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**Devising an Orthography for the Cak Language by  
Using the Cak Script**

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## Abstract

Cak (ISO 639-3 ckh) represents a Tibeto-Burman language spoken in the Chittagong Hill Tracts, Bangladesh. The language is known as Sak in Rakhaing State, Burma. The total number of native speakers of the language is estimated at approximately 3,000 in Bangladesh and 1,000 in Burma (Simons and Fennig eds. 2017). Although Cak and Sak are mutually understandable where native words are concerned, comprehensibility becomes arduous with Bangla loan words in Cak, and with Arakanese/Burmese loan words in Sak.

Until recently, Cak/Sak did not have a script of its own. However, by the beginning of the 21st century, the Cak script was developed and finally published as Ong Khyaing Cak (2013), in which its fundamental system is described.

Although well designed overall, the current Cak writing system found in Ong Khyaing Cak (2013) has several shortcomings. Huziwara (2015) discusses the following five instances: (a) No independent letter for /v/, (b) unnecessary letters for the non-phonemic elements such as the voiced aspirated stops and the retroflexes, (c) the arbitrary use of short and long vowel signs, (d) a frequent omission of high tone marks in checked syllables, and (e) multiple ways to denote coda consonants.

In this paper, Huziwara (2015) will first be reviewed. Then, the basic phonetic correspondences between Cak in Bangladesh and Sak in Burma will be examined. Finally, based on these two discussions, an orthography to be employed in the forthcoming Cak-English-Bangla-Burmese dictionary, a revised version of Huziwara (2016), will be demonstrated.

## References

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## Introduction

### Language and people

Cak (ISO 639-3 ckh) is a member of the Luish (Asakian) language family of Tibeto-Burman spoken in the Chittagong Hill Tracts (henceforth CHT) of Bangladesh. Cak is also known as Sak, particularly in the neighbouring Rakhaing State of Burma. The difference between Cak and Sak is reflected in the phonological correspondence of Proto-Luish \**c* — it becomes *c* in Cak, and *s* in the speech of younger generations of Sak: The Cak people refer to themselves as *ʔácaʔ*, where the Sak people refer to themselves as *ácaʔ* ~ *ʔəcaʔ* ~ *ʔásaʔ* ~ *ʔəsaʔ*. Despite the phonological mismatch of Proto-Luish \**c* not corresponding to the Old Burmese *s*, the autonym *ʔácaʔ* is often connected to *Sak*, which is found in Old Burmese inscriptions, and is thought to be one emanating from the oldest people in Burma.

Cak villages are mostly found in the Baishari, Naikhyongchari, and Dochari areas in the southeastern part of CHT, while Sak villages are mostly found in Maungdaw, Buthidaung, Rathedaung, and Mrauk U areas in the Rakhaing State. The Cak speaking population is estimated to be 3,000 in Bangladesh, whereas the Sak is estimated to be 1,000 in Burma (Eberhard, Simmons and Fennig 2019).

The Cak/Sak people adhere to Theravada Buddhism, and are highly influenced by Marma (ISO 639-3 rmz) or Rakhaing (ISO 639-3 rki) culture. Many Marma/Rakhaing loanwords are therefore found both in Cak and Sak.

Traditionally, Cak/Sak has no alphabet. People are accustomed to adapting Burmese or Bangla scripts, a practice contingent on purpose. Recently, however, the Cak script was developed by Mr. Mong Mong Cak, an eminent intellectual member of the Cak community. A textbook of the Cak script was subsequently published as *Ong Khyaing Cak* (2013). The current Cak writing system has several shortcomings, and should thus be modified. However, the Cak script itself can suffice for writing the Cak/Sak language if it is used systematically.

### Previous studies

Hodgson (1853) first presented 74 Cak/Sak words, followed by Grierson (1921) who linguistically connected Cak/Sak with Kadu (ISO 639-3 zkd) in northern Burma. A substantial study was not conducted until Lorenz G. Löffler, a German anthropologist, investigated the relationship between Chakma (the largest ethnic minority in CHT) and Cak. Based on his ethnolinguistic fieldwork in CHT, Löffler (1964) demonstrated that Chakma is ethnically Tibeto-Burman and linguistically Indo-Aryan, while Cak is Tibeto-Burman and belongs to the Sakisch (Luish) branch.

