Chapter 2
Literature review

About one million Lisu speakers reside in China, Myanmar, Thailand, and India. Handle (2002: 96) claimed that the vast majority of Lisu speakers speak the Northern Lisu dialect, a significant number speak the Central Lisu dialect, and of the three major Lisu dialects, the fewest people speak the Southern Lisu dialect. Since Lisu is a Tibeto-Burman language, a brief review of the Tibeto-Burman and Sino-Tibetan literature is helpful. The following sections will discuss aspects of Sino-Tibetan, Tibeto-Burman, and Lisu as well as background information of sociolinguistics and lexicostatistics that apply to this thesis. Note in the course of this discussion, examples from other sources are shown in their original forms which do not necessarily conform to International Phonetic Alphabet (IPA) standards.

2.1 Language classifications

The following subsections discuss the various classifications that have been proposed for the Sino-Tibetan language family.

2.1.1 Sino-Tibetan languages

Ruhlen (1991: 143) states that the classification of Sino-Tibetan languages varies between scholars but they all agree to exclude Mon-Khmer from the Sino-Tibetan family and have problems with grouping the Miao-Yao. Figure 3 is adapted from Ruhlen (1991: 143), describing the historical classification of the Sino-Tibetan language family.

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The Indo-Chinese family	The Indo-Chinese family
Indo-Chinese:	Indo-Chinese:
I. Chinese	I. Sinitic = Chinese
II. Tai	II. Tai
III. Karen	III. Tibeto-Burman
IV. Tibeto-Burman	(Conrady 1896 classification)
V. Miao-Yao	
VI. Mon-Khmer	
(19th Century classification)	

Figure 3 Early classification of the Sino-Tibetan family (adapted from Ruhlen 1991: 143)

As shown in Figure 3, Ruhlen describes that Conrady's classification of 1896 has only Chinese, Tai, and Tibeto-Burman subgroups while the 19th century classification also includes Karen, Miao-Yao, and Mon-Khmer. Both classifications name the language family as Indo-Chinese. Figure 4 shows proposed subgroupings by other scholars beginning in 1909, of what is now called the Sino-Tibetan language family.

Sino-Tibetan:	Sino-Tibetan:
I. Sino-Tai:	I. Sino-Tai:
A. Sinitic	A. Sinitic
B. Tai	B. Tai
II. Tibeto-Burman	C. Miao-Yao
(Konow 1909)	II.Tibeto-Burman
	(Li 1937)

Sino-Tibetan:	Sino-Tibetan:
I. Sinitic	I. Sinitic
II. Tibeto-Karen:	II. Tai
A. Karen	III. Bodic
B. Tibeto-Burman	IV. Burmic
(Benedict 1942)	V. Baric
	VI. Karen
	(Shafer 1955)

Figure 4 Proposed subgroupings of the Sino-Tibetan family (adapted from Ruhlen 1991: 144)

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As seen in Figure 4, both Konow's and Li's classifications include two subgroups in common: Sino-Tai and Tibeto-Burman. Li has one more group that Konow does not include, Miao-Yao under the Sino-Tai. Benedict's classification has only two subgroups: Sinitic and Tibeto-Karen; Shaffer's has six: Tai, Bodic, Burmic, and Baric in addition to Sinitic and Karen. In Benedict's classification, Karen and Tibeto-Burman are placed under Tibeto-Karen. Figure 5 shows Ruhlen's another example of Sino-Tibetan language family.

Sino-Tibetan:
I. Sinitic:
  A. Bai
  B. Chinese
II. Tibeto-Karen:
  A. Karen
  B. Tibeto-Burman:
    1. Tibetic
    2. Baric
    3. Burmic:
      a. Kuki-Naga
      b. Kachin-Luic
      c. Burmese-Moso:
        i. Moso
        ii. Burmse-Lolo:
          α. Burmic
          β. Lolo

Figure 5 The Sino-Tibetan Family: Benedict (1942), Shaffer (1955), and others (adapted from Ruhlen 1991: 146)

Thurgood (2003: 3) divides Sino-Tibetan languages into two groups: Sinitic, essentially Chinese, and Tibeto-Burman. The original language, Sino-Tibetan has no records and is believed to be extinct. However, it is postulated to have once existed as a single language that subsequently split into a vast family of languages.

2.1.2 Tibeto-Burman languages

Concerning the classification of Tibeto-Burman languages, Ruhlen (1991: 143) states that,

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> According to Konow (1909: 12), the large and diverse Tibeto-Burman classification was first recognized in 1828 by B. H. Hodgson, and the first Tibeto-Burman classification was attempted by Max Muller in 1854.

In addition to describing the historical development of organization of the Tibeto-Burman language family tree, Ruhlen also added different groupings of the languages. Figure 6 shows different groupings of the Tibeto-Burman languages.

Tibeto-Burman:	Tibeto-Burman:
I. Tibetan	I. Tibetic
II. Himalayana	II. Baric
III. North Assam	III. Burmic
IV. Bodo	(Shaffer 1955)
V. Naga	
VI. Kachin	
VII. Kuki-Chin	
VIII. Burmese	
(Konow 1909)	

Tibeto-Burman:	Tibeto-Burman:
I. Tibetan-Kanauri	I. Tibetan
II. Bahing-Vayu	II. Gyarung-Mishmi
III. Abo-Miri-Dafla	III. Burmese-Lolo
IV. Burmese-Lolo	IV. Naga-Kuki-Chin
(Benedict 1972)	(Voegelin & Voegelin 1977)

Figure 6 Various groupings of the Tibeto-Burman language family (adapted from Ruhlen 1991: 146)

According to Figure 6, Konow (1909) has eight subgroups under the node of Tibeto-Burman languages while Shaffer (1955) has only three. Konow included six subgroups which Shaffer did not include. They both include Tibetan and Burmese as subgroups although they named them differently; Konow called them 'Tibetan' and 'Burmese' while Shaffer called them 'Tibetic' and 'Burmic.'

Both Benedict (1972) and Voegelin & Voegelin (1977) have four subgroups under Tibeto-Burman. They share three language groups even though they are named differently. Benedict uses the term 'Tibetan-Kanauri' for what Voegelin & Voegelin

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called 'Tibetan', and both of them give the same name to Burmese-Lolo. The other subgroupings are different. Thurgood (2003) also has a different tree for the Tibeto-Burman languages as shown in Figure 7.

