

Cua Phonemes

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0. Introduction

Cua is a Mon-Khmer language, spoken by approximately 10,000 people in the Trà Bồng District of Quảng-Ngãi Province, northwest of Quảng-Ngãi City, in South Viet-Nam. The language data in this paper¹ represents the Trà-Bồng Valley dialect, slightly different from the High Mountain dialect which includes a larger geographic area and considerably more speakers, but which remains inaccessible to the researchers because that area is not government-controlled. The research for this paper has been carried on intermittently for a year and a half (beginning October, 1964), as informants have been available.

1. Consonant Phonemes

1.1 Problems of Interpretation

1.1.1 Aspirated Stops

Whether to consider the aspirated voiceless stops *ph*, *th*, and *kh* as clusters or units has been determined by the non-suspect pattern established in the presyllable and the main syllable. A simple CV comprises the non-suspect presyllable, thus pressuring the aspirated

¹ I am indebted to David D. Thomas for his assistance in the analysis of Cua phonology and preparation of this paper, and am deeply grateful for the excellent informant help given by 3 related men from Tra Bac village, Đình Đô, Đình Quang and Đình Mốc.

stops to function as a unit phoneme, as all three aspirates occur in the presyllable consonant position. The main syllable non-suspect maximum CCVC pattern only permits these aspirated stops to be interpreted as units (*klwal* 'curly'). Also, *h* does not occur as the 2nd consonant in a cluster except after the voiceless stops.

1.1.2 Postglottalized Consonants and Other Sequences Occurring Word Finally

There are no well-established clusters which occur in word-final position, and the sequences *-wq*, *-yq*, *-yh*, and *-lh* occur in that position only. They do not function as allophones of a phoneme, so, on the basis that *q* and *h* function somewhat differently than other phonemes (one is always present when nasalization occurs; both function as the only word-final consonant following the front high-mid vowel), it would seem least complicated to interpret these sequences as complex units, functioning only word-finally². Several neighboring Mon-Khmer languages also have these same complex unit phonemes, except that final *-lh*, seems to be unique to the Cua language.

1.1.3 Word-Initial Preglottalized Consonants and Voiceless Nasals

The absence of well-established stop plus stop and stop plus nasal patterns could influence towards a unit interpretation of voiceless nasals and preglottalized nasals and stops. But the existing stop plus liquid pattern (*tr*, *dr*, *pl*, *vl*, *kl*, *gl*) would permit the cluster interpretation of *hr*, *hl*, *hw*, and *hy*, and also *qw* and *qy*, considerably reducing the phoneme inventory. Because of this interpretation, and the fact that *h* and *q* function somewhat differently than other phonemes, it is also reasonable

2 Some have preferred to interpret these as allophones, e. g.

- /v/* functions as (b-) initially,
(-wq) finally;
- /j/* functions as (j-) initially,
(yq) finally;
- /s/* functions as (s-) initially,
(-yh) finally,
- /r-/* functions as (r-) initially,
(-lh) finally.

to interpret voiceless nasals (*hm, hn, hnh, and hng*) and preglottalized nasals (*qn, qng, qnh*) as clusters rather than units.

Preglottalized stops *qb* and *qd* fill the slot which, in the predominant syllable pattern, is filled by one consonant phoneme. So *qb* and *qd* have been interpreted as complex unit phonemes :

- (*qblāk*) /*blāk*/ 'to sprout',
- (*taqbyay*) /*tabyay* / 'tell a story',
- (*māk aqdrâng*) / *māk adrâng* / 'longhouse doorway'.

