A grammar of Komnzo

Christian Döhler

Studies in Diversity Linguistics 99

language science press

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ISSN: 2363-5568

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language
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Christian Döhler. 2018. *A grammar of Komnzo* (Studies in Diversity Linguistics 99).
Berlin: Language Science Press.

This title can be downloaded at:
http://langsci-press.org/catalog/book/000

ISBN: no digital ISBN
no print ISBNs!
ISSN: 2363-5568
no DOI
Source code available from www.github.com/langsci/000
Collaborative reading: paperhive.org/documents/remote?type=langsci&id=000

Cover and concept of design: Ulrike Harbort
Typesetting: Christian Döhler
Fonts: Linux Libertine, Libertinus Math, Arimo, DejaVu Sans Mono
Typesetting software: XeLaTeX

Language Science Press
Unter den Linden 6
10099 Berlin, Germany
langsci-press.org

Storage and cataloguing done by FU Berlin

no logo

For Nakre and Tayafe

Contents

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 Komnzo 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.

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. The 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 /f/ 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 (/b/, /d/, and /g/). The voiceless stops are 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 position. In only a small number of lexical items, the bilabial /b/ occurs word-finally. This phoneme is also deviant because it lacks a voiceless counterpart. There is evidence from loanword phonology (§2.6) and from surrounding Tonda languages that the bilabial fricative /f/ occupies the same structural slot in the opposition of voiceless and prenasalised stops.

There is almost no allophonic variation with the stop series, but the prenasalised stops are affected by 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*	[tʏɸ] ~ [t̪ʏɸ]	‘soft ground’
		rata	[ɾata] ~ [ɾat̪a]	‘ladder’
		kwot	[kʷɔ̆t] ~ [kʷɔ̆t̪]	‘properly’

/k/ →	[k]	*kata*	[kata]	‘bamboo knife’
		fokam	[ɸokam]	‘grave’
		safak	[saβak]	‘saratoga’

/b/ →	[ᵐp] / _]$_\sigma$	*gb*	[ᵑgəᵐp]	‘black palm’
	[ᵐb] / elsewhere	*bone*	[ᵐbone]	2SG.POSS
		gaba	[ᵑgaᵐba]	‘storage yam’

/d/ →	[ⁿt] / _]$_\sigma$	*kd*	[kəⁿt]	‘star’
	[ⁿd] / elsewhere	*deya*	[ⁿdeja]	‘tree wallaby’
		rdiknsi	[ɾəⁿdikənsi]	‘tie around’

/g/ →	ᵑk] / _]$_\sigma$	*nag*	[naᵑk]	‘grass skirt’
	[ᵑg] / elsewhere	*gau*	[ᵑg͡aù]	‘night heron’
		sagara	[saᵑgara]	proper name

2.1.1.2 Labialised velar stops

The labialised velar stops /kw/ and /gw/ 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’

/gw/ →	[ᵑgʷ] / $_\sigma$[_	*gwä*	[ᵑgʷæ]	‘mosquito’
		fagwa	[ɸaᵑgʷa]	‘width’

I will 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 in Komnzo which have an initial labialised velar stop (voiceless or prenasalised) in such a cluster, for example: *kwras* ‘Brolga’ or *gwra* ‘MacCulloch’s Rainbowfish’. If /kw/ and /gw/ were to be analysed as clusters of two phonemes, a separate syllable template (CCCV) would be required.

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

We find full and partial reduplication in Komnzo (§4.2). Full reduplication involves repeating the whole word: *yam* 'footprint, custom, event' → *yamyam* 'little feast'. More commonly found is partial reduplication where only the first consonant of the initial syllable is copied: *zbär* 'night' → *zzbär* [tsŏtsŏᵐbæɾ] 'dusk, twilight'. Note that the domain of partial reduplication does not extend further than the first consonant. Thus, we get *frasi* 'hunger' → *ffrasi* [ɸŏɸɾasi] 'appetite, hunger', but not **frfrasi* [ɸɾŏɸɾasi]. If the labialised velar stops comprise 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* [kʷŏkʷajan] ~ [kukʷajan] 'flickering light, dimmed light', but not **kkwayan* [kŏkʷajan].

2.1.1.3 Affricates

The two consonant phonemes with the highest frequency are the affricates (/z/ and /nz/) which seem to give Komnzo its characteristic fricative sound. Both affricates occur initially, medially and finally showing some allophonic variation. They are palatalised before front vowels as in *zi* [tʃɪ:] 'pain' and *nzikaka* [ⁿdʒɪkaka] '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).

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

/nz/ →	[ⁿdʒ] / _V$_{+\text{FRONT}}$	*nzigfu*	[ⁿdʒiᵑgɸu]	'rain stone'
		snzä	[sŏⁿdʒæ]	'crayfish'
	[ⁿts] / _]$_{\sigma}$	*mnz*	[mŏⁿts]	'house'
	[ⁿdz] / elsewhere	*nzun*	[ⁿdzun]	1SG.DAT
		rnzam	[rŏⁿdzam]	'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. Consequently, only the dental fricative is affected by final devoicing. The bilabial fricative has a voiced allophone which occurs intervocalically. Although voiced in most environments, the dental frica-

tive is affected by final devoicing (§2.3.2). The alveolar fricative is always voiceless in all environments. These rules are formalised below.

/f/ →	[β] / V_V	*zafazafa*	[tsaβatsaβa]	'vine stick'
	[ɸ] / elsewhere	*fid*	[ɸɪⁿt]	'bushrope'
		zarfa	[tsaɾɸa]	'ear'
		karaf	[kaɾaɸ]	'paddle'

/th/ →	[θ] / _]$_\sigma$	*süsübäth*	[sʏsʏᵐbæθ]	'darkness'
	[ð] / elsewhere	*thamin*	[ðamin]	'tongue'
		ŋatha	[ŋaða]	'dog'

/s/ →	[s]	*saisai*	[sa͡ɪsa͡ɪ]	'drizzle (n)'
		fisor	[ɸisoɾ]	'turtle'
		fis	[ɸi.s]	'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] / 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 [ɾ̥] seems to be conditioned by age. Older speakers use the voiceless variant more frequently.

/r/ →				
	[ɾ]~[ɾ̥] / _]$_{\text{WORD}}$	*msar*	[mə̪saɾ] ~ [mə̪saɾ̥]	‘green ant’
	[ɾ] / $_{\sigma}$[C_	*frasi*	[ɸɾasi]	‘hunger’
	[r]~[ɾ] / elsewhere	*rnz*	[rə̪^{n}ts] ~ [ɾə̪^{n}ts]	‘ember’
		ŋare	[ŋare] ~ [ŋaɾe]	‘woman’

2.1.4 Approximants

The two approximants /w/ and /y/ 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 /y/, 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’

