	[ᵐb̥ɾsi]	[ᵐbə̆ɾsi]	*brsi* ‘scoop water’
	fothaksi ‘take off’	[ɸɔðakə̆si]	[ɸə̆ðakə̆si]	*fthaksi* ‘take from fire’
	rgosi ‘poke through’	[ɾə̆ᵑgɔsi]	[ɾə̆ᵑgə̆si]	*rgsi* ‘wear clothes’
	monz ‘trench, ditch’	[mɔⁿts]	[mə̆ⁿts]	*mnz* ‘house’
	nzigom ‘chain smoker’	[ⁿdʒiᵑg̥m]	[ⁿdʒiᵑgə̆m]	*nzigm* ‘stickyness’

2.3 Regular phonological processes

2.3.1 Gemination

Gemination occurs with a subset of the consonantal phonemes (/t/, /k/, /ɸ/, /ð/, /m/, /n/, and /r/). We find geminates in medial heterosyllabic consonant clusters, where the rules of syllabification specify that no epenthetic vowel needs to be inserted (§2.4.3). Phonetically, geminates are characterised by a prolonged realisation of fricatives, nasals, and alveolar trill. Geminate stops are realised with a delayed release of the airflow. Although gemination is caused by affixation in most cases, I discuss the topic here rather than as a morphophonemic rule because we also find monomorphemic roots with geminates. The list in Table 2.6 provides some attested examples from the corpus. In some of the examples, we find minimal pairs based on gemination, as can be seen in the rightmost column.

Table 2.6: Geminate consonants

segment	geminate	non-geminate
/t/	*yttünzr* [jət:yⁿdzər] ‘s/he paints him’	n/a
/k/	*yakkarä* [jak:aræ] ‘quickly’ yak=karä walk=PROP	*yakarä* [jakaræ] ‘in tears’ ya=karä cry=PROP
/m/	*yamme* [jam:e] ‘through this event’ yam=me event=INS	*yame* [jame] ‘mat’
	fammäre [ɸam:ære] ‘without thinking’ fam=märe thoughts=PRIV	n/a
/n/	*yannor* [jan:ər] ‘he shouts hither’ ya-n-nor 3SG.MASC-VENT-shout	*yanor* [janər] ‘he shouts’ ya-nor 3SG.MASC-shout
/ɸ/	*fiyaffa* [ɸijaɸ:a] ‘from the hunt’ fiyaf=fa hunt=ABL	n/a
/ð/	*yththagr* [jəθ:aᵑgər] ‘it is sticking (on sth.)’	n/a
/r/	*firra* [ɸir:a] ‘place name’ *kwrro* [kʷr:o] ‘Blue-winged Kookaburra’	*fira* [ɸira] ‘betelnut’ n/a

Gemination is not attested for complex consonants, including the prenasalised stops (/ᵐb/, /ⁿd/, and /ᵑg/) as well as the two affricates (/ts/ and /ⁿdz/) and /s/. Gemination is not relevant for the labialised velar stops (/kʷ/ and /ᵑgʷ/) and the velar nasal (/ŋ/) because these do not occur in coda position.

2.3.2 Final-devoicing

The process of final devoicing affects only those consonants which occur in final position, excluding non-final /kʷ/, /ᵑgʷ/, and /ŋ/. Moreover, it affects only those consonants which are voiced in all other environments, excluding voiceless /t/, /k/, /ɸ/, /s/, and /ts/. The nasal stops and the approximants are also not affected by final devoicing. This leaves us with the following phonemes, which are targetted by final devoicing: /ᵐb/, /ⁿd/, /ᵑg/, /ⁿdz/, /ð/, and /r/.

The domain of final devoicing is the syllable. In onset position, these phonemes are always voiced, for example /ⁿdz/ in *nzafar* [ⁿdzaɸaɾ] 'sky' and *knzun* [kə̆ⁿdzun] 'parallel'. In coda position, they are voiceless, as /ⁿd/ in *bodkr* [ᵐbə̆ⁿtkə̆r] 'stinking' and /ð/ in *wathknsi* [waθkə̆nsi] 'pack up'. In word-final position, they are also voiceless, for example /ᵐb/ in *gb* [ᵑgə̆ᵐp] 'pandanus species' and /ⁿdz/ in *mnz* [mə̆ⁿts] 'house'.

We find further evidence in suffixation and encliticisation that the process is targetting the right edge of the syllable rather than the (phonological) word. *Mnz* [mə̆ⁿts] 'house' may take the vowel-initial locative enclitic *=en*, in which case /ⁿdz/ occurs in onset position and is voiced: *mnzen* [mə̆ⁿdzen] 'in the house'. This contrasts with the consonant-initial formatives *=fa* (ABL) and *=wä* (EMPH). In both cases, /ⁿdz/ is syllabified in coda position and is voiceless: *mnzfa* [mə̆ⁿtsɸa] 'from the house' and *mnzwä* [mə̆ⁿtswæ] 'really the house'. We can formalise final devoicing in the following rule:

$$/ᵐb/, /ⁿd/, /ᵑg/, /ⁿdz/, /ð/ \longrightarrow \{\ [\text{-voiced}]\ /\ \_]_{\sigma}$$

The only excepion is /r/, where final devoicing occurs only word-finally. However, final devoicing of /r/ is optional and more commonly found with older speakers.

2.3.3 Glottal stop insertion

There are only few lexemes with an initial vowel. Among the 1700 entries in the dictionary, there are 54 vowel-initial lexemes: /a/ (21), /e/ (17), /o/ (8), /æ/ (4), /u/ (3), /i/ (1). Three of these are loanwords. In addition, there is a vowel-initial undergoer prefix in one of the five prefix series.[5] Thus, vowel-initial lexemes are a marginal phenomenon. Moreover, there are no vowel-initial syllables word-internally. A possible explanation for the occurence of vowel-initial words in Komnzo, as compared to other Tonda languages in the west, might be contact with the Nambu languages to the east, where vowel-initial words seem to be more frequent.

[5] In the alpha prefixes, 2|3NSG is *e-*.

For this marginal pattern we find a rule of glottal stop insertion, as in *ebar* [ʔeᵐbaɾ] 'head' or *ettünzr* [ʔettʏⁿdzə̆ɾ] 's/he paints them'. The glottal stop is predictable and not represented in the orthography. Its insertion is restricted to word-initial environments, because the rules of syllabification maximise onsets in almost all cases (§2.4.3). There is only one exception. Word-medial glottal stop insertion occurs with some of the vowel-initial enclitics like the associative *=ä*, or the possive *=ane*. When the possessive is attached to a word which ends in a vowel, a glottal stop is inserted at the morpheme boundary. An example is *kabe* 'man' → *kabeane* [kaᵐbeʔane] 'of the man'. However, there is a variant, whereby an approximant is inserted [kaᵐbejane].