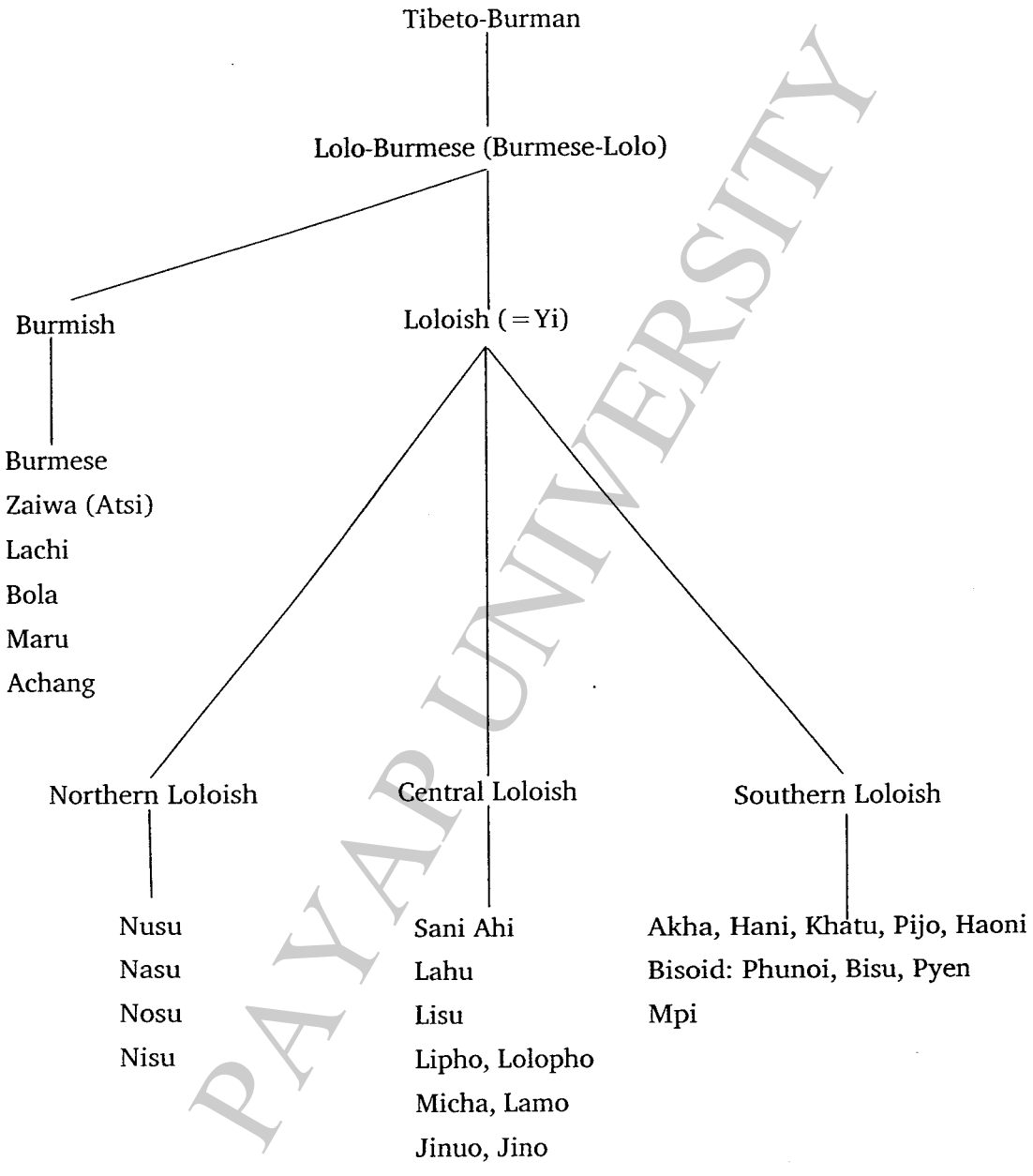

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Figure 7 Classification of the Tibeto-Burman languages (adapted from Thurgood 2003: 8)

Thurgood uses more detailed language names than the former trees, as shown in Figure 7. Under Tibeto-Burman, he has the Lolo-Burmese branch, which is divided

into two branches: Burmish and Loloish. Under the Burmish branch are grouped all the Burmish languages. The Loloish branch is divided into Northern, Central, and Southern sub-branches. All of the Loloish languages are placed under these branches.

The following section describes the basic areal features of Tibeto-Burman languages.

2.2 Phonological features of Tibeto-Burman languages

Hale (1982: 11) states that the Tibeto-Burman languages are typologically tonal, monosyllabic languages with SOV structure.

The following subsections present the general phonology, and grammar of Tibeto-Burman languages.

2.2.1 Phonology of Tibeto-Burman languages

Benedict (1972: 13) proposes that there are 16 consonant phonemes in Tibeto-Burman languages: velar /k, g, ŋ/, dental /t, d, n, s, z, r, l/, labial /p, b, m/, semi-vowels /w, y/, and glottal /h/[2]. All consonants except /g, d, b, z/ and /h/ appear in root-final position. All the major Tibeto-Burman languages have final consonants such as /k, t, s, r, l, p, w, y/ and nasals /ŋ, n, m/. The 16 consonant phonemes are also found as initial consonants in Tibeto-Burman languages both in single and cluster forms. Table 1 shows the Tibeto-Burman proto-initial consonants[3], with the initial consonants of five Tibeto-Burman languages: Tibetan, Kachin, Burmese, Garo, and Lushei.

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[2] Benedict grouped /h/ with the velar in his work.

[3] Benedict did his reconstruction by comparing Tibeto-Burman languages such as Kachin, Burmese, Garo, and Lushei with Tibetan.

Table 1 Initial consonants in Tibeto-Burman languages (adapted from Benedict 1972: 17-18)

TB	Tibetan	Kachin	Burmese	Garo	Lushei
*k	k(h)[4]	k(h)~g[5]	k(h)	k(h) ~g	k(h)
*g	g	g~k(h)[6]	k	g~k(h)	k
*t	t(h)	t(h)~d[7]	t(h)	t(h)~d	t(h)
*d	d	d~t(h)[8]	t	d~t(h)	d
*p	p(h)	p(h)~b[9]	p(h)	p(h)~b	p(h)
*b	b	b~p(h)[10]	p	b~p(h)	b
*s	s	s	s	t(h)	t(h)
*z	z	z~ś[11]	s	s	f
*ts	ts(h)	ts~dz[12]	ts(h)	s~tś(h)[13]	s
*dz	dz	dz~ts~ś[14]	ts	tś(h)	f
*ŋ	ŋ	ŋ	ŋ	ŋ	ŋ
*n	n	n	n	n	n
*m	m	m	m	m	m
*r	r	r	r	r	r
*l	l	l	l	r	l
*h	h	(zero)	h	[ ][15]	h
*w	(zero)	w	w	w	w
*y	y	y	y	tś~dz[16]	z

According to Table 1, some initial consonants of Proto-Tibeto-Burman are reflected in the daughter languages. For example, the voiceless alveolar fricative, *s of Proto-

[4] The /h/ in parentheses represented the aspirated sound.