1.2. Consonant Descriptions and Contrasts

1.2.1 Consonants Occurring Word or Main-Syllable Initially (see chart 1)

- /p/ is a voiceless bilabial stop
pāk 'language' / *phāk* 'hole' / *vāk* 'to peck' /
bāk sāk 'lose sleep over something'
 - /t/ is a voiceless alveolar stop
taal 'string on crossbow' / *thaal* 'thirsty',
katuh 'fill-in dirt' / *duh* 'to need' / *kađuh*
'skin, hide' / *kachuh* 'way of singing'
 - /ch/ is a voiceless alveopalatal affricated stop³
chung chaq 'lizard' / *jaq* 'to burn' / *saq*
'dishes' / *taq* 'to send'
 - /k/ is a voiceless velar stop
kāl 'chop, cut' / *khāl* 'classifier for people',
koot 'child' / *goot* 'to cut hair' / *oot* 'they'
 - /q/ is a glottal stop, symbolized by = word medially, unmarked word initially before vowels, and ʔ initially before consonants, except for preglottalized *b* and *đ*.
ô 'classifier for animals' / *kô* 'wait'
pa-iil 'give birth' / *jit pariil* 'hail'
ba-uul 'live with' / *jiq pakuul* 'leprosy'
 - /ph/ is a voiceless bilabial aspirated stop
phoq jit 'end of rain' / *poq* 'carry on back'
 - /th/ is a voiceless alveolar aspirated stop
thêp 'more' / *têp* 'wise'
- ε /ch/ is pronounced very lightly, like its Vietnamese correspondent.

/kh/ is a voiceless velar aspirated stop

ô khalook 'legendary mt. animal' / *kalook* 'seed, drop, pill'

/v/ is a voiced bilabial stop (b)

vaal 'two' / *baal* 'together' / *paal* 'pale'

/d/ is a voiced alveolar stop

dih 'myself, alone' / *đih* 'different' ;

pada 'surprise' / *pađa* 'slap with open hand' /

para 'to rub on, shampoo' ;

dool 'to fillet' / *tool* 'blind'

/j/ is a voiced alveopalatal affricated stop⁴

pla jôôk 'foot' / *achôôk* 'to go with' ; *kajôh* 'to crave' / *kadôh* 'bark,

pod, husk, skin of vegetable' ; *kajôw* 'demon-possessed' / *kadrôw*

'six' ; *jaawq* 'steel spear' / *yaawq* 'to count'

/g/ is a voiced velar stop

gurt 'to play' / *kurt* 'bat' ; *gô* 'I, me' / *ô* 'classifier for animal' ;

gurm 'very' / *sa rangurm* 'to overeat'

/b/ is a preglottalized voiced bilabial stop

biit 'to think' / *viit* 'to fill, be full'

/đ/ is a preglottalized voiced alveolar stop

kadôôk 'to be washed away' / *kadôôk* 'straw mat'

/m/ is a voiced bilabial nasal

mâk 'hole' / *pâk* 'language' ; *muh* 'nose' /

vuh 'to roast, burn off' ; *jamuul* 'to dabble

soil' / *hmuul* 'grass ornaments on sacrifice pole'

/n/ is a voiced alveolar nasal

panoot 'a portion, half' / *ahnoot* 'climb up' /

pangoot 'hungry' / *va naaw* 'kind of rice' / *nhaaw* 'to wash' ; *sanih*

'suddenly learn' / *salih* 'exchange'

/nh/ is a voiced alveopalatal nasal

nhaaw 'to wash' / *va naaw* 'kind of rice' ;

4 /j/ is pronounced so lightly that in rapid speech its phonetic quality is often palatalization only.

kanhuq 'to threaten' / *tanguq* 'obsessed with an idea';

nhwy 'to giggle' / *hnhw* 'house'

/ng/ is a voiced velar nasal

tanguh 'to moan' / *tanuh va* 'rice chaff';

tanguq 'obsessed' / *kanhuq* 'threaten';

nguyq 'noisy' / *hnguy* 'day'; *ngwrl* 'forehead' /

ngwn, 'much'; *ngulh* 'bird frightener' / *gurlh* 'stumble'

/l/ is a voiced alveolar lateral

lâk 'wine' / *râk* 'to crow'

/r/ is a voiced alveolar flap

reh 'to chew bone' / *leh* 'take off clothes'

/w/ is a voiced bilabial rounded vocoid

rawiit 'encircle' / *viit* 'to fill';

wah 'to bend' / *'woh* 'expression of disdain'

/y/ is a voiced palatal vocoid

yôw 'finished' / *ti* 'yaw 'left hand'

/s/ is a voiceless alveopalatal fricative

siip 'to eat lice' / *hiip* 'to smell';

sêep 'bird' / *thêep* 'more'; *sôwah* 'to comb' /

chôwah 'sand'

/h/ is a glottal fricative

hiil 'to snore' / *siil* 'to dig' / *iil* 'chicken'

1.2.2 Consonants Occurring Word Finally ⁵

The preceding list of phonemes, with the exception of the voiced and aspirated stops, *s*, *r*, and *nh*,⁶ and the addition of the following, occur in word-final position :

/lh/ -a voiceless lateral ; /yh/ -a voiceless alveopalatal fricative ; /wq/ -a voiced bilabial rounded vocoid followed by glottal stop ; and /yq/ — a voiced palatal vocoid followed by glottal stop.