/y/ →				
	[_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 /y/ 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* [jɪ̈s] ‘thorn’ and *ky* [kə̆^{j}] ‘yam type’ where epenthesis occurs after or before /w/ and /y/ 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	word	phonemic	phonetic	gloss
/kw/ - /k/	*kwafar*	/kwa.far/	[kʷaβaɾ]	place name
	kafar	/ka.far/	[kaβaɾ]	‘big’
	sakwr	/sa.kwr/	[sakʷəɾ]	‘he hit him’
	sakr	/sa.kr/	[sakəɾ]	‘mustard vine’
	kwath	/kwath/	[kʷaθ]	‘crow’
	kath	/kath/	[kaθ]	‘ankle’
/gw/ - /g/	*gwra*	/gwra/	[ŋgʷra:]	‘rainbowfish’
	gra	/gra/	[ŋgra:]	‘tree type’
/kw/ - /w/	*kwath*	/kwath/	[kʷaθ]	‘crow’
	wath	/wath/	[waθ]	‘dance (n)’
	kwf	/kwf/	[kʷəɸ]	‘stone club’
	wf	/wf/	[wəɸ]	‘shirt, blouse’
/gw/ - /w/	*gwth*	/gwth/	[ŋgwəθ]	‘nest’
	wth	/wth/	[wəθ]	‘faeces’
/k/ - /w/	*kath*	/kath/	[kaθ]	‘ankle’
	wath	/wath/	[waθ]	‘dance (n)’
/f/ - /w/	*far*	/far/	[ɸaɾ]	‘housepost’
	war	/war/	[waɾ]	‘top layer’
	kafar	/ka.far/	[kaβaɾ]	‘big’
	kawar	/ka.war/	[kawaɾ]	pers. name
	zafe	/za.fe/	[tsaβe]	‘old’
	zawe	/za.we/	[tsawe]	‘right (side)’
	tfitfi	/t.fi.t.fi/	[təβitəβi]	‘whirlwind’
	twitwi	/t.wi.t.wi/	[təwitəwi]	‘bird type’
/s/ - /t/	*süfr*	/sü.fr/	[sʏɸəɾ]	‘tree type’
	tüfr	/tü.fr/	[tʏɸəɾ]	‘many’
	kisr	/ki.sr/	[kitəɾ]	‘lizard type’

SEGMENTS	word	phonemic	phonetic	gloss
	kitr	/ki.tr/	[kisər]	‘pandanus’
	wsws	/ws.ws/	[wəswəs]	‘grass type’
	wtwt	/wt.wt/	[wətwət]	‘itchy’
/s/ - /th/	*sirsir*	/sir.sir/	[sirsir]	‘glider’
	thirthir	/thir.thir/	[ðirðir]	‘pig tusk’
	bis	/bis/	[ᵐbi:s]	‘bird type’
	bith	/bith/	[ᵐbi:θ]	‘honey bee’
	mus	/mus/	[mu:s]	‘leech’
	muth	/muth/	[mu:θ]	‘(sago) grub’
/s/ - /z/	*si*	/si/	[si:]	‘eye’
	zi	/zi/	[tʃi:]	‘pain’
	srminz	/sr.minz/	[sərmints]	‘rainbow’
	zrminz	/zr.minz/	[tsərmints]	‘roots’
	ksi kar	/k.si kar/	[kəsi kar]	‘savannah’
	kzi	/k.zi/	[kətʃi]	‘barktray’
	fs	/fs/	[ɸəs]	‘fish type’
	fz	/fz/	[ɸəts]	‘forest’
/th/ - /t/	*thruthru*	/thru.thru/	[ðruðru]	‘bamboo type’
	trutru	/tru.tru/	[trutru]	‘stream’
	füth	/füth/	[ɸʏθ]	‘rotten tuber’
	füt	/füt/	[ɸʏt]	‘pouch’
/th/ - /r/	*thusi*	/thu.si/	[ðusi]	‘fold (v.t.)’
	rusi	/ru.si/	[ɾusi]	‘shoot (v.t.)’
	bthan	/b.than/	[ᵐbəðan]	‘magic’
	bran	/b.ran/	[ᵐbəɾan]	‘line-up’
	yathizsi	/ya.thi.z.si/	[jaðitsəsi]	‘die’
	yarizsi	/ya.ri.z.si/	[jaɾitsəsi]	‘hear, listen’

SEGMENTS	word	phonemic	phonetic	gloss
	zithzith	/zith.zith/	[tʃiθtʃiθ]	'slickness'
	zirzir	/zir.zir/	[tʃiɾtʃiɾ]	'wetness'
	wath	/wath/	[waθ]	'dance (n)'
	war	/war/	[waɾ]	'top layer'
/r/ - /t/	*rar*	/rar/	[ɾaɾ]	'for what'
	tar	/tar/	[taɾ]	'friend'
	ŋarr	/ŋa.rr/	[ŋaɾə̆ɾ]	'bandicoot'
	ŋatr	/ŋa.tr/	[ŋatə̆ɾ]	'rope'
	ft	/ft/	[ɸə̆t]	'dead tree'
	fr	/fr/	[ɸə̆ɾ]	'palm stem'
/r/ - /z/	*rinaksi*	/ri.na.k.si/	[ɾinakə̆si]	'pour'
	zinaksi	/zi.na.k.si/	[tʃinakə̆si]	'put down'
	wari	/wa.ri/	[waɾi]	'plant type'
	wazi	/wa.zi/	[watʃi]	'side'
	mür	/mür/	[mʏɾ]	'grass type'
	müz	/müz/	[mʏts]	'phallocrypt'
/b/ - /m/	*bith*	/bith/	[ᵐbiθ]	'honey bee'
	mith	/mith/	[miθ]	'face'
	bä	/bä/	[ᵐbæː]	2.ABS
	mä	/mä/	[mæː]	'where'
	züb	/züb/	[tʃʏᵐb]	'depth'
	züm	/züm/	[tʃʏm]	'centipede'
/d/ - /n/	*dasi*	/da.si/	[ⁿdasi]	'bulge'
	nasi	/na.si/	[nasi]	'long yam'
	badabada	/ba.da.ba.da/	[ᵐbaⁿdaᵐbaⁿda]	'ancestor'
	bana	/ba.na/	[ᵐbana]	'pitiful'
	kd	/kd/	[kə̆nt]	'star'
	kn	/kn/	[kə̆n]	'yam type'

SEGMENTS	word	phonemic	phonetic	gloss
/g/ - /ŋ/	*gathagatha*	/ga.tha.ga.tha/	[ŋgaðaŋgaða]	‘bad’
	ŋathaŋatha	/ŋa.tha.ŋa.tha/	[ŋaðaŋaða]	‘quoll’
	game	/ga.me/	[ᵑgame]	‘tongs’
	ŋame	/ŋa.me/	[ŋame]	‘mother’
/m/ - /n/	*mä*	/mä/	[mæː]	‘where’
	nä	/nä/	[næː]	‘some’
	mawan	/ma.wan/	[mawan]	‘tree type’
	nawan	/na.wan/	[nawan]	‘waterhole’
/nz/ - /d/	*nzga*	/nz.ga/	[ⁿdzǯᵑga]	‘vagina’
	dga	/d.ga/	[ⁿdǯᵑga]	‘gills’
	ŋanz	/ŋanz/	[ŋaⁿts]	‘planting row’
	ŋad	/ŋad/	[ŋaⁿt]	‘rope’
	ymnz	/y.mnz/	[jə̆mə̆ⁿts]	place name
	ymd	/y.md/	[jə̆mə̆ⁿt]	‘bird’
/nz/ - /n/	*nzä*	/nzä/	[ⁿdʒæː]	1SG.ABS
	nä	/nä/	[næː]	‘some’
	gonz	/gonz/	[ᵑgɔnts]	‘place name’
	gon	/gon/	[ᵑgɔn]	‘water lily’
/b/ - /f/	*bä*	/bä/	[ᵐbæː]	2.ABS
	fä	/fä/	[ɸæː]	DIST
	bira	/bi.ra/	[ᵐbiɾa]	‘axe’
	fira	/fi.ra/	[ɸiɾa]	‘betelnut’
	bis	/bis/	[ᵐbiːs]	‘bird type’
	fis	/fis/	[ɸiːs]	‘husband’
/d/ - /t/	*düfr*	/dü.fr/	[ⁿdʏɸə̆ɾ]	‘headdress’
	tüfr	/tü.fr/	[tʏɸə̆ɾ]	‘plenty’
	drari	/dra.ri/	[ⁿdɾaɾi]	‘container’

