Proposed Orthography
Bru - Khong Chiam

(Class B - Tentative Orthography)

Name of Language: Bru (Khong Chiam)
Team Name: Green, VanderHaak, and Miller
Length of time spent studying the language: 6 months
Date of request: 30 August 1997

Working Charts

Initial consonant phonemes

	Point of Articulation				
Manner of Articulation	**Labial**	**Alveolar**	**Palatal**	**Velar**	**Glottal**
Voiceless Unaspirated Stops	p ป	t ต	c จ	k ก	ʔ อ
Voiceless Aspirated Stops	pʰ พ	tʰ ท		kʰ ค	
Voiced Stops	b บ	d ด			
Nasals	m ม	n น	ɲ ญ	ŋ ง	
Fricatives		s ซ			h ฮ
Lateral approximate		l ล			
Retroflexed approximate		ɾ ร			
Central approximate	w ว		j ย		

Table 1 Consonant phonemes

Initial consonant clusters

	Point of Articulation				
Manner of Articulation	**Labial**	**Alveolar**	**Palatal**	**Velar**	**Glottal**
Voiceless Unaspirated Stop Cluster	pɾ ปร pl ปล	tɾ ตร		kɾ กร kl กล	
Voiceless Aspirated Stop Cluster		tʰɾ ทร			
Voiced Stop Cluster	bɾ บร bl บล				

Table 2 Initial consonant clusters in the main syllable

Final Consonants

Manner of Articulation	Point of Articulation				
	Labial	Alveolar	Palatal	Velar	Glottal
Voiceless Unaspirated Stops	p ป	t ด		k ค	ʔ ห์ 0
Nasals	m ม	n น		ŋ ง	
Fricatives					h ฮ
Lateral approximate		l ล			
Retroflexed approximate		ɾ ร			
Central approximate	w ว		j ย		
	wʰ วฮ		jʰ ยฮ		
	wʔ วห์		jʔ ยห์		

Table 3 Final consonant phonemes

Syllabic Nasals in Presyllable

Manner of Articulation	Point of Articulation				
	Labial	Alveolar	Palatal	Velar	Glottal
Syllabic Nasal	m̩ ม่	n̩ น่	ɲ̩ ญ่	ŋ̩ ง่	

Table 4 Syllabic nasals in pre-syllable

Vowel Phonemes

		Front Unrounded						Centralized Back Unrounded						Back Rounded					
		Short		Long				Short		Long				Short		Long			
		CV	CVC	CV	CVC			CV	CVC	CV	CVC			CV	CVC	CV	CVC		
Reg 2	iː		iː			ɯ̈ː						ü			üː				
Reg 1	i		iː			ɯː						u			uː				
Close-mid																			
Reg 2	ɛː		eː				ɤ		ɤ̈ː				o		öː				
Reg 1	ɛ		eː						ɤː						oː				
Open-mid																			
Reg 2													ɔ̈ː						
Reg 1							ʌ		ʌː				ɔ		ɔː				
Open																			
Reg 2	ɜ		əː				ɐː		ɐː				ɐ̈		ɐ̈ː				
Reg 1	ə		əː				a		aː				ɑ		ɑː				
Nasal	ɛ̃ː		ɛ̃ː				ã ː		ã ː						ɑ̃ ː				

Table 5 Main syllable vowel phonemes

Diphthongs

Close	Front			Centralized Back			Back		
	CV	**CVC**		**CV**	**CVC**		**CV**	**CVC**	
Register 2	i̧ə	เx̌ย	เx̌ยx	ɯ̇ə	เx̌ɵ	เx̌ɵx	u̇ə	x̌ɔ	x́ɔx
Register 1	iə	เx̃ย	เx̃ยx	ɯə	เx̃ɵ	เx̃ɵx	uə	x̌ɔ	xɔx
Nasal									
Open									
Register 2	i̧a	เx̃ย	เx̃ยx				ṳa	x̌ɔ	x́ɔx
Register 1	ia	เx̃ย	เx̃ยx				ua	x̌ɔ	xɔx
Nasal							ũa	x̌ɔ	xɔx

Table 6 Diphthongs

Distribution Charts

Chart of the distribution of the main syllable initial consonant with vowel and diphthongs

	i̤	i	i̤ː	iː	e̤ː	eː	ɛ̤	ɛ	ɛ̤ː	ɛː
p	2	1	4	3	6	3	1	6	1	5
pʰ	-	0	-	1	-	4	-	0	-	0
b	-	0	-	2	-	2	-	2	-	6
t	3	5	2	3	9	4	1	3	0	6
tʰ	-	1	-	0	-	1	-	0	-	4
d	-	0	-	1	-	0	-	11	-	8
c	3	2	4	6	3	5	0	4	3	5
k	0	1	8	3	4	3	0	5	0	9
kʰ	-	1	-	3	-	3	-	0	-	1
ʔ	0	3	0	0	1	3	0	5	0	10
m	3	1	0	0	4	0	1	2	1	4
n	2	2	2	2	7	0	1	2	1	5
ɲ	1	0	1	2	2	0	2	1	1	5
ŋ	3	0	0	0	4	0	0	0	1	4
s	-	2	-	4	-	1	-	4	-	12
h	-	0	-	2	-	2	-	1	-	6
l	1	1	5	1	10	5	12	7	1	14
r	5	0	0	0	8	1	3	1	0	3
w	3	1	2	1	8	1	1	1	2	1
j	0	0	0	1	2	3	0	1	0	3
	i̤	i	i̤ː	iː	e̤ː	eː	ɛ̤	ɛ	ɛ̤ː	ɛː

	i̤	i	i̤ː	iː	e̤ː	eː	ɛ̤	ɛ	ɛ̤ː	ɛː
pr	0	0	1	0	1	0	0	0	0	0
pl	1	0	0	0	0	0	0	0	0	1
br	0	1	0	1	0	0	0	0	0	0
bl	0	0	0	0	0	0	0	0	0	0
tr	0	0	0	0	6	0	3	0	0	0
tʰr	0	0	0	0	0	0	0	0	0	3
kr	0	0	0	0	1	0	0	1	0	0
kl	0	0	0	0	0	0	0	0	0	0
total	27	22	29	36	76	41	25	58	11	115

	ɯ̜	ɯ	ɯ̜ː	ɯː	ɤ	ɤ̜ː	ɤː	ʌ	ʌː	a̜	a	a̜ː	aː
p	4	1	11	0	1	10	6	1	1	6	7	1	7
pʰ	-	2	-	0	0	-	1	0	0	-	1	-	0
b	-	3	-	0	1	-	2	3	3	-	2	-	5
t	9	1	4	2	2	4	1	0	3	2	6	0	5
tʰ	-	1	-	2	0	-	0	0	0	-	0	-	0
d	-	2	-	3	0	-	4	2	8	-	1	-	2
c	2	0	0	4	0	2	0	1	2	2	5	0	2
k	55	0	1	3	1	3	2	0	1	2	3	1	5
kʰ	-	1	-	1	0	-	0	0	2	-	3	-	6
ʔ	0	5	0	1	2	0	2	5	4	0	8	0	11
m	4	1	0	0	1	2	0	1	1	4	2	1	3
n	2	0	0	0	9	2	1	5	1	11	5	1	7
ɲ	2	0	1	2	0	0	0	0	0	3	1	1	2
ŋ	3	1	2	0	0	3	1	0	2	2	3	0	3
s	-	1	-	8	4	-	6	3	1	-	3	-	3
h	-	2	-	2	5	-	5	4	2	-	4	-	10
l	7	0	1	1	1	3	2	1	0	5	2	6	8
r	3	0	4	0	3	0	0	1	0	0	1	0	1
w	3	0	0	0	0	1	2	0	0	2	2	2	2
j	2	0	1	1	1	1	1	2	0	1	2	0	1
pr	0	0	1	0	0	4	0	0	2	2	1	0	2
pl	1	1	1	1	0	0	0	0	1	1	1	0	0
br	0	1	0	0	0	0	0	0	0	0	0	0	0
bl	0	1	0	1	0	0	0	0	0	0	0	0	2
tr	3	0	0	0	1	0	0	1	0	1	1	0	0
tʰr	0	0	0	0	0	0	0	0	0	0	0	0	1

	ɰ̥	ɯ	ɰ̥ː	ɯː	ɤ	ɣ̊ː	ɤː	ʌ	ʌː	a̤	a	a̤ː	aː
kr	1	0	0	0	0	2	0	0	0	0	0	0	0
kl	0	0	0	0	0	0	0	2	0	0	0	0	2
total	51	24	27	32	32	37	36	32	34	44	64	13	90

	ɯ	u	ɯː	uː	o	o̞	oː	ɔ	ɔ̞	ɔː	ɒ̞	ɒ	ɒ̞	ɒː
p	5	2	6	3	1	3	5	3	0	3	1	1	0	3
pʰ	-	1	-	1	1	-	0	-	-	0	-	0	-	0
b	-	2	-	2	0	-	1	-	-	0	-	1	-	1
t	3	3	3	6	0	2	6	3	0	2	0	5	0	5
tʰ	-	2	-	0	0	-	0	-	-	1	-	0	-	2
d	-	1	-	4	0	-	0	-	-	5	-	1	-	2
c	1	1	1	2	1	1	3	1	0	0	2	1	0	1
k	2	0	4	1	0	2	3	4	0	0	0	3	1	4
kʰ	-	1	-	2	0	-	1	-	-	0	-	1	-	1
ʔ	0	2	0	8	0	0	2	0	0	6	0	5	0	1
m	1	2	3	2	0	2	1	3	0	2	2	4	2	6
n	2	1	0	1	0	4	1	2	0	3	1	2	0	5
ɲ	2	1	0	1	0	3	0	1	2	0	0	2	2	1
ŋ	2	0	0	0	0	3	1	4	0	0	1	2	1	4
s	-	2	-	1	0	-	0	-	-	1	-	1	-	1
h	-	4	-	3	0	-	1	-	-	4	-	5	-	7
l	1	2	2	1	0	3	3	1	0	1	2	2	3	3
r	2	1	2	1	0	0	0	3	0	0	1	0	1	0
w	0	0	0	0	0	0	0	0	0	0	0	0	0	0
j	1	0	0	1	0	0	1	2	0	0	0	0	1	2
pr	2	0	1	0	0	1	0	1	0	0	0	0	1	0
pl	0	0	0	2	0	0	2	0	0	0	0	0	0	0
br	0	1	0	1	0	0	0	0	0	0	0	0	0	0
bl	0	0	0	0	0	0	0	0	0	0	0	0	0	0
tr	0	0	0	0	0	1	0	0	0	0	0	0	0	0
tʰr	0	0	0	1	0	0	0	0	0	0	0	0	0	0