[5] /k/ or /kh/ or /g/

[6] /g/ or /k/ or /kh/

[7] /t/ or /th/ or /d/

[8] /d/ or /t/ or /th/

[9] /p/ or /ph/ or /b/

[10] /b/ or /p/ or /ph/

[11] /z/ or /ś/

[12] /ts/ or /dz/

[13] /s/ or /tś/ or /tśh/

[14] /dz/ or /ts/ or /ś/

[15] Benedict does not mention what does [ ] mean in his work.

[16] /tś/ or /dz/

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Tibeto-Burman is retained in Tibetan, Kachin, and Burmese, while it is lost in Garo and Lushei. Moreover, the initial consonants *m, *n, *ŋ, and *r are retained in the daughter languages.

Benedict (1972: 37) also describes consonant clusters in Tibeto-Burman languages. Two types of consonant clusters which are found only in the root-initial position in Tibeto-Burman languages are: (a) stop or nasal + liquid /r/ or /l/), and (b) consonant (or cluster of foreign type) + semivowel /w/ or /j/). Table 2 shows these consonant clusters.

Table 2 Consonant clusters of Tibeto-Burman languages (adapted from Benedict 1972: 37)

Medial r	Medial l	Medial w	Medial y
kr	kl	kw	ky
gr	gl	gw	gy
_	_	tw	(ty)[17]
_	_	dw	(dy)[18]
pr	pl	pw	py
br	bl	bw	by
_	_	sw	sy
_	_	(zw)[19]	(zy)[20]
_	_	tsw	tsy
_	_	dzw	dzy

Note that Table 2 does not have any clusters such as /tr, tl, dr, dl, sr, sl, zr, zl, tsr, tsl, dzr, dzl/.

Benedict (1972: 57) states that the vowel system of Tibeto-Burman languages is made up of five phonemes, /i, e, a, o, u/, which may appear both in the medial and final positions with the exception of /a/. The vowel /a/ rarely appears as a single

[17] /ty/ could be both palatalized voiceless alveolar plosive, /tʲ/ or the consonant cluster, /ty/.

[18] /dy/ could be both palatalized voiced alveolar plosive, /dʲ/ or the consonant cluster, /dy/.

[19] /zw/ could be both labialized voiced alveolar fricative, /zʷ/ or the consonant cluster, /zw/.

[20] /zy/ could be both palatalized voiced alveolar fricative, /zʲ/ or the consonant cluster, /zy/.

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vowel in the final position, but appears with the combination of /w/ or /y/ for the whole vowel system. However, Matisoff (2003: 157) states that the vowel system of Tibeto-Burman languages ranges in complexity from five or six vowels to dozens. The open unrounded fronted vowel [a] is the most common and stable vowel in Tibeto-Burman languages (Matisoff 2003: 164).

The following tables show vowel examples of Tibeto-Burman languages from written Tibetan and Burmese presented in Matisoff (2003)[21].

Table 3 Vowel system of written Tibetan

i		u
e		o
	a	

According to Table 3, written Tibetan has simpler vowels system.

Table 4 Vowel system of written Burmese

i	ui	u
e		
ai		au
	a	
we	wa	wai

Table 4 shows that written Burmese has a complex vowel system.

According to Matisoff (2003: 6), Tibeto-Burman languages, such as the Loloish languages, have great typological diversity, are highly tonal, monosyllabic, and have no affixational morphology. With the exception of Karenic and Baic, all Tibeto-Burman languages are verb-final.

Aikhenvald and Dixon (2006: 313), states that not all the Tibeto-Burman languages are tonal. The Lolo-Burmese, Kachin-Nung, Karenic, and Baic languages are tonal languages. Benedict (1972: 85-87) stated that tone comparison is done based on the two-tone system (high tone from original voiceless and low tones from voiced initial

[21] Matisoff does not provide detailed characterizations of the vowels in his chart.

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consonants) of Central Tibetan with tone systems of some Tibeto-Burman languages. Burmese distinguishes between a low-level tone (unmarked), a high-falling tone (x̀), and a 'creaky voice' tone (x́). Other Lolo-Burmese languages such as Maru, Lisu, Ahi, Lolopho, and Nyi have more complex tone systems than Burmese.

2.2.2 Grammar of Tibeto-Burman languages

Dryer (2008: 13) similarly stated that SVO and SOV are the two possible sentence structures in Tibeto-Burman languages. Karen and Bai have SVO structure while the remainder of Tibeto-Burman languages have SOV word order and strict verb-final structure.

Benedict (1972: 92) claimed that verbs, nouns, pronouns, and numerals are the four general categories of Tibeto-Burman. The derivation of nouns from verbs, through prefixation or suffixation, is a characteristic of Tibeto-Burman morphology, but the derivation of verbs from nouns is very rare. Moreover, the general SOV word order of Tibeto-Burman is described in the following paragraphs.

Thurgood (2003: 43) states:

> Although available data varies in the descriptions, the OV languages within TB generally share a variety of other word order characteristics typical of OV languages, in employing postpositions rather than prepositions, in placing genitive modifiers before the possessed noun, in placing relative clauses (if they are externally headed) before the head noun, in placing postpositional phrases before the verb, in employing clause-final markers for subordinate clause, in placing markers of polar questions (if they employ them) at the end of sentences, and in placing auxiliary verbs after the main verb.

Thurgood (2003: 45-47) stated that the modifiers follow the modified word in Tibeto-Burman languages. The adjective and noun in Tibeto-Burman languages can be seen in two different orders: one is the AdjN (adjective then noun) order and the other is NAdj (noun then adjective) order. Some Tibeto-Burman languages have the AdjN order, some have NAdj order, and some have both orders. The two demonstrative and noun orders in Tibeto-Burman languages are: DemN (demonstrative then noun) and NDem (noun then demonstrative). Between these two orders, the DemN order is more common than the NDem order. Some Tibeto-Burman languages have one order and some have both orders.

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2.3 Classification of Lisu language

According to Enriquez (1933: 104), the Chinese called the Lisu people 'Lisaw,' except in the central and eastern parts of Yunnan where they are given their proper name 'Lisu'. The Lisu from these areas previously called themselves 'Liphaw'. The Khamti Shan called them 'Khe Nung,' meaning 'Black Nung.' The Maru Lhaovo and Lashi Lacid called them 'Lasi' and 'Leur-seur' respectively. The Chinese called the Kachin 'Ye-Jen' or 'Ye-Ren,' meaning 'savage,' and the Kachin has passed this name on to the Lisu, changing it to 'Yawyin.' The Chinese never called the Lisu 'Ye-Ren' but do make distinctions between what they call 'Pe Lisu' (White Lisu), 'He Lisu' (Black Lisu), and the 'Hua Lisu' (Flowery Lisu) based on the color of the women's dress.