2.4 The syllable and phonotactics

The phonotactics are best described in terms of the syllable. My description of the syllable is influenced by Blevins (1995). I begin by outlining different syllable templates and the constraints which help to define them. In §2.4.1, I provide evidence for the internal structure of the syllable. Consonant clusters are shown in §2.4.2. I offer a step-by-step analysis of syllabification and epenthesis in §2.4.3. The section closes with a discussion of the minimal word (§2.4.4) and stress (§2.4.5).

2.4.1 Syllable structure

The template for the maximal syllable in Komnzo is $[\text{CCVC}]_{\sigma}$. The minimal syllable is $[\text{CV}]_{\sigma}$ and in a more restricted environment $[\text{V}]_{\sigma}$. Thus, a syllable maximally consists of an onset, which may or may not be complex, a nucleus and a simple coda. Three constraints help to define the possible representations of the syllable in Komnzo:

1. Onsets are obligatory in word-medial and final position. There is a constraint against vowels in onset position: $^{*}{}_{\sigma}[\text{V}$. The only position where we find vowels in onsets is word-initially, but this is a marginal pattern. If the process of syllabification produces vowel-initial words, a glottal stop fills the onset position (§2.3.3).

2. Syllables may have complex onsets with a maximal number of two adjacent consonants: ${}_{\sigma}[\text{CC}$. There are constraints on the phonemes involved in CC onset clusters (§2.4.2.1).

3. Syllables may only have a simple coda: $\text{C}]_{\sigma}$. Post-vocalic consonsant clusters are always heterosyllabic $\text{VC}]_{\sigma}\text{C}]_{\sigma}$, never tautosyllabic $^{*}\text{VCC}]_{\sigma}$. There are a number of constraints on the possibilities of heterosyllabic consonant clusters (§2.4.2.2).

From the three constraints given above, we can now derive the following possible syllable types: CV, CVC, CCV, CCVC. Word-initially, we also find V and VC. Figure 2.2 presents the syllable as a binary branching construct.

A branching syllable is chosen over a flat structure because there is evidence for the rhyme as a separate node of which nucleus and coda are subnodes. Such evidence includes the different shapes and constraints for onset and coda. Onsets may be complex.

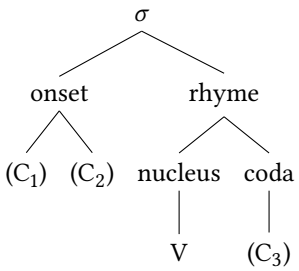

Figure 2.2: The internal structure of the syllable

Codas can only be simple. Onsets are obligatory in almost all cases, while codas are optional. Onsets and rhyme combine freely, thus capturing the generalisation that onsets rarely influence the nucleus. All consonant phonemes may appear in a simple onset (C_1). There are some restrictions, but these are internal to the onset (§2.4.2.1). The coda position (C_3) on the other hand is more limited as to which consonant phonemes may appear. The labialised velar stops /k^{w}/ and /^{ŋ}g^{w}/ and the velar nasal /ŋ/ never appear in a coda.

The strongest evidence for an independent rhyme comes from syllable weight, which impacts on vowel length of the nucleus. When there is a specified vowel in the nucleus, the vowel will be realised long in open/light syllables, and it will be realised as short in closed/heavy syllables. This affects different vowels to varying degrees. We find a good example of this in the distribution of the two allophones of /o/, which are [ɔ] and [ŏ]. In the language name *Komnzo* [kŏm^{n}dzɔ] the first vowel is very short (although stressed), and the second vowel is of normal length. It follows that syllable weight influences the length (and sometimes quality) of the vowel in the nucleus. The shortening or lengthening of nuclei may be overridden by minimal word constraints (§2.4.4), but these rules hold for all polysyllabic roots. Consequently, for an adequate description, we require the rhyme as an independent subnode of the syllable.

2.4.2 Consonant clusters

We find tautosyllabic and heterosyllabic consonant clusters in Komnzo. These have very different restrictions on their combinations.

2.4.2.1 Tautosyllabic clusters

Tautosyllabic clusters are restricted to the onset of a syllable. No more than two consonants may occur and they only involve a subset of the phonemes. In a $_{\sigma}$[C_1C_2 template, C_2 may only be /r/ or /w/.

In a cluster with /r/ we find all consonant phonemes except for the three nasal stops ($^{*}{}_{\sigma}$[mr, $^{*}{}_{\sigma}$[nr, $^{*}{}_{\sigma}$[ŋr), the approximants ($^{*}{}_{\sigma}$[wr and $^{*}{}_{\sigma}$[yr), and /r/ itself ($^{*}{}_{\sigma}$[rr). This points to an explanation in terms of a sonority hierarchy in which nasal and approximants are more sonorous than the trill/tap. Some examples of Cr clusters are *brüzi* [^{m}brytʃi] ‘catfish

species', *frar* [ɸðɾar] 'small fishtrap', *krüfr* [kɾyɸðɾ] 'cold', *gru* [ᵑgɾuː] 'shooting star', *kwras* [kʷras] 'Brolga', *srima kabe* [sɾima kaᵐbe] 'scout, spy', *thruthru* [ðruðru] 'bamboo species', *trisi* [tɾisi] 'scratch (v)', and *zra* [tsɾaː] 'swamp'.

In a cluster with /w/, the restrictions on C_1 are more severe and roots, in which it is attested, are rare. We only find the following phonemes in C_1 position: /k/, /ᵑg/, /ts/, /ⁿdz/, /ð/, and /s/. The first two phonemes in the list pose a problem because one has to find a distinction between a Cw cluster and the labialised velar stops /kʷ/ and /ᵑgʷ/. This is impossible to do for roots, but we find some evidence in a morphophonemic rule in §2.5.3, where the vowel /u/ is realised as [w] and becomes part of a Cw cluster. Some examples of lexemes with Cw clusters are *swäyé* [swæjð] 'anchoring place', *zwäf* [tswæɸ] 'luke-warm', and *bzwär* [ᵐbðzwæɾ] 'place name'.

2.4.2.2 Heterosyllabic clusters

Heterosyllabic clusters are much harder to pin down because there are syllabicity alternations, where a coda consonant may become an onset by inserting epenthetic schwa, which breaks up the cluster (§2.4.3). For the following description, I label the two consonants involved C_a (the coda of the first syllable) and C_b (the onset of the following syllable).

We find that where C_a and C_b are identical the consonants are never broken up but always realised as geminates. The attested geminate patterns are described as a phonological rule in §2.3.1. These patterns exclude a number of logically possible geminates: labialised velar stops (/kʷ/ and /ᵑgʷ/), velar nasal (/ŋ/), and all the prenasalised phonemes (/ᵐb/, /ⁿd/, /ᵑg/, and /ⁿdz/).[6] Other heterosyllabic clusters are rather unrestricted. Table 2.7 shows the possible cluster types.[7] Table 2.8 lists examples of these types.