At almost the same time as Löffler, Lucien Bernot, a French anthropologist, also conducted fieldwork in CHT with his wife and linguist Denise Bernot. Bernot (1967) was a by-product of their research. This work provides an anthropological description of the Cak community in then East Pakistan together with some 400 basic words with Luish comparanda. The vocabulary part is also presented separately in Bernot (1966). Maggard, Sangma and Ahmad (2007) represent a sociolinguistic study including some 300 basic words of four Cak dialects (one from Baishari, two from Naikhyongchari, and one in Bandarban town). Huziwara (2008) contains a descriptive grammar, whereas Huziwara (2016) is a dictionary of Cak. Both of these are based

on the Baishari dialect.

With regards to Sak, Luce (1985) demonstrates a comparative word list of two dialects; Bawtala and Dodem. Thun Shwe Khaing (1988) contains a cultural study of the Sak people which provides information on the basic structure of the Sak language. Moe Sandar (2010) contains a grammatical description of Sak spoken in Maungdaw, Rakhaing State, Burma.

Huziwara (2018) provides basic information on the characteristics of Cak and Sak dialects.

## Phonology

### The Baishari dialect

The Baishari dialect of Cak is, as we will see in the next section (Phonological correspondences of Cak/Sak varieties), the most conservative one among Cak/Sak varieties in terms of phonology. Thus it is convenient to represent the Cak language by using the Baishari one. The phonological characteristics of the Baishari dialect of Cak is summarised below.

- (1) a. The syllable structure can be represented as  $C_1(C_2)(C_3)V_1(V_2)(C_4)/T$ . Initials ( $C_1$ ), main vowels ( $V_1$ ) and T(one) are necessary elements, while glides ( $C_2$  and  $C_3$ ), the second member of the diphthong ( $V_2$ ), and codas ( $C_4$ ) are optional.
- b. There are 26 initial consonants (/k, kh, g, ŋ, c [ts], ch [ts<sup>h</sup>], j [z], t, th, d, n, p, ph, b, m, y [j], r, l, w, v, s, ʃ [ʃ~ç], h, ʁ, d, ʔ/). All of these can stand as  $C_1$ , while only /y, r, w/ as  $C_2$  and /w/ as  $C_3$ . As a result, only /-yw-/ and /-rw-/ are possible as a combination of  $C_2$  and  $C_3$ . Regarding  $C_4$ , only two consonants, /ʔ/ and /ŋ/, are possible.
- c. There are 8 vowels (/a, i, u, e, o, i, u, ə/). All of these can occur as  $V_1$ . All the vowels, except for /ə/ and /e/, can be followed by coda consonants /ʔ/ and /ŋ/. Within the limited number of grammatical particles, /eʔ/ is possible. Alternatively, /ai/ is permitted as a combination of  $V_1$  and  $V_2$  only in closed syllables. Thus, /e/ and /ai/ show (almost) complementary distribution.
- d. The vowel /ə/ can occur only as the first member of sesquisyllabic words. Phonetically, it can be heard as a result of the reduction of the vowel /a/ in morpheme boundaries.
- e. Phonetically, [ɥ] can be heard. Ong Khyaing Cak (2013) positions this as an independent vowel. Phonologically, however, it is represented as /vu/ in this paper as it behaves much the same as /u/ in various assimilations. It is important to note that this /vu/ can occur only in open syllables.
- f. There are two contrastive tones, the high tone (marked with the acute accent) and the low tone (unmarked).

Almost all of the characteristics of the Baishari dialect mentioned in (1) are common to other varieties, except for some phonological changes which will be presented in the next section.

### Phonological correspondences of Cak/Sak varieties

In this section, I present significant phonological correspondences among five Cak/Sak varieties. With regards to Cak dialects, regional variations are more salient than generational ones, while the latter is more remarkable than the other in Sak dialects. The section focuses

on the following varieties: The Baishari dialect (CB), the Naikhyongchari dialect (CN), the Dochari dialect (CD), the Sak variety of older generations (older than 50 years in age) (SA), and the Sak variety of younger generations (younger than 40 years in age) (SB).

## 1. Initials

There are 26 consonant phonemes in the Baishari Cak<sup>1</sup>. These are practically the same throughout all the varieties. In principle, a consonant X corresponds to the same consonant. However, for some phonemes (/c, ch, j, s/ in Baishari) and consonant clusters (/ky, khy, gy, ɲy/ in Baishari), there are complex correspondences. Table 1 summarises the major complex correspondences among varieties. In the table, [ʃ], [tʃ], and [dʒ] might be [ç], [tç], and [dʒ] respectively.