Hope (1974: 1) stated that there are five major dialects[22] of Lisu. According to Lakana (1982: 3), however, there are many Lisu dialects with considerable dialectal variation between them. She notes that although these dialects share a large amount of common vocabulary, they are mutually unintelligible[23].

According to Yu (2007: 2), the Lisu have three subgroups: Northern Lisu, Central Lisu, and Western Lisu. According to Lewis (2009), however, Lisu has 10 dialects: Bai Lisu (White Lisu), Dechang Lisu, Hei Lisu (Black Lisu), Hua Lisu (Flowery Lisu), Lu Shi Lisu, Ninglang Lisu, Northern Lisu, Nujiang Lisu, Shibacha Lisu, and Western Lisu. Of these, three are found in Myanmar: Hua Lisu (Flowery Lisu), Hei Lisu (Black Lisu), and Lu Shi Lisu. Among these three dialects, Black Lisu is the most distinct. In Myanmar, Yawgin, Tangsir, and Hkwinhpang are also regarded as Lisu dialects or ethnic groups of Lisu.

There is also a Lisu dialect called 'Bible dialect' which is largely based on Central Lisu or Hua Lisu (Flowery Lisu), along with the Southern and Northern dialects. The Christian Lisu assumed the Bible dialect is the standard dialect regardless of the country where they live. Handle (2002: 96), however, refers to Northern Lisu as the standard dialect. Despite various views about which Lisu dialect is the standard Lisu, there is not a linguistic tree available in the literature to describe the classification of dialects within Lisu.

[22] Hope does not mention the names of these Lisu dialects.

[23] Daoratanahong does not mention the names of these Lisu dialects.

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2.4 Phonology of Lisu

The following sections describe the phonological inventories of the three major Lisu dialects: Northern, Central, and Southern Lisu based on earlier works.

2.4.1 Phonology of Northern Lisu

Bradley (1994: viii-xi) provides the consonant and vowel charts of the Northern Lisu dialect, which is spoken in northwestern Yunnan, southern Sichuan, northern Myanmar and northeastern India. Table 5 shows this consonant chart of the Northern Lisu dialect adapted from Bradley (1994: viii-xi).

Table 5 Consonant chart of the Northern Lisu dialect (adapted from Bradley 1994: viii-xi)[24]

p	t	ts	tʃ	tɕ	k	
ph	th	tsh	tʃh	tɕh	kh	
b	d	dz	dʒ	dʑ	g	
f		s	ʃ	ɕ		h
v		z	ʒ		ɣ	ɦ
m	n			ɲ	ŋ	
w	l	r		j		

In the Northern Lisu dialect, the /z/ and /j/ are only marginally distinct, and are both transcribed [j]. The /x/ and /h/ are only little distinct, and are both transcribed [h]. Zero-initial (a syllable beginning with a vowel) is realized as [ʔ], which is not transcribed. Palato-alveolar consonants such as /tʃ, tʃh, dʒ, ʃ, ʒ/ appear only before the vowels /u/ and /ɿ/[25]; their phonemic status is questionable. These consonants are also used to transcribe Chinese loanwords with retroflex initials. The [ɦ] is a 'nasalized cavity fricative'; in the transcription, the tilde is placed over the following vowel rather than over the [h]; e.g., /ɦa/ is transcribed [hã]. The phonemes /ɣ, w, f, r/ occur in limited environments; their phonemic status is questionable (Bradley 1994: viii-xi).

[24] No places or points of articulation and manners of articulation are provided in Bradley (1994).

[25] The sound of this vowel is similar with the vowels [i] and [ɯ].

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Table 6 Vowel chart of the Northern Lisu dialect (adapted from Bradley 1994: viii-xi)[26]

	Monophthongs		Diphthongs
	Front	Back	
	ɿ		
Close	i , y	ɯ , u	
Close-mid	e , ø	ɤ	
Open-mid		ɔ	
	æ		
Open	a		ja , wa

Vowels are nasalized after the nasalized cavity fricative [h̃] and after the zero-initial (with the exception of [ɤ]). [ɳ] appears only after the palato-alveolar series such as /tʃ, tʃh, dʒ, ʃ, ʒ/; its phonemic status is questionable. It is usually realized as a syllabic fricative [ʐ̩] or [ʒ̩]. Most speakers do not observe the contrast between [e] and [ø]. Other diphthongs that are not listed here may appear in Chinese loanwords. Northern Lisu dialect has six contrastive tones, as seen in Table 7 which adapted from Bradley (1994: viii-xi).

Table 7 The distribution of six contrastive tones in the Northern Lisu dialect (adapted from Bradley 1994: viii-xi)

Tones	Characteristics	Examples[27]
1	extra-high level /55/	/mo^{55}/
2	high level /44/	/mo^{44}/
3	mid level /33/	/mo^{33}/
4	mid rising /35/	/mo^{35}/
5	low falling /21/	/mo^{21}/
6	low falling with glottal stop /21ʔ/	/ mo^{21ʔ}/

[26] No places or points of articulation and manners of articulation are provided in Bradley (1994).

[27] No gloss is provided in Bradley (1994).

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2.4.2 Phonology of Central Lisu

Namkhung (1996: 221) describes the basic phonology of the Central Lisu dialect in which Fraser worked in 1922. Fraser collected this data from the dialects of the Tengyueh and Longling districts in China, and Myitkyina, Bhamo and the Northern Shan States in Burma. The following table is adapted from Fraser's work of 1922.

Table 8 Consonant chart of the Central Lisu dialect (adapted from Fraser 1922: 1-5)[28]

INITIALS

p	t	ts	ch	k	
hp	ht	hts	hch	hk	
b	d	dz	j	g	
		s	sh	hh	h
v					
m	n			ng	h'
w	l	r	y		

MEDIALS

-w- -y-

In Table 8, /hh/ represents the [x] sound, which Fraser described as a 'guttural h.' It only occurs before the vowel /a/, and appears to be in complementary distribution with /h/. The symbol [h'] represents /ɦ/ that is a 'nasal h.' It indicates nasalization of the entire syllable. The sound [v] sometimes resembles [ũ] in its pronunciation. The palatals /j, ch, hch, sh/ often are realized as dentals [dz, ts, hts, s] when followed by the back vowels /a, o, u/ (Fraser 1922: 1-5).

The glides in the syllables /waw/, /wu/, and /yi/ are not consonantal, but a lengthening of the vowel: [ɔ:, u:, i:]. These syllables do not occur with initial consonants, with one exception: /nyi/ ('day', 'two,' etc.), which contrasts with /ni/ ('evil spirit,' 'red,' 'few,' etc.) (Fraser 1922: 1-5). Table 9 is the vowel chart of Central Lisu dialect.