Table 2.7: Heterosyllabic consonant clusters

	/r/	oral stop	pren. stop	nasal	affr.	fric.	approx.	labio-velar
/r/	✓	✓	n/a	✓	✓	✓	✓	✓
oral stop	n/a	✓	n/a	✓	n/a	✓	✓	✓
pren. stop	n/a	✓	n/a	✓	n/a	✓	✓	n/a
nasal	✓	✓	✓	✓	✓	✓	✓	✓
affr.	n/a	✓	n/a	✓	n/a	✓	✓	n/a
fric.	n/a	✓	n/a	✓	✓	✓	✓	✓
approx.	n/a	✓	n/a	✓	✓	✓	n/a	n/a
lab-velar	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a

[6] The labialised velar stop and the velar nasal may not occur as C_a because these never occur in coda position.
[7] The column and the row labelled "pren. stop" includes prenasalised stops and the prenasalised affricate.

Table 2.8: Examples of attested heterosyllabic consonant clusters

C_a	C_b	example	phonetic	gloss
/r/	[+nasal]	*ker.ma*	[keɾ͡ma]	‘from tail’
		tr.nä	[tə̆ɾ͡næ]	‘palm frond’
/r/	[+oral]	*for.tu*	[ɸ̆ɛ̆ɾ͡tu]	‘scar’
		ker.ko	[keɾ͡ko]	‘headdress’
/r/	[+affr.]	*zr.zü*	[tsə̆ɾ͡tʃʏ]	‘knee’
/r/	[+fric.]	*war.fo*	[waɾ͡ɸɔ]	‘above’
		kr.si	[kə̆ɾ͡si]	‘block (v)’
		tr.tha	[tə̆ɾ͡ðə]	‘life’
/r/	[+approx.]	*kar.wä.si*	[kaɾ͡wæsi]	‘lie (v)’
		yar.yom.g.si	[jaɾ͡jə̆mᵑgə̆si]	‘scream (v)’
/r/	[+lab-vel]	*ŋa.far.kw.re*	[ŋaɸaɾ͡kʷə̆ɾe]	‘we leave’
[+oral]	[+oral]	*wät.ku*	[wæ t͡ku]	‘pelican’
[+oral]	[+nasal]	*dek.ni.ni*	[ⁿdek͡nini]	‘praying mantis’
		rt.maksi	[ɾə̆t͡makə̆si]	‘cut’
[+oral]	[+fric.]	*f.rk.thé*	[ɸə̆ɾə̆k͡ðə̆]	‘red’
		et.fth	[ʔet͡ɸə̆θ]	‘sleep (n)’
[+oral]	[+approx.]	*thik.ya.si*	[ðik͡jasi]	‘build fence’
		zok.wa.si	[tsə̆k͡wasi]	‘speech’
		mit.wa.si	[mit͡wasi]	‘swing (v)’
[+oral]	[+lab-vel]	*tat.kwo.nam*	[tat͡kʷɔnam]	‘tree species’
[+pren.]	[+oral]	*gb.ka.rä*	[ᵑgə̆ᵐp͡kaɾæ]	‘with pandanus’
[+pren.]	[+nasal]	*ŋad.me*	[ŋaⁿtme]	‘with rope’
[+pren.]	[+fric.]	*bad.fo*	[ᵐbaⁿtɸɔ]	‘to the ground’
[+pren.]	[+approx.]	*mnz.wä*	[mə̆ⁿt͡swæ]	‘house (EMPH)’
[+nasal]	/r/	*nin.rr*	[nin͡ɾə̆ɾ]	‘with us’
[+nasal]	[+oral]	*am.kf*	[ʔam͡kə̆ɸ]	‘breath’
		thun.t.nä.gwr	[ðun͡tə̆næᵑgwə̆ɾ]	‘he lost them’
[+nasal]	[+nasal]	*kan.motha*	[kan͡mɔða]	‘river snake’
[+nasal]	[+pren.]	*yar.yom.g.si*	[jaɾjə̆m͡ᵑgə̆si]	‘scream (v)’
		kum.da	[kum͡ⁿda]	‘basket’
		kän.brim	[kæn͡ᵐbɾim]	‘come here!’
[+nasal]	[+affr.]	*san.zin*	[san͡tʃin]	‘put him down!’
[+nasal]	[+fric.]	*zan.fr*	[tsan͡ɸə̆ɾ]	‘far’
		kam.tha.tha	[kam͡ðaða]	‘like a bone’
[+nasal]	[+approx.]	*nze.nm.wä*	[ⁿdʒenə̆m͡wæ]	‘for us (EMPH)’
[+nasal]	[+lab-vel]	*ŋan.kwir*	[ŋan͡kʷir]	‘run hither’
[+affr.]	[+oral]	*ez.kn.wr*	[ʔet͡skə̆nwə̆ɾ]	‘he moves them’
[+affr.]	[+nasal]	*käz.nob*	[kæt͡snə̆ᵐp]	‘drink (it)!’
[+affr.]	[+fric.]	*fz.fo*	[ɸə̆t͡sɸɔ]	‘to forest’

C_a	C_b	example	phonetic	gloss
[+affr.]	[+approx.]	*fz.wä*	[ɸ̆tswæ]	‘forest (EMPH)’
[+fric.]	[+oral]	*mnz.wä*	[mə̆^{n}tswæ]	‘house (EMPH)’
[+fric.]	[+affr.]	*buf.zenz*	[^{m}buɸ̲tʃe^{n}ts]	‘your wife’
[+fric.]	[+fric.]	*ef.thar*	[ʔeɸ̲ðaɾ]	‘dry season’
		füs.füs	[ɸʏsɸ̲ʏs]	‘wind’
[+fric.]	[+approx.]	*nzf.wi.yak*	[^{n}tsə̆ɸ̲wIjak]	‘we walked’
		naf.wä	[naɸ̲wæ]	‘they (EMPH)’
		fith.wo.g.si	[ɸiθ̲wɔ^{ŋ}gə̆si]	‘take out’
[+fric.]	[+lab-vel]	*math.kwi*	[maθ̲k^{w}i]	‘personal name’
		y.ra.kth.kwa	[jə̆rakə̆θ̲k^{w}a]	‘he put on top’
[+approx.]	[+oral]	*faw.ka.rä*	[ɸa^{w}k̲aɾæ]	‘with payment’
[+approx.]	[+nasal]	*faw.ma*	[ɸa^{w}m̲a]	‘from payment’
[+approx.]	[+affr.]	*bäw.zö*	[^{m}bæ^{w}t̲ʃœ]	‘paperbark’
[+approx.]	[+fric.]	*wy.thk*	[wə̆^{j}ð̲ə̆k]	‘comes to end’

We can make a number of observations from Table 2.8. The prenasalised phonemes do occur in C_a as well as C_b. In the latter case, C_a may only be another nasal, as in *kum.da* [kum^{n}da] ‘basket’, *kum.g.si* [kum^{ŋ}gə̆si] ‘smell (v)’, *dm.gu* [^{n}də̆m^{ŋ}gu] ‘waterhole’, *tin.gwä* [tin^{ŋ}g^{w}æ] ‘tree species’. If C_a is a phoneme other than a nasal, the cluster will be broken up: *ga.r.da* [^{ŋ}gaɾə̆^{n}da] ‘canoe’, *ä.th.gam* [ʔæðə̆^{ŋ}gam] ‘Parinari nonda’, *th.f.gar.w.r.mth* [ðə̆ɸə̆^{ŋ}gaɾwə̆ɾə̆mə̆θ] ‘they were breaking them’. There are no attested cases of a prenasalised phoneme in C_b with a homorganic nasal in C_a, i.e. /m/ + /^{m}b/, /n/ + /^{n}dz/, /n/ + /^{n}d/.