SEGMENTS	word	phonemic	phonetic	gloss
	trari	/tra.ri/	[tɾaɾi]	‘strong man’
	kadakada	/ka.da.ka.da/	[ka^{n}daka^{n}da]	‘yamcake’
	katakata	/ka.ta.ka.ta/	[katakata]	‘grass type’
	sd	/sd/	[sə̆^{n}t]	‘yam type’
	st	/st/	[sə̆t]	‘plant type’
/nz/ - /z/	*nzä*	/nzä/	[^{n}dʒæ:]	1SG.ABS
	zä	/zä/	[tʃæ:]	PROX
	nzanza	/nza.nza/	[^{n}dza^{n}dza]	‘insect type’
	zaza	/za.za/	[tsatsa]	‘carrying’
	nzr	/nzr/	[^{n}dzə̆ɾ]	‘leftover’
	zr	/zr/	[tsə̆ɾ]	‘tooth’
	rbänzsi	/r.bä.nz.si/	[ɾə̆^{m}bæ^{n}dzə̆si]	‘prohibit’
	rbäzsi	/r.bä.z.si/	[ɾə̆^{m}bætsə̆si]	‘untie’
/g/ - /k/	*gd*	/gd/	[^{ŋ}gə̆^{n}t]	‘mud’
	kd	/kd/	[kə̆^{n}t]	‘star’
	kafar	/ka.far/	[kaβaɾ]	‘big’
	gafar	/ga.far/	[^{ŋ}gaβaɾ]	‘fish type’
	gursi	/gur.si/	[^{ŋ}guɾsi]	‘break off’
	kursi	/kur.si/	[kuɾsi]	‘split’
	tag	/tag/	[ta^{ŋ}k]	‘type of bee’
	tak	/tak/	[tak]	‘pandanus’
	srag	/srag/	[sɾa^{ŋ}k]	pers. name
	srak	/srak/	[sɾak]	‘boy’
/w/ - /y/	*yarsi*	/yar.si/	[jaɾsi]	‘tired’
	warsi	/war.si/	[waɾsi]	‘chew’
	yf	/yf/	[jə̆ɸ]	‘name’
	wf	/wf/	[wə̆ɸ]	‘shirt’

SEGMENTS	word	phonemic	phonetic	gloss
	yttünzr	/yt.tü.nzr/	[jə̆ttʏⁿdzə̆ɾ]	‘paints him’
	wttünzr	/wt.tü.nzr/	[wə̆ttʏⁿdzə̆ɾ]	‘paints her’
	fäw	/fäw/	[ɸæ͡ù]	‘arrow shaft’
	fäy	/fäy/	[ɸæ͡ì]	‘payment’

2.2 Vowel phonemes

Table 2.3 and Figure 2.1 below give an overview of the vowel phonemes. Komnzo vowels divide the articulatory space into four levels of height (high, mid, mid-low, and low) and draw a distinction between front and back vowels. Additionally, for front vowels, there is a phonemic distinction between rounded and unrounded vowels. In Figure 2.1 IPA symbols are employed, whereas Table 2.3 lists the corresponding graphemes. Note that I include the epenthetic schwa in parentheses. This is because there is some evidence that schwa constitutes an marginal phoneme word-finally. That being said, in all other occurences it is created by epenthesis (§2.2.2).

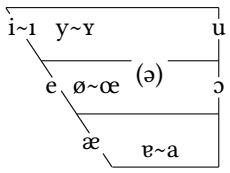

Figure 2.1: Komnzo vowel space

Table 2.3: Vowel phoneme inventory

	front		central	back
	unrounded	rounded		
high	i	ü		u
mid	e	ö	(é)	o
mid-low	ä			
low			a	

Nasal vowels are rather marginal in Komnzo. There are only two words in which we find nasal vowels. These are the conjunction *a* [ã:] ‘and’ and *o* [õ] ‘or’. Both have a second, much rarer variant with an initial velar nasal *ŋa* [ŋa:] and *ŋo* [ŋɔ:]. This suggests that

nasalisation of the vowel is caused by the loss of the preceding velar nasal. Nasalisation is not phonemic in Komnzo.

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 /y/ in coda position (§2.1.4). In the practical orthography these are sometimes written as diphthongs, e.g. <ai> or <au>.[2] Two words which exemplify this are *saisai* /say.say/ 'drizzle' and *kaukau* /kaw.kaw/ 'Mouth Almighty'.

2.2.1 Phonetic description and allophonic distribution of vowels

There is free variation between the following allophones, that is respectively of /i/, /ü/, /u/, /e/, /ö/, /o/, and /a/:

Table 2.4: Vowel allophones

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

There is no phonemic contrast between short and long vowels. However, vowels tend to be longer in monosyllabic roots, especially if the monosyllable is light/open, e.g. *nzä* [ⁿdʒæː] 'I'. This process of vowel lengthening is caused by minimal word conditions in combination with syllable weight as will be described in §2.4.1 and §2.4.4.

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* /kom.nzo/ [kŏmⁿdzɔ] and *komon* /ko.mon/ [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 (see §2.4.4). The second rule overrides syllable weight and the impact of the

[2] This is an individual decision based on the speakers' preferences.

minimal word constraint. After the labio-velar approximant (/w/) and the two labialised-velar stops (/kw/ and /gw/) /o/ is always realised as short, centralised, rounded vowel [ŏ]. Leaving the influences of the minimal word constraint to §2.4.4, we can formalise these observations in the following rule:

(1)

/o/ →	[ŏ] / _C]$_\sigma$	*emoth*	/e.moth/	[ʔe:mŏθ]	‘girl’
		ymorymor	/y.mor.y.mor/	[jəmŏrjəmŏr]	‘desire’
		thomgsi	/thom.g.si/	[ðŏm^{ŋ}gəsi]	‘help’
	[ɔ] / _]$_\sigma$	*nibo*	/ni.bo/	[ni^{m}bɔ]	‘six’
		dokre	/do.kre/	[^{n}dɔkɾe]	‘frog’
	[ŏ] / C$_{\text{+labio-velar}_}$	*kwosi*	/kwo.si/	[k^{w}ŏsi]	‘dead’
		woku	/wo.ku/	[wŏku]	‘skin’

There are some irregularities with these rules when it comes to other bilabial consonants, like /f/. 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 type’ or *fokufoku* [ɸŏkuɸŏku] ‘small patch of vegetation’.

2.2.1.2 Analytic problems with /ö/

The vowel /ö/ [œ] poses a problem because there are no minimal pairs between /ö/ and some of its immediate neighbours (/e/, /o/, /ä/) in the corpus. There are minimal pairs between /ö/ and /i/, /ü/, /u/, /a/. The lack of minimal pairs with the former group along with the effects of vowel harmony (see §2.5.1) invite an analysis in which /ö/ 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 /ö/ are much rarer than all other vowels.[3] For the current description, /ö/ 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

[3] Amongst the 1700 entries in the dictionary, only 30 contain /ö/. Compare this number with 730 for /a/. This is a conservative count in which singletons and reduplicates as well as simple forms and compounds are only counted once.

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* [tətʏsi] 'print, paint' and the noun *fzenz* [ɸətʃeⁿts] '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* [jətːʏⁿdzəɾ] '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 in Komnzo which lack specified vowels altogether.[4] A few examples are: *mnz* [məⁿts] 'house', *zfth* [tsəɸəθ] 'base, reason', and *ggrb* [ᵑgəᵑgəɾəᵐp] '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 [ə]. However, there is one exception. If the epenthetic vowel is inserted preceding the two approximants /y/ and /w/ it is realised as a high front or high back vowel respectively, as in: *nyak* [nĭjak] 'we go' and *thwak* [ðŭwak] 'shoulder'.