⁵ It is interesting to note that of the 1700 word dictionary used for this data, only 8% of the final consonants are nasals. Comparing this language with other Mon-Khmer languages (most of which have a much higher percentage of nasal finals), it would appear that Cua usually makes a shift to a voiceless stop at the same point of articulation as the nasal ending in these other languages.

⁶ In word-final position the contrast between /nh/ and /ng/ is neutralized. The phonetic manifestation is *ng*, except following *ê*, when *ng* may vary with *nh*.

- /p/ *ô koop* 'turtle'
 /t/ *koot* 'child'
 /ch/⁷ *gahooch* 'to whistle'
 /k/ *kook* 'bracelet'
 /q/ *kooq* 'white'
 /m/ *ahnoom* 'swathe, cover'
 /n/ *tanoon* 'loincloth'
 /ng/ *vâlh kanoong* 'a snake'
 /l/ *gâl* 'drum'
 /lh/ *gâlh* 'swollen'
 /h/ *parah* 'reserve'
 /yh/ *parayh* 'to pluck with finger'
 /y/ *ôl jaray* 'type of tree'
 /w/ *ôl paraw* 'type of tree'
 /wq/ *varawq* 'unusual'
 /yq/ *rangwayq* 'musical instrument'

2. The Phonological Word

2.1 Word Pattern

The word is composed of one non-obligatory presyllable and the obligatory main syllable, which receives the heavier stress.

2.1.1 Presyllable

CV is the only pattern, thus becoming $c_1 v_1$ of the word.

2.1.2 Main Syllable

The two established patterns for the simple word are :

$C_2 V_2 \pm C_5$ and $C_3 C_4 V_2 \pm C_5$.

2.2 Phoneme Distribution Within the Word

2.2.1 Within the Presyllable

The only vowel occurring in the presyllable is a neutralized central *a*, which has phonetic variance as it is assimilated to the points

⁷ /ch/ in word-final position possesses the quality of an *i*- onglide, preceding central and back vowels. There appears to be some free variation of *-ch*, with *-k* usually after front vowels, and *-t* following back vowels.

of articulation of its surrounding environment. All the stops may fill the C₁ position (*pa, ta, cha, ka, va, da, ja, ga*) except that *d* has not yet been found and *b* and the aspirated stops are infrequent. The only nasal occurring in the presyllable is *ma*. The other phonemes which occur are *ra, sa, ha,* and (q) *a*.

2.2.2 Within the Main Syllable

2.2.2.1 C₂ V₂ ± C₅ : Any consonant may occur in C₂ position except the four phonemes which are restricted to word final position only (*lh, yh, yq,* and *wq*). The V₂ slot may be filled by any vowel (see Section 3). The C₅ category is composed of the non-aspirated voiceless stops, all nasals except *nh,* and *w, l, y, h, q,* and the four restricted phonemes just mentioned. Word examples of this type are :

CV -*lu* 'clever', CVC - (*munε*) *luk* 'ancestors'; with presyllables, as follows :

cv CV-*kalu* 'type of singing', cvCVC - *jaluk* 'dark'

2.2.2.2 Consonant Clusters (C₃ C₄): The second phoneme in a sequence is more restricted than the first, so we shall state the clusters on the basis of the C₄ fillers. All four nasals occur in that position, preceded only by *h* and *q* (except *m* has not yet been found preglottalized). The other four phonemes which classify as C₄ fillers are *r, l, y,* and *w.* *r* may be preceded by C₃ alveolars, *dr, dr̄* and *tr* and *hr* and nasal *mr.* (There has been more open transition noted between the *mr* sequence than in any other cluster). Occurring before *l* are the bilabial and velar stops *pl, vl, kl, gl,* and *hl.* Before *y,* all non-aspirated stops except velar stops occur : *py, vy, by, ty, dy, jy* (*ch* has not been found yet), and *qy* and *hy.* All three velar stops and *ng* occur before *w* : *kw, khw, εw ngw* as well as *qw* and *hw.* Also, there has been found one occurrence of labialized *pw,* in the word *kapwaq* 'to seize, pounce on'. *h* is the only C₃ phoneme which occurs with all C₄ phonemes. The most frequently occurring clusters, in order, are ; *hl, dr, kl, tr, hr,* and *pl.* Some examples of words demonstrating the C₃ C₄ V₂ C₅ pattern are :