	ɯ	u	ɯː	uː	o	o̞ː	oː	ɔ̞	ɔ̞ː	ɔː	ɒ̞	ɒ	ɒ̞ː	ɒː
kr	0	0	1	0	0	0	0	0	0	0	0	2	0	0
kl	0	0	0	0	0	0	0	1	0	0	0	0	0	1
total	24	29	23	44	2	25	31	29	2	28	10	38	12	50

	i̯ə	iə	ɰ̯ə	ɰə	u̯ə	uə	i̯a	ia	u̯a	ua
p	2	5	0	0	4	4	4	4	7	1
pʰ	-	1	-	3	-	2	-	1	-	1
b	-	2	-	0	-	0	-	1	-	1
t	0	1	0	0	4	2	5	2	3	3
tʰ	-	0	-	0	-	0	-	0	-	0
d	-	0	-	0	-	0	-	2	-	1
c	1	2	1	0	0	3	5	3	7	3
k	0	2	0	3	1	4	0	3	5	8
kʰ	-	2	-	1	-	1	-	0	-	0
ʔ	0	1	0	2	0	1	1	0	0	0
m	1	0	3	0	4	2	4	1	5	0
n	3	0	1	0	1	0	3	1	3	1
ɲ	0	0	1	0	2	0	3	0	3	0
ŋ	0	0	2	0	1	1	1	0	1	0
s	-	3	-	3	-	6	-	3	-	1
h	-	2	-	1	-	2	-	0	-	9
l	3	5	2	1	2	4	4	1	4	2
r	3	2	0	1	1	3	2	6	3	4
w	1	2	0	0	0	0	1	0	0	0
j	0	0	0	0	0	1	0	0	0	1
pr	0	1	0	1	2	0	1	0	2	0
pl	0	1	0	0	2	0	0	0	1	1
br	0	0	0	0	0	0	0	0	0	0
bl	0	0	0	0	0	0	0	0	0	1
tr	0	0	1	0	3	0	2	0	0	0
tʰr	0	0	0	0	0	0	0	0	0	0

	i̯ə	iə	ɯ̯ə	ɯə	ṵə	uə	i̯a	ia	ṵa	ua
kr	0	0	0	0	2	0	0	0	1	1
kl	0	0	0	1	0	0	0	0	0	0
total	14	32	11	17	29	36	36	30	46	39

Chart of the distribution of the pre-syllable initial consonant with vowel

	i	u	o	a	ʼ
p	0	7	0	44	
pʰ	0	0	0	21	
t	0	1	0	81	
tʰ	0	1	0	1	
d	0	0	0	2	
c	0	0	0	3	
k	0	30	0	53	
kʰ	0	0	0	7	
ʔ	1	2	0	83	
m	0	0	0	32	15
n	0	0	0	2	40
ɲ	0	0	0	2	1
ŋ	0	0	0	0	9
s	0	0	0	87	
l	1	0	1	15	
r	0	1	0	57	
j	0	0	0	1	
total	2	42	1	491	65

1.3 Chart of the distribution of the pre-syllable final consonant with vowel

i	u	o	a	
0	0	0	1	k
0	5	0	10	m
0	0	0	9	n
0	0	0	10	ŋ
0	0	0	6	l
0	0	0	18	r
0	5	0	54	total

Chart of the distribution of the main syllable vowel and diphthongs with final consonant

See section 3.3.5.1 in the Bru Khong Chiam Phonology Statement.

Statement of Orthography for Bru (Khong Chiam)

Vowels & Dipthongs

Sound			Orthographic Symbol		Example				
etic	emic	Reg.	CV: / CV?	CVC	CV: / CV?			Closed Syllable	
i̤	i̤	2	◌̂	◌̂	ti?	to hurt		ta.ˈpin	a low, flat area;
iˑ	i	1	◌̂	◌̂	ti?	to criticize		ra.ˈniŋ	to argue
i̤ː	i̤ː	2	◌̄	◌̄	tiː	high		ʔa.ˈl̬i̤ːŋ	pour
iːˑ	iː	1		◌̄	kiː	a loom		ŋ̩ˌˈkiːŋ	a waist
ḛː	ḛː	2	◌̀	◌̀	pḛː	a raft		ʔa.ˈrḛːŋ	salty
e·,eˑ	eː	1	◌	◌	peː	a pile		teːn	to thrash
ɜ̆	ɛ̆	2	◌̄	◌̄	mpḛ?	mother		tɛ̆ŋ	to spread
·ɜ	ɜ	1	◌	◌	me?	Question Mkr		pɛŋ	to drain
ɜ̆ː,ɜ̆	ɛ̆ː	2	◌̀	◌̀	racɛ̆ːh	to poke		ŋ̩ːɜ̆ːŋ	dry
ɛ·ː	ɛ	1	◌	◌	teː	but		pɛːŋ	to throw
ɛ̃ː	ɛ̃ː	Nasal	◌	◌	hɛ̃ː	a procession		hɛ̃ːŋ	more

Proposed Orthography for Khong Chiam Bru

Sound			Orthographic Symbol			Example				
etic	emic	Reg.	CV: / CV?	CVC		CV: / CV?			Closed Syllable	
ɨ	ɨ	2	X̌	X̌X		mɨ?	to carry	(Thai)	pɨːŋ	big
ɯ‑ᵐ	ɯ	1	X̌	X̌X		kʰɯ?	to bump	(Thai)	pɯŋ	book
ɨː	ɨː	2	X̌ə	X̌X		ka.ˈtɨː	to rapel animals	(Thai)	ta.ˈpɨːŋ	to carry
ɯ‑ᵐ.ˠ	ɯː	1	X̌ə	X̌X		n̩.ˈtɯː	season	(Thai)	kɯːŋ	to lever up
ɤˠ	ɤ	1	X̌əˠ	X̌X		sɤ?	to waste	(Thai)	sɤp	to wear
	ɤj			X̌ɛj		-	-		lɤj	they
ɤː	ɤ̀ː	2	X̌ə	X̌X		cɤː	already	(Thai)	prɤː?	dirty
	ɤ̀ːj			X̌ɛj		-	-		mpɤːj	to bathe
ɤːˠ	ɤː	1	X̌ə	X̌X		sɤː lɤː?	awkward	(Thai)	ŋɤːk ŋak	clumsy
	ɤːj			X̌ɛj		-	-		sɤːj	indifferent
ʌ	ʌ	1	X̌əˠ	X̌X		saʔʌ?	to starve	(Thai)	rasʌ? rasɯaŋ	messy
	ʌj			X̌ɛj		-	-		mʌj	you
ʌː	ʌː	1	X̌ə	X̌X		ra.ˈbʌː	alligator	(Thai)	pahʌːm	chest
	ʌːj			X̌ɛj		-	-		kʰʌj	brother / son in law

Proposed Orthography for Khong Chiam Bru

Sound			Orthographic Symbol		Example			
etic	emic	Reg.	CV: / CV?	CVC	CV: / CV?		Closed Syllable	
ᵃa̤ː	a̤ː	2	X̤ː̌	X̤X̌	na̰ʔ — cls		pa̤ŋ — light	
	a̤w			ᵘXᷢ			ca̤w — to stop	
	a̰m			X̊ᷢ			pana̰m — to cuddle	
	a̤j			ˡXᷢ			pla̤j — go change bait	
a	a	1	Xː̌	XX̌	paʔ — at		ta̰ŋ — a seat	
	aw			ᵘXᷢ			ku.ˈtaw — hot	
	am			X̊ᷢ			lam — cls.	
	aj			ˡXᷢ			rakaj — lizard	
ᵃa̤ː	a̤ː	2	X̤ː̌	X̤ːX̌	sa.ˈla̤ː — a wayside shelter		pʰaŋ la̰ːŋ — an iron bell	
aː	aː	1	Xː	XːX	ʔa.ˈkaː — fish		baːŋ toːm — the mouth of a stream	
ã̤ː	ã̤ː	Nasal	Xː̃	XX̃	0 — 0		haːn — a goose	
ʉː	ʉː	2	X̤ː	X̤X̌	ʔapʉʔ — coconut shell		pʉ̈ŋ — to wrap in cloth	
uⁿ	u	1	Xː	XX̌	taɲuʔ — to poke		ka.ˈtʰuŋ — shoulder bag	
ʉ̈ː	ʉ̈ː	2	X̤ː	X̤X	kʉ̈ː — every		ʔa.ˈlʉ̈ːŋ — uncle	
uⁿ;	uː	1	Xː	X̥X	tuː — blunt		pʰuːŋ — to darn a net	

Proposed Orthography for Khong Chiam Bru

Sound			Orthographic Symbol		Example					
etic	emic	Reg.	CV: / CV?	CVC	CVC	CV: / CV?		Closed Syllable		
oˑ°	o	1	(Thai)	(Thai)	0	0	0	coʔ	to take a break	
oː	ö	2	(Thai)	(Thai)	coː	(a) bunch of bamboo	(Thai)	nɔ̤ːŋ	loufah gourd	
oˑ°ː	oː	1	(Thai)	(Thai)	po:	an anchored buoy	(Thai)	toːŋ	a kind of fish trap	
ɔˑ°	ɔ̆	2	(Thai)	(Thai)	rakɔʔ	curry	(Thai)	ʔamɔ̰ŋ	alive	
ɔ	ɔ	1	(Thai)	(Thai)	sɔʔ	hair	(Thai)	cɔh	to plant	
ɔː	ɔː	1	(Thai)	(Thai)	rasɔː raʔaːj	conversation	(Thai)	ʔɔːn	to give	
ɒˑ°	ɒ̆	2	(Thai)	(Thai)	mpɒ̰ʔ	pregnant	(Thai)	mp̰k	dull	
ɒ	ɒ	1	(Thai)	(Thai)	pɒʔ	to go	(Thai)	ɲpʔ	sour	
ɒˑ°ː	ɒ̆ː	2	(Thai)	(Thai)	kalpː	bamboo drum	(Thai)	ɲp̰ːm	to agree	
ɒː	ɒː	1	(Thai)	(Thai)	kakɒː	first	(Thai)	kɒːn	a child	
õˑː	õː	Nasal	(Thai)	(Thai)	taw hõ̤ː	a trap	(Thai)	hɒ̃ːp	to carry	
eˑï	eï	2	(Thai)	(Thai)	pïə	to mix	(Thai)	ka.ˈniəŋ	a hollow	
eï	eï	1	(Thai)	(Thai)	bïə	a seedling	(Thai)	ta.ˈkiəŋ	(a) lamp	

