

CHAPTER 4

COMPARATIVE DESCRIPTION

4.0 Introduction

This chapter answers the question “How related are these four selected Bisoid varieties with respect to their phonological inventories?”

It looks at syllable structures, initial consonants, consonant clusters, vowels, diphthongs, rhymes and tones from two perspectives. The first section is a discussion of the distribution of the phone across the varieties, and the second section looks at distribution within the form with the same meaning.

4.1 Syllable Structures

All four speech varieties have four syllable types in common. These syllable types can be generalized as $CV_1(V_2)(C)T$. The onset consists of a single consonant. The nucleus consists of a required vowel and possibly an optional vowel, which forms a diphthong. The coda consists of optional consonant. Tone is required on all syllables.

Bantang	Bisu	Cauho	Tsukong
CV	CV	CV	CV
CVC	CVC	CVC	CVC
CVV	CVV	CVV	CVV
CVVC	CVVC	CVVC	CVVC
	CCV		
	CCVV		
	CCVC		

Table 173 Syllable Types

Bisu adds an additional three syllable types due to it having syllable initial consonant clusters. So a generalized syllable pattern that covers all observed syllable types under analysis would be: $C_1(C_2)V_1(V_2)(C)T$. The onset consists of a required consonant and an optional consonant, which forms a consonant cluster. The nucleus consists of a required vowel and possibly an optional vowel, which forms a diphthong. The coda consists of an optional consonant. Tone is required on all syllables.

4.2 Consonants

The following table shows the comparison of the phonemes of Bantang, Bisu, Cauho, and Tsukong.

The Phonemes of the Four Speech Varieties in Comparison

Bintang					Bisu				
p ^h	t ^h	c ^h	k ^h		p ^h	t ^h	c ^h	k ^h	
p	t	c	k	ʔ	p	t	c	k	ʔ
b	d		g		b	d			
m	n		ɲ	ŋ	m	n		ŋ	
	v	s	ʃ	ɣ	h	f	s	ʃ	h
				fi			ts		
w			j		w			j	
	l					l			
Cauho					Tsukong				
p ^h	t ^h	c ^h	k ^h		p ^h	t ^h	c ^h	k ^h	
p	t	c	k	ʔ	p	t	c	k	ʔ
b	d		g		b	d		g	
m̥	ŋ̥								
m	ɲ	n		ɲ	m	n		ɲ	ŋ
	s	ʃ		h		s	ʃ	x	h
				fi					
w			j		w			j	
	l					l			

Table 174. Phonemes in Comparison

From the table, all four speech varieties have voiceless aspirated and unaspirated plosives. For voiced plosives, Bantang, Cauho, and Tsukong have three places of articulation, while Bisu does not show the occurrence of the voiced velar plosive /g/. For voiceless nasals, only Cauho has the voiceless bilabial nasal /m̥/ and the voiceless alveolar nasal /n̥/. The palatal nasal /ɲ/ does not occur in Bisu. In addition, the labiodental nasal /ɱ/ only occurs in Cauho. For fricatives, the voiceless labiodental fricative /f/ only occurs in Bisu. The voiced labiodental fricative /v/ and the voiced velar fricative /ɣ/ occurs only in Bantang. The voiceless velar fricative /x/ occurs only in Tsukong. The voiced glottal fricative /ɦ/ occurs in Bantang and Cauho. For affricates, the affricate /ts/ occurs only in Bisu. All of the speech varieties show the consistent occurrence of approximants.

4.2.1 Initial Consonants

The four following charts compare the initial consonants of the four languages.