There are only few clusters which involve /r/ in the C_b position. This is caused by maximizing onsets during syllabification, which creates complex onsets clusters of the type Cr. As a consequence, the only heterosyllabic clusters with /r/ in C_b position are the ones which are illegal as onset clusters (e.g. $^{*}{}_{\sigma}$[mr, $^{*}{}_{\sigma}$[nr, $^{*}{}_{\sigma}$[rr). In other words, because $^{*}{}_{\sigma}$[nr is illegal as an onset, we do find it as a heterosyllabic cluster (*nin.rr* [ninɾə̆ɾ] ‘with us’). Likewise, because ${}_{\sigma}$[fr is a legal onset cluster, we never find it as a heterosyllabic cluster.

We do find heterosyllabic clusters which involve /w/ in C_b position and a velar (prensalised) stop in C_a position. Evidence that these clusters are indeed heterosyllabic as opposed to an instantiation of the labialised velar stop /k^{w}/ and /^{ŋ}g^{w}/ comes from two sources. First, we find examples like *zok.wa.si* [tsə̆kwasi] ‘speech’ where the short, centralised allophone of /o/ shows that the first syllable is a closed syllable (§2.2.1 and §2.4.1). Since the labialised velar stops cannot occur in coda position, we have to assume a syllable boundary between /k/ and /w/. Secondly, verb stems ending in /k/ and /^{ŋ}g/ select the *-wr* allomorph of the non-dual suffix (§5.5.3.3). In inflected verbs like *ŋa.th.wek.wr* [ŋaðə̆wekwə̆r] the verb stem *thwek-* and the non-dual suffix *-wr* are separate morphemes and should be analysed as separated syllables. Consequently, heterosyllabic clusters /kw/ and /^{ŋ}gw/ as well as the complex phonemes /k^{w}/ and /^{ŋ}g^{w}/ are required for an adequate description of the phonological system.

2.4.3 Syllabification and epenthesis

Syllable structure is generally understood not to be defined at the underlying representation (Blevins 1995: 221). Thus, we do not find minimal pairs based on syllabicity. As was explained in §2.2.2, schwa is not a phoneme but an epenthetic vowel inserted in order to break up consonant clusters. There is some degree of free variation in syllabicity and schwa insertion. An example is the word *mrn* 'family, clan' with the locative suffix *-en*. The resulting word *mrnen* 'in the family' may be realised either [mə̆rnen] or [mə̆rə̆nen]. There is no phonemic contrast and speakers find it difficult to perceive the difference in syllabicity.

The process of syllabification will be outlined here in the form of three ordered rules, which predict epenthesis and syllable structure:

1. Associate each specified vowel with a syllable nucleus.
2. Establish and maximise onsets in accordance with syllable templates (See constraint number 2 in §2.4.1 on onset clusters). A phonological rule will insert a glottal stop if there is no consonantal onset in word-initial position (§2.3.3).
3. Break-up unsyllabified consonants with epenthetic vowels:
    a) Exception: suffixes which allow no other syllabification than inserting the epenthetic vowel in final position. This includes the adjectivaliser *-thé*, non-singular ergative case marker *-yé* and the first singular actor verb suffix *-é*.
    b) Elsewhere: proceed from right to left breaking up consonant clusters.
    c) After each schwa insertion, establish codas in accordance with possible heterosyllabic consonant clusters. Otherwise, maximise onsets. Exception: word-initial segments are always recognised as onsets.
    d) The epenthetic vowel is [ŭ] and [ĭ] if followed by heterosyllabic /w/ and /j/, respectively. In all other instances it is [ə̆].

The process of syllabification attempts to map the minimal syllable CV onto the underlying representation. The rules give preference to onsets rather than codas. Consequently, we do not find vowel-initial syllables word-medially or word-finally.

I have modelled the process of syllabification as being divided into two steps. Syllables which contain full vowels are recognised first. In a second step epenthetic vowels are inserted to break up unsyllabified consonant clusters. This algorithm proceeds from right to left and inserts epenthetic schwas between unsyllabified consonants to create syllable nuclei. The insertion ensures that onsets are maximised. After each onset, the processs checks against the list of possible heterosyllabic consonant clusters (§2.4.2.2) whether another insertion occurs right away or only after a coda has been recognised. In the latter case, it "jumps" one consonant and breaks up the next pair of unsyllabified consonants. An exception is the word-initial position, where the segment is automatically recognised as an onset. The rules ensure that no word-initial schwa insertion occurs. The direction (right to left) explains why we never find schwa in word-final position. There are only

a handful of lexemes in which schwa is attested word-finally, for example *kayé* [kajə̆] 'yesteray|tomorrow'.

The direction is important in order to explain forms like *wonrsoknwr* [wə̆nə̆rsɔkə̆nwə̆ɾ][8] 's/he is bothering me' which is syllabified as *wo.nr.so.kn.wr*. The algorithm is applied from right to left. This is why the cluster *r.s* is first recognised as a possible heterosyllabic consonant cluster. Next, schwa is inserted to form the syllable [nə̆ɾ]. If the process was applied from left to right, one would expect that *n.r* is first recognised as a possible heterosyllabic cluster and schwa would be inserted to form the syllable [ɾə̆], which yields the incorrect form * *won.r.so.kn.wr*. There is some degree of optionality. For example, informants accepted schwa insertion in both places [wə̆nə̆ɾə̆sɔkə̆nwə̆ɾ] in elicitation.[9]

The algorithm specifies that schwa is inserted between consonants disregarding possible onset clusters (§2.4.1), whereas syllables with specified vowels maximise their onsets and produce onset clusters. Indeed, we do not find the possible onset clusters Cr or Cw with epenthetic vowels. There are only two exceptions for Cr. The first is the verb *frm.nz.si* 'fix, prepare', in which the onset cluster /fr/ is never broken up even if the verb is fully inflected, as in *ya.frm.nzr* 's/he prepares him'. The second exception occurs with all verbs in a specific inflection: Word-initially, the irrealis prefix *ra-* becomes part of an onset cluster with the undergoer prefix. This syllable usually contains a specified vowel, for example in *thra-* (2|3NSG) or *kwra-* (1SG). However, when the restricted verb stem is used, dual marking is encoded in the vowel of the syllable. The dual value is encoded by a zero-morpheme, as in *thr.th.bth* [ðɾə̆ðə̆ᵐbə̆θ] 'they (2) put them inside'.[10] In this inflection, the Cr cluster is never broken up.

