A grammar of Cheke Holo

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2 Phonology

2.1 Introduction

CH phonology includes several noteworthy features. Among these are consonant clusters, voiceless continuants, and phonological phenomena involved in verb nominalization. The number of consonantal phonemes is 31 and there are five vowel phonemes. These are described and contrasted in sections 2.2 and 2.3. Allophony in CH is not significant, but what does occur is noted in section 2.4. Syllable patterns are all open, as described in 2.5. Consonant clusters and vowel sequences are many in number and frequency, and these are described in sections 2.6 and 2.7. Assimilation is fairly unremarkable, but what is active is noted in 2.8. As discussed in section 2.9, stress follows typical Oceanic conventions of occurring primarily in penultimate position in multi-syllable words. Argumentation for the presence of clitics in CH is presented in section 2.10. Nominalization by means of phonological processes occurs in four different phonemic environments, and is described in 2.11. Reduplication (section 2.12) is quite common in CH, predominately on verbs. Finally, the interplay between phonological considerations and orthographic conventions, including the somewhat intense history of suggested changes to some culturally-entrenched orthographical representations, receives an overview in 2.13.

2.2 Phoneme charts

The following Tables present the CH phonemes. The analysis of the consonants here differs slightly from that of White (1988), though the vowels are classified identically.[8] In Table 1, the orthographic representations of the consonants are indicated in parenthesis next to the phoneme, as are the vowels in Table 2.

[8] There are three primary differences with White (1988:x-xi): 1) White classified the voiceless velar fricative as voiced aspirated, rather than as voiceless. It should be represented as voiceless. 2) White includes semi-vowel /w/ in his phoneme chart. He notes that /w/ only occurs in Solomons Pijin loan words that have come into common use in CH. I omit /w/ due to its non-occurrence in CH (i.e. non-borrowed) words. 3) White proposed that the voiced flap /ɾ/ is a phoneme, but I posit instead that the trill /r/ is underlying, and that [ɾ] and [r] are allophones. The total number of consonantal phonemes is 31, as opposed to White's number of 32. As mentioned, I do not analyse /w/ as a phoneme, and this accounts for the basic difference in the totals.

Table 1: CH Consonants
(note: CH orthographic representations are in parentheses)

		Labial	Alveolar	Palato-alveolar	Velar	Glottal
Stops & affricates	vl	p (p)	t (t)	tʃ (ch)	k (k)	ʔ (')
	aspirated	p^h (ph)	t^h (th)		k^h (kh)	
	vd	b (b)	d (d)	dʒ (j)	g (ḡ)	
Fricatives	vl	f (f)	s (s)		x (gh)	h (h)
	vd	v (v)	z (z)		ɣ (g)	
Nasals	vl	m̥ (mh)	n̥ (nh)	ɲ̊ (gnh)	ŋ̊ (n̄h)	
	vd	m (m)	n (n)	ɲ (gn)	ŋ (n̄)	
Lateral approximants	vl		l̥ (lh)			
	vd		l (l)			
Trill	vl		r̥ (rh)			
	vd		r (r)			

Table 2: CH Vowels
(note: CH orthographic representations are in parentheses)

	Front	Central	Back
Close	i (i)		u (u)
Mid	e (e)		o (o)
Open		a (a)	

2.3 Description of the contrastive features of phonemes

All CH sounds are produced with egressive lung air.

2.3.1 Consonants

It is important to present data which shows that the phonemes listed on the charts do indeed contrast, and are not just allophones of each other. I will show the consonants contrasted within their natural classes or categories word initially and medially, where applicable.

Stops and Affricates

The stops differ as to place of articulation: labial, alveolar, velar, and glottal. All stops except the glottal contrast between voiced, voiceless, and aspirated. Examples follow of minimal pairs (or near minimal pairs) to illustrate the contrasts.

(3) /p/ and /ph/
/paja/ ['pa.ja] 'bitter, sour'
/pʰaja/ ['pʰa.ja] 'adze, or poisonous snake'

(4) /p/ and /b/
/posa/ ['po.sa] 'to arrive at'
/bosa/ ['bo.sa] 'to churn up water'

(5) /b/ and /pʰ/
/buka/ ['bu.ka] 'uncooked'
/pʰuka/ ['pʰu.ka] 'wild banana'

(6) /t/ and /tʰ/
/toga/ ['to.ga] 'be well settled'
/tʰoga/ ['tʰo.ga] 'one thousand'

/toutʰoru/ [tou.'tʰo.ru] 'see flickering lights'
/tʰoutoru/ [tʰou.'to.ru] 'lightning bug'

(7) /t/ and /d/
/tapa/ ['ta.pa] '1DU.INCL'
/daka/ ['da.ka] 'stamp down'

/dadalu/ [da.'da.lu] 'wash face'
/tataha/ [ta.'ta.ha] 'one by one'

(8) /tʰ/ and /d/
/tʰamna/ [ˈtʰam.na] ‘type of wood used for firewood’
/daŋna/ [ˈdaŋ.na] ‘to fast, abstain’

/tʰoka/ [ˈtʰo.ka] ‘final outcome, resolution’
/dokʰa/ [ˈdo.kʰa] ‘dig a hole’

(9) /k/ and /g/
/klopa/ [ˈklo.pa] ‘break’ (as in ‘an arm breaks’)
/glopa/ [ˈglo.pa] ‘wall section between posts’

/kreso/ [ˈkre.so] ‘lie on back with legs raised’
/greto/ [ˈgre.to] ‘dried coconut leaf’

(10) /k/ and /kʰ/
/kato/ [ˈka.to] ‘to cut down with an axe’
/kʰato/ [ˈkʰa.to] ‘to encounter, meet’

/keli/ [ˈke.li] ‘good’
/kʰeʔi/ [ˈkʰe.ʔi] ‘teeth’

/paka/ [ˈpa.ka] ‘lower elevation’
/fakʰaekʰae/ [fa.ˈkʰae.kʰae] ‘to tease’

(11) /kʰ/ and /g/
/kʰadʒa/ [ˈkʰa.dʒa] ‘cough’
/gadʒu/ [ˈga.dʒu] ‘tree’

/goɣa/ [ˈgo.ɣa] ‘bark used to blacken’
/kʰoga/ [ˈkʰo.ga] ‘section of fishing net’

(12) /ʔ/ and ∅
/biʔo/ [ˈbi.ʔo] ‘big’
/bio/ [ˈbi.o] ‘nautilus shell’

(13) /ʔ/ and /k/
/pʰaʔu/ [ˈpʰa.ʔu] ‘head’
/pʰaki/ [ˈpʰa.ki] ‘tree of red dye’

(14) /ʔ/ and /h/
/hiʔo/ ['hi.ʔo] ‘take’
/hihi/ ['hi.hi] ‘pry apart’

The affricates differ between voiced and voiceless palatal articulation, and this is illustrated with the following minimal pairs:

(15) /dʒ/ and /tʃ/
/dʒa/ ['dʒa] ‘sandbar’
/tʃa/ ['tʃa] ‘stick, poke’

/tʃau/ ['tʃau] ‘banana’
/dʒau/ ['dʒau] ‘perhaps’

Fricatives

The contrasts between fricatives generally pattern those of the contrasts between stops, except for the fact that aspirated fricatives do not occur. Thus, the fricatives differ in the labial, alveolar, velar, and glottal points of articulation, and between voiced and voiceless, except for the glottal fricative, which is only voiceless.