Bantang	
Plosive	p ^h p b t ^h t d c ^h c k ^h k ʔ
Nasal	m n ɲ ŋ
Fricative	v s ʃ ɣ h fi
Affricate	-
Approximant	w j l

Bisu	
Plosive	p ^h p b t ^h t d c ^h c k ^h k ʔ
Nasal	m n ŋ
Fricative	f s ʃ h
Affricate	ts
Approximant	w j l

Cauho	
Plosive	p ^h p b t ^h t d c ^h c k ^h k ʔ
Nasal	m̥ m̥ n̥ ɲ n̥ ŋ
Fricative	s ʃ h fi
Affricate	-
Approximant	w j l

Tsukong	
Plosive	p ^h p b t ^h t d c ^h c k ^h k ʔ
Nasal	m n ɲ ŋ
Fricative	s ʃ x h
Affricate	-
Approximant	w j l

Table 175. Initial Consonants in Comparison

According to the preceding table, Bisu does not have the voiced velar plosive /g/ and the palatal nasal /ɲ/ as the initial consonant. Cauho shows the voiceless bilabial nasal /m̥/, the voiceless alveolar nasal /n̥/, and the labiodental nasal /ɲ/ as the initial consonant. The voiceless labiodental fricative /f/ and the affricate /ts/ occur as the initial consonant only in Bisu. The voiced labiodental fricative /v/ and the voiced velar fricative /ɣ/ occurs as the initial consonant only in Bantang. The voiceless velar fricative /x/ occurs as the initial consonant only in Tsukong. The voiced glottal fricative /fi/ occurs as the initial consonant in Bantang and Cauho.

This section will examine the correspondences of initial consonants. The following table shows the correspondences of initial consonants in Bantang, Bisu, Cauho, and Tsukong.

Bantang	Bisu	Cauho	Tsukong
p ^h	p ^h /p	p ^h	p ^h
p	p	p	p
m	b	b	b/m
t ^h	t ^h	t ^h	t ^h
t	t	t	t
n	d	d/n	d/n/ɲ
c ^h	c ^h /ts	t ^h /s	c ^h /ts/ʃ
c	c	c	c/s/ts
k ^h	k ^h	k ^h	k ^h
k	k	k	k
ʔ	ʔ	ʔ	ʔ
m	m	m	m
n	n	n	n
–	w	b	w
s	s	s	s
h	h	h	h
l	l	l	l

Table 176. Correspondences of Initial Consonants

According to the preceding table, the consistent correspondences in the speech varieties include voiceless initial plosives /p^h/, /p/, /t^h/, /t/, /c/, /k^h/, /k/, /ʔ/, nasals /m/ and /n/, fricatives /s/ and /h/, and lateral approximant /l/. In Bisu and Cauho voiced initial plosives /b/ corresponds with /m/ in Bantang and Tsukong, and /d/ in Bisu corresponds with /n/ in Bantang and Cauho, and with /n/ and /ɲ/ in Tsukong. The voiced labial-velar approximant /w/ in Bisu and Tsukong corresponds with /b/ in Cauho. Note there are limited occurrence and subsequent distribution of initial consonants in Bantang. The voiceless aspirated palatal plosive /c^h/ corresponds with /ts/ in Bisu and Tsukong, with /t^h/ in Cauho, with /s/ in Cauho, and with /ʃ/ in Tsukong. The affricate /ts/ occurs as a variant in Bisu and Tsukong.

In conclusion, most of the plosives, including voiceless aspirated and unaspirated bilabial /p^h/ and /p/, voiceless aspirated and unaspirated alveolar /t^h/ and /t/, voiceless unaspirated palatal /c/, voiceless aspirated and unaspirated velar /k^h/ and /k/, and glottal /ʔ/ have a high frequency of consistency across all varieties.

The following table shows the correspondences of the initial consonant.

Bantang	Bisu	Cauho	Tsukong
p ^h	p ^h /p	p ^h	p ^h
p	p	p	p
m	b	b	b/m
t ^h	t ^h	t ^h	t ^h
t	t	t	t
n	d	d/n	d/n/ɲ
c ^h	c ^h /ts	t ^h /s	c ^h /ts/ʃ
c	c	c	c/s/ts
k ^h	k ^h	k ^h	k ^h
k	k	k	k
ʔ	ʔ	ʔ	ʔ
m	m	m	m
n	n	n	n
–	w	b	w
s	s	s	s
h	h	h	h
l	l	l	l