Proposed Orthography for Khong Chiam Bru

Sound		Reg.	Orthographic Symbol		Example					
etic	emic		CV: / CV?	CVC	CV: / CV?			Closed Syllable		
ia̯	i̯a	2	เ◌ีย	เ◌ียx	tia	เ◌ีย	duck	tⁱap	เ◌ีย	low
ia	ia	1	เ◌ีย	เ◌ียx	0	0	0	kaliam	กฺรฺเลียม	scorpion
eɯ̈	eɯ̈	2	เ◌อ	เ◌อx	eɯ̈ɔ	เ◌อ	lineage	muɯeɳ	เมือง	a town
em	em	1	เ◌อ	เ◌อx	pa.ˈkruɯ	ปฺระเกือ	to trick	ma.ˈpʰuɯeɳ	มฺระเพือง	starfruit
eɯ̈	eɯ̈	2	◌ี	◌ิ	peɯ̈d	ปี้	a bunch	sa.ˈtuɯɳ	สฺตึง	to transplant rice
en	en	1	◌ี	◌ิ	end	ปี้.	to cure	tuɯɳ	ตึง	coconut
u̯a	u̯a	2	◌ัว	◌ัวx	m̩puɯa	มฺปัว	father	cuaʔ	จั๊ะ	to hunt
ua	ua	1	◌ัว	◌วx	kukruɯa	กุกรั้ว	to urinate	huat	ฮ้วด	bamboo steamer
ũa	ũa	Nasal	◌ัว	◌วx	0	0	0	huat	ฮ้วด	to pour

Examples of Main Syllable Consonants (including digraphs & consonant clusters)

Sound		Symbol			Example				
etic	emic		CV	CVC	Open Syllable			Closed Syllable	
p	p	$-	ปุ	ปุ	peː	เปๅ	a pile	ta.ˈpet	ถะแปๅด	to stick
p˺	p	-$	ปุ	ปุ	---	---	---	lɛːp	แลๅบ	(a) thatch of leaves
pʰ	pʰ	$-	ผ	ผ	pʰɯe	เผือ	preserved	pʰeːt	เผด	a ghost
b	b	$-	ปุ	ปุ	ra.ˈbʌː	ระบๅอ	alligator	bɛʔ	แปๅะ	a mouth
t	t	$-	ด	ด	ku.ˈtɕiː	กุ๊ด	long	ta.ˈteːm	ตระแดม	to keep adding colour here and there
t˺	t	-$	ด	ด	---	---	---	ra.ˈtet	ระแด๊ด	close
tʰ	tʰ	$-	ถ	ถ	tʰɛː	แถก	to shave	tʰɛːp	แถๅบ	a wall
d	d	$-	ด	ด	ka.ˈdaː	กะดๅก	thin	dup	ดุๅ	to sink
c	c	$-	จ	จ	ra.ˈcɛː	ระเจ๊	to fight with words	cɛːm	เจๅม	a bird
k	k	$-	ก	ก	kiː	กี๊	there; that	kɛt	แกๅด	small
k˺	k	-$	ก	ก	---	---	---	kɛk	แก๊ก	to provoke
kʰ	kʰ	$-	ค	ค	kʰɯː	คือ	is	ma.ˈkʰiep	มะเคๅยๅบ	custard apple
ʔ	ʔ	$-	อ	อ	ʔɒː	ออ	beautiful	ʔuːjh	ฮุย	fire
ʔ	ʔ	-$	หฺ	หฺ	---	---	---	ʔa.ˈliː?	อวลิ๊ๅ	pig
ʔ	ʔ	$-	0	0	---	---	---	n̩.ˈlɛ̃ʔ	หนึๅละ	where

Proposed Orthography for Khong Chiam Bru

Sound		Symbol			Example					
					Open Syllable			Closed Syllable		
etic	emic		CV	CVC			Particle			
m	m	$-	แม	แม	แม	mɛː	Particle	แมน	mɛːn	to pick
m	m	-$	แม	แม	---	---	---	อะแอม	ʔa.ˈʔɛːm	younger sibling
n	n	$-	นา	นา	พารนาะ	pʰar.ˈnʌː	tomorrow	นาบ	naːp	to prohibit
n	n	-$	นา	นา	---	---	---	ระแนน	ra.ˈnɛːn	child
ɲ	ɲ	$-	ญแ	ญแ	แญ	ɲɛː	a kind of lizard	ญแะ-ญแะ	ɲɛʔ ɲɛʔ	slushy
ŋ	ŋ	$-	งอ	งอ	0	0	0	ตะงิด	ta.ˈŋit	to relieve
ŋ	ŋ	-$	งอ	งอ	---	---	---	แปง	pɛŋ	to drain
s	s	$-	ซี	ซี	ซี	siː	color	ซูบ	suːp	to succeed
h	h	$-	ฮอ	ฮอ	อะฮอ	ʔa.ˈhɒː	bamboo	ระฮืูบ	ra.ˈhɯːp	red
h	h	-$	ฮอ	ฮอ	---	---	---	งแกะ	ŋ.ˈkɛh	short
l	l	$-	แล	แล	แล	lɛː	to cut	ซะแลบ	sa.ˈlɛːp	bending down
l	l	-$	แล	แล	---	---	---	วีล	wiːl	village
r	r	$-	รี	รี	กะแรื	ka.ˈrɛ̣ː	to escort	รีบ	riːp	to tighten
r	r	-$	รี	รี	---	---	---	บาร	baːr	two
w	w	-$	วแ	วแ	แวื	wɛ̣ː	to swerve	แวืว	wɜ̃ːw	flat
w	w	-$	วแ	วแ	---	---	---	แรว	rɛ̃ːw	(a) trap
wʰ	wʰ	-$	บอะ	บอะ	---	---	---	แบอวะ	bʌwʰ	to roast

Sound		Symbol			Example					
etic	emic	-$	CV	CVC	Open Syllable			Closed Syllable		
$w^ʔ$	$w^ʔ$	-$	ฮว๋	ฮว๋	---	---	---	hi:wʔ	ฮ๋วฮ	to jerk
j	j	$-	ย	ย	sa.ˈjɛ:	ยะเ่ย	to sift	ta.ˈjɛ:ʔ	ต๋ะเเย่ฮ	to worship
j	j	-$	ย	ย	---	---	---	wạj	ว๋ย	before; quickly
j^h	j^h	$-	ยฮ	ยฮ	---	---	---	ʔuːjh	อุ๋ยฮ	fire
$j^ʔ$	$j^ʔ$	-$	ย๋ฮ	ย๋ฮ	---	---	---	kɯːjʔ	ก๋ยฮ	smallest
pr	pr	$-	ปร	ปร	prɯ̯a	ปรั๋ว	to stand on end	priat	ปร๋ียาด	banana
pl	pl	$-	ปล	ปล	plɯ̯:	ปลื่อ	breakfast	plụaʔ	ปลั๋วฮ	greyish
br	br	$-	ปร	ปร	brɯ:	ปรู๋	Bru	ʔabriːt	อ๋ะปร๋ีด	cricket
bl	bl	$-	ปล	ปล	0	0	0	blaːj	ปลาย	white
tr	tr	$-	ตร	ตร	ntrɛ̯:	นแ๋ตร่	pestle	trịaʔ	ตเ๋ร๋ียฮ	mushroom
t^hr	t^hr	$-	ทร	ทร	t^hrɛ:	แทร่	field	t^hrɛt	แทร๋ด	to shrink
kr	kr	$-	กร	กร	krɯ̯a	กรั๋ว	family	ʔakrɯːk	อ๋ะกรู๋ก	lion
kl	kl	$-	กล	กล	klɔ:	กลอ	snail	klʌʔ	แกลอะ	to forget

Examples of Pre-Syllables

Sound		Symbol	Example	
etic	emic			
p	p	$-	patɛ̝r	to unroll
pʰ	pʰ	$-	pʰarnʌ:	tomorrow
t	t	$-	tapʉl	seven
k	k	$-	kadʌwʔ	pumpkin
ʔ	ʔ	$-	ʔabritt	cricket
m	m	$-	mana:	should
m	m	-$	lambʌ:	easy
m̩	m̩	$-	m̩pʉa	father
n	n	$-	nanʌʔ	how
n	n	-$	kandʌ:l	heal
n̩	n̩	$-	n̩trɛ̝:	a pestle
ɲ	ɲ	$-	ɲɛnɲum	to put up
ŋ	ŋ	-$	saŋkịr	trellis
ŋ	ŋ	$-	ŋkɛ:l	cucumber
s	s	$-	sadaw	night

Bru Khong Chiam Proposed Orthography

Sound			Symbol		Example
etic	emic				
ɾ	r	$-	รฺ	rakaj	lizard
r	r	-$	รฺ	pʰarnʌː	tomorrow
l	l	$-	ด	lakɯ̈ej	wife
l	l	-$	ด	kaldɯːŋ	to tip
tʰr	tʰr	$-	ทร	tʰratʰraːʔ	to wash hair

Examples of each phone in all relevant situations

Consonants

See Bru Phonology Statement Section 3.1

Vowels and Diphthongs

See Bru Phonology Statement Section 3.3

Sequences of phonemes

V + semivowel

See Bru Phonology Statement Section 3.1.4

VV

See Bru Phonology Statement Section 3.3.4.4

#CC

See Bru Phonology Statement Section 3.2.2

Complex C#

See Bru Phonology Statement Section 3.1.4

Minimal or analogous pairs of words to demonstrate phonemic contrasts in as many environments as possible.