Examples of minimal pairs (or near minimal pairs) to illustrate the contrasts:

(16) /ɣ/ and /x/
/xao/ ['xao] ‘be raised, as one leg resting on another’
/ɣao/ ['ɣao] ‘pull on a bowstring’

(17) /g/ and /ɣ/
/aga/ ['a.ga] ‘drink without touching container to mouth’
/aɣa/ ['a.ɣa] ‘brightly shine’

/gaoɣat^{h}o/ [gao.'ɣa.t^{h}o] ‘thought’ (noun)
/ɣaoɣat^{h}o/ [ɣao.'ɣa.t^{h}o] ‘to think’ (verb)

(18) /k/ and /x/
/kaokamo/ [kao.'ka.mo] ‘repeatedly steer canoe from front paddle’
/gaxamu/ [ga.'xa.mu] ‘wedding feast’

(19) /kh/ and /x/
/kakamo/ [ka.'k^{h}a.mo] ‘arm and finger measurement’
/gaxamu/ [ga.'xa.mu] ‘wedding feast’

(20) /h/ and /x/
/hamu/ ['ha.mu] ‘bail out a canoe’
/ɣaxamu/ [ɣa.'xa.mu] ‘wedding feast’

(21) /k/ and /ɣ/
/kari/ ['ka.ri] ‘untie thatch’
/ɣari/ ['ɣa.ri] ‘stunted in growth’

(22) /f/ and /v/
/fara/ ['fa.ra] ‘very much’
/vaa̤ra/ ['va.a̤ra] ‘hardwood tree’

/faraɣado/ [fa.ra.'ɣa.do] ‘playfully insert syllables into one’s name’
/varadaki/ [va.ra.'da.ki] ‘twenty’

/tafo/ ['ta.fo] ‘meet someone’
/rave/ ['ra.ve] ‘cut a canoe’

(23) /f/ and /p/
/fala/ ['fa.la] ‘cut-nut tree’
/pala/ ['pa.la] ‘carry on the shoulder’

(24) /s/ and /z/
/sisi/ ['si.si] ‘flower’
/zizi/ ['zi.zi] ‘play recklessly and freely’

Nasals

The nasals differ in four points of articulation: labial, alveolar, palatal, and velar, and contrast between voiced and voiceless.

Examples of minimal pairs (or near minimal pairs) to illustrate the contrasts:

(25) /m/ and /m̤/
/meke/ ['me.ke] ‘inceptive aspect’
/m̤eke/ ['m̤e.ke] ‘dog’

/nomi/ ['no.mi] ‘2PL alienable possessive pronoun’
/nom̤i/ ['no.m̤i] ‘to hear’

(26) /n/ and /n̥/
/nara/ ['na.ra] ‘east wind’
/n̥ara/ ['n̥a.ra] ‘search’

/naʔa/ ['na.ʔa] ‘3SG.F pronoun’
/n̥aʔa/ ['n̥a.ʔa] ‘put’

(27) /ŋ/ and /ŋ̊/
/ŋigru/ ['ŋi.gru] ‘flood’
/ŋ̊igru/ ['ŋ̊i.gru] ‘move by force’

(28) /ŋ/ and /n/
/ŋali/ ['ŋa.li] ‘shake’
/nali/ ['na.li] ‘quickly’

/ŋala/ ['ŋa.la] ‘just/only’
/nalafe/ [na.'la.fe] ‘type of vine used in canoe construction’

(29) /n/ and /ŋ̊/
/naɲaho/ [na.'ɲa.ho] ‘feast presented by husband to wife’s mother’
/ŋ̊aɲo/ ['ŋ̊a.ɲo] ‘agitated’

/mana/ ['ma.na] ‘3SG pronoun’
/noŋ̊ari/ [no.'ŋ̊a.ri] ‘fragrant’

(30) /ɲ/ and /ɲ̊/
/ɲafa/ ['ɲa.fa] ‘rest’
/ɲ̊aɣa/ ['ɲ̊a.ɣa] ‘wither’

(31) /ɲ/ and /ŋ/
/noɲa/ ['no.ɲa] ‘3SG alienable possessive pronoun’
/naŋa/ ['na.ŋa] ‘worry’

(32) /m/ and /n/
/maŋa/ ['ma.ŋa] ‘open mouth widely’
/naŋa/ ['na.ŋa] ‘worry’

/malu/ ['ma.lu] ‘rough sea’
/nalu/ ['na.lu] ‘philodendron plant’

(33) /m/ and /n̥/
/mage/ ['ma.ge] ‘tense up, as in argument’
/n̥aɣe/ ['n̥a.ɣe] ‘rise or surface’

(34) /m/ and /ŋ̊/
/glima/ ['gli.ma] ‘five’
/gliŋ̊o/ ['gli.ŋ̊o] ‘k.o. vine’

(35) /m/ and /ŋ/
/maja/ ['ma.ja] ‘rainbow’
/ŋaja/ ['ŋa.ja] ‘scalding hot’

(36) /ŋ/ and /ɲ̊/
/ŋagu/ ['ŋa.gu] ‘want possessions’
/ɲ̊aɣa/ ['ɲ̊a.ɣa] ‘wither’

Lateral approximants and trills

The lateral approximants and trills are all alveolar, and in both sets contrast between voiced and voiceless.

Examples of minimal pairs (or near minimal pairs) show the contrasts:

(37) /l/ and /l̥/
/liligi/ [li.'li.gi] ‘roll back and forth on surface of the water’
/li̥ligi/ [li.'l̥i.gi] ‘peel off skin’

/balu/ ['ba.lu] ‘with’
/bal̥u/ ['ba.l̥u] ‘bird’

(38) /r/ and /r̥/
/r̥ana/ ['r̥a.na] ‘startle’
/rane/ ['ra.ne] ‘becoming daylight’

/rur̥u/ ['ru.r̥u] ‘slide down a tree’
/ruruja/ [ru.'ru.ja] ‘feel heartburn’

(39) /l/ and /r/
/laka/ ['la.ka] ‘sticks together, like mud or wet flour’
/raka/ ['ra.ka] ‘cook in stone oven without wrapping in a parcel’

(40) /l̥/ and /r̥/
/bal̥u/ ['ba.l̥u] 'bird'
/bur̥u/ ['bu.r̥u] 'recede from flooded state'

2.3.2 Vowels

Similar to Palmer's (2009a:14) comments that the Kokota vowel inventory "reflects the widespread Oceanic five vowel system", the contrast between the five CH vowel phonemes are maintained in terms of front, central and back, and close, mid and open. The only central vowel is open. There is no recognizable phonemic length distinction, consistent again with data from Kokota (Palmer, *ibid*).

Vowel contrasts

(41) /i/ and /e/
/ɣigri/ ['ɣi.gri] 'to sprout young shoots'
/gegre/ ['ge.gre] 'large stones placed at edge of a stone oven'

(42) /o/ and /u/
/ɣodo/ ['ɣo.do] 'aim directly toward'
/ɣudu/ ['ɣu.du] 'flooded'

(43) /a/ and /e/
/basa/ ['ba.sa] 'form a large sore'
/besa/ ['be.sa] 'ground frog"

(44) /a/ and /o/
/hana/ ['ha.na] 'eight'
/hono/ ['ho.no] 'load'

(45) /i/ and /u/
/iru/ ['i.ru] 'misbehave'
/uru/ ['u.ru] 'hang down'

/tafri/ ['ta.fri] 'go around aimlessley'
/tafru/ ['ta.fru] 'cover over'

(46) /i/ and /a/
/ifu/ ['i.fu] 'blow'
/afi/ ['a.fi] 'wipe after defecating'

/buli/ ['bu.li] ‘cowrie shell’
/bula/ ['bu.la] ‘k.o. tree’

(47) /i/ and /o/
/bihi/ ['bi.hi] ‘find something sought after’
/boho/ ['bo.ho] ‘full after eating’

(48) /a/ and /u/
/bosa/ ['bo.sa] ‘splash, churn up water’
/bosu/ ['bo.su] ‘pig’

(49) /o/ and /e/
/dadalo/ [da.'da.lo] ‘bald, featherless’
/dadale/ [da.'da.le] ‘smooth stone in ocean’

(50) /e/ and /u/
/kheda/ ['k^{h}e.da] ‘k.o. canoe’
/khuda/ ['k^{h}u.da] ‘be kind, nice’

2.4 Allophony

Most phonemes of CH have only one allophone; thus there is very little variation in the pronunciation or realization of the phonemes. The following allophones are noted where more than one allophone occurs for the particular phoneme.

2.4.1 Phoneme /r/

Phoneme /r/ is pronounced as a tap [ɾ] when occurring after a stressed vowel, and as a trill when occurring before a stressed vowel. When occurring word initially, the /r/ is trilled, slightly (but definitely trilled nonetheless) and this is true whether the /r/ is stressed or unstressed. An example which shows how stress and syllable onset affect flapping and trilling in CH is found in the common word /tore/. This word is used to express surprise or sudden reaction of disbelief. When spoken softly, without loud voice or a registry of intonation that calls attention to the outburst of surprise of the listener, the stress is definitely on the first syllable, and the second syllable begins with the flapped allophone of /r/. But, when the exclamation /tore/ is used to vigorously express very sudden amazement at the received information, the process reverses: the second syllable receives the stress, and the /r/ is trilled and not flapped.