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*), case marking (ERG.NSG *=é*) and in the adjectivaliser *-thé*. The latter could be historically related to the similative case marker (*=thatha*). 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, if *kayé* 'yesterday' is marked with a temporal possessive case (*=thamane*), word-final schwa disappears: *kaythamane dagon* 'yesterday's food'. This does not happen with full vowels, e.g. *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*>.

[4] Among 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.

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/ - /e/ and /e/ - /i/) and not repeated in the table.

Table 2.5: Minimal pairs of vowel phonemes

SEGMENTS	word	phonemic	phonetic	gloss
SEGMENTS	word	phonemic	phonetic	gloss
/i/ - /u/	*mith*	/mith/	[miθ]	'face'
	muth	/muth/	[muθ]	'(sago) grub'
	grigri	/gri.gri/	[ᵑgɾɪᵑgɾɪ]	'maggots'
	gru	/gru/	[ᵑgɾu:]	'shooting star'
/i/ - /ü/	*minzaksi*	/mi.nza.k.si/	[miⁿdzakə̆si]	'paint (vt.)'
	münzaksi	/mü.nza.k.si/	[mʏⁿdzakə̆si]	'allow'
	di	/di/	[ⁿdi:]	'back of head'
	düdü	/dü.dü/	[ⁿdʏⁿdʏ]	'in good shape'
/i/ - /e/	*si*	/si/	[si:]	'eye'
	se	/se/	[se:]	'torch'
	bi	/bi/	[ᵐbi:]	'sago'
	be	/be/	[ᵐbe:]	2SG.ERG
/i/ - /ö/	*di*	/di/	[ⁿdi:]	'back of head'
	dö	/dö/	[ⁿdœ:]	'monitor lizard'
/i/ - ∅	*biribiri*	/bi.ri.bi.ri/	[ᵐbiɾɪᵐbiɾi]	'plant type'
	bribri	/b.ri.b.ri/	[ᵐbə̆ɾiᵐbə̆ɾi]	'weeding'
	with	/with/	[wiθ]	'banana'
	wth	/wth/	[wə̆θ]	'faeces'
	fis	/fis/	[ɸis]	'husband'
	fs	/fs/	[ɸə̆s]	'fish type'

/u/ - /i/	see above /i/ - /u/			
/u/ - /ü/	*futhfuth*	/futh.futh/	[ɸuθɸuθ]	‘scrapes’
	füthfüth	/füth.füth/	[ɸʏθɸʏθ]	‘hatched bird’
	but	/but/	[ᵐbut]	‘kava sticks’
	büt	/büt/	[ᵐbʏt]	‘amputated limb’
	rusi	/ru.si/	[ɾusi]	‘shoot (vt.)’
	rüsi	/rü.si/	[ɾʏsi]	‘rain (v.)’
/u/ - /o/	*muramura*	/mu.ra.mu.ra/	[muɾamuɾa]	‘medicine’
	moramora	/mo.ra.mo.ra/	[mɔɾamɔɾa]	‘tree type’
	muth	/muth/	[muθ]	‘(sago) grub’
	moth	/moth/	[mŏθ]	‘path’
	tru	/tru/	[tɾuː]	‘palm type’
	tro	/tro/	[tɾɔː]	‘python type’
/u/ - ∅	*kursi*	/kur.si/	[kuɾsi]	‘split (vt.)’
	krsi	/kr.si/	[kŏɾsi]	‘block (vt.)’
	kut	/kut/	[kut]	‘trap’
	kt	/kt/	[kŏt]	‘grass type’
	fuk	/fuk/	[ɸuk]	‘in a group’
	fk	/fk/	[ɸŏk]	‘buttocks’
/ü/ - /i/	see above /i/ - /ü/			
/ü/ - /u/	see above /u/ - /ü/			
/ü/ - /e/	*fünz*	/fünz/	[ɸʏⁿts]	‘arm muscles’
	fenz	/fenz/	[ɸeⁿts]	‘puss’
/ü/ - /ö/	*nümä*	/nü.mä/	[nʏmæ]	‘one week away’
	nömä	/nö.mä/	[nœmæ]	‘yamcake’
	düdü	/dü.dü/	[ⁿdʏⁿdʏ]	‘in good shape’
	dödö	/dö.dö/	[ⁿdœⁿdœ]	‘plant type’
/ü/ - ∅	*sün*	/sün/	[sʏn]	‘dirt, dust’
	sn	/sn/	[sŏn]	‘yam type’

	tüfr	/tü.fr/	[tʏɸ̆ɚ]	‘plenty’
	tfrtfr	/t.fr.t.fr/	[tə̆ɸ̆ɚtə̆ɸ̆ɚ]	‘tree type’
/e/ - /i/	see above /i/ - /e/			
/e/ - /ü/	see above /ü/ - /e/			
/e/ - /ö/	not attested			
/e/ - /o/	*fethaksi*	/fe.tha.k.si/	[ɸeðakə̆si]	‘dip in’
	fothaksi	/fo.tha.k.si/	[ɸɔðakə̆si]	‘take off (bag)’
	game	/ga.me/	[ᵑgame]	‘tongs’
	gamo	/ga.mo/	[ᵑgamɔ]	‘magic spell’
/e/ - /a/	*yem*	/yem/	[jem]	‘cassowary’
	yam	/yam/	[jam]	‘event’
	fetr	/fe.tr/	[ɸetə̆ɚ]	‘dangerous’
	fatr	/fa.tr/	[ɸatə̆ɚ]	‘shoulder’
	gwra	/gwra/	[ᵑgʷra:]	‘fish type’
	gwre	/gwre/	[ᵑgʷre:]	‘bird type’
/e/ - /ä/	*erbänzé*	/e.r.bä.nzé/	[ʔeɾə̆ᵐbæⁿtsə̆]	‘I untie them’
	ärbänzé	/ä.r.bä.nzé/	[ʔæɾə̆ᵐbæ ⁿtsə̆]	‘I untie for them’
	fenz	/fenz/	[ɸeⁿts]	‘puss’
	fänz	/fenz/	[ɸæⁿts]	‘proper name’
	nze	/nze/	[ⁿdʒe:]	1SG.ERG
	nzä	/nzä/	[ⁿdʒæ:]	1SG.ABS
/e/ - ∅	*menz*	/menz/	[meⁿts]	‘story man’
	mnz	/mnz/	[mə̆ⁿts]	‘house’
	fethaksi	/fe.tha.k.si/	[ɸeðakə̆si]	‘dip in’
	fthaksi	/f.tha.k.si/	[ɸə̆ðakə̆si]	‘take from fire’
	ŋakwire	/ŋa.kwi.re/	[ŋakʷiɾe]	‘we run’
	ŋakwiré	/ŋa.kwi.ré/	[ŋakʷiɾə̆]	‘I run’
/ä/ - /e/	see above /e/ - /ä/			
/ä/ - /a/	*näbi*	/nä.bi/	[næᵐbi]	‘one’