Table 177. Correspondences of Initial Consonants

The highest frequency of consistent correspondences of initial consonant are with the voiceless aspirated bilabial plosive /p^h/, the voiceless unaspirated bilabial plosive /p/, the voiceless aspirated alveolar plosive /t^h/, the voiceless unaspirated alveolar plosive /t/, the voiceless unaspirated palatal plosive /c/, the voiceless aspirated velar plosive /k^h/, the voiceless unaspirated velar plosive /k/, the glottal /ʔ/, the bilabial nasal /m/, the alveolar nasal /n/, the voiceless alveolar fricative /s/, the voiceless

glottal fricative /h/, and the alveolar lateral approximant /l/. The correspondences of initial consonants with the voiced alveolar plosive /d/, the voiceless aspirated palatal plosive /c^h/, and the voiced labial-velar approximant /w/ are not consistent.

4.2.2 Initial Consonant Clusters

This section examines the correspondences of consonant clusters. The following table shows the correspondences of consonant clusters.

Bantang	Bisu	Cauho	Tsukong
p ^h	p ^h l	p ^h	p ^h
p ^h	pl	p ^h	p ^h
p	pl	p	p
m	bl	b	b
k ^h	k ^h l	k ^h	k ^h
k	kl	k	k
k	kl	kw	g
m	bl	m	m

Table 178. Correspondences of Consonant Clusters

According to the preceding table, it is rare to find clusters that correspond consistently. However, sometimes it is simply one speech variety that is a little different or similar from the cognates in the rest of the varieties, such as with clusters /p^hl/, /pl/, /bl/, /k^hl/, and /kl/. In the correspondence set for the cluster /k^hl/, with limited supporting data, only Bisu has the cluster /k^hl/ as common while the rest of the varieties have the simple plosive /k^h/. In the case of the clusters /kw/ there is no consistent occurrences although further data would be helpful to support these correspondence.

In conclusion, there are no clusters, which could be considered to have the highest frequency of consistent occurrence. There is only the cluster /k^hl/, which guides the possibility to find the consistent occurrence of consonant clusters in any further study.

The following table shows the correspondences of the Bisu consonant cluster /bl/. Other clusters are poorly represented and do not show clear correspondences.

Bantang	Bisu	Cauho	Tsukong
mj	bl	b	b

Table 179. Correspondences of Consonant Clusters

4.3 Vowels

There are two sections describing vowels. The first section will focus on the correspondences of plain vowels. The second section will focus on the correspondences of diphthongs.

4.3.1 Plain Vowels

The following table compares all of the plain vowels occurring in four speech varieties.

Bantang			Bisu		
i	i	u	i	i	u
e		o	e		o
	ə			ə	
		ɔ			ɔ
æ			æ		
a			a		

Cauho			Tsukong		
i	i	u	i	i	u
e		o	e		o
	ə			ə	
		ɔ			ɔ
æ			æ		
a			a		

Table 180. Plain Vowels

All four speech varieties have the same 9 plain vowels, which are the unrounded close front vowel /i/, the unrounded close central vowel /i/, the rounded close back

vowel /u/, the unrounded close-mid front vowel /e/, the rounded close-mid back vowel /o/, the central vowel /ə/, the rounded open-mid back vowel /ɔ/, the unrounded front vowel /æ/, and the unrounded open front vowel /a/.

This section will examine the correspondences of plain vowels. The following table shows the correspondences of plain vowels

Bantang	Bisu	Cauho	Tsukong
i	i	i	i
i	i	i	i
u	u	u	u
e	e	e/ æ	e
o/u	o/u/ɔ	o	o/ɔ
æ	–	æ	e
a	a	a	a

Table 181. Correspondences of Plain Vowels

According to the preceding table, unrounded front vowels /i/, /e/, /a/, unrounded central vowel /i/, and rounded back vowels /u/ and /o/ consistently occur in all the speech varieties. The front vowel /æ/ corresponds with /e/ in Tsukong. Note there is limited occurrence and distribution of the vowel /æ/ in Bisu. The rounded open-mid back vowel /ɔ/ occurs as a variant in Bisu and Tsukong.