Thus, /r/ ---> [ɾ] / ˈV_
----> [r] / __ˈV

Examples:

/mare/ ---> [ˈma.ɾe] '3PL pronoun'
/bara/ ---> [ˈba.ɾa] 'fence'

/repa/-----> [ˈre.pa] '3DU.F pronoun'
/tore/-----> [to.ˈre] 'wow!; exclamation of surprise'

2.4.2 Vowel realized as glide: /i/ -> [j]

The vowel /i/ becomes a palatal glide [j] when occurring before vowel /a/.

/iara/ > [jaɾa] '1SG pronoun'
/iaɣo/ > [jaɣo] '2SG pronoun'
/pʰia/ > [pʰja] 'two'

2.4.3 Vowel realized as glide: /u/ -> [w]

The vowel /u/ becomes labial semi-vowel [w] when occurring before vowel /a/.

/sua/ > [swa] 'child'
/tuana/ > [twana] 'this'

2.5 Syllable patterns

The predominant CH syllable pattern is one of open syllables. In fact, CH speakers are well known in the Solomons for transforming closed syllables of borrowed English words into open syllables.[9] The following syllable patterns stand as distinct and usual syllables in various word formations:

V /e/ 'pragmatic emphasis marker'
CV/ka/ 'locative preposition'
CCV/kla/ 'fall with light noise on impact'
CVV/mae/ 'man'
CCVV/groi/ 'discussion'

[9] Though this is common, it is not a universal nor necessarily predictable pattern. The CH transform English 'engine' to *injini* and 'fiber [canoe]' to *faiba*, but the English word 'letter' is represented as *letas*. I have no rules to suggest which can usefully predict the variation, but can only plead CH speakers' preference. (N.B. The use of examples of a few loan words from English should not lead one to conclude that CH extensively employs CVC and VC syllable patterns in its language-inherent lexicon.) The tendency to transform closed syllables into open is a bit more predictable with the use of borrowed proper names, in that most all end with an open syllable. For example, CH speakers refer to someone named David as '*Deveti*' /deveti/, and John is called '*Jone*' /dʒone/.

The open syllable pattern, however, is not universal throughout the lexicon. As contrasted with consonant clusters occurring word intially, which is discussed in section 2.6, there are four consonantal sequences which occur word medially, namely /mn/ as in /gromno/ ‘darkness’, /ŋn/ as in /daŋna/ ‘fasting’, /m̥b/ as in /kofuboṃboi/ ‘miracle’, and /ŋ̊g/, as in /goŋ̊gotu/ ‘jealousy’. There are numerous occurrences in the lexicon of the /mn/ and /ŋn/ consonantal sequences, while /m̥b/ and /ŋ̊g/ only occur in the two lexical items which are cited.[10] These are analyzed as sequences across syllable boundaries rather than consonant clusters. The two words /gromno/ and /daŋna/ represent the syllable patterns CCVC.CV and CVC.CV respectively, and thus CVC and CCVC are to be included in the distinct syllable patterns in CH listed above.

But, how can one determine which consonant sequences should be divided to form the syllable coda of one syllable and the onset of the next, as opposed to sequences which are same-syllable clusters, functioning to form an onset of the next syllable? The answer lies in whether or not the consonant sequence in question ever forms the onset in the initial syllable of words. Thus, for example, the common sequence /gr/ would never be divided between the /g/ and /r/ to form a coda of one syllable and an onset of the next. This is a consonant cluster found word initially in several words, such as /groɣe/ ‘discussion’. When /gr/ occurs word medially, as in /thagru/ ‘backside’, the syllables are /tha.gru/, not */thag.ru/.

Regarding the many consonant sequences in CH, the only ones which participate in forming codas of syllables are those which never occur word initially. These consonantal sequences are /mn/, /ŋn/, /m̥b/, and /ŋ̊g/. Thus, all sequences described here which fit this sequencing pattern have as the first member of the sequence either a voiced or voiceless bilabial nasal, or a voiced or voiceless velar nasal.

There are five CH clusters with /n/ in the second position in the cluster, such as /sn/ in /snagla/ ‘free’. But the /sn/ is found both word initially as noted and as word medially in /nasnaplu/ ‘unconscious’. In the case of the latter, the cluster does not divide to form coda and onset, but only forms an onset. Another way of describing this is to say that /mn/, /ŋn/, /m̥b/, and /ŋ̊g/ are unique because each of these sequences must be preceded by a V to be functional in the language. Otherwise, these sequences do not occur in CH.

In summary, all CH consonants can occur as both word-initial onset and as word-internal onset. This is shown in the following table.

[10] There are 32 lexical entries with the /ŋn/ sequence, and 50 lexical occurrences of /mn/.

Table 3: CH Consonants as onset
(x=attested, - = not attested)

Onset	p	p^h	b	t	t^h	d	tʃ	dʒ	k	k^h	g	ʔ	f	v	s	z	x	ɣ	h
Wd initial	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
Wd medial	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
Onset	m̥	m	n̥	n	ɲ̊	ɲ	ŋ̊	ŋ	l̥	l	r̥	r							
Wd initial	x	x	x	x	x	x	x	x	x	x	x	x							
Wd medial	x	x	x	x	x	x	x	x	x	x	x	x							

None of the CH consonants can occur word-final coda. For the word-medial codas as described above, the following table shows the four consonants that can occur in that coda position.

Table 4: CH consonants as coda

(x = attested, - = not attested)

Coda	p	pʰ	b	t	tʰ	d	tʃ	dʒ	k	kʰ	g	ʔ	f	v	s	z	x	ɣ	h
Wd Final	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Wd medial	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Coda	m̥	m	n̥	n	ɲ̊	ɲ	ŋ̊	ŋ	l̥	l	r̥	r							
Wd Final	-	-	-	-	-	-	-	-	-	-	-	-							
Wd medial	x	x	-	-	-	-	x	x	-	-	-	-							

2.6 Consonant clusters

CH is noted by speakers of other Solomon Islands' vernaculars as relatively distinctive because of its prevalent consonant clusters. Two other Isabel languages, Blablanga and Kokota, both to the north of CH, also have consonant clusters. Both of these two language groups are related to CH, and are quite small in number of speakers. Both have a reasonably high rate of cognancy with CH, though Blablanga is closer to CH and Kokota is more closely related to Zabana in the far north of Isabel. Of the 22 clusters found in CH (see Table 5), 18 occur both word initially and word medially. The remaining four, /tr/, /bn/, /vl/, /sl/, only occur word initially.

Table 5: CH Consonant Clusters

(x = attested, - = not attested)

Cluster	pl	pr	tr	bl	bn	br	km	kn	kŋ	kl	kr
Wd initial	x	x	x	x	x	x	x	x	x	x	x
Wd medial	x	x	-	x	-	x	x	x	x	x	x
Cluster	gl	gr	fn	fl	fr	vn	vl	vr	sn	sl	sr
Wd initial	x	x	x	x	x	x	x	x	x	x	x
Wd medial	x	x	x	x	x	x	-	x	x	-	x

General observations:

1) None of the aspirated stops in CH is followed by a consonant.

2) Neither the voiced nor voiceless velar fricative is followed by a consonant, though the voiced velar stop occurs often in consonant clusters.

3) In terms of numbers of occurrence in actual lexical items, /r/ and /l/ are the predominantly occurring second members of the clusters, but there is also a reasonably high frequency of /m/ and /n/.

4) There are no restrictions as to certain vowels following certain consonant clusters. The clusters can be followed by any of the five phonemic vowels.

5) No velar or glottal consonants form the second member of a cluster.

6) All of the clusters listed are found word initially or syllable initially and thus form syllable onsets.

The following listing contains the consonant clusters in CH with representative examples. A word initial occurrence is listed first, and the second entry is a word medial example for those clusters which occur in that position.