CCV -*hla* 'leaf' CCVC - *hlah* 'mouthwash'; and with presyllables ;

cvCCV - *ahra* 'squirm', cv CCVC - *kahlah* 'peel bark'

2.3 Distribution and Frequency

2.3.1. Of Presyllables

43% of the words collected to date have presyllables, some of which function as affixes. *ka-* occurs twice as frequently as the next frequent presyllables, which are *ta-* and *a-*. Presyllable *a-* has the widest range of distribution. *ha-* is the most restricted occurring only before *r*.

2.3.2 Between Pre- and Main Syllable

Main-syllable initial consonants *n*, *l*, and *r*, occur with the widest range of presyllables. Clusters which can occur with presyllables are *hm*, *hn*, *hng*, *hr*, *hl*, *hy*, *tr*, and *dr*, all of which occur with *a*; *dr* is also preceded by *ka*, *pa*, *ma* and *sa*, *tr* by *ka-* (one word), and *hng* and *hr* by *ta*. The contrastive separation of a consonant cluster proves the phonemic existence of the presyllable, such as :

bla 'answer', *bala* 'jest, joke'

vluk 'drown' *valuk* 'lake'

klaat 'fog', *kalaat* 'hunk of meat'

trâk 'eggplant', *tarâk* 'unison call in prayer chant'

3. Vowel Phonemes

3.1 Problems of Interpretation

There are nine different well-established points of articulation. One extra contrast at the mid-front tongue position (*i*) is very restricted in distribution, and occurs infrequently, yet it is contrastive with its bordering phonemes, and does not function as an allophone.⁸ The high and mid, front (except *i*) and back vowels glide to the low central vowel. See Chart II.

3.2 Vowel Descriptions and Contrasts

/i/ is a high front unrounded vowel (*i*) (often varying with *ɪ* in the environment of p.t and l).

8 The possibility does exist that further data may allow this vowel to be interpreted as an allophone of *é*, but the few words found thus far are not convincing. Other than symmetry in the vowel system, little would be gained by interpreting (*i*, *ê*, *e*) before (*h*) and (*q*) as /ih, ês, êh/ and /iq, êq/, respectively. And what symmetry would be gained in the vowel system would be lost in the distribution of the final voiced consonants.

environment of *p*, *t*, and *l*).

sit 'little while, bit' / *siit* 'long time; to sew'

/ii/ is phonetically the same as the preceding vowel, but longer

/i/ is a high-mid front unrounded vowel (e[^])

ramiq 'awfully' / *miq* 'mother' / *dâng hmêq* 'olden times'

/ê/ is a low-mid front unrounded vowel (e)

tanêng 'stubborn' / *kanêng* 'teeth';

kapêh 'woven walls' / *peh va* 'to pound rice' / *pîq* 'fingerprint'

/êê/ is phonetically the same as the preceding vowel, but longer

sêêt 'to cook' / *hla seet* 'type of leaf' / *siit* 'long time; sew'

/e/ is a low front unrounded vowel (ɛ)

ô ji kech 'kind of frog' *sêêp kech* 'parrot' / *kêch* 'bite'

/ee/ is phonetically the same as the preceding vowel, but longer

/ɹ/ is a high central unrounded vowel (ɨ)

ramɹt 'weak' / *tamɹt* 'taut'

đɹ 'that, there' / *đɹ* (*sal*) "protect from sun"

/ɹɹ/ is phonetically the same as the preceding vowel, but longer

/ɔ/ is a mid central unrounded vowel (ə.)

pɔq 'to carry on back' / *pɔɔq* 'large shelter, /

hmɹq '(n)ever'

/ɔɔ/ is phonetically the same as the preceding vowel, but longer

arɔɔlh 'choose', *tɔɔl* 'reply' / *lɹɹl* 'soft, tender'