Main Syllable -- Consonant Initial

See Bru Phonology Statement Section 3.1

Main Syllable Consonant Final

See Bru Phonology Statement Section 3.1

Example2.doc

Pre-Syllable + Main Syllable CV(C).C̲ in analogous environments

	Bru Thai Script	Bru IPA Script	English Gloss
p	ตะปิ่น	tapi̱n	flat smooth area
b	ตะเบ็อว	tabɤw	evening
t	ตะติ่	tati̱ʔ	to blow
d	ปะแด็ยฮ์	padʌjʰ	to lie down
c	ปะจี่บ	paci̱ːp	to sit quietly
k	ปะเกือ	pakɯə	to trick someone
kʰ	ปะเดน	pakʰeːn	to give unwillingly
ʔ	ปะอี	paʔiʔ	clumsy
n	ปะนิ่ม	panɯ̱m	to hatch
ɲ	ตะญุ	taɲuʔ	to poke
ŋ	ปะงัยห์	paŋajʔ	to tell a lie
s	ปะไซ	pasaj	satisfied
h	ปะเฮิม	pahʌːm	the heart
l	ปะลา	palaː	to sharpen
r	ปะรายห์	paraːjʔ	to dry something
j	ปะยื่อ	pajɯ̱ː	to lift up
pl	ระปลั้วะ	rapluaʔ	mouldy
pr	ปุเปรือย	puprɯəj	crumbly
br	อะบรีด	ʔabriːt	cricket
tɾ	กะตรึ่บ	katrɯ̱p	to overturn
kl	กะกลาย	kaklaːj	to wear a lower garment
kr	อะกรู่ก	ʔakrṳːk	a lion

Main Syllable Vowels in analogous environments

See Bru Phonology Statement Section 3.3.4.2 and 3.3.4.5

Example2.doc

Pre-syllable -- Consonant Initial <u>C</u>V(C).C in analogous environments

	Bru Thai Script	Bru IPA Script	English Gloss
p	ปะเน็ย	panʌj	here
pʰ	พะญ่าน	pʰaɲa̤ːn	a witness
t	ตะแม็ยฮ์	tamʌːjʰ	to gossip
tʰr	ทระทราห์	tʰratʰraːʔ	to wash hair
c	จะจัวร	cacuar	to search for something
k	กะโมม	kamɔːm	a dipper
kʰ	คะญั้ง	kʰaɲaŋ	to tighten
ʔ	อะม่ง	ʔamɔ̤ŋ	uncooked
m	มะเน่ห์	mane̤ːʔ	later
n	นะน่ะ	nana̤ʔ	how
ɲ	ญะญ่วม โซะ	ɲaɲṳəm sɔʔ	to put up hair
s	ชะมำ	samam	to hold firmly
l	ละเม่น	lame̤ːn	soft
r	ระมึฮ	ramɯh	name

Pre-syllable -- Consonant Final CV(<u>C</u>).C

	Bru Thai Script	Bru IPA Script	English Gloss
-N	รังเฮาะ อูยฮ์	raŋhɒʔ ʔuːjʰ	hot coals
-l	กัลฮีห์	kalhɯːʔ	red
-r	ซัรฮัน	sarhan	a sensation in the mouth

Example2.doc

Pre-syllable -- Vowel C<u>V</u>(C).C

	Bru Thai Script	Bru IPA Script	English Gloss
a	ปะม่าน	pamạːn	to estimate
u	ปุมเป่	pumpẹː	fussy
a	ปะเต่ร	patẹːr	to unroll
u	ปุปิ่น	pupɯ̤ːn	to tell a story
o	ลวอา	loŋʔaː	wide

Example2.doc

Examples of all syllable patterns

CV	Bru Thai Script	Bru IPA Script	English Gloss
cv	เต่	tẹː	also
cvcc	เป็้อวฮ์	pʌwʰ	to open something
cvc	ยอห์	jɒːʔ	to want
cvvcc	เปี่ยยฮ์	pi̤ajʰ	to hit with a stick
cvvc	เปี่ยน	piən	to change
cvv	ปั่ว	pṳə	a bunch (CLS)
ccvc	ปลึ่ม	plṳɯm	fat
ccvvc	ปรี่ยาด	pri̤at	banana
ccvv	กรั่ว	krṳə	family
ccvcc	ปรายฮ์	praːjʰ	to stay away
ccv	แปลอ	plʌː	the head, front, beginning
c.ccvv	น่ตเรี่ย	ntri̤a	in two days
c.cvc	ม่ปิ่ล	mpi̤l	tamarind
c.cvvc	ม่เบียห์	mbiaʔ	some day in the future
c.ccvc	น่เตร่ฮ	ntrẹːh	a nail
cv.cvvc	ปะเดียบ	padiap	to lower something
cv.ccvvc	ปุเปรื้อย	pupruɯəj	crumbly
cv.ccvc	กะตรี่บ	katrṳp	to overturn a container
cv.cvvcc	ปะเดียยฮ์	padiajʰ	to break
cv.cvc	ปะเน็่ย	panɤj	here
cv.cvcc	ปะนัยฮ์	panajʰ	jackfruit
cv.cvv	อะเลี่ย	ʔali̤a	small bamboo
cv.cv	ตะกู่	takṳː	to sit
cvc.ccvvc	ชันเตรี่อห์	santrṳəʔ	to belch
cvc.ccvc	กุมโปลห์	kumploːʔ	species
cvc.cvc	พัรนาย	pʰarnaːj	language
cvc.cv	ลำแบอ	lambʌː	easy
ccv.cvc	คลินิก	kʰlinik	clinic
ccv.ccvc	ทระทราห์	tʰratʰraːʔ	to wash hair

Example2.doc

Linguistic and Sociolinguistic Factors (SPAR 7)

Orthography

Orthography Development

Name of orthography:
Bru (Khong Chiam)

Do any existing standards exist for the orthography? If so what are they?
There are no orthographic standards for Bru.   There is a Thai standard for the Base Orthography, though.

Who developed it? (Give details of the extent of involvement of the different contributors)
While there are no standards for Bru orthography, there are existing orthographies. The first was developed by Dr. Theraphan of Chulalongkorn University in 1980. It is a linguistically based orthography that uses Thai script. It was developed at the university for use in the Bruu – Thai – English dictionary.

In 1994, John & Carolyn Miller, while working on a linguistic survey comparing dialects of Mon-Khmer languages, used a sociolinguistic survey to investigate language attitudes towards vernacular language use as well as the desire for written vernacular materials. As a result of the survey and discussion with Bru speakers, John & Carolyn Miller modified the Theraphan orthography, in Nakorn Phanom working with two Bru men.

When was the proposed orthography developed?
Dr. Theraphan originally developed the orthography in 1979, in the process of producing The Bruu -Thai-English Dictionary. John and Carolyn Miller proposed changes to the Theraphan orthography in 1994 while working with Bru Woen Buek speakers writing various texts in Bru. In 1996-97 Julie Green and Feikje van der Haak, in discussion with a few Bru Woen Buek speakers, modified the Miller Orthography. These last modifications changed some of Miller's revisions back to Theraphan's. This was done to keep the Bru Orthography as close to the Thai Base Orthography standard.

Who is currently working on its development?
Julie Green and Feikje van der Haak

Is it currently being used? By whom? To what extent? (How much is published and is it widely read?)

It is not currently being used by anyone that we know of, except that we use it in our language learning and that is exposing it (in a limited sense) to others. Occasionally, a few Bru speakers write letters in the Miller orthography (or a variant) to the Millers.

What is the attitude of each community towards the (proposed?) orthography?

The attitude of the community toward any of the orthographies is unknown. Bru speakers, however, have stated a desire for written vernacular materials that will preserve the Bru language and culture. Early indications indicate that individual Bru people are positive towards the proposed orthography.

1.1.2   Which orthography has been chosen to be developed? What is the rationale behind the decision?

A combination of the Theraphan and Miller orthography has been chosen to be tested and be further developed. It was chosen because it is based on a linguistically solid orthography (Theraphan 1980) and Puan, (a Bru speaker, who has helped Millers and is helping us. He very interested in his language) has been involved in the decisions. We are anticipating that there will be further revisions (especially in the diphthongs and other "non-Thai" combinations) after more Bru people have had a chance to use it and give their input on its development.

In order for the orthography to be accepted and used, what special considerations need to be taken into account regarding:

Local leaders?

The input we'll need from local leaders outside of the village is unknown. We'll probably need to talk over orthography issues with the "Bru Monk" in the wat in Khong Chiam. He has told us that he is interested in Bru language and culture issues and has asked for a copy of anything we produce.

We will need to have input and discussion time with the Village Chief of Woen Buek and the Village Chief of Thalong.

Native speakers?

At this point native Bru speakers have not really been formally exposed to orthography issues so they have not had a chance to either think over the issues or give their input on orthography design. We plan to expose them extensively to written Bru.

Mr. See Puengpa (one of the authors of the Bruu – Thai – English Dictionary and one of the developers of the Theraphan Orthography) will need to be consulted and probably a part of any village level decision making process.

Government officials and / or government?

The Governor and Vice Governor of Ubol, the District Officer of Khong Chiem and a Vice District Officer of Khong Chiem have expressed interest in the language and culture research project. However, we're not sure of the extent that these people need / should be involved in the orthography decision making process.

Other groups working in the area?

No one else is working in the Khong Chiam dialect of Bru at this time.

There are other groups working in other Bru - So groups. New Tribes, in the past had an interest in some of the Bru groups between Woen Buek and Nakhorn Phanom.

In *Katuic phonology and orthography: Notes on phonology and orthography in several Katuic Mon-Khmer groups in Northeast Thailand*, John & Carolyn Miller discuss the possibility of a standardized Bru - So orthography. They state that,

> "In the past these groups have had very little or no contact with each other. Some groups had no knowledge of the existence of some of the others. If the situations were to continue, then very little importance needs to be placed on standardization of orthographies for the different dialects." (1995:??) *p. 37 in my copy*

If standardization is desired in the future, then we would need to be in discussion with New Tribes and the other Bru groups who are interested in standardizing the Bru orthography.

What is the current status of this chosen orthography in terms of:

Stage of development?

B1. It has been informally tested with individuals, but it has not been formally tested in the village.

What groups are already using it?

No groups are formally using any of the orthographies. Two individuals who were trained by Millers are loosely using the proposed (Miller) orthography in letters. Even though there is little evidence of use, I would still assume that the Theraphan orthography may have a few loyalists especially among those who did the initial work, but I do not see any use of it in the village. This needs to be checked out.

Problem areas of the chosen orthography, as seen by:

the analyst?

We do not anticipate any analytical problems in the proposed orthography. Both the Miller and Theraphan orthographies are phonologically sound.

We do, however, anticipate problems in the way the diphthongs and central and back vowels are represented, as they are different then the Thai. These will need to be tested.

native speakers?

We don't know yet, but we think we can predict problems with all the non-Thai looking combinations and all the non-Thai sounds (extra central and back vowels, extra diphthongs, second register, presyllables and syllabic nasals and some final consonants and consonant clusters).

national linguists?

We don't know if Dr. Theraphan is still interested in Bru orthography as she has academically moved on to other areas of interest. We probably should check with her at some point.

the government?

Unknown.

teachers

Unknown.

others?

Unknown.

What type of orthography testing has been done and what further testing is needed?

Very informal testing has been done with two Bru speakers.

Further testing is needed in the following areas. For further discussion on the problems and possible solutions, see section 0.

Problem area	Problem
Diphthongs	Bru has 2 levels of diphthongs where Thai has only 1.
Second Register Vowels	Thai doesn't have these.
Extra Central Mid vowels	Bru has 2 levels of central mid vowels where Thai has only 1. Thai also under-differentiates between the long and short vowels. This long – short distinction is phonemic in Bru. The centralized open-mid vowel / ʌ / also has a non-Thai appearance.
Extra Central Back vowels	Bru has one additional level of back vowels.
Distinguishing between / ɔ / and / o / and / o̱ / and / u /.	/ɔ/ and / o̱ / are very high and sound a lot like the Thai / o / and / u / respectively. Bru speakers may want to choose to represent the lower vowels with the higher vowel's symbol and then mark it as different with a x̃ or some other way.
Final / h / and / ʔ / / wʰ /, / wʔ /, / jʰ /, / jʔ /	Non-Thai appearance
Presyllables	The presyllable in Bru is much more frequent than the presyllable in Thai. Thai doesn't write the vowel consistently. Bru will need to.
Syllabic Nasals	Non-Thai appearance

What still needs to be done for the orthography to be approved by:

all leaders and groups within the area?