(51) /pl/
/ploŋo/ ['plo.ŋo] ‘hike over a hill’
/snaplu/ ['sna.plu] ‘pull out of a long object’

(52) /pr/
/prosa/ ['pro.sa] ‘clap’
/naprai/ ['na.prai] ‘sun’

(53) /bl/
/blau/ ['blau] ‘steal’
/kakabla/ [ka.'ka.bla] ‘bite off skin of nut’

(54) /bn/
/bniha/ ['bni.ha] ‘burst, break open’
/bnilo/ ['bni.lo] ‘slip out’

(55) /br/
/braŋo/ ['bra.ŋo] ‘wither’
/mobra/ ['mo.bra] ‘sting’

(56) /tr/
/tro/ ['tro] ‘drop with a light splash’

(57) /kl/
/klaja/ ['kla.ja] ‘be bald’
/bukla/ ['bu.kla] ‘visibly pregnant’

(58) /km/
/kmana/ ['kma.na] ‘lot of’
/ɡlikmu/ ['ɡli.kmu] ‘be silent’

(59) /kn/
/knabe/ ['kna.be] ‘buy or sell a pig’
/naʔikno/ [na.'ʔi.kno] ‘people’

(60) /kɲ/

/kɲao/ ['kɲao] ‘subsiding water, such as after a flood’
/nakɲe/ ['na.kɲe] ‘goatfish’

(61) /kr/

/kroɣa/ ['kro.ɣa] ‘empty, deserted’
/bukrei/ ['bu.krei] ‘heap, pile’

(62) /gr/

/groma/ ['gro.ma] ‘frog’
/magra/ ['ma.gra] ‘to fight’

(63) /gl/

/glima/ ['gli.ma] ‘five’
/doglo/ ['do.glo] ‘straight, correct’

(64) /fr/

/frane/ ['fra.ne] ‘brave’
/dofra/ ['do.fra] ‘awake’

(65) /fl/

/flalo/ ['fla.lo] ‘fly’
/jifla/ ['ji.fla] ‘leave’

(66) /fn/

/fnuda/ ['fnu.da] ‘faint’
/jafnu/ ['ja.fnu] ‘surprised with disappointment’

(67) /vr/

/vra/ ['vra] ‘bolt, leap up’
/faɣavru/ [fa.'ɣa.vru] ‘load or pack in’

(68) /vl/

/vlada/[11] ['vla.da] ‘leave or arrive suddenly’

(69) /vn/

/vnahe/ ['vna.he] ‘cut with a sharp object’

[11] This is the only known occurrence of this cluster in CH.

(70) /sl/
/sloʔo/[12] ['slo.ʔo] ‘fall into or through a hole’

(71) /sn/
/snakre/ ['sna.kre] ‘allowed’
/brisna/ ['bri.sna] ‘crush, shatter’

(72) /sr/
/sruma/ ['sru.ma] ‘get something in the eye’
/fasre/ ['fa.sre] ‘strike against, as a match against a box’

2.7 Vowel sequences

While there are many vowel sequences in CH, there is no evidence that these sequences are accounted for as phonemic diphthongs. This is also true for neighboring Kokota. However Palmer (2009a:15) did describe diphthong formation in Kokota: “This [absence of phonemic diphthongs] is demonstrated by speaker syllabifications, in which every vowel in a sequence is syllabified separately. However, in normal speech certain non-identical VV sequences regularly undergo a process of diphthong formation.”

One criterion relevant to CH diphthong formation is the same as Palmer (2009a:16) employs in describing Kokota, namely “relative height”. That is, if a sequence contains two front vowels, two back vowels, or a sequence with /a/ as the first vowel, then that sequence is eligible for diphthong formation. Examples include:

(73) /a/ and /e/
/mae/ ['mae] ‘man’

(74) /a/ and /i/
/fai/ ['fai] ‘k.o. tree, used for canoes’

(75) /a/ and /o/
/ao/ ['ao] ‘that one’

(76) /a/ and /u/
/au/ ['au] ‘exist/be.at’

[12] This is the only known occurrence of this cluster in CH.

(77) /e/ and /i/
/mei/ ['mei] ‘come’

(78) /o/ and /u/
/fou/ ['fou] ‘like this’

However, no diphthong is formed in which the second vowel is not higher than the first. Thus, [ea], found in [beata] ‘calm sea, ’ is not a diphthong, and neither is [ia] in [iago] ‘you’ (SG).[13] Other examples follow.

(79) /e/ and /a/
/beata/ [be.'a.ta] ‘calm sea’

(80) /i/ and /a/
/iago/ [i.'a.go] ‘2SG’

(81) /o/ and /a/
/maloa/ [ma.'lo.a] ‘open air/sky’

(82) /u/ and /a/
/bua/ ['bu.a] ‘few’

(83) /i/ and /e/
/siesiʔe/ [si.e.'si.ʔe] ‘lower edge of fishing net’

(84) /o/ and /e/
/toe/ ['to.e] ‘spy in the distance’

(85) /u/ and /e/
/brue/ ['bru.e] ‘chase away’

[13] The CH speakers show this syllabification principle brilliantly when singing certain songs, and hence provide support for the basis of relative height as a determining factor. In the songs, the second singular pronoun *iago* is clearly pronounced with a syllable division between the *i* and *a*, as in *i-a-go*.

(86) /o/ and /i/
/gloi/ ['glo.i] ‘small bag worn over shoulder’

(87) /u/ and /i/
/fahui/ [fa.'hu.i] ‘finish’

(88) /e/ and /o/
/k^{h}oveo/ [k^{h}o.'ve.o] ‘small misty cloud, fog’

(89) /i/ and /o/
/fio/ ['fi.o] ‘small skin covering nuts’

(90) /u/ and /o/
/uoʔuo/ [u.o.'ʔu.o] ‘crazy’

(91) /e/ and /u/
/dedeu/ [de.'de.u] ‘earring’

(92) /i/ and /u/
/fagriu/ [fa.'gri.u] ‘teach, advise’

2.8 Glide formation

In regards to assimilation, the combination of /m/ and /u/ becomes [m^{w}] when the /u/ occurs before /a/ and /e/. Strictly speaking, the /u + a/ would not be classified as a dipthong, but is a vowel sequence. Examples:

(93) /muana/ > [m^{w}ana] ‘peace’
(94) /mueŋe/ > [m^{w}eŋe] ‘tiny red biting insect’

This same pattern occurs when Isabel speakers pronounce the name of the provincial capital, Buala, as [b^{w}ala].

2.9 Stress

2.9.1 Stress in underived root words

Regardless of word class, the stress on the word root is regularly on the penultimate syllable. The following examples of word roots (i.e. non-derived environments which exclude affixes, clitics, and compounds) illustrate this. Syllable boundaries are marked with a full stop, and stress is marked with a diacritic.

Two syllable words:

(95) /daka/ [ˈda.ka] ‘step foot onto’
(96) /mana/ [ˈma.na] ‘3SG pronoun’

Three syllable words:

(97) /bakala/ [ba.ˈka.la] ‘wide canoe paddle’
(98) /kekedo/ [ke.ˈke.do] ‘burned on the outside’

Four syllable words:

(99) /maŋahaɣei/ [ma.ŋa.ˈha.ɣei] ‘want, desire’
(100) /hamerane/ [ha.me.ˈra.ne] ‘morning’[14]

An expectation of total uniformity regarding the underlying penultimate stress rule on word roots is incorrect. During a period of almost three decades of listening to conversations, I have noted that occasional words deviate from the stress rule and have acquired their own stress patterns, and there is no apparent reason for the variation, whether examining them in isolation on word level or on a higher phonological level such as the sentence. The inventory of words which show this variation is low, and an examination of various potential factors, such as phonemic environments or number of syllables in the words under question does not reveal any structural reason for the change. The following common words deviate, and show stress on initial or antepenultimate syllables:

(101) /tʰoutonu/[ˈtʰo.u.to.nu] ‘story’
(102) /pʰaloho/ [ˈpʰa.lo.ho] ‘bow’
(103) /ˈla.la.hu/ [ˈla.la.hu] ‘play’

Example of stress on ultimate syllable:
(104) /n̥o.ro.ˈra/ [n̥o.ro.ˈra] ‘deep sea’

[14] This word may have originally been a compound noun. The word *rane* is a CH word in current use meaning ‘daylight is breaking’. However, /ha.me/ is not a known CH word.