The correspondences in the table remind us of those of Written Burmese, Modern Spoken Burmese (Mandalay-Yangon dialect), and Arakanese in which affricates of the protolanguage correspond to fricatives and all the clusters of velar plus medial y correspond to affricates.

Table 1: Major correspondences of Cak/Sak initials

Proto-Cak	CB	CN	CD	SA	SB
*c	c [ts]	c [ts] ~ [tʃ]	c [ts]	c [ts]	s
*ch	ch [tʃ <sup>h</sup> ]	ch [tʃ <sup>h</sup> ]	ch [tʃ <sup>h</sup> ]	s [s <sup>h</sup> ]	sh [tʃ <sup>h</sup> ]
*j	j [dz]	j [dz]	j [dz]	j [dz]	z
*s	s	s	s	s	sh [s <sup>h</sup> ]
*ky	ky	cy [tʃ]	cy [tʃ]	cy [tʃ]	c [tʃ]
*khy	khy	chy ~ ʃ	chy ~ ʃ	chy ~ ʃ	chy ~ ʃ
*gy	gy	jy [dʒ]	jy [dʒ]	jy [dʒ]	j [dʒ]
*ɲy	ɲy	ñ [ɲj]	ñ [ɲj]	ñ [ɲj]	ñ [ɲj]

## 2. Rhymes

There are 8 vowel phonemes in all the varieties of Cak/Sak. In principle, a vowel X corresponds to the same vowel. However, some reflexes of the combination of vowels and final consonants (/iʔ, uʔ, oʔ, iɲ, uɲ, oɲ/ in Baishari) vary depending on varieties. Table 2 presents a summary of significant correspondences. The correspondences in the table, especially in SA and SB, again, remind us of those of Written Burmese, Modern Spoken Burmese, and Arakanese in which a monophthong corresponds to a diphthong in certain combinations of vowels and coda consonants.

Table 2: Major correspondences of Cak/Sak rhymes

Proto-Cak	CB	CN	CD	SA	SB
*iʔ	iʔ	iʔ	iʔ	(e)iʔ	eiʔ
*uʔ	uʔ	uʔ	uʔ	(o)uʔ	ouʔ
*oʔ	oʔ	oʔ	oʔ	oʔ	auʔ
*iɲ	iɲ	iɲ	iɲ	(e)iɲ	eiɲ
*uɲ	uɲ	uɲ	uɲ	(o)uɲ	ouɲ
*oɲ	oɲ	oɲ	oɲ	oɲ	auɲ

<sup>1</sup> The Baishari **ɲy** becomes **ny** in other dialects. The **ɲy** can be regarded as a single phoneme **ñ** depending on interpretation.

### 3. Tones

The correspondences of tones of Cak/Sak varieties are fairly consistent. A tone X corresponds to the same tone in all varieties. Although there are many irregular correspondences, especially in polysyllabic words, they are marginal and do not seem to affect mutual understanding.

## The Cak script

### Overview

The idea to create an original script for the Cak language was first conceived by Mong Mong Cak. Mong Mong Cak was originally from Baishari, but for decades, due to civil service, lived in Bandarban, the headquarter of the Bandarban Hill District where Cak villages are located. An eminent intellectual in the Cak community, Mong Mong Cak has written many papers on Cak in Bangla. Although the prototype of the Cak script appeared to be available well before 2000, it was only in 2013 that the present version of the Cak script was published in the form of a textbook by Ong Khyaing Cak, a younger brother of Mong Mong Cak.

The Cak script is a set of Indic type syllabic letters with 11 independent vowel letters<sup>2</sup>, 11 vowel signs, 34 consonant letters, and several other symbols such as numbers and tone marks. The full set of the Cak script is listed in the Appendix.

A set of true-type fonts of the Cak script was also prepared by Ong Khyaing Cak. Based on this computer font and Ong Khyaing Cak (2013), Huziwara has requested Prof. Takashima Jun (Tokyo University of Foreign Studies) to create a  $\LaTeX$  package for the Cak script (Cak- $\TeX$ ) and on which the present paper has been developed.

### Problems and proposals

#### 1. Major problems in Ong Khyaing Cak (2013)

Although well designed overall, the current writing convention of the Cak script found in Ong Khyaing Cak (2013) has several shortcomings. These are summarised in (2).