In Figures 2.3-2.6, I present four examples spelling out the algorithm step by step.

2.4.4 Minimal word

We find some constraints on the minimal size of a word in Komnzo. I describe this here, because the minimal word helps to explain a number of phenomena. It has an impact on allophonic variation of /o/ (§2.2.1), vowel length in general, and epenthesis.

Compared to polysyllables, monosyllabic roots have a slightly longer vowel if the syllable is closed, and a very long vowel if they consist of an open syllable. This is relevant for roots with specified vowels only, not for roots with an epenthetic vowel. Three examples are: *fk* [ɸə̆k] 'buttocks', *fäk* [ɸæk] 'jaw', and *fä* [ɸæː] 'there (DIST)'. In moraic theory, we could rephrase the minimal word constraint as: "Words with specified vowels need to be at least two morae long".

We saw in §2.2.1 that the phoneme /o/ has two allophones: a short centralised rounded vowel [o̞], which occurs in closed syllables, and a rounded back vowel [ɔ], which occurs

[8] The allophone [ə̆] of the phoneme /o/ occurs here not because this might be a closed syllable, but because it follows a labio-velar approximant (§2.2.1)

[9] This might be an artefact introduced by elicitation, because in fluent speech this hardly ever occurs.

[10] This verb is glossed as: th-r-∅-thb-th 2|3NSG-IRR-ND-put.inside.RS-2|3NSG It it a rare inflection because three things have to come together: irrealis mood, restricted verb stem, dual number marker (which is a zero-morpheme in this case).

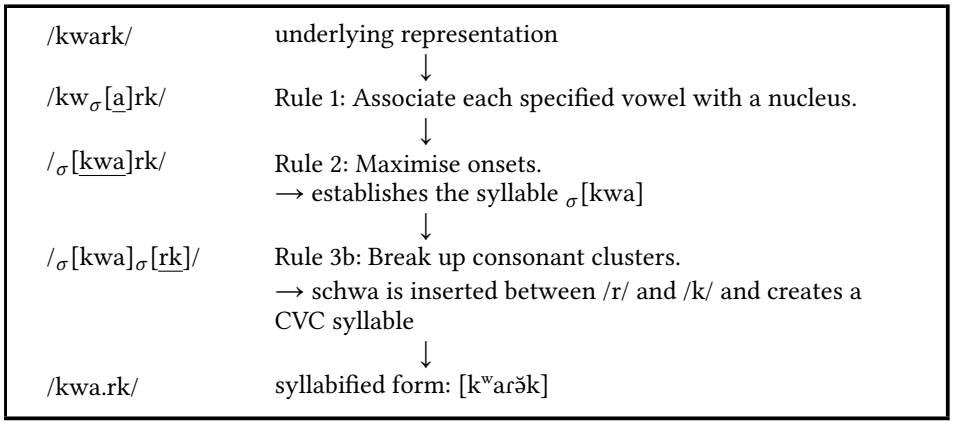

Figure 2.3: Syllabification of *kwark* 'deceased'

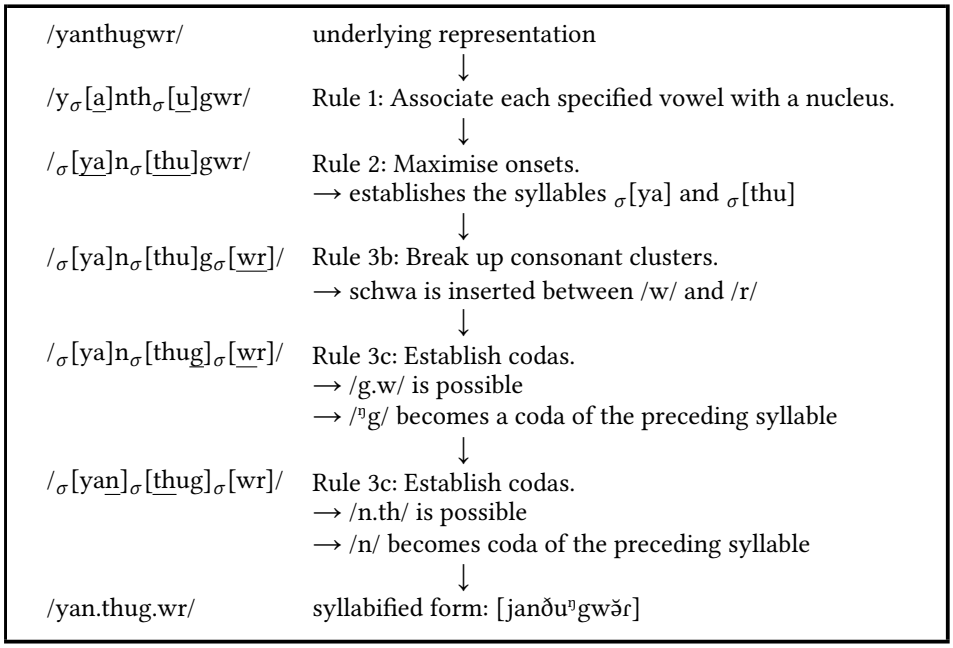

Figure 2.4: Syllabification of *yanthugwr* 's/he tricks him here'

/zwäfiyokw$_{\sigma}$[é]/	underlying representation: final schwa (ɪsg) is prespecified as nucleus
	↓
/zw$_{\sigma}$[ä]f$_{\sigma}$[i]y$_{\sigma}$[o]kw$_{\sigma}$[é]/	Rule 1: Associate each specified vowel with a nucleus.
	↓
/$_{\sigma}$[zwä]$_{\sigma}$[fi]$_{\sigma}$[yo]k$_{\sigma}$[wé]/	Rule 2: Maximise onsets. → establishes: $_{\sigma}$[zwä], $_{\sigma}$[fi], $_{\sigma}$[yo], $_{\sigma}$[wé]
	↓
/$_{\sigma}$[zwä]$_{\sigma}$[fi]$_{\sigma}$[yok]$_{\sigma}$[wé]/	Rule 3c: Establish codas. → /k.w/ is possible → /k/ becomes coda of the preceding syllable
	↓
/zwä.fi.yok.wé/	syllabified form: [tswæɸɪjɔkwə̆]

Figure 2.5: Syllabification of *zwäfiyokwé* 'I finished sth. for her'