[28] Fraser does not provide places or points of articulation and the manners of articulation.

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Table 9 Vowel chart of the Central Lisu dialect (adapted from Fraser 1922: 1-5)

	Monophthongs			Diphthongs
	Front	Central	Back	
Close	i , ū	ï	u	
Close-mid	ye , ē		rgh , aw	rghe
	á			
Open	a			rgha

In some dialects, the vowel, /i/ after dental sibilants is realized as [ɪ], but this distinction is slight, as /i/ is not a cardinal [i]. The distinction is made by older speakers but not by younger speakers. The vowel /ū/ represents [y]. The symbol /ï/ represents the vowel [ɨ]. Fraser described it as a 'plain guttural vowel sound, difficult to describe'. The symbol /ye/ represents [e]. Fraser stated that the [y] is 'somewhat suppressed' in combination with consonants. In some dialects, the distinction between [ye] which is [e] and [ē] which is [ø] are lost after labials such as /p, hp, b, v, m/. The symbol /rgh/ represents [ɤ] and /á/ represents [æ]. The symbol /aw/ represents [ɔ]. Fraser wrote that 'many Lisu words have a vowel sound somewhat between [ɔ] and [o]', but as they are difficult to distinguish, he did not indicate them. The vowel /á/ represents [æ]. The symbol /rgha/ and /rghe/ probably represent /ɣa/ and /ɣe/ in initial position, but /ɤa, ɤe/ as vowels (Fraser 1922: 1-5). The following table shows the tone system of Central Lisu (Fraser 1922: 4-5).

Table 10 The tone system of the Central Lisu dialect (adapted from Fraser 1922: 4-5)

Tones	Characteristics	Examples[29]
1	high and even	/mo^{55}/
2	abrupt, rising	/mo^{45}/
3	medium, even	/mo^{33}/
4	very slightly lower than tone /3/	/-/[30]
5	low, even	/mo^{22}/
6	low, abrupt	/mo^{21ʔ}/

[29] Hope does not provide the gloss.

[30] No example for this tone.

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Table 10 shows the tone system of Central Lisu dialect. The Central Lisu dialect has six basic tones: four level tones and two contour tones.

2.4.3 Phonology of Southern Lisu

This section summaries the basic phonology of Southern Lisu as described by Hope (1972: vi-vii). Table 11 shows the consonant chart of the Southern Lisu dialect.

Table 11 Consonant chart of the Southern Lisu dialect (adapted from Hope 1972: vi)[31]

p	t	ts	k	ʔ
ph	th	tsh	kh	
b	d	dz	g	
f		s	x	h
v		z	ɣ	
m	n		ŋ	
	l			

According to Hope, the labialization in the Southern Lisu dialect is represented by [w] and palatalization by [y], following the initial consonants. Alveolar consonants /t, th, d, n, l, ts, tsh, dz, s, z/ are realized as palatal when followed by /y/.
Vowels are given in the following table.

Table 12 Vowel chart of the Southern Lisu dialect (adapted from Hope 1972: vi)

	Front	Central	Back
Close	i	ɨ	u
Close-mid	e		
		ə	
Open-mid			ɔ
	æ		
Open	a		

Hope (1972: vi-vii) considers laryngealization to be a suprasegmental feature and marks it as [˳] under the vowels. It is realized as glottalization of the nuclear

[31] Hope does not provide places or points of articulation and the manners of articulation.

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vowel[32] in low-tone syllables, and as tenseness of the nuclear vowel in mid-tone syllables. The vowel /e/ is realized with rounding in labialized syllables. For example, /twe/ is realized as [tø].

Table 13 shows the tonal system of the Southern Lisu dialect.

Table 13 The tone system of the Southern Lisu dialect (adapted from Hope 1972: vi)

Tones	Characteristics	Examples[33]
1	high	má
2	high-falling	mâ
3	mid-rising	mă
4	mid	ma
5	low	mà

As shown in Table 13, Southern Lisu has five tones: high, high-falling, mid-rising, mid, and low. Although Hope provides only five tones in Southern Lisu dialect, Bradley provides six tones in his Southern Lisu Dictionary (2006: viii) (see detail in Table 14). Hope's Southern Lisu tones have some effect on the sit

The following table shows tone comparison between the three major Lisu dialects. Consistent with Bradley, the author, a Southern Lisu speaker has 6 tones in his dialect rather than the 5 tones mentioned by Hope (1972).

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[32] The major vowel, if there are one more vowel.

[33] Hope does not provide the gloss for these tones and this tonal system is quite similar to the tonal system of Central Thai. This similarity needs further study.

Table 14 Tone comparison between the major Lisu dialects (adapted from Bradley 2006: viii)

	Central Lisu(Fraser)[34]		Northern Lisu		Southern Lisu	
Gloss	Numeric	Orthographic	Value	Orthographic[35]	Value	Symbol
'millstone'	mo^1	MO.	55	mol	55	mó
'tattoo'	mo^2	MO,	35	moq	35	mŏ
'high'	mo^3	MO..	33	mo[36]	33ʔ	moʔ
'see'	mo^4	MO.,	44	mox	33	mo
'old'	mo^5	MO:	21	mot	21	mò
'weed'	mo^6	MO;	21ʔ	mor	21ʔ	mòʔ

In Table 14, Tone 3 /33ʔ/ and Tone 6 /21ʔ/ in Southern Lisu has constriction while Northern Lisu has lost constriction in Tone 3. The Tones 3 and 6 in Southern Lisu are derived from proto-Loloish syllables with final stops. Tone 4, /44/ is higher in Northern Lisu than in Southern Lisu, /33/. The unmarked tone in Northern Lisu, [mo] corresponds to Fraser's Tone 3, [mo^3] while the unmarked tone in Southern Lisu corresponds to Fraser's Tone 4, [mo^4] (Bradley 2006: viii-ix).

2.4.4 Syllable structures of Lisu

Lisu is a monosyllable language. The major and minor syllables are the prominent features of Lisu. This section summarizes general background about the major and minor syllable structures of Lisu.

According to Pakkhem (2007: 41), major and minor syllables can be defined as follows:

> Major syllable is the nuclear syllable which takes the strong stress. It always occurs in monosyllabic words and the final syllable of disyllabic and trisyllabic words. Minor syllable is a syllable which takes the weak stress. It occurs as the first syllable of disyllabic, and the first two syllables and second syllable of trisyllabic words.

[34] Fraser's work is apparently based on Central Lisu dialect.