In conclusion, the front vowels /i/, /e/, and /a/ show the highest frequency of consistent occurrence.

The following table shows the correspondences of vowels.

Bantang	Bisu	Cauho	Tsukong
i	i	i	i
ɨ	ɨ	ɨ	ɨ
u	u	u	u
e	e	e/æ	e
o/u	o/u/ɔ	o	o/ɔ
æ	-	æ	e
a	a	a	a

Table 182. Correspondences of Vowels

The highest frequency of consistent vowel correspondences are the unrounded close front vowel /i/, the unrounded close central vowel /ɨ/, the rounded close back vowel /u/, the unrounded close-mid front vowel /e/, the rounded close-mid back vowel /o/, and the unrounded open front vowel /a/. The other correspondences vowels with the rounded open-mid back vowel /ɔ/, and the unrounded front vowel /æ/ are not consistent.

4.3.2 Diphthongs

The diphthongs in the four speech varieties are shown in the following table.

Bantang		
Front	Central	Back
iə	-	ɔi
iu	-	-
eo	-	-
ai	-	-
au	-	-

Bisu		
Front	Central	Back
iə	əi	ɔi
ai	-	-
au	-	-

Cauho		
Front	Central	Back
iə	-	uə
-	-	ɔi
ai	-	-
au	-	-

Tsukong		
Front	Central	Back
iə	-	ui
iu	-	-

Table 183. Bisoid Diphthongs

According to the table, only the diphthong /iə/ occurs in all four speech varieties. Only Tsukong does not have the diphthongs /ɔi/, /ai/, and /au/. The diphthong /iu/ occurs in Bantang and Tsukong. The diphthong /eo/ occurs only in Bantang. The diphthong /əi/ occurs only in Bisu. The diphthong /uə/ occurs only in Cauho. The diphthong /ui/ occur only in Tsukong.

The following table shows the correspondences of diphthongs.

Bantang	Bisu	Cauho	Tsukong
a	au	a	a
a	iə	a	a
a	iə	a/iə	i
a/au	ɔ	iə	ɔ
au	au	au	i/e
iə	æ	a	iə/i
iə	i	æ	a
iə	iə	iə	iə
iə	i	i	i/e/a
o	əi	i	i/au
o/ɔi	ɔi	ɔi	o
i/u	au	i	i

Table 184. Correspondences of Diphthongs

Diphthongs provided to be exceedingly difficult to show correspondences across the speech varieties. Table 184 summarizes the general tendencies of correspondences. Only one diphthong /iə/ is unchanged across all the speech varieties. Further study is needed to understand the relationship of diphthongs within Bisoid.

The following table shows the correspondences of diphthongs in Bisoid.

Bantang	Bisu	Cauho	Tsukong
a	au	a	a
a	iə	a	a
a	iə	a/iə	i
a/au	ɔ	iə	ɔ
au	au	au	i/e
iə	æ	a	iə/i
iə	i	æ	a
iə	iə	iə	iə
iə	i	i	i/e/a
o	əi	i	i/au
o/ɔi	ɔi	ɔi	o
i/u	au	i	i

Table 185. Correspondences of Bisoid Diphthongs

As mentioned earlier, the correspondences of diphthongs is not as regular as that of vowels or consonants. Only the diphthong /iə/ could be said to occur consistently in the data.

4.4 Rhymes

This section will examine the correspondences of rhymes. The following table shows the correspondences of rhymes.