See sections 0 and 0 above.

official agencies outside the area?

See sections 0 and 0 above.

Is there disagreement within the language group on orthography matters? If so, describe.

There are no known areas of disagreement in orthography issues.

Justification of all decisions which depart from the chosen base orthography, including a discussion of the problems, the alternatives considered and the reasons for the choice.

Problem 1a: Bru has four layers of central vowels while Thai only has three. One of them will have to be "non-Thai," as Thai doesn't have an available symbol.

Problem 1b: Thai under-differentiates between the long and short central vowels.

Sound	Base Symbol	Proposed Bru Symbol	Alternatives
ɤʔ	เxอะ	เx̣อะ	เxอะ
ɤʔ	เx̂x	เx̣̃อx	เx̃อx เx̂x
ɤː	เxอ	เx̣อ	เxอ
ɤːʔ	เx̂x	เx̣̂x	เx̂x
ɤ̆ː	เx́อ	เx̣́อ	เx́อ
ɤ̆ːʔ	เx̂́x	เx̣̂́x	เx̂́x
ʌʔ	เxอะ	เxอะ	เx̣อะ \ แxอะ
ʌʔ	เx̂x	เx̃อx	เx̣̃อx \ แx̃อx
ʌː	เxอ	เxอ	เx̣อ \ แxอ
ʌːʔ	เx̂x	เx̂x	เx̂x \ เx̃x \ แx̂x

Discussion a: One way or another, one of the two central vowels needs to be marked. The choice is either to decide which vowel (the higher or lower) will be marked as "different" or create a new symbol combination. While the proposed solution is to create a new symbol combination, which is non-Thai looking, it retains the syllable structure and it marks the mid-central vowels as different from the lower central vowel.

Problem 2: Thai under differentiates between \ej\ and \əj\. In the process of checking contrasts, \ej\ in Bru, was found to not be in contrast with \eːj\ so \ej\ was reassigned to \eːj\. The possibility of finding contrast between the long and short vowels here, still exists, which would then create a new kind of problem.

Sound	Base Symbol	Proposed Bru Symbol	Alternatives
ɤːj	เxย	เx̣ย	เxย
ɤj	เx̃ย	เx̣̃ย	\ เx̃ย
ʌj	เxย	เx̃ย	เx̣ย \ แx̃ย
ʌːj	เxย	เxย	เx̣̃ย \ เx̃ย

Discussion: While \ej\, \eːj\, \ej^h\, \eːj^h\, \ej^ʔ\, \eːj^ʔ\ and \ɛj\, \ɛj\, \ɛ̣j\, \ɛːj\, \ɛj^h\, \ɛj^h\, \ɛ̣j^h\, \ɛːj^h\, \ɛj^ʔ\, \ɛj^ʔ\, \ɛ̣j^ʔ\, \ɛːj^ʔ\ are all theoretically possible combinations in Bru. This phonological hole is characteristic of other Mon-Khmer languages (Kui, Bru Quang Tri, Ta-oih). We have chosen the above solution because of this phonological hole and because it is Thai looking.

Problem 3: Thai doesn't have syllabic nasals. Any choice will either potentially look un-Thai or create a syllable orthographically that doesn't really exist.

Sound	Base Symbol	Proposed Bru Symbol	Alternatives			
m̩	none	ม่	มา	อัม	ห	อึง
n̩	none	น่	นา	อัน	ห	อึง
ɲ̩	none	ญ่	ยา	อัน	ห	อึง
ŋ̩	none	ง่	งา	อัง	ห	อึง

Discussion: Any orthographic choice made to represent the syllabic nasals will have to be extensively tested. We have followed the Miller orthography in the present choice.

Problem 4: While Thai has presyllables, it is not consistent in writing it. Thai writes presyllables in three ways: short vowel, long vowel, and no vowel.

Sound	Base Symbol	Proposed Bru Symbol	Alternatives
	xะ / x̌x	xะ / x̌x	xา / xาx
	x̖	x̖	x̤

Discussion: We need to find out how Bru perceive their presyllables (as a short vowel, or long vowel) and how they want them to be written. Both Theraphan and Miller have chosen to write the presyllable vowel as a short vowel. The proposed orthography follows Theraphan and Miller.

This issue intersects with whether or not written Bru will use word spaces (or half word spaces) as the CV structure of the word may be misread if the presyllables vowel is a long vowel.

Problem 5: Bru has two layers of diphthongs \ ia \ and \ iə \ and \ ua \ and \ uə \ while Thai only has one layer. Bru speakers do not associate one layer as "more Thai sounding" than another.

Sound	Base Symbol	Proposed Bru Symbol	Alternatives
i̤ə	เx̌̇ย	เx̌̇ย	เx̌̇ย
iə	เx̌ย	เx̌̇ย	เx̌ย
i̤a	เx̌̇ย	เx̌̇ย	เx̌̇ย x̌̇ยา
ia	เx̌ย	เx̌ย	เx̌ย x̌ยา
ṳə	x̌̇ว	x̌̇ว	x̌̇ว ẋ̤วา
uə	x̌ว	x̌̇ว	x̌ว x̤วา
ṳa	x̌̇ว	x̌̇ว	x̌̇ว ẋ̤วา
ua	x̌ว	x̌ว	x̌ว x̤วา

Discussion: These diphthongs are a problem and they will need to be extensively tested.

Theraphan's use of the Pali dot to distinguish one layer from another is linguistically acceptable, but the problems with readability (photocopiers adding or subtracting dots) and write-ability (it's easy to leave off when writing) are a draw back to using the Pali dot.

Another problem in marking the layers with anything is that Bru speakers do not associate one of the layers as being more "Thai sounding", so deciding and then remembering which to mark will be a problem.

One option would be to mark one layer with $\overset{\approx}{x}$. This has the same "randomness" problem of which layer to

mark but it is a little more visible and less likely to get left off when reading / writing. This solution would not be adding a new symbol or symbol combination as it is being proposed for distinguishing between \ ɔ \ and \ o \. This solution keeps both Thai and Bru syllable structure intact, but causes computer and printing

problems as $\overset{\approx}{x}$ has to be stacked over $\overset{\prime}{x}$ and $\overset{\approx}{x}$ for second register vowels. While it is possible to find a

computer solution to do this three layer stacking problem, the very non-Thai appearance seems to mitigate against this as a solution. It is also hard to see, even if the computer can do it.

We do not see a good solution to this. We chose the above solution because the Miller solution was un-Thai and breaks the Bru syllable structure. Whatever the "final" proposed solution, it will need to be extensively tested.

Problem 6: Thai uses ญ as an \ n \. Bru will use it as an \ ɲ \.

Sound	Base Symbol	Proposed Bru Symbol	Alternatives
ɲ		ญ	

Discussion: This is just using one Thai symbol for another in Bru. This shouldn't cause major transfer problems as it's not a very common symbol in Thai and it does not occur very frequently in Bru. Dot says that this is a very common sound in both the consonant initial and final positions in Northern Khmer. She says that it is not a problem for Northern Khmer speakers. Feikje says that it's not a problem for Kui speakers. We don't anticipate that this will be a problem for Bru speakers. It will be something that will need to be taught, though.

Problem 7: Thai does not have these complex final consonants.

Sound	Base Symbol	Proposed Bru Symbol	Alternatives
$?w^h$	none	วฮ	
$?w^?$	none	วห์	
$?j^h$	none	ยฮ	ยซ
$?j^?$	none	ยห์	

Discussion: The proposed orthography uses the Thai symbols and combines them to form the needed Bru consonant clusters and complex final consonants. This shouldn't interfere with transfer from Bru to Thai as the symbols are used for their corresponding sounds in Thai. These consonant clusters make word breaks a necessity.

Problem 8: Thai does not use ฮ as a final consonant and Thai sometimes pronounces final glottal as / h /.

Thai does not have final glottal after long vowels, but Bru does.

Sound	Base Symbol	Proposed Bru Symbol	Alternatives
$?h$	ฮ	ฮ	ห
$??$	ห	ห์	อ์

Discussion: / h / final in Bru is contrastive with / ? / and nothing so it needs to be marked. Using ห as final

/ h /; is a possibility, but because ห์ is being used to represent / ? / it would probably be best to have a

symbol that is a little more visually distinct. ห์ will need to be tested to see if this is how Bru speakers

would like to represent final glottal.

Problem 9: Bru has one more level of back vowels than Thai has.

Sound	Base Symbol	Proposed Bru Symbol	Alternatives
\o̤ː\	โx́	โx̃́	โx́
\o\	โxะ	โx̃ะ / x̃x	โxะ
\oː\	โx	โx̃	โx
\ɔ̤\	โx	x́ะ	
\ɔ\	โx	xะ	
\ɔː\	โxะ	โxะ	
\ɒ̤\	xอ	x́อ	
\ɒ\	xอ	xอ	
\ɒ̤ː\	xอ	x́อ	
\ɒː\	xอ	xอ	

Discussion: We have chosen Miller's solution because the sound of the \ɔ̤\ \ɔ̤ː\ and \ɔː\ sound more like the Thai \o\ \o̤ː\ and \oː\. This is the solution that the 2 Bru speakers working with Millers choose.

Problem 10: Both x̃ and x́ are Thai tone marks and they are never used together.

Sound	Base Symbol	Proposed Bru Symbol	Alternatives
\o̤ː\	โx́	โx̃́	โx́

Discussion: The proposed solution is non-Thai looking and it causes computer and printing problems, as x̃

has to be stacked with x́. This computer/printing problem is overcomeable and may be well worth the

computer font work that it would take to implement this solution. However, it may be difficult to read.

Problem 11: Because the second register of one level is very close in tongue height to the tongue height position of the first register vowel of the above level, Bru speakers may perceive that second register vowel corresponding to that higher first register vowel. This is especially true for the higher levels in the vowel chart.

Discussion: The perception of Bru speakers of the vowel levels is something that needs to be extensively tested.

Problem 12: Bru vowels have a distinction between first and second register. Thai doesn't have this.

Sound	Base Symbol	Proposed Bru Symbol	Alternatives
		x́-	

Discussion: Both Miller and Theraphan orthographies choose this solution. Unless Bru speakers have a problem with this, or come up with an alternate solution themselves, we will keep to using this symbol.