[35] The consonant alphabets [l, q, x, t, and r] after [mo] are the tone marks of the Northern Lisu writing system.

[36] This tone is unmarked.

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Bradley (2006: xviii) states that the minimal syllable in native Lisu words is a vowel with a tone; most syllables have single initial consonants as well, and some have consonant clusters. Like other Tibeto-Burman languages, Lisu has major and minor syllables. For example, the word 'fire' in Lisu is [a^{55} to^{55}]. The first syllable [a^{55}] does not have any particular meaning, is followed by a full tonic syllable [to^{55}], and has the minimal syllabic structure V. Therefore, the first syllable [a^{55}] is a minor syllable and the second syllable [to^{55}] is a major syllable.

In the following paragraphs, Lakana (1982: 24) presents the major and minor syllables in Lisu which she based on Southern Lisu dialect in Thailand.
She divides Lisu syllables into three types: nasal syllables[37], open syllables, and closed syllables. All her data were collected from Lisu speakers in Thailand, belonging to the Southern Lisu dialect.

The following example gives examples of the nasal syllable.

Example (1):

/m/	'not'
/m khùɯ/ ~ /ŋ khùɯ/	'night'
/n tɕhì/	'abdomen'
/ŋ khfù/	'smoke, cigarette'

(adapted from Lakana 1982: 24)

Example (1) shows Lisu nasal syllables. The word 'night' can be either /m khùɯ/ or /ŋ khùɯ/. The structure of this type of syllable is $C(CV)^T$ if the /khf/ is interpreted as a consonant cluster. However, the author who is a Southern Lisu speaker has never heard his dialect spoken with a /khf/, it is normally pronounced simply /kh/. Moreover, it is strange to see /f/ following /kh/ in Lisu. It is not usual to have the stops and fricatives form a consonant cluster.

The following example shows the open syllable type in Lisu.

Example (2):

sub-type 1		sub-type 2	
/na/	'to be sick'	/ŋwá/	'fish'
/ŋō/	'to hang'	/dʑvūɯ/	'tusk, canine tooth'

(adapted from Lakana 1982: 25)

[37] It means both nasal and pre-nasal syllables.

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Example (2) shows that the structure of the open syllable is C(C)V^{T} and it has two sub-types. The structure of second sub-type could be shown as CV^{T}, if the /ŋw/ and /dʑv/[38] is consonant clusters. However, the author who is the speaker of Southern Lisu has hardly spoken or heard the language spoken this way with the voiced fricative /v/ following the alveo-palatal /dʑ/.

The following example shows the closed syllable in Lisu.

Example (3):

sub-type 1		sub-type 2	
/sɯŋ/	'to be born'	/pjàwʔ/	'to enjoy'
/tsáj/	'again'	/swàjʔ/	'to throw down' or 'shake off'

(adapted from Lakana 1982: 24)

The closed syllable may be shown as C(C)VC^{T} and has two subtypes. All examples of this sub-type are loanwords. The first words of both sub-type 'to be born' and 'to enjoy' are borrowed from Burmese and the second words 'again' and 'to throw down' or 'shake off' are borrowed from Chinese. Thus, the author doubts whether this syllable form is present in native Lisu vocabulary.

Thurgood (2003: 226) said that the Lisu syllable structure is C(G)VT[39]. All Lisu dialects have clusters composed of velars plus medial /w/ before the vowel /a/, as in /kwa, khwa, gwa, xwa, ŋwa/. Nearly all dialects have bilabials or nasalized voiceless glottal fricative, /h̃/ (but not labiodentals /ɱ, f, v/) plus medial /j/ before /a/, as in /pja, phja, bja, mja/; /lja/ also occurs in Chinese loans. Most Lisu dialects in some areas including most of the northern area have clusters of labials plus medial /j/ before /ø/, as in /pjø, phjø, bjø, mjø/ but are replaced by bilabials plus /i/, as in /pji, phji, bji, mji/ or bilabials plus /e/, as in /pje, phje, bje, mje/.

2.4.5 Lisu orthography

There are seven Lisu orthographies: (1) Pollard script, (2) Fraser script, (3) Chinese character based script, (4) Chinese pinyin based script, (5) Modified Fraser script, (6) Thai alphabet based script (Bradley 2006: xxv-xxvi, xxviii), and (7) Burmese alphabet based script developed in Moegok Township, in Myanmar. Table 15 shows

[38] It is strange to see /v/ following the /dʑ/. It is not usual for the fricative /v/ to follow the alveo-palatal /dʑ/ in Lisu.

[39] (G) refers to glide.

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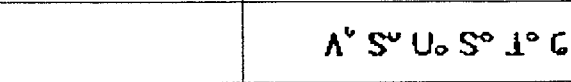
examples of six Lisu scripts. The examples of Thai alphabet based script are not available.

Table 15 Examples of six Lisu scripts

Name of script	Example
1. Pollard script	
2. Fraser script	LI..-SU.. V., B., LO. LO: T:
3. Chinese character based script	
4. Chinese pinyin based script	Lisu hanbbax lol tot`et
5. Modified Fraser script	Li..-Su.. Va., Ba., Lo. Tho: Gei:
6. Burmese alphabet based script	လီဆုဟာဘာလို့.ထိုဃေ

Of these orthographies, the Fraser script is currently in wide use. Bradley (2003: 4) states that the earliest Lisu script was the Pollard script. It was originally invented for the Lipo, also called 'Eastern Lisu', from north central Yunnan and the extreme south of Sichuan in China. This script was derived from the script which Samuel Pollard invented for the Miao of Guizhou in 1904. It has both syllabic and alphabetic forms. The large inventory of symbols includes some from the Roman alphabet, some from Pitman shorthand, some newly invented, and vowels in smaller symbols. In the Pollard script, the placement of the vowels indicates the tone: placing the vowel symbol above the consonant represents high tone, placing it to the top right represents middle tone, middle right the rising tone, and bottom right, the low tone.

The second script was invented by the British missionary James Outram Fraser, the Karen evangelist Ba Thaw, and the American Baptist missionary George J. Geis in the 1910s. The Roman capital letters (both upright and inverted forms) are used as the consonants and vowels, and punctuation marks are used as tone marks.

The third script was invented by the Lisu leader Wa Renbo in Wexi County, Tengchong, China in 1925. It is similar in appearance to Chinese characters.

The fourth script was invented by Chinese and Russian linguists. This orthography was developed with Roman and Cyrillic letters. As the Russian linguists left, it was changed into Chinese Pinyin and finally into the Pinyin plus the postscript as tone marks. This script is also called the Northern Lisu script.

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The fifth Lisu script was invented by David Morse and Tom Tehan in 2000. It is a modified form of the Fraser script, without the upright and inverted forms, which may be typed on any ordinary keyboard.