- (2)
  - a. Although /v/ is phonemic in Cak, it does not contain an independent consonant letter. This is not included in the primary set of the Cak script but rather, represented as  $\text{ᳵ}$  ⟨bhv⟩, the combination of  $\text{ᳶ}$  ⟨bha⟩ (voiced aspirated bilabial stop) and  $\text{᳷}$  ⟨v⟩ [ɣ] (syllabic v).
  - b. Although voiced aspirated stops and retroflexes are not found in Cak, the current Cak script contains letters corresponding to these. In Ong Khyaing Cak (2013), these letters are employed so as to write native words, but not for loans from Indo-Aryan.
  - c. Although Cak does not distinguish long and short vowels, Ong Khyaing Cak (2013) often mixes these to write the same word.

<sup>2</sup> The long {ā} is, in fact, a combination of the short {a} and the long vowel sign for {ā}. However, it is counted as an independent vowel in Ong Khyaing Cak (2013).

- d. Although Cak distinguishes two tones (high and low) even in checked syllables, Ong Khyaing Cak (2013) often ignores these.<sup>3</sup>
- e. Although there are only two coda consonants (ʔ and ɲ) in Cak, Ong Khyaing Cak (2013) employs various types of coda consonants to represent the same sound.<sup>4</sup>

## 2. Major proposals by Huziwara (2015)

Huziwara (2015) examines the writing convention of Ong Khyaing Cak (2013), and proposes an orthography for the Cak language. A summary of these proposals, with some revisions, is demonstrated in (3).

- (3) a. Do not use ʘ (bha) + ʘ (v) to represent /v/. ʘ (V). The original vowel letter for [ʏ] (syllabic v), can be used in place, as it is possible to write the independent syllabic v like ʘ (<@av> /vu/ or ʘ (<wv> /wvu/.
- b. Do not use unnecessary letters such as voiced aspirated stops and retroflexes. Regarding vowels, all the independent vowel letters, with the exception of ʘ (<a>, are unnecessary.
- c. Use long vowel signs in open syllables, with the exception of ʘ (<a> /ə/ and short vowel signs in closed syllables.<sup>5</sup>
- d. Use the high tone mark consistently, irrespective of syllable structure.
- e. Use only ʘ (<k'> for /-ʔ/ and ʘ (<ng'> for /-ɲ/.
- f. Use Baishari forms to write the Cak language. It is possible to derive a corresponding form in other varieties from the Baishari one, but not vice versa. For instance, as evident in Table 1, 'Cak/Sak' ʘ:ʘʘʘ (<a:cak'> can be read as /ʔácaʔ/ by Baishari speakers and as /ʔásaʔ/ by Sak speakers of younger generations.

## Concluding remarks

This paper presented an overview of the Cak writing system in Ong Khyaing Cak (2013), and the proposals in Huziwara (2015). The principle of the Cak writing system proposed in Huziwara (2015) is simple: One phoneme, one script.

One of the most critical problems for the Cak script now is how to transfer the script to Unicode. Although the Cak script includes unnecessary letters, it is better to register all of these, as they may be of use to those wanting to distinguish loan words from native words, functional words from content words, and other aspects. I hope that the Cak script can not only contribute to developing the language, but can also assist Cak/Sak speakers to better know and protect their language.

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<sup>3</sup> This is perhaps because of the influence from Burmese in which no tonal distinction is made in checked syllables.

<sup>4</sup> This is, again, perhaps because of the influence from Burmese in which rhyme can be written in several ways.

<sup>5</sup> This proposal is influenced by the Burmese writing convention. It might be better to employ only short vowels irrespective of syllable structure.

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**Appendix: List of the Cak script**

The complete set of the consonant letters of the Cak script is in Table 3, and that of the vowel letters is in Table 4. Vowels are better written as a combination of 𑜄 (/@a) + vowel signs, as in Table 5. Table 6 presents a sample of possible combinations of the consonant /k/ with vowel signs, medial letters, and coda consonants. In the tables, the first line contains Cak letters, the second line contains transliterations, and the third line contains sounds. The Cak letters in parentheses are not recommended for use. Additional comments on the use of letters are shown in (4).

(4) a. In Table 3, 𑜄 (ńa) can be used to represent /ŋy-/ in Baishari.

- b. In Table 3, letters in the third column from the top (𑄀 𑄁 𑄂 𑄃 𑄄) represent retroflexes.
- c. In Table 4, there is no independent vowel letter for /ʔi/. It can be written in combinations as shown in Table 5.
- d. In Table 5, the syllabic v can be written as 𑄅 (v̥). However, the present author writes it as 𑄆 (wv) so as to fill the gap of syllables beginning with w-.