Non-Alphabetic characters

Punctuation

Symbol	Use	Meaning
ๆ	at the end of a word	repeat last word

Spaces and hyphenation / line breaks

Because of the sesqui-syllabic syllable structure, the proposed Bru orthography will use spaces (or half spaces when possible) as word breaks. This will also help the computer handle sentence wrapping within paragraphs.

Discussion relevant to choices made for over and under differentiated phonemes

The syllabic nasal is over-differentiated in two ways. First it is represented by the allophone's symbol and it is marked as syllabic even though the syllable structure of the word would indicate that it is syllabic. Over-differentiated also helps avoid the tendency to add an empathetic vowel between two initial consonants, as Thai does.

Nasalized vowels are under-differentiated because of their relative predictability and infrequency.

Discussion relevant to consonant clusters(e.g. where to place the vowel)

Superscript and subscript vowels are placed over or under the second consonant in a consonant cluster in accordance with Standard Thai usage. Vowels that precede the initial consonant, follow Standard Thai usage of placing the vowel prior to both consonants in a consonant cluster, rather than splitting the consonant cluster with the vowel.

The register marker is also placed above the second consonant in a consonant cluster.

Discussion relevant to how prosidies (register) will be symbolized

Register is symbolized with a mai ek ($\overset{\shortmid}{x}$) over the first consonant (C^3) or the second consonant in a consonant cluster (C^4) in the main syllable.

Discussion relevant to syllabic patterns (Sesqui-syllabic)

The proposed orthography will write the presyllables using the short vowels. Register will not be marked on presyllable as it takes on the register characteristics of the main syllable.

Discussion relevant to vowel length, nasalization, diphthongs

See above discussions.

The proposed orthography marks vowel length in accordance with standardized Thai. Nasalized vowels are not marked in any way.

For a discussion on diphthongs, see section 5.1.4.4.

State the problems incurred with these decisions

Because of the sesqui-syllabic syllable structure in Bru, word breaks (however small) are needed to differentiate words.

Name of the Orthography:

The name chosen for the orthography is the same as the language name -- Bru (Khong Chiam). Because Bru is a generic term for Mon-Khmer speakers, the place name (Khong Chiam) is added to differentiate between this Bru and other Bru groups. Khong Chiam district is the only place in Thailand where this type of Bru is spoken.

Existing Orthographies

Statement of Orthography for Theraphan Bru

Working Charts

Initial consonant phonemes

Manner of Articulation	Point of Articulation									
	Labial		Alveolar		Palatal		Velar		Glottal	
Voiceless Unaspirated Stops	p	ป	t	ต	c	จ	k	ก	ʔ	อ
Voiceless Aspirated Stops	pʰ	พ	tʰ	ท			kʰ	ค		
Voiced Stops	b	บ	d	ด						
Nasals	m	ม	n	น	ɲ	ญ	ŋ	ง		
Fricatives			s	ซ					h	ฮ
Lateral approximate			l	ล						
Retroflexed approximate			ɾ	ร						
Central approximate	w	ว			j	ย				

Table 7 Consonant phonemes

Initial consonant clusters

Manner of Articulation	Point of Articulation									
	Labial		Alveolar		Palatal		Velar		Glottal	
Voiceless Unaspirated Stop Cluster	pɾ	ปร	tɾ	ตร			kɾ	กร		
	pl	ปล					kl	กล		
Voiceless Aspirated Stop Cluster			tʰɾ	ทร						
Voiced Stop Cluster	bɾ	บร								
	bl	บล								

Table 8 Initial consonant clusters in the main syllable

Final Consonants[1]

Manner of Articulation	Point of Articulation									
	Labial		Alveolar		Palatal		Velar		Glottal	
Voiceless Unaspirated Stops	p	ป	t	ต			k	ค	ʔ	อ์
Nasals	m	ม	n	น			ŋ	ง		
Fricatives									h	ฮ
Lateral approximate			l	ล						
Retroflexed approximate			ɾ	ร						
Central approximate	w	ว			j	ย				
	wʰ	วฮ			jʰ	ยฮ				
	wʔ	วอ์			jʔ	ยอ์				

Table 9 Final consonant phonemes

Syllabic Nasals in Presyllable

Manner of Articulation	Point of Articulation									
	Labial		Alveolar		Palatal		Velar		Glottal	
Syllabic Nasal	m̩	ม	n̩	น			ŋ̩	ง		

Table 10 Syllabic nasals in pre-syllable

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[1] Areas that differ from the proposed orthography are shaded.

Vowel Phonemes

The table below is rotated 90° on the page. The IPA phoneme values (with script example columns for Short CV/CVC and Long CV/CVC) are given for each of the three major column groups: **Front Unrounded**, **Centralized Back Unrounded**, and **Back Rounded**.

	Front Unrounded	Centralized Back Unrounded	Back Rounded
	Short (CV, CVC) / Long (CV, CVC)	Short (CV, CVC) / Long (CV, CVC)	Short (CV, CVC) / Long (CV, CVC)
(Close) Register 2	iː	ɯː	uː
Register 1	i	ɯ	u
Close-mid Register 2	eː	ɤ̈ː	öː
Register 1	eː	ɤː	oː
Open-mid Register 2		ʌ̈	ɔ̈ː
Register 1		ʌ	ɔ
Open Register 2	ɜː	äː	ɒ̈ː
Register 1	ɛ	aː	ɒː
Nasal	ɛ̃ː	ãː	ɒ̃ː

Table 11 Main syllable vowel phonemes

Diphthongs

Close	Front			Centralized Back			Back		
		CV	CVC		CV	CVC		CV	CVC
Register 2	i'ə	เxี̍ย	เxี̍ยx	ɯ'ə	เxื̍อ	เxื̍อx	u'ə	xั̍ว	xั̍วx
Register 1	iə	เxี̃ย	เxี̃ยx	ɯə	เxื̃อ	เxื̃อx	uə	xั̃ว	xั̃วx
Nasal									
Open									
Register 2	i'a	เxี̍ย	เxี̍ยx				u'a	xั̍ว	xั̍วx
Register 1	ia	เxี̃ย	เxี̃ยx				ua	xั̃ว	xั̃วx
Nasal							ũa	xั̃วง์	xัวxง์

Table 12 Diphthongs

Examples

If an example of a phoneme not listed, it is represented the same way as the proposed orthography.

Vowels & Diphthongs

Sound			Orthographic Symbol		Example		
etic	emic	Reg.	CV / CVʔ	CVC	CVː / CVʔ	CVC	Closed Syllable
ɛ̃ˑ	ɛ̃ː	Nasal	แฮ̃ɡ̃	แฮ̃ɡ̃	hɛ̃ː a procession		
ɤˑ	ɤ	1	เฆอะ	เฆ̂x	sɤʔ to waste	sɤp to wear เฆ̂บ
	ɤj			เฆ̂ย	-	-	lɤj they เฮ̂ย
ɤː	ɤː	2	เฆอ̇	เฆ̂x	tɤː? to come เฮอ̇	-	tapɤːn awkwardly ตะเฆ̂น \ sapɤːj to bathe สะเฆ̂ย
	ɤːj			เฆ̇xย	-		
ɤˑˑ	ɤː	1	เฆอ̇	เฆ̂x	sɤː lɤːʔ awkward เฆอ̇-เฮ̂ฆ	-	ŋɤːk ŋaːk clumsy เฮ̂ก-งาก \ sɤːj indifferent เฮ̂ย
				เฆ̂อย	-		
ʌ	ʌ	1	เฆอะ	เฆ̂x	saʔʌʔ to starve ขะเฆอะ	-	rasʌʔ rasuɐŋ messy ระเฆ̂อะ-ระเสือง
	ʌj			เฆ̂อย	-	-	mʌj you เฮ̂ย
ʌː	ʌː	1	เฆอ	เฆ̂x	ra.ˈbʌː alligator ระเฆอ	-	pahʌːm chest ปะเฮ̂ม \ kʰʌːj brother / son in law เฮ̂ย
	ʌːj			เฆอย	-		

Theraphan Orthography Statement

Sound			Orthographic Symbol		Example			
Etic	emic	Reg.	CV/ CV?	CVC	CV:/ CV?		Closed Syllable	
ãː	ãː	Nasal	xⁿɡ	xⁿxɡ				
ɔ̌·	ɔ̆	2	xⁿɡ̈	xⁿɡ̈	rakɔ̈?	curry	?amɔ̆ŋ	alive
ɔ	ɔ	1	xⁿɡ̈	xẍ	sɔ?	hair	cɔh	to plant
ɔː	ɔː	1	xɡ̈	xɡ̈x	rasɔː raʔaːj	conversation	?ɔːn	to give
ũa	ũa	Nasal	xⁿɡ	xⁿxɡ	0	0	huan	restless

Main Syllable Consonants (including digraphs & consonant clusters)

Sound			Symbol		Example			
Etic	emic		CV	CVC	Open Syllable		Closed Syllable	
p⁼	p	-$	แป	แป	---	---	แคป lɛːp	(a) thatch of leaves
t⁼	t	-$	เต	เต	---	---	ระเต็ด ra.ˈtet	close
ʔ	ʔ	-$	เอ	เอ	---	---	อะลี้ด ʔa.ˈliːʔ	pig
	ʔ	$-	อ	อ	---	---	ในแล้ะ n̥ˈlɛʔ	where
w⁼	w⁼	-$		วด	---	---	ฮิวด hiːwʔ	to jerk
j⁼	j⁼	-$	ยศ	ยด	---	---	กึยด kɯːjʔ	smallest

Pre-Syllables

Sound			Symbol	Example		
Etic	emic					
m̩	m̩	$-	ม	m̩.ˈpṳa	มปั่ว	father
n̩	n̩	$-	น	n̩.ˈtrḛː	นเตร่	a pestle
ŋ̩	ŋ̩	$-	ง	ŋkɛːl	งแกล	cucumber

Table 13 Pre-Syllables

Discussion relevant to word break decisions

The Theraphan orthography does not make a decision on word breaks.

Discussion relevant to choices made for over and under differentiated phonemes

The Theraphan orthography does not under differentiate any of the phonemes.

Prestopped nasals are not marked in any way. Nasalized vowels, however, are marked.

Discussion relevant to consonant clusters (e.g. where to place the vowel)

Superscript and subscript vowels are placed over or under the second consonant in a consonant cluster in accordance with Standard Thai usage.

The register marker is also placed above the second consonant in a consonant cluster.

Discussion relevant to how prosidies (register) will be symbolized

Register is symbolized with a mai ek $(\overset{\shortmid}{x})$ over the first consonant (C^3) or the second consonant in a

consonant cluster (C^4), in the main syllable.

Discussion relevant to syllabic patterns (Sesqui-syllabic)

The Theraphan orthography does not mark the pre-syllable in any way. Syllabic nasals are not marked as syllabic.