The sixth Lisu script was invented in the 1980s by some Lisu Buddhist leaders from Moegok Township. It is based on the Burmese script.

The seventh Lisu script was a Thai alphabet based script. In 1970s, there was a proposal for developing a Lisu script based on Thai but it was not successful (Bradley 2006: xxviii).

Bradley (2006) also states that there was a proposal for Lisu script based on Thai script in 1970s but that it was not successful. Out of many reasons for this script was not successful, one could be many Christian Lisu who are literated in Fraser from Myanmar and some from China migrated into Thailand (Bradley 2006: xxviii). These newer migrants Lisu introduced the Fraser script to the Lisu of Thailand before the Thai based Lisu script is well developed and it may never have a chance to be well developed.

2.5 Sociolinguistics

One of the major foci of this study is sociolinguistics. Wardhaugh (2005: 13) states that sociolinguistics is the study of the relationship between language and society with the purpose of considering the nature of languages and how they function.

The following subsections provide sociolinguistic definitions and reviews of relevant literature.

2.5.1 Bilingualism

Crystal (2003: 51) presents that bilingualism is the degree of proficiency that a person must achieve in order to speak a language that is not their mother tongue. This degree may sometimes be a comparable level to a native speaker or sometimes less or even the least competence of the second language. There are two kinds of bilingualism; the first one is additive or elite bilingualism, which is the situation where the majority learn the minority language (an example is that of English-speaking Canadians learning French). The second type is subtractive or folk bilingualism, where the second language replaces the first language (such as

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minority ethnic groups learning the national language or a language of wider communication). The additive or elite bilingualism is not suitable to apply in this study since Lisu is a minority language. However, the subtractive or folk bilingualism is suitable to apply in this study. Since Lisu is a minority language, the bilingualism in this study will be discussing on Lisu speakers learning language(s) of wider communication with several levels of competence from basic to native ability. Regardless of the degree of competency, the community has different views of bilingual speakers.

Wardhaugh (2006: 99) provides that people from western societies view bilingual people differently. They give prestige to those who could speak the classical languages: Greek or Latin. In contrast, they give little credit to people who speak languages such as Russian, Japanese, or Chinese. In the same way, the Lisu people gave less prestige to those who speak other minority languages while they give more prestige to those who speak in language(s) of wider communication such as Burmese, Chinese, Central Thai or English. Notions about prestige reveal language attitudes.

It is interesting to raise a question like what makes a community or person bilingual. Blair (1990: 52-53) states that individuals or communities become bilingual because of community needs and pressures. These needs and pressures provide the motivation to learn the second language. However, motivation alone cannot make individuals or communities become bilingual unless they have contact with the second language. Therefore, motivation and contact are the most important factors that produce bilingualism. The degree of 'motivation' to acquire the second language and 'contact' with the second language are difficult to measure. Individuals or community contact with the second language may vary by factors such as age, sex, education, and occupation. The degree of contact with the second language may correlate with education, occupation, age, and sex. The community's motivation to learn the second language is related to the domains in which the second language is used. The following subsection describes the correlation between age and bilingualism.

2.5.1.1 Bilingualism and age

In any community, there might be a gap between the bilingual ability of the older generation and the younger generation. In other words, the age of individuals is correlated with their bilingual ability. Blair (1990: 54-56) says that the age of

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individual may have a direct influence on how much a person is bilingual in the second language. He states that the correlation between age and bilingualism may manifest itself in three common ways: bilingualism decreases with age, bilingualism increases with age, and bilingualism peaks about middle age and falls. According to Blair, bilingualism may decrease with age when the younger generation of a certain community is more bilingual than the older generation. It is a universal view to see that the younger generation has higher education and more bilingual abilities than the older generation in most communities.

Blair again explains that bilingualism increases with age when the older generation has better education and more contact with the language(s) of wider communication than the younger generation. This kind of bilingualism is unusual. However, we see as an example in Myanmar: the older generation speaks better English (learned through the British Colonial education) than the younger generation. The third case that Blair discussed is bilingualism peaking around middle age when there is more contact with the outsiders. Blair also states that their bilingual ability then decreases when they stop using the language. This is because the bilingual ability of certain person may peak when they use those languages, however once they stop or retire from their former jobs, they do not use the language much and their bilingual ability then decreases.

The following subsection discusses the correlation between education and bilingualism.

2.5.1.2 Bilingualism and education

Since bilingualism somehow means acquiring a language that is not the speaker's mother tongue, it is also related to the language of instruction at school. Sometimes, the language of instruction may be the first language of the individuals or sometimes it may be the second language. The individuals may meet fewer barriers if the language of instruction is their first language. However, the individual may meet more barriers if the language of instruction is the second language. Blair (1990: 57-62) discussed three educational situations, which correlate with the bilingualism. In the first situation, the second language is both the language of wider communication and the language of education. In the second situation, the second language serves only as the language of wider communication and a third language serves as the language of education. In the third situation, the second language is the language of wider communication while the first language is used as the language of education.

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Of these three situations, only the first and second situations are relevant for this study. The first situation is relevant in China and Myanmar where the national languages Chinese and Burmese respectively serve as both the language of wider communication and language of instruction. The second situation is relevant in Thailand because Northern Thai serves as the regional language while the Central Thai serves as the language of instruction.

2.5.2 Language use and language attitudes

Both language use and language attitudes are important to maintain a language. If the use of a vernacular language is not important for the speech community, this language cannot be maintained. The use of the vernacular language depends on the attitudes of the speech community toward its own language. Blair (1990: 107-108) states that in a bilingual community, the study can focus on the relationship between the use of first and second language. The use of the first and second language is usually not equal in a speech community since people have to deal with different social situations. In other words, there might be some domains in which the speakers would use the first language and other domains where the speakers would use the second language.

Blair (1990: 107-108) also says that people make choices for what speech varieties to use in particular domains such as family, friends, neighbors, school, work, government, and religions. Language attitudes are the attitudes that people have toward various speech varieties. These speech varieties may vary from mother tongue to language(s) to wider communication. Therefore, the language attitudes of individuals vary concerning the mother tongue, related dialects, and language(s) of wider communication.

Language attitudes can be shown in the following figure (Blair 1990: 109).