/skrifzenz/	underlying representation
	↓
/skr$_{\sigma}$[i]fz$_{\sigma}$[e]nz/	Rule 1: Associate each specified vowel with a nucleus.
	↓
/s$_{\sigma}$[kri]f$_{\sigma}$[ze]nz/	Rule 2: Maximise onsets. → establishes: $_{\sigma}$[kri], $_{\sigma}$[ze]
	↓
/s$_{\sigma}$[kri]f$_{\sigma}$[zenz]/	Rule 3c: Establish codas. → no cluster with /^{n}dz/ → /^{n}dz/ becomes the coda of the preceding syllable
	↓
/s$_{\sigma}$[krif]$_{\sigma}$[zenz]/	Rule 3c: Establish codas. → /f.z/ is possible → /ɸ/ becomes the coda of the preceding syllable.
	↓
/$_{\sigma}$[s]$_{\sigma}$[krif]$_{\sigma}$[zenz]/	Rule 3b: Break up consonant clusters. → schwa is inserted between /s/ and /k/
	↓
/s.krif.zenz/	syllabified form: [sə̆kɾiɸtʃe^{n}ts]

Figure 2.6: Syllabification of *skrifzenz* 'Skri's wife'

in open syllables. I employed this phenomenon in §2.4.1 to justify the need of syllable weight as a concept. As for the phoneme /o/, in monosyllabic roots the difference between these syllable types is suspended and we do find [ɔ] in closed syllables, as in *gon* [ᵑgɔn] 'hips' or *rot* [ɾɔt] 'fence type'. Thus, the minimal word constraint overrides these allophonic rules. The constraint applies at the root level and not the level of the inflected word. For example, we find [ɔ] instead of [ɞ] in the verb *thorsi* [ðɔɾsi] 'put inside' because *thorsi* is multimorphemic (*thor-* 'put inside' + *-si* NMLZ). With polysyllabic roots, this is not the case and the two variants of /o/ follow the allophonic rule as was layed out in §2.2.1. An example is: *thomonsi* [ðɔmo̞nsi] 'pile up firewood', which consists the stem *thomon-* and the nominaliser *-si*.

The minimal word constraint impacts on syllabification because there are two variants for monosyllabic roots of the type CrV(C). These kinds of roots may be realised with a lengthened vowel in the nucleus. Alternatively, an epenthetic vowel may be inserted to break up the onset cluster thus creating a disyllabic form. In this case the specified vowel is of normal length and stress does not shift to the initial epenthetic vowel but remains with the specified vowel. Examples are: *srak* ['sɾak] ~ [sə̆'rak] 'boy' and *zra* ['tsɾaː] ~ [tsə̆'ɾa] 'swamp'.

2.4.5 Stress

Stress is a syllable-level phenomenon in Komnzo. A stressed syllable is marked by higher intensity and sometimes higher pitch. Vowel duration is not an acoustic correlate of stress. The epenthetic vowel [ə̆] is frequently stressed. That being said, specified vowels usually become more centralised and shortened in word-final position, which is always unstressed.

The prosodic domain of stress asignment is the phonological word. Primary stress (marked by preceding ˈ in the examples) is assigned to the initial syllable of a word. There are a number of exceptions to initial stress which I will describe below. Secondary stress (marked by preceding ˌ in the examples) carries little function in Komnzo and it is often hard to distinguish from unstressed syllables. Secondary stress only occurs in words with more than three syllables. Only few roots have more than three syllables and none have more than four. An example of a four-syllable root is *ngemäku* ['nə̆ᵑgeˌmæku] 'term of address between foster parent and real parent'. It follows, that all words with more than four syllables are polymorphemic. For example, inflected verbs often comprise more than four syllables, as in *kwamnzokwrmth* ['kʷamⁿdzə̆kˌwə̆rə̆mə̆θ] 'they were dancing.'

There are some exceptions to initial stress. For example, in partial reduplication (§4.2) the first syllable is unstressed, as in *rrokar* [rə̆'rokar] 'things'. In full reduplication, we find initial stress *rokarrokar* ['rokarˌrokar] as with the corresponding singleton form *rokar* ['rokar]. Another example comes from verbs with a proclitic. In the verb form *bŋatrakwr* [bə̆'ŋatrakʷə̆r] 's/he falls there', the proclitic *b=* (MED) attaches to the outer layer of the fully inflected verb. Cases like partial reduplication and verbal proclitics should be seen as exceptions to the rule of initial stress.

Stress is assigned from left to right. Words with two, three, and four syllables construct a trochee, dactyl, and ditrochee, respectively. In Table 2.9, I present templatic stress patterns for words between two and four syllables of length.

Table 2.9: Stress patterns of words with two to four syllables

syllable structure	example	phonetic	gloss
ˈσσ	*nzäthe*	[ˈⁿdʒæðe]	‘namesake’
	ebar	[ˈʔeᵐbaɾ]	‘head’
	nzrm	[ˈⁿdʒə̆rə̆m]	‘flower’
ˈσσσ	*kafara*	[ˈkaβaɾa]	‘river pandanus’
	bägwrm	[ˈbæᵑgʷə̆rə̆m]	‘butterfly’
	krbu	[ˈkə̆rə̆ᵐbu]	‘swelling’
ˈσσˌσσ	*nänzüthzsi*	[ˈnæⁿdʒʏθˌtsə̆si]	‘cover with soil/mud’
	kukufasi	[ˈkukuˌɸasi]	‘Grey Shrike-trush’
	kdewawa	[ˈkə̆ⁿdeˌwawa]	‘firefly’

Words with more than four syllables vary in their assignment of secondary stress. Most five-syllable words assign secondary stress to the third syllable, but some assign it to the fourth. Most six-syllable and seven-syllable words assign secondary stress to the fourth syllable, but there are also exceptions. The variation of stress assignment in words with more than four syllables might be explained in terms of open vs. closed syllables, or in terms of specified vs. epenthetic vowel nucleus. The nature of secondary stress in Komnzo remains to be investigated in more detail.

2.5 Morphophonemic Processes

The following section addresses morphophonemic processes which occur through affixation or cliticisation.

2.5.1 Vowel harmony after *=wä*

Effects of vowel harmony can be found with the emphatic clitic *=wä*. Encliticisation of *=wä* causes a change in the quality of the vowel of the preceding syllable regardless whether this syllable is part of the root or another suffix or enclitic. Depending on the vowel quality its impact can be described as fronting or rounding. Some examples are given in Table 2.10.

The vowel harmony does not affect vowels in a closed syllable: *kafarwä* ‘really big’ not **kafärwä* or *dö kerwä* ‘really the lizard tail’ not **dö körwä*. The process is blocked by two intervening consonants. Vowel harmony of this type is restricted to morphophonemics

Table 2.10: Vowel harmony caused by *=wä*

process	example	example with *=wä*
fronting of /o/	*karfo* 'to the village'	*kar=fö=wä* village=ABL=EMPH
	bobo 'towards there'	*bobö=wä* MED.ALL=EMPH
raising of /a/	*nima* 'this way'	*nimä=wä* like.this=EMPH
	bafanema 'because of that one'	*baf=ane=mä=wä* RECOG=POSS=CHAR=EMPH
rounding of /e/	*zafe* 'long ago'	*zafö=wä* long.ago=EMPH
	etfthme 'overnight'	*etfth=mö=wä* sleep=INS=EMPH

because we do find lexemes where the vowels in question occurs in adjacent syllables, as in *namä* 'good' or *dowä* 'Wompoo Fruit Dove'.