2.9.2 Stress in morphologically complex words

Within derived words, the word root maintains penultimate syllable stress, but any additional suffixes or clitics also bear final stress. This is shown in the following examples. In (105), stress occurs on the /ha/, which is the penultimate syllable of the word root, and in (106) on the enclitic /ni/ '3rd singular object marker enclitic'. In (107), stress is again found on the /ha/, the penultimate syllable of the word root, while the 3rd singular object marker enclitic /ni/ is not stressed, but the stress falls on the following enclitic, the completive aspect marker /hi/.

(105) /ma.ɲa.ˈha.ɣei/ *magnahagei* 'want/desire'
(106) /ma.ɲa.ˈha.ɣei.ˈni/ *magnahagei=ni* 'want/desire=3SG.OBJ'
(107) /ma.ɲa.ˈha.ɣei.ni.ˈhi/*magnahagei=ni=hi* 'want/desire=3SG.OBJ=COMPL'

In example (108), the word root /tʰa.ˈbu.si/ 'same sex sibling/brother' carries penultimate stress, but with the addition of the enclitic /ɲa/ '3SG.POSS' in (109) the enclitic is also stressed.

(108) /tʰa.ˈbu.si/ 'brother'
(109) /tʰa.ˈbu.si.ˈɲa/ 'brother of him'

For words derived by the causative prefix /fa/, the syllable stress also remains on the penultimate syllable of the root, as in (111).

(110) /ˈbra.hu/ 'long'
(111) /fa.ˈbra.hu/ 'lengthen/cause to be longer'

The word root can undergo reduplication (which typically denotes durative action) in addition to the causation derivation. This morphological derivation does not affect the penultimate stress pattern on both the word root and the derived word as shown in (112).

(112) /fa.ba.ˈbra.hu/ 'repeatedly lengthen'

However, with the derived word serving as host to an enclitic, the enclitic is also stressed. In example (113), as in (109), stress is shown on the enclitic, which in this example is /di/ '3rd plural object marker':

(113) /fa.ba.ˈbra.hu.ˈdi/ 'cause them to repeatedly lengthen'

As with example (114), an additional enclitic receives stress:

(114) /fa.ba.ˈbra.hu.di.ˈhi/ 'cause them to repeatedly lengthen to completion point'

Compounding of nouns shows that each of the word roots that make up the compound demonstrates penultimate stress, as shown in (115) - (117):

(115) /ˈkha.kla.ˈsi.tha/ *khakla* 'leaf' + *sitha* 'k.o. nut' = 'scorpion fish'
(116) /ˈa.pu.ˈbla.hi/ *apu* 'wash' + *blahi* 'holy' = 'baptism'
(117) /ˈkʰo.ra.ˈma.la.ˈkʰu.ku/ *kʰora* 'hole' + *mala* 'PUR' + *kʰuku* 'defecate' = 'anus'

In reduplication, the stress remains on the penultimate syllable of the word root, as shown in (118):

(118)
/ˈno.lo/ 'walk'
/no.ˈno.lo/ 'walk about'

For transitive verbs which are reduplicated, the stress patterns on word root and enclitics in example (119) are similar to those shown in examples (113) and (114).

(119)
/ˈi.ju/ 'read'
/i.ˈju.ju/ 'reading'
/i.ˈju.ju.ˈni/ 'reading it'
/i.ˈju.ju.ni.ˈhi/ 'reading it completely'

2.10 Argumentation for the presence of clitics

CH demonstrates several morphemes that are bound forms. These include the following:

- the set of direct object enclitics is described in sections 4.2.2 and 8.3.2.1, and listed in Table 19
- two aspectual clitics, namely those that encode completive aspect with *=hi(la)* (described in section 8.3.2.3), and continuative aspect by *=u* (described in section 8.3.2.4)
- the enclitics which mark possession, listed in Table 36.

The reasons for describing these as clitics rather than either free word forms, or bound forms which are affixes, are discussed here:

First, they are indeed bound forms, not free forms, in that they cannot appear as independent words and are not independent of their hosts.

Second, as bound forms, they can attach to different hosts. This would nullify them from being considered as affixes, as affixes do not demonstrate freedom of stem selection. It is also noted that they attach at the end of phrases.

Third, these CH surface elements are separate grammatical elements (following Dixon, 2010a:221), and each is to be regarded as a separate grammatical word. These are not able to stand alone in CH, and as such, each is unable to make a phonological word by itself.

Verbs are the hosts for the direct object enclitics and for the completive and continuative aspectual clitics. The direct object enclitic must attach as enclitic to the host verb as, in (120), rather than either as a proclitic, or as a free form, occurring in a position other than enclitic, as in the two examples in (121):

(120) *mana* *cheke=ni*
3SG.M talk=3SG.OBJ
'He says it.'

(121) **mana* *ni=cheke*
3SG.M 3SG.OBJ=talk
*'he says it'

**mana* *ni* *cheke*
3SG.M 3SG.OBJ talk
*'he says it'

The analysis of the completive and continuative aspect markers is identical to that of direct object enclitics. The aspect markers both must attach as enclitic to the verb host, as in (122) and (124), rather than either as a proclitic or as a free form occurring in a position other than enclitic, shown in ungrammatical examples (123) and (125):

(122) *mana* *mei=hi*
3SG.M come=COMP
'He came-finish.'

(123) **mana* *hi=mei*
3SG.M COMP=come
*'he finish come'

(124) *mana* *mei=u*
3SG.M come=CONT
'He keeps coming.'

(125) **mana* *u =mei*
3SG.M CONT=come
*'he continues come'

Possession in CH is discussed in section 7.5.1. For the purpose of describing the presence of possessive enclitics, it is noted briefly that the CH possessive enclitics attach to both noun and verb hosts. First, clitics attaching to nouns is illustrated in examples (126) and (127):

(126) *Phoko=gna* *mana* *na* *theome* *no=gū*
shirt=3SG.POSS 3SG.M DEM[15] NEG ALN=1.SG.POSS
'His shirt, not mine.'

(127) *Phoko=gna* *ukru mana* *na* *theome phoko=gna* *vega*
shirt=3SG.POSS red 3SG.M DEM NEG shirt=3SG.POSS white
'His red shirt, not his white one.'

The possessive clitic must attach to the host noun and it cannot attach to the modifier of the noun. Thus, in attempting to change the hosts for the clitics in the previous example (127), the following construction in (128) is not attested:

(128) **Phoko ukru=gna* *mana* *na* *theome phoko* *vega=gna*
shirt red=3SG.POSS 3SG.M DEM NEG shirt white=3SG.POSS
*'his red shirt, not his white one'

In the following triad of examples with a compound noun, constrast is shown by the possessive clitic attaching only to the head noun and not to either member of the compound noun construction which modifies the head noun:

(129) *sugā=gna* *mae bi'o*
house=3SG.POSS man big
'house of the big man'

(130) **sugā* *mae=gna* *bi'o*
house man=3SG.POSS big
*'house of the man big'

(131) **sugā* *mae* *bi'o=gna*
house man big=3SG.POSS
*'house of the man big'

However, in example (132) the possessive enclitic attaches to the second member of a compound noun in a noun phrase when that head of phrase is further modified.

[15] The DEM 'demonstrative' gloss is used frequently in this book. In section (6.3.1), the various types of demonstratives in CH are discussed and more explicit glosses are given. Elsewhere, the DEM gloss is left underspecified so as to keep the length of the gloss line limited.

The possessive enclitic does not attach to the edge of the noun phrase, as shown by the ungrammaticality of (133).

(132) *sugā mae bi'o=gna Nareabu*
house man big=3SG.POSS Nareabu
'house of the big man of Nareabu'

(133) **sugā mae bi'o Nareabu=gna*
house man big Nareabu=3SG.POSS
*'house of the man big Nareabu'

In addition to possessive enclitics attaching to nouns, the verb can also serve as host for the possessive enclitic, as illustrated in (134). The enclitic attaches to the edge of the verb phrase, rather than to the noun phrase following, as in (135).

(134) *mei=gna mae Billy*
come=3SG.POSS male Billy
'Coming of Billy.'