Bisu	Bantang	Cauho	Tsukong
iŋ	i	i	i
in	en/e	iŋ/en	eŋ/e
ik	i	e	em
en	en	æn	en
et	et	et	i
oŋ	u	u	u
ok	ok	ok	o
oi/om/u/o	ɔŋ	oŋ/ɔŋ/ɔʔ/o	oŋ/ɔŋ/o
æŋ	eŋ/ə/ak	æt/eŋ/e	c/a
æt	æt	æt	e
æn	a	eŋ	a
ap	ap/aʔ	aʔ/æn	at/a
a	a	at	a

Table 186. Correspondences of Rhymes

In Table 189, the vowel /i/ is followed by the voiceless unaspirated velar plosive /k/ in addition to the alveolar nasal /n/ and /ŋ/. The vowel /e/ is followed by the nasal /m/, /n/, and /ŋ/ in addition to the voiceless unaspirated alveolar plosive /t/. None of consonants and vowels follows after the vowel /u/. The vowel /o/ is followed by the voiceless unaspirated velar plosive /k/ in addition to the nasals /m/ and /ŋ/. The vowel /ɔ/ is followed by the velar nasal /ŋ/. The vowel /æ/ are followed by the voiceless unaspirated alveolar plosive /t/, the alveolar nasal /n/, and the velar nasal /ŋ/. The vowel /a/ is followed by the voiceless unaspirated bilabial plosive /p/, the voiceless unaspirated alveolar plosive /t/, the voiceless unaspirated velar plosive /k/, and the glottal /ʔ/.

In conclusion, the unrounded vowels /i/, /e/, /æ/, and /a/ in addition to the rounded vowels /o/ and /ɔ/, are most often followed by the alveolar nasal /n/ and the velar nasal /ŋ/. However the unrounded vowel /a/ is not only followed by the alveolar nasal

/n/ and the velar nasal /ŋ/, but also by the voiceless unaspirated bilabial plosive /p/, the voiceless unaspirated alveolar plosive /t/, the voiceless unaspirated velar plosive /k/, the glottal /ʔ/, and the unrounded close front vowel /i/.

The following table shows the correspondences of rhymes.

Bisu	Bantang	Cauho	Tsukong
iŋ	i	i	i
in	en/e	iŋ/en	eŋ/e
ik	i	e	em
en	en	æn	en
et	et	et	i
oŋ	u	u	u
ok	ok	ok	o
oŋ/om/u/o	ɔŋ	oŋ/ɔŋ/ɔʔ/o	oŋ/ɔŋ/o
æŋ	eŋ/ə/ak	æt/eŋ/e	e/a
æt	æt	æt	e
æn	a	eŋ	a
ap	ap/aʔ	aʔ/æn	at/a
a	a	at	a

Table 187. Correspondences of Rhymes

It is rare to find the consistent correspondences of rhymes. In general, most of vowels followed by a consonant or a vowel has many occurrences in Cauho in contrast to Tsukong which has the fewest occurrences. If there is further data to support this, it can be clearer to find the consistent occurrences of rhymes. Bisu would appear to be the most conservative using this data, but it must be remembered that Bisu was used as a baseline in this data. From this data, it can be concluded that Bisu, Bantang, and Cauho are more conservative than Tsukong. Tsukong appears to be more conservative in its nasal rhymes than stopped rhymes.

4.5 Tones

This section will discuss tone correspondences in the speech varieties.

The following table shows the correspondences of tones.

Bantang	Bisu	Cauho	Tsukong	Checked Syllable	Manner of Articulation
33	31	31	31	Yes	asp
33/31	—	35/31	35/31	Yes	asp
33/31	33/31	31/35/33	35		asp
33	31	31	31/35		asp
33	33	31	31	Yes	vd
33	33	31	—	Yes	vd
33	33	351	33		vd
33	33	33	31		vd
33/31	31	33/31/35	31/35	Yes	vl
—	31	—	—	Yes	vl
33	33	33	35	Yes	vl
33/35/31	33/31	31/33	31/35		vl
33	31/351	31/33	31		vl

Table 188. Correspondences of Tones

The most frequently consistent tones across the four speech varieties are 1) tone 31 with an aspirated initial consonant with a syllable final consonant, 2) tone 31 with an aspirated initial consonant and open syllable, 3) tone 31 with a voiceless initial consonant with a syllable final consonant, and 4) tone 31 with a voiceless initial consonant and open syllable.