	nabi	/na.bi/	[na^{m}bi]	‘bow, bamboo’
	fätr	/fä.tr/	[ɸætəɾ]	‘left’
	fatr	/fa.tr/	[ɸatəɾ]	‘shoulder’
	mafä	/ma.fä/	[maɸæ]	‘with whom’
	mafa	/ma.fa/	[maɸa]	‘who’
/ä/ - /ö/	not attested			
/ä/ - /o/	*bärbär*	/bär.bär/	[^{m}bæɾ^{m}bæɾ]	‘half’
	bor	/bor/	[^{m}bo̯ɾ]	‘rat’
	nä	/nä/	[næː]	‘some’
	no	/no/	[nɔː]	‘water’
/ä/ - ∅	*fäk*	/fäk/	[ɸæk]	‘jaw’
	fk	/fk/	[ɸə̆k]	‘buttocks’
	märmär	/mär.mär/	[mæɾmæɾ]	‘slope’
	mrmr	/mr.mr/	[mə̆ɾmə̆ɾ]	‘inside’
	bnä	/b.nä/	[^{m}bə̆næ]	‘with you’
	bné	/b.né/	[^{m}bə̆nə̆]	2NSG.ERG
/a/ - /ä/	see above /ä/ - /a/			
/a/ - /e/	see above /e/ - /a/			
/a/ - /ö/	*namä*	/na.mä/	[namæ]	‘good’
	nömä	/nö.mä/	[nœmæ]	‘yamcake’
/a/ - /o/	*zan*	/zan/	[tsan]	‘fight’
	zon	/zon/	[tsɔn]	‘plant type’
	karfa	/kar.fa/	[kaɾɸa]	‘from village’
	karfo	/kar.fo/	[kaɾɸɔ]	‘to village’
	far	/far/	[ɸaɾ]	‘house post’
	for	/for/	[ɸo̯ɾ]	‘riverbank’
/a/ - ∅	*ngath*	/n.gath/	[nə̆^{ŋ}gaθ]	‘friend’
	ngth	/n.gth/	[nə̆^{ŋ}gə̆θ]	‘young sibling’

	tharthar	/thar.thar/	[ðaɾðaɾ]	‘next to’
	thrthr	/thr.thr/	[ðə̆ɾðə̆ɾ]	‘intestines’
	mar	/mar/	[maɾ]	‘pandanus type’
	mr	/mr/	[mə̆ɾ]	‘brain’
	sakwra	/sa.kw.ra/	[sakʷə̆ɾa]	‘I hit him’ (PST)
	sakwré	/sa.kw.ré/	[sakʷə̆ɾə̆]	‘I hit him’ (RPST)
/o/ - /e/	see above /e/ - /o/			
/o/ - /ö/	not attested			
/o/ - /a/	see above /a/ - /o/			
/o/ - /ä/	see above /ä/ - /o/			
/o/ - /u/	see above /u/ - /o/			
/o/ - ∅	*borsi*	/bor.si/	[ᵐbo̯ɾsi]	‘laugh’
	brsi	/br.si/	[ᵐbə̆ɾsi]	‘scoop water’
	fothaksi	/fo.tha.k.si/	[ɸɔðakə̆si]	‘take off’
	fthaksi	/f.tha.k.si/	[ɸə̆ðakə̆si]	‘take from fire’
	rgosi	/r.go.si/	[ɾə̆ᵑgɔsi]	‘poke through’
	rgsi	/r.g.si/	[ɾə̆ᵑgə̆si]	‘wear clothes’
	monz	/monz/	[mɔⁿts]	‘trench, ditch’
	mnz	/mnz/	[mə̆ⁿts]	‘house’
	nzigom	/nzi.gom/	[ⁿdʒiᵑgo̯m]	‘chain smoker’
	nzigm	/nzi.gm/	[ⁿdʒiᵑgə̆m]	‘stickyness’

2.3 Regular phonological processes

2.3.1 Gemination

Gemination occurs with a subset of the consonantal phonemes (/t/, /k/, /f/, /th/, /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 (see §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

examples in Table 2.6 provide 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* 's/he paints him'	n/a
/k/	*yakkarä* 'quickly' yak=karä walk=PROP	*yakarä* 'in tears' ya=karä cry=PROP
/m/	*yamme* 'through this event' yam=me event=INS	*yame* 'mat'
	fammäre 'without thinking' fam=märe thoughts=PRIV	n/a
/n/	*yannor* 'he shouts hither' ya-n-nor 3SG.MASC-VENT-shout	*yanor* 'he shouts' ya-nor 3SG.MASC-shout
/f/	*fiyaffa* 'from the hunt' fiyaf=fa hunt=ABL	n/a
/th/	*yththagr* 'it is sticking (on sth.)'	n/a
/r/	*firra* 'place name' *kwrro* 'Blue-winged Kookaburra'	*fira* 'betelnut' n/a

Gemination is not attested for complex consonants, including the prenasalised stops (/b/, /d/, and /g/) as well as the two affricates (/z/ and /nz/) and /s/. Gemination is not relevant for the labialised velar stops (/kw/ and /gw/) and the velar nasal (/ŋ/) because these do not occur in coda position.

2.3.2 Final-devoicing

The process of final devoicing, naturally, affects only those consonants which (i) occur in final position (excluding non-final: /kw/, /gw/ and /ŋ/) and (ii) are voiced in all other environments (excluding voiceless: /t/, /k/, /f/, /s/, and /z/). 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: /b/, /d/, /g/, /nz/, /th/, and /r/.

The domain of final devoicing is the syllable. For example, in words where /nz/ occurs in onset position, it is always voiced: *nzafar* [ⁿdzaɸaɾ] 'sky' and *knzun* [kə̆ⁿdzun] 'parallel'. If /nz/ occurs in final position, it is always voiceless: *mnz* [mə̆ⁿts] 'house'. We find evidence in suffixation and encliticisation that the process is targetting the right edge of the syllable rather than the word. *Mnz* [mə̆ⁿts] 'house' may take the vowel initial locative enclitic *=en* in which case /nz/ 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 /nz/ 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:

(2) /b/, /d/, /g/, /nz/, /th/ → { [-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 in Komnzo which are vowel initial.[5] In addition, the non-singular undergoer prefix for second/third person in one of the five prefix series is also vowel initial. However, vowel initial words are a marginal pattern in Komnzo and with one exception, which I describe below, word-medial syllables without onsets are not found. A possible explanation for the occurence of vowel initial words in Komnzo is contact with the Nambu languages to the east.

For this marginal pattern we find a rule of glottal stop insertion as in: *ebar* [ʔeᵐbaɾ] 'head' or *ettünzr* [ʔettʏⁿdzə̆ɾ] 's/he paints them'. This rule is restricted to word-initial environment, because the rules of syllabification maximise onsets in almost all cases (see §2.4.3). There is only one exception. Word-medial glottal stop insertion occurs with the vowel initial possessive suffix *-ane*. When the possessive is suffixed 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'.

[5] Among the 1700 entries in the dictionary, there are 54 vowel initial lexemes: /a/ (21), /e/ (17), /o/ (8), /ä/ (4), /u/ (3), /i/ (1). Three of these are loanwords.

2.4 The syllable and phonotactics

The phonotactics of Komnzo 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 (§2.4.1). I provide evidence for the internal structure of the syllable. Consonant clusters are shown in §2.4.2. It follows a step-by-step analysis of syllabification and epenthesis (§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 (see §2.3.3). Word-internal or word-final syllables never lack a consonantal onset.

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. (see §2.4.2.1)

3. Syllables may only have a simple coda: $\text{C}]_{\sigma}$. Post-vocalic consonsant clusters are always heterosyllabic, never tautosyllabic: $^{*}\text{CC}]_{\sigma}$. There are a number of constraints on the possibilities of heterosyllabic consonant clusters (see §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 in Komnzo as a binary branching construct.

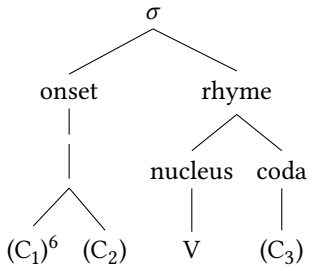

Figure 2.2: The internal structure of the syllable

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. 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 (see §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 /kw/ and /gw/ 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. If there is a specified vowel in the nucleus, the vowel will become long in open/light syllables, and it will become 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 [ɞ]. In the language name *Komnzo* /kom.nzo/ [kɞmⁿdzɔ] 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 (see §2.4.4), but these rules hold for all polysyllabic roots. Consequently, we require reference to 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 in their possibilities.