(135) **mei mae Billy=gna*
come male Billy=3SG
*'come Billy of him.'

Stress distribution on the enclitics is illustrated in section 2.9.2.

2.11 Phonological considerations in nominalization

In CH grammar, nominalization of verbs occurs in four different phonemic environments. One environment is verbs which begin with voiceless stops. These verbs are nominalized through aspiration of the initial voiceless stops.

Table 6: Nominalization of verbs: voiceless stops

Verb	Nominalized form
/pukri/ 'to braid'	/p^{h}ukri/ 'rope'
/pore/ 'to comb'	/p^{h}ore/ 'comb'
/tatasu/ 'to sweep'	/t^{h}atasu/ 'broom'
/toɣu/ 'to poke a stick into'	/t^{h}oɣu/ 'stick for poking'
/koʔu/ 'to drink'	/k^{h}oʔu/ 'water'
/kudʒo/ 'to make smoke'	/k^{h}udʒo/ 'smoke'

Secondly, verbs that begin with liquids /l/ and /r/ are nominalised by the addition of /g/ before the liquid.

Table 7: Nominalization of verbs: liquids

Verb	Nominalized form
/lehe/ 'to die'	/glehe/ 'death'
/lapi/ 'to lick'	/glapi/ 'tongue'
/leka/ 'to shape the lines of a canoe's prow'	/gleka/ 'the shaped lines'
/roɣe/ 'to discuss'	/groɣe/ 'discussion'
/ragi/ 'to dance'	/gragi/ 'dance'
/rofo/ 'to be hungry'	/grofo/ 'hunger'

The third regular pattern of nominalization occurs with verbs which begin with a voiced velar fricative, /ɣ/. They are nominalized by changing the fricative to a stop.

Table 8: Nominalization of verbs: voiced velar fricative

Verb	Nominalized form
/ɣusna/ 'to question'	/gusna/ 'question'
/ɣeri/ 'to travel on river's edge'	/geri/ 'edge of river'
/ɣo̪ra/ 'to paddle'	/go̪ra/ 'paddle'
/ɣapa/ 'to stride'	/gapa/ 'stride'

The fourth regular pattern of nominalization involves verbs that begin with the voiceless glottal fricative /h/. This fricative changes to voiceless alveolar nasal /n̪/.

Table 9: Nominalization of verbs: voiceless glottal fricative

Verb	Nominalized form
/huge/ 'to swell up'	/n̪uge/ 'boil/sore'
/huga/ 'to put on a belt'	/n̪uga/ 'belt'
/hamu/ 'to scoop'	/n̪amu/ 'bailer'
/hogri/ 'to change'	/n̪ogri/ 'changed'
/haru/ 'to tie'	/n̪aru/ 'knot'
/haburu/ 'to join two end floats'	/n̪aburu/ 'float ends'

CH speakers describe the overall pattern for this formation of nominalization by saying that the initial sound of the verb is "strengthened". One can see from the examples and tables that in nominalizing verbs, the initial segment of the word shows a modification of the syllable onset. In some cases, a segment is added, such as with /h/ and /g/, while in other cases a phonological feature is altered (ɣ > g) or added ([nas]).

A summary of the nominalization rules is as follows:

$C_{vl}V > C^{h}_{vl}V$
LV > ɡLV (where L = /l/ or /r/)
ɣV > ɡV
hV > n̥V

There is an additional nominalization process, and it is one that is not phonologically motivated. Even so, its description is arbitrarily placed here for reference with the other nominalization processes. This process involves the prefixing of /na/ to a certain set of verbs to realize a nominal form, as illustrated in Table 10. This set does not appear to be defined by morphological, phonological, or word class grounds, but is a lexicalized set of verbs which receive the nominalizing prefix.

Table 10: Nominalization of verbs: prefixing /na/

Verb	Nominalized form
/m̥aɣu/ ‘to be afraid’	/nam̥aɣu / ‘fear’
/moja/ ‘to be dry’	/namoja/ ‘reef’
/fnera/ ‘to wound’	/nafnera/ ‘wound’
/ugra/ ‘to fish’	/naʔugra/ ‘fishing’
/um̥u/ ‘to go fast’	/naʔum̥u/ ‘speed’
/blau/ ‘to steal’	/nablau/ ‘thievery’
/tan̥i/ ‘to cry’	/natan̥i/ ‘crying’

2.12 Reduplication

Reduplication of the first CV syllable of the verb stem is quite common in CH. The verb is the predominant word class which reduplicates, while there is some evidence for adjective reduplication, as described in section 4.2.3.3, and also occasional evidence of noun reduplication. It is noted in the following examples that there are various types of reduplication represented, including the copy of the first syllable, the CVV of the first syllable, or the entire root. The purpose in this first section is to show the various purposes of reduplication as a general notion, rather than describe the various structural types. That description will follow, starting in 2.12.1.

Verbal reduplication serves two main purposes.[16] The first purpose is the most common, and that is to prolong or intensify the event or action which is being referred to, illustrated in (136) and (137).[17]

(136) /filo/ > /fifilo/
'look' > 'gaze'

(137) /tʃuru/ > /tʃutʃuru/
'pierce' > 'sew up'

The second function of verbal reduplication is to change intransitive verbs to transitive verbs, as in (138).

(138) /fruni/ > /fufruni/
'to be covered' > 'to cover something'

As mentioned, noun reduplication does occur though it is not widespread. It functions to note diversity of the noun:

(139) /soa/ > /soasoa/
'stripe' > 'multi-color stripes'

Another documented purpose of noun reduplication is establishing a figurative use for the reduplicated form from the root noun, as in (140), (141) and (142).

(140) /sua/ > /suasua/
'child' > 'banana seed pod'

(141) /tʃau/ > /tʃautʃau/
'banana' > 'kidney'

(142) /buri/ > /buiburi/
'biting fly' > 'gossip'

Another function of noun reduplication is deriving a verb from a noun, as in the following three examples.

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[16] Lynch *et al* (2002:44) mentions common purposes of reduplication in Oceanic as randomness of action, repetition, actor and patient plurality, and derivation of intransitive from transitive verbs. The latter function is reversed in CH as noted in the description, that is, the derivation of transitive verbs from intransitive.

[17] It is noted here that many of the reduplicated verbal forms are listed in the CH dictionary without full documentation of meaning. Where the meaning has not been explicitly stated, it is understood that duration, intensity, or repetition is intended. This follows White's indication of the main functions of this process.

(143) /bela/ > /beabela/
'wooden platform' > 'to stack up firewood'

(144) /beku/ > /bebeku/
'burial ground' > 'to bury'

(145) /tʃara/ > /tʃatʃara/
'rubbish' > 'be untidy'

There are three types of reduplication, classified as full reduplication; partial reduplication; and syllable reduplication. Each is now examined in turn.

2.12.1 Full reduplication

At least fifty-three examples of full reduplication are listed in the CH dictionary corpus. Of these, sixteen show productive reduplication. That is, sixteen fully reduplicated forms are comprised of root words which are identified as single lexical items which undergo reduplication. The other thirty-eight words have fully reduplicated forms, but those reduplicated forms are described as lexically reduplicated. That is, the root form within the word does not constitute a separate word in CH. In terms of semantic grouping, approximately one third of the members of this class exhibit some meaning related to motion or posture. Examples of productive and non-productive forms include the following.

Productively reduplicated forms:

(146) /bue/ > /buebue/
'to fan' > 'to keep fanning'

(147) /vra/ > /vravra/
'jump up' > 'be quick to act'

(148) /ʔiju/ > /ʔijuʔiju/
'read' > 'keep reading'

(149) /toe/ > /toetoe/
'spy' > 'stare at'

For fully reduplicated words, examples of non-productive forms, of which the non-reduplicated form does not constitute a word in CH, include:

(150) /losoloso/ 'flail with arms and legs'
(151) /ʔaloʔalo/ 'twitch legs when sleeping'

(152) /ɡrumagruma/ ‘commotion made by a pack of dogs chasing a pig in the forest’
(153) /ʔodoʔodo/ ‘walk in a slow, stooped fashion’

2.12.2 Partial, or “White’s rule” reduplication

According to White (White 1995:790) CH reduplication is formed by deleting the second consonant of a CVCV shape and thus producing a first syllable which is CVV in a resulting CVVCVCV word. This partial reduplication is here classed as “White’s rule” reduplication, following his major proposition regarding reduplication.[18] Thus,

(154) /bela/ > /beabela/
‘wooden platform’ > ‘stack up firewood’

(155) /tʃari/ > /tʃaitʃari/
‘run’ > ‘move swiftly’

(156) /heta/ > /heaheta/
‘strong (adj.)’ > ‘be strong/assertive’

(157) /nuri/ > /nuinuri/
‘wind’ > ‘breezy’

It is noted here that the rule also extends to a CCVCV shape, as in the following example. The initial CC is retained in the reduplicated form.