Discussion relevant to vowel length, nasalization, diphthongs

Theraphan marks vowel length and superscript and subscript vowels in accordance with standardized Thai.

Vowels that precede the initial consonant follow Standard Thai usage of placing the vowel prior to both

consonants in a consonant cluster, rather than splitting the consonant cluster with the vowel.

Nasalized vowels are marked with a ฺ่ง in the word final position. Diphthongs are represented by the Thai

symbols. Because Bru has another level of diphthongs, Theraphan puts a Pali dot under the higher level.

State the problems incurred with these decisions

Because of the sesqui-syllabic syllable structure in Bru, word breaks (however small) are needed to

differentiate words.

Syllabic nasals, left unmarked, may be a problem with readers either trying to put an ephenthetic vowel (?)

in between the nasal and the initial consonant of the main syllable or by trying to make it into a consonant

cluster and getting derailed while sounding out the word. This has been extensively tested in Kui.

Marking the nasalized vowels with an ฺ่ง in the word final position is both non-Thai and potentially hard to

read.

While retaining the Thai look of the diphthong, using the Pali dot to differentiate between levels of Bru

diphthongs will possibly become confusing (or left off all together) because the visual difference is

minimal.

Comparison of Proposed and Theraphan Bru orthographies

Initial Consonants

	p	pʰ	b	t	tʰ	d	c	k	kʰ	ʔ	m	n	ɲ	ŋ
Proposed	ป	พ	บ	ต	ท	ด	จ	ก	ค	อ	ม	น	ญ	ง
Theraphan	ป	พ	บ	ต	ท	ด	จ	ก	ค	อ	ม	น	ญ	ง

	r	l	s	h	j	w	m̥	n̥	ŋ̥
Proposed	ร	ล	ช	ฮ	ย	ว	ม่	น่	ง่
Theraphan	ร	ล	ช	ฮ	ย	ว	ม	น	ง

Final Consonants

	p	t	k	m	n	ŋ	r	l	h	j	jʰ	jʔ	w	wʰ	wʔ
Proposed	บ	ด	ก	ม	น	ง	ร	ล	ฮ	ย	ยฮ	ยห์	ว	วฮ	วห์
Theraphan	ป	ต	ก	ม	น	ง	ร	ล	ฮ	ย	ยฮ	ยอ์	ว	วฮ	วอ์

Front Vowels

	i̤		i		i̤ː		iː		e̤ː		eː	
	CV	CVC	CV	CVC	CV	CVC	CV	CVC	CV	CVC	CV	CVC
Proposed	x̧̂	x̧̂x	x̂	x̂x	x̧̃	x̧̃x	x̃	x̃x	เx̧́	เx̧́x	เx	เxx
Theraphan	x̧̂	x̧̂x	x̂	x̂x	x̧̃	x̧̃x	x̃	x̃x	เx̧́	เx̧́x	เx	เxx

	ɛ̧		ɛ		ɛ̧ː		ɛː	
	CV	CVC	CV	CVC	CV	CVC	CV	CVC
Proposed	แx̧́ะ	แx̧̃x	แxะ	แx̃x	แx̧́	แx̧́x	แx	แxx
Theraphan	แx̧́ะ	แx̧̃x	แxะ	แx̃x	แx̧́	แx̧́x	แx	แxx

Central Vowels

	ɯ		ɯ		ɯː		ɯː	
	CV	CVC	CV	CVC	CV	CVC	CV	CVC
Proposed	x̊	x̊x	x̌	x̌x	x̊อ	x̊x	x̌อ	x̌x
Theraphan	x̊	x̊x	x̌	x̌x	x̊อ	x̊x	x̌อ	x̌x

	ɤː				ɤ			
	CV	CVC	CVj	CVʔ	CV	CVC	CVj	CVʔ
Proposed	เx̣อ	เx̣̃x	เx̣ย	เx̣̃ห์	เx̣อะ	เx̃x	เx̃ย	เx̃อะ
Theraphan	เxอ̣	เx̃x	เx̣ย	เx̃ออ์	เxอะ	เx̃x	เx̃ย	เx̃อะ

	ʌ				ʌː			
	CV	CVC	CVj	CVʔ	CV	CVC	CVj	CVʔ
Proposed	เxอะ	เx̃x	เxย	เx̃ห์	เxอ	เx̃x	เx̃อย	เx̃ห์
Theraphan	เxอะ	เx̃x	เx̃ย	เx̃ออ์	เxอ	เx̃x	เx̃อย	เx̃ออ์

	a			a			aː			aː		
	CV	CVC	CVm	CVj	CV	CVC	CVm	CVj	CV	CVC	CV	CVC
Proposed	x̆ะ	x̆x	x̆ำ	ไx	xะ	x̆x	x̆ำ	ไx̆	x̆า	xาx	xา	xาx
Theraphan	x̆ะ	x̆x	x̆ำ	ไx	xะ	x̆x	x̆ำ	ไx̆	x̆า	xาx	xา	xาx

Back Vowels

	u		u		uː		uː	
	CV	CVC	CV	CVC	CV	CVC	CV	CVC
Proposed	x̧́	x̧́x	x̧	x̧x	x̧́	x̧́x	x̧	x̧x
Theraphan	x̧́	x̧́x	x̧	x̧x	x̧́	x̧́x	x̧	x̧x

	o		ɔː		oː	
	CV	CVC	CV	CVC	CV	CVC
Proposed	โxะ	xx	โx́	โx́x	โx	โxx
Theraphan	โxะ	xx	โx́	โx́x	โx	โxx

	ɔ̀		ɔ̀ː		ɔː	
	CV?	CVC	CV?	CVC	CV?	CVC
Proposed	โฌ้ะ	ฉ้x	โฌ้	โฌxx	โฌ้	โฌ้x
Theraphan	เฌ่าะ	ฉ่อx	เฌ่า	ฉ่อx	เฌา	xอx

	ɒ̀		ɒ		ɒː		ɒːː	
	CV?	CVC	CV?	CVC	CV?	CVC	CV?	CVC
Proposed	เฉ่าะ	ฉ้อx	เฌาะ	ฉ้อx	เฉ่า	ฉ่อx	เฌา	xอx
Theraphan	เฉ่าะ	ฉ้อx	เฌาะ	ฉ้อx	เฉ่า	ฉ่อx	เฌา	xอx

Diphthongs

	i̤ə		iə		i̤a		ia		ṳ̈ə		ɯ̈ə	
	CV	CVC	CV	CVC	CV	CVC	CV	CVC	CV	CVC	CV	CVC
Proposed	เฌ่ย	เฌ่ยx	เฌ่ย	เฌ่ยx	เฌ่ย	เฌ่ยx	เฌย	เฌยx	เฌื่อ	เฌื่อx	เฌือ	เฌือx
Theraphan	เฌ่ย	เฌ่ยx	เฌ่ย	เฌ่ยx	เฌ่ย	เฌ่ยx	เฌย	เฌยx	เฌื่อ	เฌื่อx	เฌือ	เฌือx

	ṳə		uə		ṳa		ua	
	CV	CVC	CV	CVC	CV	CVC	CV	CVC
Proposed	ฉ้ว	ฉ่วx	ฉ้ว	xวx	ฉ้ว	ฉ่วx	ฉ้ว	xวx
Theraphan	ฉ้ว	ฉ่วx	ฉ้ว	xวx	ฉ้ว	ฉ่วx	ฉ้ว	xวx

Statement of Orthography for Miller's Bru Orthography

Working Charts

Initial consonant phonemes

Manner of Articulation	Point of Articulation				
	Labial	Alveolar	Palatal	Velar	Glottal
Voiceless Unaspirated Stops	p ป	t ต	c จ	k ก	ʔ อ
Voiceless Aspirated Stops	pʰ พ	tʰ ท		kʰ ค	
Voiced Stops	b บ	d ด			
Nasals	m ม	n น	ɲ ญ	ŋ ง	
Fricatives		s ซ			h ฮ
Lateral approximate		l ล			
Retroflexed approximate		ɾ ร			
Central approximate	w ว		j ย		

Table 14 Consonant phonemes

Initial consonant clusters

Manner of Articulation	Point of Articulation				
	Labial	Alveolar	Palatal	Velar	Glottal
Voiceless Unaspirated Stop Cluster	pɾ ปร pl ปล	tɾ ตร		kɾ กร kl กล	
Voiceless Aspirated Stop Cluster		tʰɾ ทร			
Voiced Stop Cluster	bɾ บร bl บล				

Table 15 Initial consonant clusters in the main syllable

Final Consonants

Manner of Articulation	Point of Articulation				
	Labial	**Alveolar**	**Palatal**	**Velar**	**Glottal**
Voiceless Unaspirated Stops	p บ	t ด		k ค	ʔ ห์
Nasals	m ม	n น		ŋ ง	
Fricatives					h ฮ
Lateral approximate		l ล			
Retroflexed approximate		ɾ ร			
Central approximate	w ว		j ย		
	w^h วฮ		j^h ยฮ		
	$w^ʔ$ วห์		$j^ʔ$ ยห์		

Table 16 Final consonant phonemes

Syllabic Nasals in Presyllable

Manner of Articulation	Point of Articulation				
	Labial	**Alveolar**	**Palatal**	**Velar**	**Glottal**
Syllabic Nasal	m̩ ม่	n̩ น่		ŋ̍ ง่	

Table 17 Syllabic nasals in pre-syllable

Vowel Phonemes

| | Front Unrounded | | | | Centralized Back Unrounded | | | | Back Rounded | | | |
| | Short | | Long | | Short | | Long | | Short | | Long | |
	CV	CVC	CV	CVC	CV	CVC	CV	CVC	CV	CVC	CV	CVC
Reg 2	ï:				ɯ̈				ü:			
Reg 1	i				ɯ				u:			
Close-mid												
Reg 2	e:				ɤ̈:				ö:			
Reg 1	e:				ɤ:				o:			
Open-mid												
Reg 2									ɔ̈:			
Reg 1					ʌ:				ɔ:			
Open												
Reg 2	ɛ̈:				ä:				ɒ̈:			
Reg 1	ɛ:				a:				ɑ:			
Nasal	ɛ̃:				ã:				ɒ̃:			

Table 18 Main syllable vowel phonemes

Diphthongs

Close	Front	CV	CVC	Centralized Back	CV	CVC	Back	CV	CVC
Register 2	i̤ə	เx̥̃ย	เx̥̃ยx	ɰ̤ə	เx̥̃อ	เx̥̃อx	ṳə	x̥̃ว	x̥ว́x
Register 1	iə	เx̃ย	เx̃ยx	ɰə	เx̃อ	เx̃อx	uə	x̃ว	xวx
Nasal									
Open									
Register 2	i̤a	x̥̃ยา	x̥̃ยา				ṳa	x̥̃วา	x̥̃วา
Register 1	ia	x̃ยา	x̃ยา				ua	x̃วา	x̃วา
Nasal	ĩa						ũa	x̃วา	x̃วา

Table 19 Diphthongs

Examples

If an example of a phoneme not listed, it is represented the same way as the proposed orthography.