Aside from letters in the tables below, there are some special symbols in the Cak script: Medials, codas, tone mark, and numbers. They are shown in (5).

- (5) a. Medials: 𑄇 (-y-), 𑄈 (-r-), 𑄉 (-w-), 𑄊 (-yw-), 𑄋 (-rw-)
- b. Codas
  - 𑄌 (-'). This is the vowel killer sign. In the Cak writing system, this sign is used to mark the final glottal stop as well the final nasal in combination with velar consonants. Thus -ʔ is written as 𑄍 (-k') and -ŋ, as 𑄎 (-ng').
  - 𑄏 (-M) (Anusvara). This sign can be used to denote the final nasal -ŋ. However, the use of 𑄎 (-ng') is recommended instead.
  - 𑄐 (-e) /-eʔ/. In Ong Khyaing Cak (2013), the symbol 𑄑 sporadically appears to denote the final glottal stop -ʔ. It is preferable to use 𑄍 (-k') consistently. However, to distinguish -eʔ and -aiʔ, 𑄒 (-e) is used for -eʔ, and 𑄓 𑄍 (-ek') is used for -aiʔ as proposed by Huziwara (2015).
- c. Tone mark: 𑄔 (-:) (Visarga). This sign is used to denote a high tone.
- d. Numbers: 0 (0), 𑄕 (1), 𑄖 (2), 𑄗 (3), 𑄘 (4), 𑄙 (5), 𑄚 (6), 𑄛 (7), 𑄜 (8), 𑄝 (9)

Table 3: Consonant letters

𑄀	𑄁	𑄂	(𑄃)	𑄄
<ka>	<kha>	<ga>	<gha>	<nga>
kə	khə	gə	—	ŋə
𑄅	𑄆	𑄇	(𑄈)	𑄉
<ca>	<cha>	<ja>	<jha>	<ña>
cə [tsə]	chə	jə [dzə]	—	—
(𑄊)	(𑄋)	(𑄌)	(𑄍)	(𑄎)
<Ta>	<Tha>	<Da>	<Dha>	<Na>
—	—	—	—	—
𑄏	𑄐	𑄑	(𑄒)	𑄓
<ta>	<tha>	<da>	<dha>	<na>
tə	thə	də	—	nə
𑄔	𑄕	𑄖	(𑄗)	𑄘
<pa>	<pha>	<ba>	<bha>	<ma>
pə	phə	bə	—	mə
𑄙	𑄚	𑄛	𑄜	𑄝
<ya>	<ra>	<la>	<wa>	
yə	rə	lə	wə	

ဆ	ဧ	ခ	င	ဂ
ဆ	ဧ	ခ	င	ဂ
<sa>	<Sa>	<ha>	<bba>	<dda>
sə	ʃə	hə	ʃə	də

Table 4: Independent vowel letters

စ	စာ	(ဣ)	(ဣ)
<@a>	<@aa>	<i>	<ii>
ʔə	ʔa	ʔi	ʔi
(ဥ)	(ဥ)	(ဝ)	(ဝ)
<u>	<uu>	<o>	<o'>
ʔu	ʔu	ʔo	ʔo
(ဧ)	(Ü)	(X)	
<e>	<W>	[Y]	
ʔe	ʔu	vu [v]	

Table 5: A recommended way to write vowels

စ	စာ	ဣ	ဣ	
<@a>	<@aa>	<@ii>	<@uu>	
ʔə	ʔa	ʔi	ʔu	
စ	စာ	ဣ	ဣ	(စ)
<@e>	<@o>	<@W>	<@Y>	(([Y]))
ʔe	ʔo	ʔu	ʔi	vu [v]

Table 6: Possible combinations of the consonant /k/ with vowel signs, codas, and medials

က	ကာ	(ကိ)	ကိ	(ကု)	ကု	
<ka>	<kaa>	<(ki)>	<kii>	<(ku)>	<kuu>	
kə	ka	(ki)	ki	(ku)	ku	
က	ကာ	ကိ	ကိ	ကု		
<ke>	<ko>	<kW>	<kY>	<kvu>		
ke	ko	ku	ki	kvu [kʏ]		
ကကိ	ကိကိ	ကကိ	ကကိ	ကကိ	ကိကိ	ကိကိ
<kak'>	<kik'>	<kuk'>	<kek'>	<kok'>	<kWk'>	<kYk'>
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kyə	krə	kwə	kywə	krwə		