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) and 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 $_{\sigma}$[Cr clusters are *brüzi* 'catfish type', *frar* 'small fishtrap', *krüfr* 'cold', *gru* 'shooting star', *kwras* 'Brolga', *srima kabe* 'scout, spy', *thruthru* 'bamboo type', *trisi* 'scratch (v)', *zra* '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/, /g/, /z/, /nz/, /th/, and /s/. The first two phonemes in the list pose a problem because one has find a distinction between a Cw cluster and the labialised velar stops /kw/ and /gw/. This is

[6] Syllables without consonantal onsets are restricted to word initial environments. In this case, a phonological rule states that a glottal stop is inserted (§2.3.3).

impossible to do for lexemes, 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 $_{\sigma}$[Cw cluster. Some examples of lexemes with $_{\sigma}$[Cw onset clusters are: *swäyé* 'anchoring place', *zwäf* 'lukewarm', *bzwär* [ᵐbžzwæɾ] 'place name'.

2.4.2.2 Heterosyllabic clusters

Heterosyllabic clusters are much harder to pin down because - as we will see in §2.4.3 below - there are syllabicity alternations where a coda consonant may become an onset by inserting epenthetic schwa after which it breaks up the cluster. I will 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 /gw/), velar nasal (/ŋ/), and all the prenasalised phonemes (/b/, /d/, /g/, and /nz/).[7] Other heterosyllabic clusters are rather unrestricted. Table 2.7 presents the possible cluster types in Komnzo and Table 2.8 lists examples of these types.

Table 2.7: Heterosyllabic consonant clusters

	/r/	oral stop	pren. stop[8]	nasal	affr.	fric.	approx.	lab-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

Table 2.8: Examples of attested heterosyllabic consonant clusters

C_a	C_b	underlying representation	phonetic realisation	gloss
/r/	[+nasal]	/ker.ma/	[kɐrma]	'from tail'
		/tr.nä/	[tərnæ]	'palm frond'

[7] The labialised velar stop and the velar nasal may not occur as C_a because these never occur in coda position.
[8] The column and line labelled 'prenasal' includes prenasalised stops and the prenasalised affricate.

C_a	C_b	underlying representation	phonetic realisation	gloss
/r/	[+oral]	/for.tu/	[ɸĕɾ̲tu]	‘scar’
		/ker.ko/	[keɾ̲ko]	‘headdress’
/r/	[+affr.]	/zr.zü/	[tsə̆ɾ̲tʃʏ]	‘knee’
/r/	[+fric.]	/war.fo/	[waɾ̲ɸɔ]	‘above’
		/kr.si/	[kə̆ɾ̲si]	‘block (v)’
		/tr.tha/	[tə̆ɾ̲ða]	‘life’
/r/	[+approx.]	/kar.wä.si/	[kaɾ̲wæsi]	‘lie (v)’
		/yar.yom.g.si/	[jaɾ̲jə̆mᵑgə̆si]	‘scream (v)’
/r/	[+lab-vel]	/ŋa.far.kw.re/	[ŋaɸaɾ̲kʷə̆ɾe]	‘we leave’
[+oral]	[+oral]	/wät.ku/	[wæ tku]	‘pelican’
[+oral]	[+nasal]	/dek.ni.ni/	[ⁿdeknini]	‘praying mantis’
		/rt.maksi/	[ɾə̆tmakə̆si]	‘cut’
[+oral]	[+fric.]	/f.rk.thé/	[ɸə̆ɾə̆kðə̆]	‘red’
		/et.fth/	[ʔetɸə̆θ]	‘sleep (n)’
[+oral]	[+approx.]	/thik.ya.si/	[ðikjasi]	‘build fence’
		/zok.wa.si/	[tsə̆kwasi]	‘speech’
		/mit.wa.si/	[mitwasi]	‘swing (v)’
[+oral]	[+lab-vel]	/tat.kwo.nam/	[tatkʷɔnam]	‘tree type’
[+pren.]	[+oral]	/gb.ka.rä/	[ᵑgə̆ᵐbkaræ]	‘with pandanus’
[+pren.]	[+nasal]	/ŋad.me/	[ŋaⁿtme]	‘with rope’
[+pren.]	[+fric.]	/bad.fo/	[ᵐbaⁿtɸɔ]	‘to the ground’
[+pren.]	[+approx.]	/mnz.wä/	[mə̆ⁿtswæ]	‘house (EMPH)’
[+nasal]	/r/	/nin.rr/	[ninɾ̲ə̆ɾ]	‘with us’
[+nasal]	[+oral]	/am.kf/	[ʔamkə̆ɸ]	‘breath’
		/thun.t.nä.gwr/	[ðuntə̆næᵑgwə̆ɾ]	‘he lost them’

C_a	C_b	underlying representation	phonetic realisation	gloss
[+nasal]	[+nasal]	/kan.motha/	[kanmɔða]	‘river snake’
[+nasal]	[+pren.]	/yar.yom.g.si/ /kum.da/ /kän.brim/	[jaɾjɞ̃mⁿgəsi] [kumⁿda] [kænᵐbɾim]	‘scream (v)’ ‘basket’ ‘come here!’
[+nasal]	[+affr.]	/san.zin/	[santʃin]	‘put him down!’
[+nasal]	[+fric.]	/zan.fr/ /kam.tha.tha/	[tsanɸəɾ] [kamðaða]	‘far’ ‘like a bone’
[+nasal]	[+approx.]	/nze.nm.wä/	[ⁿdʒenəmwæ]	‘for us (EMPH)’
[+nasal]	[+lab-vel]	/ŋan.kwir/	[ŋankʷir]	‘run hither’
[+affr.]	[+oral]	/ez.kn.wr/	[ʔetskənwəɾ]	‘he moves them’
[+affr.]	[+nasal]	/käz.nob/	[kætsnɞ̃ᵐp]	‘drink (it)!’
[+affr.]	[+fric.]	/fz.fo/	[ɸətsɸɔ]	‘to forest’
[+affr.]	[+approx.]	/fz.wä/	[ɸətswæ]	‘forest (EMPH)’
[+fric.]	[+oral]	/mnz.wä/	[məⁿtswæ]	‘house (EMPH)’
[+fric.]	[+affr.]	/buf.zenz/	[ᵐbuɸtʃeⁿts]	‘your wife’
[+fric.]	[+fric.]	/ef.thar/ /füs.füs/	[ʔeɸðaɾ] [ɸʏsɸʏs]	‘dry season’ ‘wind’
[+fric.]	[+approx.]	/nzf.wi.yak/ /naf.wä/ /fith.wo.g.si/	[ⁿtsəɸwIjak] [naɸwæ] [ɸiθwɔŋgəsi]	‘we walked’ ‘they (EMPH)’ ‘take out’
[+fric.]	[+lab-vel]	/math.kwi/ /y.ra.kth.kwa/	[maθkʷi] [jəɾakəθkʷa]	‘personal name’ ‘he put on top’
[+approx.]	[+oral]	/faw.ka.rä/	[ɸaʷkaɾæ]	‘with payment’
[+approx.]	[+nasal]	/faw.ma/	[ɸaʷma]	‘from payment’

C_a	C_b	underlying representation	phonetic realisation	gloss
[+approx.]	[+affr.]	/bäw.zö/	[^{m}bæ^{w}tʃœ]	‘paperbark’
[+approx.]	[+fric.]	/wy.thk/	[wə̆^{j}ðə̆k]	‘comes to end’