2.5.2 Dissimilation between prefix and verb stem

We find a number of verb stems in which the vowel quality of the prefix is raised from /æ/ to /e/. This occurs only in inflections which build on the restricted stem, i.e. it is the prefix vowel which encodes the dual versus non-dual contrast. The vowel /æ/ marks usually non-dual, whereas /a/ or zero mark dual number. See §5.3 for stem types and §5.5.3.4 for a description of pre-stem dual marking. Dissimilation targets the non-dual /æ/ and raises it to /e/. The trigger is the first vowel of the verb stem. Raising takes place when the first vowel is either /a/ or /æ/; for two verb stems it is /œ/. Some examples are: *mar-* 'see', *far-* 'set off', *faf-* 'hold' and *wär-* 'crack, happen', *rä-* 'be, do', *räs-* 'erect', *söbäth-* 'ascend' and *sörfäth-* 'descend'.[11] Thus, for verbs like *marasi* the non-dual of a recent past perfective is not realised as **zämar* but *zemar* 'he looked at himself'. Depending on syllabification and intervening prefixes, the trigger vowel in the verb stem and the prefix can be separated by another syllable. In most cases, this is a syllable created by epenthesis. Verb stems like *mräs-* 'stroll', *thfär-* 'jump' and *thkäf-* 'start' have an epenthetic vowel after the first consonant in their nominalisations, for example *m.rä.z.si* 'stroll'. In the

[11] The majority of Komnzo verbs have two verb stems, a restricted and an extended stem (§5.3). I list the restricted stems here, because the first vowel of the stem is relevant here. Elsewhere in this grammar, I use the extended stem or the nominalisation to refer to verbs. Therefore, I provide the respective extended verb stems here: *mar-* 'see', *fark-* 'set off', *fa-* 'hold', *wä-* 'crack, happen', *rä-* 'be', *räz-* 'erect', *mrä-* 'stroll', *thfä-* 'jump', *thkäfak-* 'start', *sog-* 'ascend', *rsör-* 'descend'.

inflected verb form, the initial consonant is syllabified as a coda: *zemräs* 'he strolled around'. If the venitive prefix *n-* is added to the inflection, the trigger vowel and prefix vowel are separated by another syllable, but the raising still takes place: *ze.nm.räs* 'he strolled towards here'. The raising pattern described here applies to inflections of various TAM categories (irrealis, imperatives, iteratives). They all share the use of the restricted stem and, consequently the encoding of duality takes place in the vowel of the prefix.

A special case is the copula *rä-*. Although highly irregular in many ways, it follows the dissilimation pattern just described. What is special about the copula is that the past suffix *-a* triggers the same kind of raising in the stem of the copula. Thus, we find *erera* 'they were' instead of * *erära*. Without the the past suffix, raising takes not place: *erä* 'they are'.

Raising of the prefix vowel is a morphophonemic process, not a general phonological process. For example, we do find lexemes where /æ/ and /a/ occur in adjacent syllables, as in (*atätö* 'tree species', *mätraksi* 'bring out'). The same is true for /æ/ and /æ/ in adjacent syllables, as in (*krätär* 'tree species', *thäfäm* 'ripples'). Moreover, the /æ/ vowel is not raised to /e/ in verb inflections that build on the extended stem. Consider the 2|3NSG *e-* and the 3SG.F *w-* of the alpha prefix series (§5.5.1.4). The valency changing prefix *a-* follows in the next slot and it merges with these two prefixes, i.e. they are realised as *ä-* and *wä-*, respectively. However, the /æ/ vowel in the prefixes is not raised to *e-* if the first vowel of the stem is /æ/. For example, the verb *fänzsi* 'show' is realised as *wäfänzr* 's/he shows her' and not * *wefänzr*. One reason for this might be that raising the vowel to /e/ would neutralise the valency changing prefix *a-*. Another explanation might be that the raising pattern developed together with pre-stem dual marking, which is found only with restricted stem (§5.5.3.4). Restricted stems in turn do not combine with the prefixes of the alpha series (§6.2.1), which explains why these are not affected.

2.5.3 Approximant ↔ high vowel

In two different parts of the verbal inflectional paradigm, a change from the approximants to high vowels ([w] ⟶ [u]/[ü], and [y] ⟶ [i]) and the reverse is found.

All of the verbal proclitics consist only of a consonant, e.g. the immediate past *n=* or the three deictic proclitics *z=* PROX, *b=* MED, and *f=* DIST. These are cliticised to otherwise fully inflected verbs. In most cases, this creates an extra syllable word-initially, as in *b.ŋa.trak.wr* 's/he falls there'. Some of the verb prefixes in the alpha series begin with an approximant, for example (*wo-* 1SG, *w-* 3SG.F, and *y-* 3SG.MASC). When the clitics are attached to these prefixes, the approximants are realised as high vowels: *u-* 1SG, *ü-* 3SG.F, and *i-* 3SG.MASC. A few examples are given in (1-3).

(1) *burera*
b=wo-rä-ra
MED=1SG.α-COP.ND-PST
'I was there.'

(2) *zimithgr*
z=y-mi-thgr
PROX=3SG.MASC.α-hang-STAT.ND
'It hangs here.'

(3) *zürugr*
z=w-rugr
PROX=3SG.F.α-sleep.ND
'She sleeps here.'

Another change which involves high vowels and approximants is attested only for [u] ↔ [w]. The formatives of the beta-2 prefix series (β2) end in a [u] vowel, for example *ku-* 1SG, *su-* 3SG.MASC, *thu-* 2|3NSG. The valency changing prefix *a-* occurs in the following slot, for example *ku-a-* 'for me', *su-a-* 'for him', *thu-a-* 'for you/them'. In its presence, the [u] vowel becomes part of an onset consonant cluster and is realised as a high back approximant [w]. An example is given in (4-5).

(4) *thufsinzr*
thu-fsi-nzr-∅
2|3NSG.β2-count.EXT-ND-2|3SG
'S/he counted them.'

(5) *thwafsinzr*
thu-a-fsi-nzr-∅
2|3NSG.β2-VC-count.EXT-ND-2|3SG
'S/he counted for them.'

2.6 Loanwords and loanword phonology

A number of speech sounds are restricted to loanwords. These are the voiced oral stops [b], [d], and [g], the lateral approximant [l] and a few diphthongs. The "donor languages" of almost all loanwords found in Komnzo are either English or Hiri Motu. Only few loanwords come from Bahasa Indonesia, for example the terms for introduced fish species: *ikan lele* 'Clarias batrachas', *mujair* 'Oreochromis mossambicus', *gastor* 'Channa striata'. An increasing number of people start to learn the third offical language of Papua New Guinea - Tok Pisin - and sometimes expressions like *maski* 'nevermind' can be heard among younger Komnzo speakers. Otherwise Tok Pisin plays only a minor role in loanwords.