Examples of Vowels & Diphthongs

Sound			Orthographic Symbol		Example			
etic	emic	Reg.	CV / CVʔ	CVC	CVː / CVʔ		Closed Syllable	
ɤˠ	ɤ	1	เXə̌ะ	เ̂Xx	0	0	sɤp / เ̂กีบ	to wear
	ɤj			เ̂Xəย	-	-	lɤj / เ̂ลอย	they
ɤː	ɤː	2	เXə́	เ̌Xx	sɤʔ / เชอะ	to waste	ŋɤːk ŋaːk / เชิก-ราก sɤːj	clumsy
	ɤːj			เ̌Xəย	-	-	เชอย	indifferent
ɤˠ ; ɤˠ	ɤː	1	เXə	เ̌Xx	sɤː lɤːʔ / เชอ-เลาะ	awkward		
	ɤːj			เ̌Xəย	-	-		
ʌ	ʌ	1	แXə̌ะ	แ̂Xx	saʔʌʔ / ฉะแหละ	to starve	rasʌʔ rasuɛŋ	messy
	ʌj			แ̂Xəย	-	-	mʌj	you
ʌː	ʌː	1	แXə	แ̌Xx	ra.'bʌː / ระแบ	alligator	pahʌːm kʰʌːj / แปะแหลม	chest
	ʌːj			แ̌Xəย	-	-		brother / son in law
i̯a	i̯a	2	Xเย	Xเยx	ti̯a / เที่ยา	duck	tiap / ทียาน	low
ia	ia	1	Xเย	Xเยx	0	0	kaliam / กาเลียม	scorpion

əɨ	2	x̌ɔ̂	x̌ɔx̂	phiə	a bunch	ʔ̌ʊ̂	sa.ˈtɨəŋ	to transplant rice
uə	1	x̌ɔ̂	xɔx	end	to cure	ʔ̌ʊ̂	tɨəŋ	coconut
ɨa	2	x̌ɔ̂	x̌ɔx	m̩pɨa	father		cɨaʔ	to hunt
ua	1	x̌ɔ̂	xɔx	kukrua	to urinate		huat	bamboo steamer

Diphthongs

| | ɨə | | iə | | iə | | ia | | ia | | uə | | uə | | em | |
	CV	CVC	CV	CVC	CV	CVC	CV	CVC	CV	CVC	CV	CVC	CV	CVC	CV	CVC
Proposed																
Miller																

| | eɨ | | en | | ɨa | | ua | |
	CV	CVC	CV	CVC	CV	CVC	CV	CVC
Proposed								
Miller								

Examples of Main Syllable Consonants (including digraphs & consonant clusters)

All main syllable consonants in the Miller orthography are the same as the proposed orthography.

Examples of Pre-Syllables

All pre-syllable consonants in the Miller orthography are the same as the proposed orthography.

Discussion relevant to word break decisions

The Miller orthography does not make a decision on word breaks.

Discussion relevant to choices made for over and under differentiated phonemes

The Miller orthography under differentiates the nasalized vowels and over differentiates the syllabic nasals. This is the same as the proposed orthography.

Discussion relevant to consonant clusters (e.g. where to place the vowel)

Superscript and subscript vowels are placed over or under the second consonant in a consonant cluster in accordance with Standard Thai usage. Vowels that precede the initial consonant, follow Standard Thai usage of placing the vowel prior to both consonants in a consonant cluster, rather than splitting the consonant cluster with the vowel.

The register marker is also placed above the second consonant in a consonant cluster.

Discussion relevant to how prosidies (register) will be symbolized

Register is symbolized with a mai ek ($\overset{\text{'}}{x}$) over the first consonant (C^3) or the second consonant in a

consonant cluster (C^4), in the main syllable. This is the same as the proposed orthography and Theraphan orthography.

Discussion relevant to syllabic patterns (Sesqui-syllabic)

The syllabic nasals are the only syllable structure marked in the presyllable in the Miller orthography.

Discussion relevant to vowel length, nasalization, diphthongs

The Miller orthography marks vowel length in accordance with standardized Thai. Nasalized vowels are not marked at all. The higher levels of diphthongs are represented in accordance Thai symbols. The lower level uses a new, non-Thai looking combination of symbols.

State the problems incurred with these decisions

Because of the sesqui-syllabic syllable structure in Bru, word breaks (however small) are needed to differentiate words.

The new combination of Thai symbols that the Miller orthography for diphthongs uses breaks the syllable structure of the Bru word. This may prove to be difficult for newly literate Bru readers to handle and / or unacceptable to Bru speakers.

Comparison of Proposed and Miller Bru orthographies

Initial Consonants

	p	pʰ	b	t	tʰ	d	c	k	kʰ	ʔ	m	n	ɲ	ŋ
Proposed	ป	พ	บ	ต	ท	ด	จ	ก	ค	อ	ม	น	ญ	ง
Miller	ป	พ	บ	ต	ท	ด	จ	ก	ค	อ	ม	น	ญ	ง

	r	l	s	h	j	w	m̥	n̥	ŋ̊
Proposed	ร	ล	ช	ฮ	ย	ว	ม่	น่	ง่
Miller	ร	ล	ช	ฮ	ย	ว	ม่	น่	ง่

Final Consonants

	p	t	k	ʔ	m	n	ŋ	r	l	h	j	jʰ	jʔ	w	wʰ	wʔ
Proposed	บ	ด	ก	ห์	ม	น	ง	ร	ล	ฮ	ย	ยฮ	ยห์	ว	วฮ	วห์
Miller	บ	ด	ก	ห์	ม	น	ง	ร	ล	ฮ	ย	ยฮ	ยห์	ว	วฮ	วห์

Front Vowels

	i̤		i		i̤ː		iː		e̤ː		eː	
	CV	CVC	CV	CVC	CV	CVC	CV	CVC	CV	CVC	CV	CVC
Proposed	x̂̍	x̂̍x	x̂	x̂x	x̃̍	x̃̍x	x̃	x̃x	เx̍	เx̍x	เx	เxx
Miller	x̂̍	x̂̍x	x̂	x̂x	x̃̍	x̃̍x	x̃	x̃x	เx̍	เx̍x	เx	เxx

	ɛ̤		ɛ		ɛ̤ː		ɛː	
	CV	CVC	CV	CVC	CV	CVC	CV	CVC
Proposed	แx̍ะ	แx̂̍x	แxะ	แx̃x	แx̍	แx̍x	แx	แxx
Miller	แx̍ะ	แx̂̍x	แxะ	แx̃x	แx̍	แx̍x	แx	แxx

Central Vowels

	ɯ̍		ɯ		ɯ̍ː		ɯː	
	CV	CVC	CV	CVC	CV	CVC	CV	CVC
Proposed	x̌	x̌x	x̌	x̌x	x̌อ	x̌x	x̌อ	x̌x
Miller	x̌	x̌x	x̌	x̌x	x̌อ	x̌x	x̌อ	x̌x

	ɤː				ɤ			
	CV	CVC	CVj[2]	CVʔ	CV	CVC	CVj	CVʔ
Proposed	เxอ	เx̂x	เxย	เx̂ห์	เxอะ	เx̃x	เx̃ย	เx̃ห์
Miller	เxอ	เx̂x	เxือย	เx̂ห์	เxอะ	เx̂x	เx̂ือย	?

	ʌ				ʌː			
	CV	CVC	CVj	CVʔ	CV	CVC	CVj	CVʔ
Proposed	แxอะ	แx̂x	แx̃ย	แx̃ห์	แxอ	แx̂x	แxย	แx̂ห์
Miller	แxอะ	แx̂x	แx̂ือย	?	แxอ	แx̃x	แx̃ือย	?

	a̍			a			a̍ː		aː		
	CV	CVC	CVm	CVj	CV	CVC	CVm	CVj	CV	CVC	CV	CVC
Proposed	x́ะ	x̌x	x̊ำ	ไx̀	xะ	x̌x	x̊ำ	ไx	x̀า	x̀าx	xา	xาx
Miller	x́ะ	x̌x	x̊ำ	ไx̀	xะ	x̌x	x̊ำ	ไx	x̀า	x̀าx	xา	xาx

---

[2] also jʰ and jʔ

Back Vowels

	ʉ		u		ʉː		uː	
	CV	CVC	CV	CVC	CV	CVC	CV	CVC
Proposed	x̖́	x̖́x	x̖	x̖x	x̱́	x̱́x	x̱	x̱x
Miller	x̖́	x̖́x	x̖	x̖x	x̱́	x̱́x	x̱	x̱x

	o		o�looː		oː		ɔ		ɔː		ɔːː	
	CV	CVC	CV	CVC	CV	CVC	CV	CVC	CV	CVC	CV	CVC
Proposed	โxะ	xx	โx́	โx́x	โx	โxx	โx̃́ะ	x̃́x	โx̃́	โx̃́x	โx̃	โx̃x
Miller	โxะ	xx	โx́	โx́x	โx	โxx	โx̃́ะ	x̃́x	โx̃́	โx̃́x	โx̃	โx̃x

	ɒ		ɒ		ɒː		ɒː	
	CV	CVC	CV	CVC	CV	CVC	CV	CVC
Proposed	เx́าะ	x̃́อx	เxาะ	x̃́อx	เx́า	x́อx	เxา	xอx
Miller	เx́าะ	x̃́อx	เxาะ	x̃́อx	เx́า	x́อx	เxา	xอx

Dipthongs

	i̯ə		iə		i̯a		ia		ɯ̯ə		ɯə	
	CV	CVC	CV	CVC	CV	CVC	CV	CVC	CV	CVC	CV	CVC
Proposed	เx̃́ย	เx̃́ยx	เx̃ย	เx̃ยx	x̃́ยา	x̃́ยาx	x̃ยา	x̃ยาx	เx̃́อ	เx̃́อx	เx̃อ	เx̃อx
Miller	เx̃́ย	เx̃́ยx	เx̃ย	เx̃ยx	x̃́ยา	x̃́ยาx	x̃ยา	x̃ยาx	เx̃́อ	เx̃́อx	เx̃อ	เx̃อx

	ɯ̯ə		uə		ɯ̯a		ua	
	CV	CVC	CV	CVC	CV	CVC	CV	CVC
Proposed	x̖́ว	x́วx	x̖ว	xวx	x̖́วา	x̖́วาx	x̖วา	x̖วาx
Miller	x̖́ว	x́วx	x̖ว	xวx	x̖́วา	x̖́วาx	x̖วา	x̖วาx

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