We can make a number of observations from Table 2.8 above. 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: *kumda* [kum^{n}da] ‘basket’, *kumgsi* [kum^{ŋ}gə̆si] ‘smell (v)’, *dmgu* [^{n}də̆m^{ŋ}gu] ‘waterhole’, *tingwä* [tin^{ŋ}g^{w}æ] ‘tree type’. If C_a is a phoneme other than a nasal, the cluster will be broken up: *garda* [^{ŋ}gaɾə̆^{n}da] ‘canoe’, *äthgam* [ʔæðə̆^{ŋ}gam] ‘Parinari nonda’, *thfgarwrmth* [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/+/b/, /n/+/nz/, /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 (*ninrr* /nin.rr/ [ninrə̆ɾ] ‘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 /kw/ and /gw/ comes two sources. First, we find examples like *zokwasi* [tsə̆kwasi] ‘speech’ where the short, centralised allophone of /o/ shows that /k/ is the coda of a closed syllable. Compare this with the discussion of /o/ (§2.2.1) and the discussion of syllable weight (§2.4.1). Secondly, verb stems ending in /k/ and /g/ select the *-wr* allomorph of the non-dual suffix (§5.5.3.3). Consequently, heterosyllabic clusters /k.w/ and /g.w/ as well as the complex phonemes /kw/ and /gw/ 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). Hence, we do not find minimal pairs based on syllabicity in Komnzo. As was explained in §2.2.2 above, 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 /mr.nen/ [mə̆ɾnen] or /m.r.nen/ [mə̆ɾə̆nen]. 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 (see §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 /y/ respectively. In all other instances it is [ŏ].

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 and in a second step epenthetic vowels are inserted to break up unsyllabified consonant clusters. This algorithm proceeds backwards (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 (see §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 find schwa never in word-final position. There are only a handful of lexemes in which schwa is attested word-finally.

The direction is important in order to explain forms like *wonrsoknwr* [wĕnŏɾsɔkŏnwŏɾ][9] 's/he is bothering me' which is syllabified /wo.nr.so.kn.wr/. The algorithm is applied from right to left which is why the cluster /r.s/ is first recognised as a possible heterosyllabic consonant cluster. After this recognition, schwa is inserted between /n/ and /r/. 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 between /r/ and /s/ which yields the incorrect form **/won.r.so.kn.wr/*. As pointed out above, there is some degree of optionality. In elicitation, informants accepted schwa insertion in both

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

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

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 *frmnzsi* /frm.nz.si/ 'fix, prepare' in which the onset cluster /fr/ is never broken up even if the verb is fully inflected: *yafrmnzr* /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 cluster only contains an epenthetic vowel if (i) the restricted verb stem is used and (ii) the verb is marked for dual number: *thrthbth* [ðɾəðəᵐbəθ] 'they put them inside'.[10]

In Figure 2.3-5 below, I present four examples spelling out the algorithm step by step:

/kwark/	underlying representation
	↓
/kw$_\sigma$[a]rk/	Rule 1: Associate each specified vowel with a nucleus.
	↓
/$_\sigma$[kwa]rk/	Rule 2: Maximise onsets. ⟶ establishes the syllable $_\sigma$[kwa]
	↓
/$_\sigma$[kwa]$_\sigma$[rk]/	Rule 3b: Break up consonant clusters. ⟶ schwa is inserted between /r/ and /k/ and creates a CVC syllable
	↓
/kwa.rk/	syllabified form: [kʷarə̆k]

Figure 2.3: Syllabification of *kwark* 'deceased'

2.4.4 Minimal word

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

Compared to polysyllables, monosyllabic roots have a slightly longer vowel if they are closed syllables 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* [ɸæ:] 'there (DIST)'. In

[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).

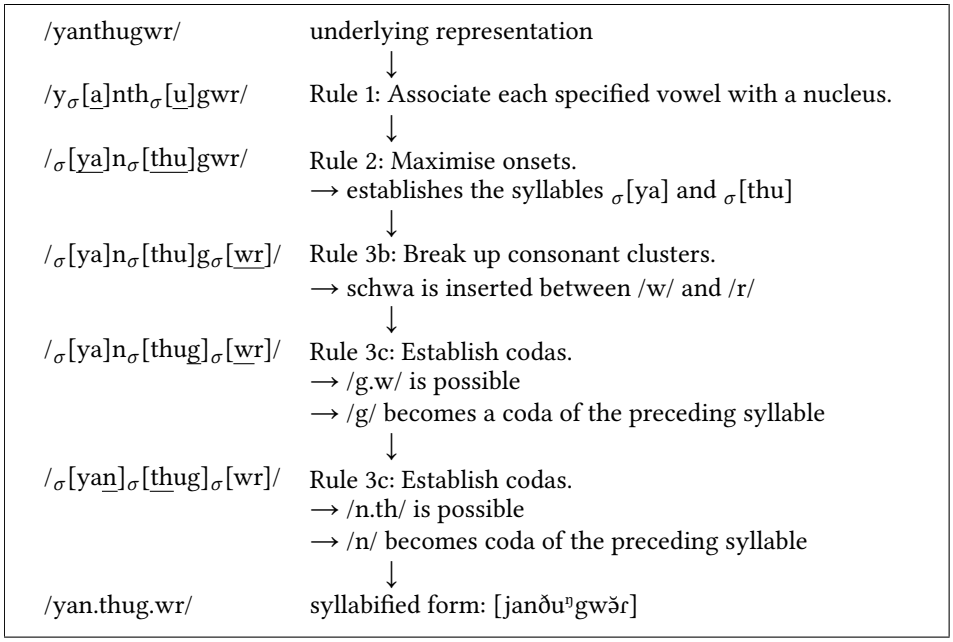

Figure 2.4: Syllabification of *yanthugwr* 's/he tricks him here'

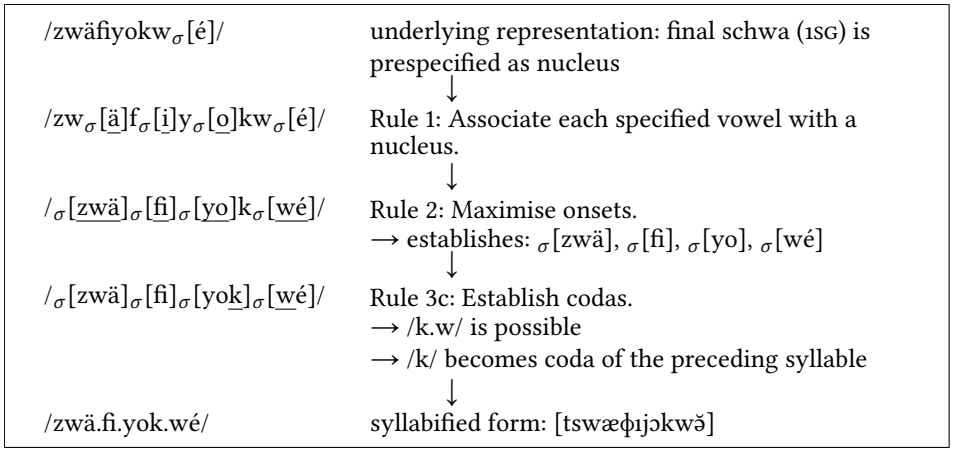

Figure 2.5: Syllabification of *zwäfiyokwé* 'I finished sth. for her'

/skrifzenz/	underlying representation
	↓
/skr$_{\sigma}$[i̲]fz$_{\sigma}$[e̲]nz/	Rule 1: Associate each specified vowel with a nucleus.
	↓
/s$_{\sigma}$[kri̲]f$_{\sigma}$[ze̲]nz/	Rule 2: Maximise onsets.
	→ establishes: $_{\sigma}$[kri̲], $_{\sigma}$[ze̲]
	↓
/s$_{\sigma}$[kri]f$_{\sigma}$[zenz̲]/	Rule 3c: Establish codas.
	→ no cluster with /nz/
	→ /nz/ becomes the coda of the preceding syllable
	↓
/s$_{\sigma}$[krif̲]$_{\sigma}$[z̲enz]/	Rule 3c: Establish codas.
	→ /f.z/ is possible
	→ /f/ becomes the coda of the preceding syllable.
	↓
/$_{\sigma}$[s̲]$_{\sigma}$[k̲rif]$_{\sigma}$[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'

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 in open syllables. I employed this phenomenon above 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* [^{ŋ}gɔn] 'hips' or *rot* [rɔt] '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 [e̞] in the verb *thorsi* [ðɔrsi] '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], which consists of (*thomon-* 'pile up firewood' + *-si* NMLZ).