From the degree of indigenisation of loanwords we can distinguish at least two periods: an early phase which lasted until the 1960s and a second phase from that time until today. The boundary between the two periods is rather fuzzy. The first period was characterised by English speaking patrol officers and officials who visited the area for very short periods. The second period began with the opening of a Mission school in Rouku in the mid 1960s. At the beginning, the language of instruction was Hiri Motu. In the 1970s the school was moved to Morehead and since then, the language of instruction is English.

We find linguistic evidence for the two periods. Loanwords from the first period have undergone indigenisation in order to adapt to Komnzo phonology. Loans which entered the language during the second period are much closer to the original English or Motu pronunciation. An example is the word *doctor*. While it is pronounced [dokta] nowadays, some older speakers still use a second variant *nzokta* [ⁿdzokta] which they report was common in their parent's and grandparent's generation.

Words from the first period are: *frayn misin* [ɸrajə̃n mısın] 'plane, flying machine', *kas raba* [kas raᵐba] 'gas lamp', *dis* [ⁿdi:s] 'dish, plate', *damaki* [ⁿdamakı] 'dynamite'. We find regular correspondences of English phonemes mapping onto Komnzo phonology. The bilabial stop [p] becomes a bilabial fricative [ɸ] in *frayn misin*, but in a cluster with the bilabial nasal [m] in *kas raba* it becomes a prenasalised voiced bilabial stop [ᵐb]. The velar voiced stop [g], also in *kas raba*, comes out as a voiceless velar stop [k]. The lateral approximant [l] in English *flying* becomes an alveolar tap or trill [ɾ ~ r] in Komnzo *frayn* and again in *kas raba*. The English diphthong [a͡ɪ] in 'dynamite' is monophthongised in *damaki*. The voiced alveolar stop [d] becomes prenasalised [ⁿd] in *damaki* and *dis*[12]. In the same word, the post-alveolar fricative [ʃ] turns into an alveolar fricative [s]. However, there are too few loans from this early period to make a systematic comparison of all English phonemes in different environments.

The second period, which lasts until today, is characterised by loan phonemes. Indigenisation is found to a lesser degree. The second period is also characterised by the influx of loans from Hiri Motu. We find loan phonemes in the oral voiced stops [b], [d] and [g], as in *bara* 'paddle', *durua* 'help', *dibura* 'prisoner', *gunana* 'place name'[13] from Hiri Motu, and *baisikol* 'bicycle' from English. Note that the English diphthong [a͡ɪ] is retained and not monophthongised and the lateral approximant [l] also does not change.

There are two correspondences which we find in both periods. The first is between the voiceless bilabial stop [p] in English and the voiceless bilabial fricative [ɸ] in Komnzo. The second correspondence is between the lateral approximant [l] and the alveolar trill/flap [ɾ ~ r]. In the early period, [l] was changed in all environments, but in the second period this only occurs in [pl] clusters in English. Elsewhere, [l] is taken over into Komnzo as a loan phoneme. We have seen some examples from the first period above. Examples from the second period are: *fren* 'plane', *fenzil* 'pencil', and *sosfen* 'saucepan'.

2.7 Orthography development

There is no writing tradition in Komnzo, but most people can read and write in one of the official languages, namely English and Motu. The mission school, which was based at Rouku during the 1960s, operated in Motu, but today English is the teaching language at the primary school in Morehead. Thus, reading and writing in Komnzo has not been promoted in the past. As a consequence, literacy in one's mother tongue is an alien concept for most Komnzo speakers.

[12] There is no explanation for the change from English [t] > Komnzo [k] in *damaki* 'dynamite'.

[13] *Gunana* means 'the former (one)' in Hiri Motu. In Komnzo, it designates a place 'where old Rouku used to be' as informants put it. A new hamlet was founded there a few years ago.

The first attempt to develop an orthography for Komnzo was during an alphabet workshop organised by Marco and Alma Bouvé at Morehead Station in 2000.[14] It brought together representatives from a dozen villages. The two representatives from Rouku were Greg Marua and Wendy Yasii. When I began my work in Rouku, this orthography was not used except for a few words that were written on the blackboard in the elementary school. Regrettably, the Rouku elementary school has been dysfunctional since 2010. During my fieldwork I have organised two orthography meetings. The outcome of these meetings was the Komnzo Language Council, which includes representatives of all clans. The language council has remained an abstract administrative body overseeing my work. In practice, I concentrated most translation and elicitation work on 4-5 interested individuals. Together, we have revised the orthography several times. Table 2.11 and Figure 2.7 show the differences between the orthography from the workshop in 2000 and the current orthography. Changes are shown with an arrow (⟶).

Table 2.11: Comparison of orthographies: consonants

	bilabial	dental	alveolar	palato-alveolar	palatal	velar	labio-velar
stop & affricate	b ⟶ □		t	ts ⟶ z		k	□ ⟶ kw
prenasalised stop & affricate	mb ⟶ b		nt ⟶ d	nj ⟶ nz		nþ⟶ g	□ ⟶ gw
fricative	f	th	s				
nasal	m		n			ng ⟶ ŋ	
lateral			r				
semivowel					y		w

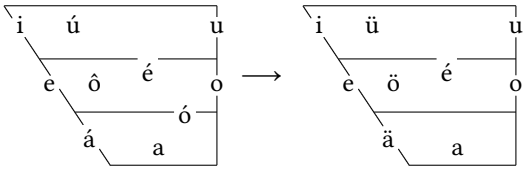

Figure 2.7: Comparison of orthographies: vowels

[14] The workshop was supported by the Summer Institute of Linguistics (SIL).

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Name index

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Subject index

A grammar of Komnzo

Komnzo is a Papuan language of Southern New Guinea spoken by around 250 people in the village of Rouku. Komnzo belongs to the Tonda subgroup of the Yam language family, which is also known as the Morehead Upper-Maro group. This grammar provides the first comprehensive description of a Yam language. It is based on 16 months of fieldwork. The primary source of data is a text corpus of around 12 hours recorded and transcribed between 2010 and 2015.

Komnzo provides many fields of future research, but the most interesting aspect of its structure lies in the verb morphology, to which the two largest chapters of the grammar are dedicated. Komnzo verbs may index up to two arguments showing agreement in person, number and gender. Verbs encode 18 TAM categories, valency, directionality and deictic status. Morphological complexity lies not only in the amount of categories that verbs may express, but also in the way these are encoded. Komnzo verbs exhibit what may be called 'distributed exponence', i.e. single morphemes are underspecified for a particular grammatical category. Therefore, morphological material from different sites has to be integrated first, and only after this integration can one arrive at a particular grammatical category.

The descriptive approach in this grammar is theory-informed rather than theory-driven. Comparison to other Yam languages and diachronic developments are taken into account whenever it seems helpful.

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