(158) /bligo/ > /bliobligo/
‘wave hand/fan flame’ > ‘wave lighted stick on road’

Non-productive reduplicated CCVCV forms include:

(159) /knauknaru/ ‘rough surface’

[18] White indicates that this is the overall, underlying reduplication process in CH, and he does not distinguish between the three classes in the way that I am proposing. He does not address full reduplication, and for the reduplication operation which I term syllable reduplication, he says (1990:790) that “it is also common in pronunciation to drop the second vowel in the double vowel syllable.” However, in the examples he gives, there is only one which is of the double-vowel type, as the rest are non-same vowels. White’s proposal for the underlying reduplication pattern means that there is no third class, but simple speaker preference on the large set of words which undergo what I term syllable reduplication. However, to capture the broad and noticeable pattern and indicate this as a reduplication class, I have proposed the syllable reduplication class as underlying for that large group of words, rather than projecting an arbitrary sort of variation of the partial, “White’s rule” class in which speakers simply drop the second vowel.

(160) /groirovi/ ‘large stone overhanging water’
(161) /grouromu/ ‘riddle’

The dictionary corpus shows a total of at least sixty-seven occurrences of this type reduplication, and at least forty-two of these are productively reduplicated. Unlike the fully reduplicated class, there does not appear to be a significant semantic grouping within this class. Nor does there appear to be any phonological, morphological, or semantic grounds for suggesting the motivation of this type reduplication as opposed to full reduplication.

There are two examples of this partial reduplication showing two of the same vowels successively occurring after the reduplication process, and in this case, the second vowel elides. This is because same successive vowels do not occur in CH without an intervening glottal stop. Thus, in example (162), the second /a/ in the reduplicated form elides, and yields /brabrana/ as the reduplicated form.[19] The process might thus be described as:

(162) /brana/ > /braa/ + /brana/ > /brabrana/
‘hot’ > ‘warm/lukewarm’

The same process is observed in (163):

(163) /fagrougrounu/ ‘procrastinate’, and not */fagrouugrounu/

2.12.3 Syllable reduplication

Reduplication of the first syllable occurs in at least sixty-two lexical items, and all but one of these is productively reduplicated. There does not appear to be phonological, morphological, or semantic evidence to suggest a motivating difference in this process from either of the other two. Examples include:

(164) /nolo/ > /nonolo/
‘to walk’ > ‘go walking about’

(165) /daḷa/ > /dadaḷa/
‘cut skin’ > ‘repetitive cutting of skin’

(166) /haŋa/ /hahaŋa/
‘hurry’ > ‘out of breath’

[19] It is perhaps reasonable to suggest that these examples would cause one to rename this class “White’s rule (amended)” rather than “White’s rule”. However, since these are the only two examples discovered in the corpus which yield a successive vowel environment, the anomaly is simply noted here.

(167) /beku/ > /bebeku/
'burial ground' > 'to bury'

(168) /vahi/ > /vavahi/
'choose' > 'process of choosing'

There are at least five words in this class which have an initial consonant cluster. Two of these have a /km/ cluster, and this cluster is reduplicated in the echo syllable formation.

(169) /kmeri/ > /kmekmeri/
'blink' > 'keep blinking'

(170) /kmokhu/ > /kmokmohu/
'stop' > 'continue to cease'

However, for words in this class which have an initial consonant cluster, and the second C in the cluster is /r/, the C elides when the echo syllable is formed.

(171) /froʔ/ > /fofroʔ/
'squeeze' > 'keep squeezing'

(172) /breku/ > /bebreku/
'break' > 'keep breaking'

(173) /fruni/ > /fufruni/
'cover' > 'cover completely'

2.12.3.1 Reduplication of vowel-initial words

If the stem has only a V as the initial syllable and the word is of the form VC(C)V or VV, then a glottal stop is added after the reduplication of the initial V to form the reduplication.[20] This is illustrated in examples (174) - (176):

(174) /aknu/ > /aʔaknu/
'strike' > 'beat'

(175) /afi/ > /aʔafi/
'wipe after defecating' > 'hold defecation in hand'

[20] Or, this can be further described as following from the underlying realization that all seemingly vowel initial words actually start in a glottal stop phonemically.

(176) /ei/ > /eʔei/
'do' > 'repeatedly do'

2.12.3.2 Aspiration

In syllable reduplication, occasional aspiration of /t/ is noted in certain words.[21] The occurrence of this aspiration is not predictable. In the reduplication process of each of the following, the /t/ of the root is aspirated in the reduplicated word:

(177) /taji/ > /tat^{h}aji/
'take care' > 'continue to take care'

(178) /tora/ > /tot^{h}ora/
'open' > 'keep open'

(179) /tuge/ > /tut^{h}uge/
'hammer' > 'keep hammering'

However, in the following words, the /t/ of the root is not aspirated. There is no apparent phonological, morphological, or semantic reason for the differences from the lexical items noted above which do exhibit aspiration.

(180) /tok^{h}i/ > /totok^{h}i/
'bump into' > 'keep bumping into'

(181) /tohi/ > /totohi/
'peel' > 'keep peeling'

(182) /tutu/ > /tututu/
'fight with fists' > 'keep fighting with fists'

2.12.3.3 Voicing alternations on nasals

There is evidence of voicing alternation on a nasal during reduplication. The word /maku/ 'strong' is acted upon by the causative prefix /fa/ to yield /famaku/ 'to make strong'. However, in the reduplicated form of /famaku/, the voiced nasal becomes voiceless:

(183) /famaṃ̥akhu/ 'to continue to make strong'

[21] There is also one example of this in the full reduplication class. The motion verb (common to the major semantic grouping of that class) /tei/ 'to go' becomes /teit^{h}ei/ 'journey'.

2.12.3.4 Multiple reduplicated forms

The reduplication of /filo/ 'look' patterns after more than one class. First, /filo/ reduplicates to /fifilo/ 'to gaze at', following the syllable reduplication class. Also, /filo/ follows the pattern of the "White's rule", partial class, to reduplicate to /fiofilo/ meaning to 'watch over', or 'care for'. Thus, there are two reduplication processes noted on the same root. However, full reduplication of the root, */filofilo/, is not attested in the data.

The multiple forms can also be observed in the reduplication of /fota/ 'to divide', namely /fofota/ and /foafota/, though there is not an apparent difference in meaning between the reduplicated forms. The two are variant forms meaning 'to continue in the divided state'. As similarly noted for /filo/, the fully reduplicated form of the root, /fota/, is not attested.

2.13 Orthographic conventions

2.13.1 Orthography of this book and its history

The orthography used in this book is based on that which is described in Table 1 for consonants and Table 2 for vowels.

David Bosma (personal communication, 1998), has provided the bulk of the background information pertinent to this section. He reported that while he and White both attempted to apply their phonological analyses to what they regarded as an improved orthography, these efforts were met with firm resistance by CH speakers. Linguists and missionaries from the late 19th and early 20th centuries helped the CH people to write down their language, and the orthography used at that time has in turn been passed down to successive generations of CH speakers.[22] It is still in use in what I term the historical orthographic representation. Bosma particularly made a studied attempt to revise the orthography for the benefit of CH speakers. Before discussing Bosma's proposed revised orthography, the consonantal

[22] It is obvious that there is a need to uncover some sources, oral or written, which can help us to determine exactly how the Cheke Holo language was first written, and then analyse any changes which may have occurred between then and now. Ray (1926) provided the earliest published documentation of the language, but a history of the actual spelling by the people themselves is unfortunately not available. All I have ever been told is, "This is the way we have always written it." Further interaction yields the information that "early missionaries wrote it down." That statement generates many more questions than it answers, but does indicate there is some history which needs uncovering. I know of no current source for accessing that information. Interestingly, Besnier (1995:xv) says the same for Nukulaelae, stating "how Nukulaelae Islanders developed historically the orthographic system that they currently use to write their language is undocumented. One can surmise that they tailored it on the orthography that London Missionary Society missionaries devised in the early nineteenth century for Samoan." The CH orthography was perhaps fashioned after work done by missionaries in Bughotu, which as noted, served as the "church language" for the island for many years.

phonemes are listed in Table 11 with corresponding information on how CH speakers have historically represented their orthography.