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] ~ [sə̆ɾak] 'boy' and *zra* [tsɾaː] ~ [tsə̆ɾa] 'swamp'.

2.4.5 Stress

Stress is a syllable-level phenomenon in Komnzo. A stressed syllable is marked by a clearer pronunciation, higher intensity and sometimes higher pitch. Vowel length is not an acoustic correlate of stress and even the epenthetic vowel (a short schwa) is frequently stressed. That being said, specified vowels usually become more centralised and shortened in word-final position which is always unstressed.

The domain of primary stress (marked by ˈ in the examples) is the initial syllable of a word. There are a number of exceptions to initial stress which I will describe below. Secondary stress (marked by ˌ in the examples) carries little function in Komnzo and it is often hard to distinguish from unstressed syllables. Secondary stress is absent in bi- and trisyllabic words. Only few roots have more than three syllables and none have more than four. An example of a four-syllable root is *ˈngeˌmäku* /n.ge.mä.ku/ [nə̆ᵑgemækuˈ] '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: *ˈkwamnzokˌwrmth* /kwam.nzok.w.r.mth/ [kʷamⁿdzə̆kwə̆ɾə̆mə̆θ] 'They were dancing.'

There are some exceptions to initial stress. For example, in partial reduplication (§4.2) the first syllable is unstressed as in: *rˈrokar* /r.ro.kar/ 'things'. In full reduplication, we find initial stress *ˈrokarˈrokar* as with the corresponding singleton form *ˈrokar*. A second environment in which the first syllable is unstressed are inflected verbs with a proclitic. An example is the form *bŋatrakwr* /b.ˈŋa.trak.wr/ 's/he falls there'. The proclitic *b*= (MED) is added on an 'outer layer' to the otherwise 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 of up to four syllables construct a disyllabic trochee foot. In Table 2.9 below, I present templatic stress patterns for words between two and four syllables of length.

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, thus, constructing a tri-syllabic foot, but there are also exceptions. Variation 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.

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

syllable structure	example	phonetic	gloss
ˈσσ	*ˈnzäthe*	[ⁿdʒæðe]	‘namesake’
	ˈebar	[ʔeᵐbaɾ]	‘head’
	ˈnzrm	[ⁿdʒ̆ɾ̆ə̆m]	‘flower’
ˈσσσ	*ˈkafara*	[kaβaɾa]	‘river pandanus’
	ˈbägwrm	[bæᵑgʷə̆ɾ̆ə̆m]	‘butterfly’
	ˈkrbu	[kə̆ɾ̆əᵐbu]	‘swelling’
ˈσσˌσσ	*ˈnänzüthˌzsi*	[næⁿdʒʏθtsə̆si]	‘cover with soil/mud’
	ˈkukuˌfasi	[kukuɸasi]	‘Grey Shrike-trush’
	ˈkdeˌwawa	[kə̆ⁿdewawa]	‘firefly’

2.5 Morphophonemic Processes

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

2.5.1 Vowel harmony after *-wä*

The emphasiser suffix *-wä* attaches to nominals. Affixation 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. 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 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 /ä/ 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 /ä/ 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 dual marking. Dissimilation targets the non-dual /ä/ 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 /ä/, for two verb stems it is /ö/. Some examples are: *mar-* ‘see’, *far-* ‘set off’, *faf-* ‘hold’ and *wär-* ‘crack, happen’, *rä-* ‘be, do’, *räs-* ‘erect’, *söbäth-*

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

'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 *mräzsi* /m.rä.z.si/ 'stroll'. In the inflected verb form, the initial consonant is syllabified as a coda: *zemräs* 'he strolled around' (syllabified as /zem.räs/). If the ventive prefix *n-* is added to the inflection, trigger vowel and prefix vowel are separated by another syllable, but this does not affect the raising: *zenmräs* 'he strolled towards here' (syllabified as /zen.m.räs/). 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 fact that the vowel in the prefix encodes duality.

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*.

Raising of the prefix vowel is a morphophonemic process, not a general phonological process. For example, we do find lexemes where /ä/ and /a/ occur in adjacent syllables

[11] The majority of Komnzo verbs have two verb stems, a restricted and an extended stem (See §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'.

(*atätö* 'tree type' (Pouteria sp), *mätraksi* 'bring out'); the same goes for /ä/ and /ä/ (*krätär* 'tree type' (Oriocalis sp), *thäfäm* 'ripples'). Moreover, the /ä/ 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. When the valency changing prefix *a-* is added to the inflection, these two formatives are realised as *ä-* and *wä-* respectively (see §5.5.1.2). However, the /ä/ vowel in these formatives is not raised to *e-* in inflected verb forms, for example *wäfänzr* '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 only found with restricted stem. Restricted stems in turn do not combine with the prefixes of the alpha series (see §5.5.1.2), 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] or [ü], and [y] → [i]) and the reverse from [u] to [w] 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 *bŋatrakwr* /b.ŋa.trak.wr/ 's/he falls there'. Some of the verb prefixes in the alpha series begin with an approximant (*wo-* 1SG, *w-* 3SG.F, and *y-* 3SG.MASC). If the clitics are attached to these forms the high approximants are realised as high vowel: *u-* 1SG, *ü-* 3SG.F, and *i-* 3SG.MASC. A few examples are given in (3-5) below.

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

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

(5) *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 one of the subseries of beta (β_2) end in a [u] vowel, for example *ku-* 1SG, *su-* 3SG.MASC, *thu-* 2|3NSG. The valency changing prefix *a-* occurs between the beta prefix and the verb stem , for example *ku-a-* 'for me', *su-a-* 'for him', *thu-a-* 'for you/them'. In this case, the [u] becomes part of an onset consonant cluster and is realised as a high back approximant [w]. An example is given in (6-7).

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

(7) *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 amongst 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* [^{n}dzokta] which they report was common in their parent's and grandparent's generation.

Words from the first period are: *frayn misin* [ɸrajǎn mısın] 'plane, flying machine', *kas raba* [kas ɾa^{m}ba] 'gas lamp', *dis* [^{n}di:s] 'dish, plate', *damaki* [^{n}damakı] '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 [^{m}b]. 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 [a͡ı] in 'dynamite' is monophthongised in *damaki*. The voiced alveolar stop [d] becomes prenasalised [^{n}d] in *damaki* and *dis*. 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'[12] from Hiri Motu and *baisikol* 'bicycle' from English. Note that the English diphthong [a͡i] 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]. It seems, in the early period, [l] was changed in all environments, but 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 1960's, 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.

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. 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 disfunctional 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 (→).

[12] *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.

Table 2.11: Comparison of orthographies: consonants

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

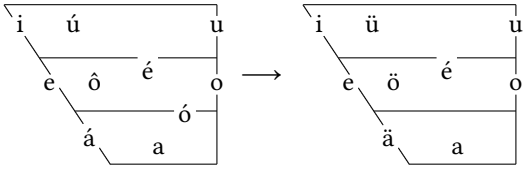

Figure 2.7: Comparison of orthographies: vowels

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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.