/a/ is a low central unrounded vowel (a)

nhaw 'corn tassels' / *nhaaw* 'to wash (hands, face)

/aa/ is phonetically the same as the preceding vowel, but longer

takaat 'to come to' / *takoot* 'tie a knot'

/u/ is a high back rounded vowel (u)

tuq 'to simmer' / *gay tuuq* 'hammer' / *tôq* 'hot'

/uu/ is phonetically the same as preceding vowel, but longer

/ô/ is a mid back rounded vowel (o) *lôk* 'finger' / *lôôk* 'debt'

/ôô/ is phonetically the same as the preceding vowel, but longer

hlôô: 'smell bad' / *hluu* 'rice chaff' / *vâl*

ahlôol 'type of snake'

/â/ is a more central and slightly higher, less rounded vowel (varying to ʌ) than its related long vowel /oo/⁹
tavâk 'cheek' / *tavak* 'bamboo sprouts' / *daak tavook* 'river'

/oo/ is a low back rounded vowel (ɔ.), phonetically long

/ial/ is a high front unrounded vowel glided to a neutral central vowel
kadiap mat 'to close eyes' / *kadêap* 'onion' ; *kasiat jôôk* 'tip-toe' /
kasiit 'nine' ; *viat* 'put into' / *viit* 'fill'

/êal/ is a mid front unrounded vowel glided to a neutral central vowel
sêap 'raise young' / *sêêp* 'bird'

/ual/ is a high back rounded vowel glided to a neutral central vowel
duah 'string bear' / *dôl* (daak) 'carry water' ; *sathuik* 'cross over'
 / *play kanhuuk* 'a fruit'

/ôal/ is a mid back rounded vowel glided to a neutral central vowel
karôaq 'devil who causes epilepsy' / *ahlôôq* 'harvested rice field'

3.3 Suprasegmental Features

3.3.1 Nasalization

Cua has contrastive nasalization, but it does not occur frequently. Such words are usually initiated with *h*, and end with a voiceless stop (*t*, *k*, *ch*, *q*), or *h*. The vowels which have been found with nasalization so far are : *ê*, *e*, *u*, *uu*, *a*, *aa*, and *oo*. Open syllables rarely occur with nasalization, but there are instances with vowels *e* and *a*.

sanum hê '3 years ago', *hã hui* 'open mouth' ; *hõoch* 'overflow' / *gahooch* 'to whistle', *hêq* 'fat' / *heq* 'finished'.

3.3.2 Length

All vowels except *i* have contrastive length, although not all contrast in all environments. The length contrast is frequent with all vowels except *ê*, which, with very few examples, is found to be contrastive before only four final consonants. Glides are found to be only long. All vowels are phonetically long in open syllables (except *i*, which occurs only in closed syllables before *q* and *h*). Length is contrastive before *h* and *q*, although rare.

9 Present Cua orthography distinguishes between /â/ and /oo/ although they are basically the same phoneme, because *â* already exists in Vietnamese orthography, and *oo*, representative of its phonetic sound, will aid beginning readers. (With the exception of a few people, most Cua remain illiterate).

3.4 Distribution of Vowel Phonemes

Glancing at the occurrences of *ʊ* and *ɔ*, one could wonder whether they are allophones of the same phoneme. The higher *ʊ* may be preceded by nasal consonants but *ɔ* never is ; however, with several other consonants they do contrast in minima environments. The low central vowels *a* and *aa* occur with the largest inventory of final consonants.

		bilabial	alveolar	alveo-palatal	velar	glottal
stops	vl.	p	t	çh	k	q
	vl. asp.	ph	th		kh	
	vd.	v	d	j	g	
	vd. pregl.	b	ḏ			
nasals		m	n	nh	ng	
liquids	vl.		lh			
	vd.	w	l,r	y		
fricative				s/yh		h
post-glottal.		wq		yq		

CHART I. CONSONANT PHONEMES

	Front	Central	Back
	Glide		Glide
High	i	ia	u ua
High-Mid	ĩ		
Mid		êa	ɔ ô ôa
Low-Mid	ê		
Low	e	a	â/oo
	Suprasegmental : Length (double vowel)		
	Nasalization (~)		

CHART II. VOWEL PHONEMES