Table 11: Table of historical representation of the orthography
(note: Consonantal Phonemes are described next to the Historical Representation)

ConPhoneme	HistRepresentation	ConPhoneme	HistRepresentation
p	p	ɣ	g
p^h	ph	x	gh
t	t	h	h
t^h	th	m	m
k	k	m̥	mh
k^h	kh	n	n
ʔ	Ø	n̥	nh
b	b	ŋ	n̄
d	d	ŋ̊	n̄h
g	ḡ	ɲ	gn
tʃ	ch	ɲ̊	gnh
dʒ	j	l	l
f	f	l̥	lh
s	s	r	r
v	v	r̥	rh
z	z		

2.13.2 Bosma's suggested revised orthography

The basic revision, as described by Bosma (personal communication 1998), concerned the representation of two different sound patterns: 1) those reflecting a range of voiceless consonants, and 2) those reflecting voiced velar stops and nasals. He suggested twelve changes in the orthography.[23]

As noted in Table 12, all of the nasals, laterals, and trills have voiceless counterparts. The voiceless sound was described by Bosma as the production of the consonantal sound preceded by a puff of air. He represented this sound in the language by the letter 'h' preceding the consonant. The voiced stops /b d g/ all have voiceless and voiceless aspirated phonemic counterparts, but Bosma's suggested

[23] For a fuller description of this history, see Boswell, F., 2001.

orthographical changes were not directed at any features related to these phonemes, since they were written in an easily reproduced way. In the same type patterning, Bosma felt another adjustment was needed with the representation of the voiceless continuants /l̥/ and /r̥/. Thus, for example, /l̥oti/ 'prevent' was spelled *hloti*.

The representation of the voiced velar fricative presented another type challenge and the possible adjustment was thus different in that the 'h' took a position following rather than preceding the consonant. Bosma represented the /ɣ/ as 'gh'.[24]

The second type of sound pattern requiring orthographic adjustment concerned the occurrence of voiced velar stops and nasals. Bosma proposed an adjustment for the voiced velar stops when occurring before lateral or trill continuants. Thus, in the word /glimai/ 'five', the CH people had always represented the velar stop with what they called a 'g bar' or ḡ, and spelled it as in *ḡlimai* 'five'. Bosma proposed doing away with the 'g bar' representation in these environments, because even though /g/ and /ɣ/ phonemically contrast, the voiced velar fricative /ɣ/ never occurs before /l/ or /r/, and thus the contrast is neutralized.

Bosma's same idea held for the representation of voiced velar nasal /ŋ/ and voiceless velar nasal /ŋ̊/. He felt that the /ŋ/ could be represented as 'ng' rather than as n̄, or 'n bar'. Unlike /g/, the /ŋ/ occurs in non-predictable environments. Following the same pattern as other voiceless nasals, the /ŋ̊/ would be written as 'hng'.

Bosma's major effort at demonstrating and promoting the new orthography was the publication of the book, *Life in our village: short stories from Nareabu, Santa Isabel, Solomon Islands* (1981b). A few years later, after gathering his own data, White prepared to publish his dictionary in this new orthography as outlined below in Table 12. Phonemes which are affected by the revised orthography are marked by an asterisk before the phoneme.

[24] It is noted that at the time of Bosma's suggested revision, he had not yet identified in his research the voiceless velar fricative phoneme /x/. If he had, it is logical that he would have applied the same principle of representing a voiceless phoneme with 'h' to indicate what he called the 'puff of air preceding the sound'. And thus, the representation for the voiceless velar fricative would have been 'hgh', as noted in Table 12, and it is counted as one of the 12 changes that I cite.

Table 12: Suggested Revisions to Orthography
(note: ConPhoneme=Consonantal Phoneme; HistRepresentation=Historical Representation; BosmaSuggestion=Bosma Suggested Revision)

ConPhoneme	HistRepresentation	BosmaSuggestion
p	p	p
pʰ	ph	ph
t	t	t
tʰ	th	th
k	k	k
kʰ	kh	kh
*ʔ	Ø	’
b	b	b
d	d	d
*ɡ	g̱	g
tʃ	ch	ch
dʒ	j	j
f	f	f
s	s	s
v	v	v
z	z	z
*ɣ	g	gh
*x	gh	hgh
h	h	h
m	m	m
*m̥	mh	hm
n	n	n
*n̥	nh	hn
*ŋ	n̄	ng
*ŋ̊	n̄h	hng
*ɲ	gn	ng
*ɲ̊	gnh	hgn
l	l	l
*l̥	lh	hl
r	r	r
*r̥	rh	hr

2.13.3 Affirmation of historical representation

Despite Bosma and White's best efforts at promoting the new orthography, the CH speakers were not satisfied. It was felt that the early orthographic rendering of CH was sufficient overall, and should not be modified. After all, if it could be read and written, why change to a new orthography.[25]

Bosma acceded to the wishes of the people and the local translators and he encouraged publication with the long-standing orthography. All books published in the language since then have used the original orthography. These volumes include White's dictionary (White 1988), children's Bible story books (Piaso 1992a, 1992b), a book of stories published by the National Literacy Committee (Boswell, F. 1991), pre-reading books (Boswell, B. 1991a, 1991b), the New Testament (Committee 1993; reprinted 1995 and 2007), comics (Piaso 1999a, 1999b), Bible story books (Piaso n.d.), Old Testament portions (Committee 2005), and the reprinting of the CH hymnal, *Khoje Blahi*, in 2016.

2.13.4 A further revision?

As of this writing in June 2018, the CH speakers are being introduced to yet another possibility for orthographic changes. This effort is being led by the current Bible translation team of the Diocese of Isabel of the Church of Melanesia. Ironically, this trial orthography notably does away with the diacritics which Bosma sought in the 1970s to remove for ease of typing. The suggested revisions are motivated by the word processing input of their work on the Old Testament translation. While future publications might incorporate some or all these proposed changes, the historical orthography is still 'official' and in use. For example, as noted in the previous section, the CH Hymn Book (*Khoje Blahi*) was reprinted in 2016 with the historic, current orthography.

2.14 Summary

The CH phoneme inventory consists of 31 consonants and 5 vowels. Most phonemes have only one allophone. CH phonology demonstrates predominantly open syllables, though there are some rare exceptions. Namely, of the 22 consonant sequences in CH, there are four which participate in forming codas of syllables. It is noted that these four clusters are those which never occur word initially. These consonantal sequences are /mn/, /ŋn/, /m̥b/, and /ŋ̊g/. Four syllable words are attested in the language, though words of three syllables or less comprise the usual word length. CH syllable patterns are attested as showing regular penultimate

[25] The only change incorporated was the use of an apostrophe to represent the glottal stop. It is noted that while accepted as a useful representation, it was not consistently applied in orthographic renderings.

syllable stress, though there a few lexical items which demonstrate either ultimate or initial stress on a three syllable word. Nominalization in certain phonological environments is a significant feature of CH phonology. These four environments are: nominalization of verbs which begin with voiceless stops, verbs which begin with liquids, verbs which begin with voiced velar fricatives, and verbs which begin with voiceless glottal fricative. Reduplication of the first CV syllable of the verb stem is quite common in CH. The verb is the predominant word class which reduplicates. There are various types of reduplication represented, including the copy of the first syllable, the CVV of the first syllable, or the entire root.

Linguists and missionaries from the late 19th and early 20th centuries helped the CH people to write down their language, and the orthography used at that time has in turn been passed down to successive generations of CH speakers. That orthography is still in use. It is the one used in this book, and is described for consonants in Table 1 and for vowels in Table 2.