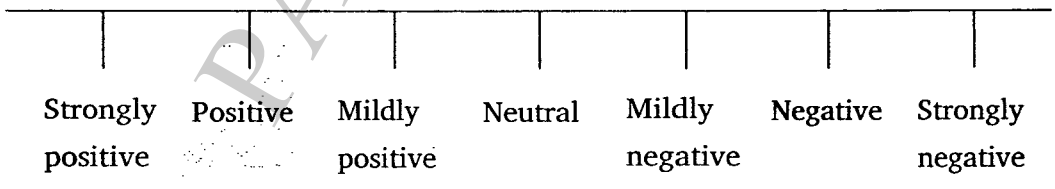

Figure 8 The level of language attitudes (Blair 1990: 109)

According to Figure 8 language attitudes have different stages such as 'strongly positive', 'positive', 'mildly positive', 'neutral', 'mildly negative', 'negative', and

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'strongly negative'. The attitudes of the speakers of a particular speech variety have a direct effect on the preservation of that language. In other words, how people look upon their language is somehow related to the maintenance of their language. This means if the speakers of a certain language think their own language is less prestigious than others are, the maintenance of their particular language is not good.

Fasold (1984: 34-60) states:

> Language attitudes are the ways in which a person or community perceives the relevance and status of their language, often reflecting their attitudes about themselves relative to other groups. Language attitudes play a key role in language maintenance, shift, and death.

Based on the language attitudes of the speakers a language may shift or die. Blair also states that in addition to studying the attitudes of oral varieties, the attitudes towards different scripts are also important.

The following subsection discusses the language vitality.

2.5.3 Language vitality

Edwards (1985: 49) said that language vitality is the measurement of a languages ability to meet the needs of the community. When a language is used, it means it is satisfying the needs of the society. If the language of wider communication is used in the domains where once first language was used, the vitality of first language is weak. If the first language is used in the home and in-group communication, the vitality of this language is good and it will continue to exist. If the first language is not used at home and in-group communication, its vitality is weak.

Edwards (1985: 49) states:

> Languages do not live or die at all ... The fortunes of languages are bound up with those of its users, and if languages decline or 'die' it is simply because the circumstances of their speakers have altered.

The continued existence of a language is directly related to its usefulness in the community. If a language fails to fulfill the needs of the society, its vitality will decline.

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2.6 Lexicostatistics

Sanchez-Mazas (2008: 237) attributes the development of lexicostatistics to Constantine Samuel Rafinesque (1831), who devised lexical comparison to win a gold medal worth 1,000 francs in a competition held by Societe de Geographie (2010) in Paris to determine the origin of Asiatic languages. Moreover, according to McMahon (2005: 33), lexicostatistics has sometimes been considered to be synonymous with glottochronology, which seeks to determine the dates when languages separated. Campbell (2004: 201) states that some scholars make a distinction between the terms 'glottochronology' and 'lexicostatistics,' the former having the goal of assigning a date to the split of a language into daughter languages, and the latter the goal of statistical manipulation of lexical material for historical inferences.

The following subsection gives the definitions and reviews of lexicostatistic studies.

2.6.1 Definitions and reviews of the lexicostatistics

Swadesh (1952: 122-126) stated that lexicostatistics is an instrument for researching the prehistory of languages and a key to understanding language as a social phenomenon. The methodology of lexicostatistic dating uses a well-prepared wordlist. The lexical items of this wordlist must be universal, non-cultural, easily-identifiable concepts which can be matched with simple terms in most languages. Lexical items which tend to have negative features should not be included in the wordlist. Potentially duplicative items such as 'wife-woman', identical roots such as 'this-that', 'who-what-when-how', 'I-we', and 'die-kill', onomatopoetic words should not be included in the wordlist. The Swadesh 100-wordlist is presented in Table 16.

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Table 16 The Swadesh 100-wordlist

1. I	21. dog	41. nose	61. die	81. smoke
2. you	22. louse	42. mouth	62. kill	82. fire
3. we	23. tree	43. tooth	63. swim	83. ash
4. this	24. seed	44. tongue	64. fly	84. burn
5. that	25. leaf	45. claw	65. walk	85. path
6. what	26. root	46. foot	66. come	86. mountain
7. who	27. bark	47. knee	67. lie	87. red
8. not	28. skin	48. hand	68. sit	88. green
9. all	29. flesh	49. belly	69. stand	89. yellow
10. many	30. blood	50. neck	70. give	90. white
11. one	31. bone	51. breast	71. say	91. black
12. two	32. egg	52. heart	72. sun	92. night
13. big	33. grease	53. liver	73. moon	93. hot
14. long	34. horn	54. drink	74. star	94. cold
15. small	35. tail	55. eat	75. water	95. full
16. woman	36. feather	56. bite	76. rain	96. good
17. man	37. hair	57. see	77. stone	97. new
18. person	38. head	58. hear	78. sand	98. round
19. fish	39. ear	59. know	79. earth	99. dry
20. bird	40. eye	60. sleep	80. cloud	100. name

Bennett (1998: 34) states that lexicostatistics is helpful to judge the degree of linguistic relationship between languages based on the frequency of shared features. The source data to compare may include vocabulary, inflectional morphemes, syntactic patterns, and even cultural traits but the most common type is lexical items. The amount of lexical data is critical because too few items will not be representative, causing a false result. For example, the words 'father' and 'mother' in Chinese and Lisu is very similar. If the lexical comparison is based on only these two words, the result of lexical similarity between Chinese and Lisu will be 100%. This result is not representing for the whole Chinese and Lisu. However, too many lexical items will obscure the linguistic relationship because comparing too many lexical items may contain the loanwords, the uncommon words. The ideal quantity is between one hundred and five hundred lexical items.

Polome (1990: 217) states:

> Lexicostatistic techniques compare selected vocabulary of related or presumably related languages, and have been used to postulate relationships

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among languages, to set up subgroupings among related languages, and to date the time of divergence of two or more related languages.

Mann (2004: 13) compares various wordlists: used by Jaxontov, Swadesh, and SIL MSEA. He ordered them according to lexical items found on the wordlists from the highest number to the lowest. The resultant wordlist is designed to guide researchers in selecting words for lexical comparison in Mainland Southeast Asia (see Appendix A).

Brown (2008: 248) claims lexicostatistics is a method of counting the percentage of common roots between two languages by using basic words. The theory is that basic words are resistant to borrowing; therefore, the percentage will give an indication of how closely languages are related.

Lexicostatistics gives an indication of the degree of lexical similarity between languages. The following sub-section presents some example of lexicostatistical studies in earlier works.

2.6.2 Examples of lexicostatistics in some earlier works

There has been some research on lexicostatistics in Tibeto-Burman languages such as Khoi Lam Thang's (2001) reconstruction of Proto-Chin, Ken Manson's (2008) reconstructing of Proto-Karen, and Audra Phillips's (2009) lexical comparison of Pwo Karen, and Peiros's (1996) lexical comparison of Lolo-Burmese. In Peiros's paper, he compared the Lolo-Burmese language tree of Bradley (1996) with the tree that resulted from his own lexical comparison. The Lolo-Burmese language tree of Bradley (1996) is shown in Figure 9.

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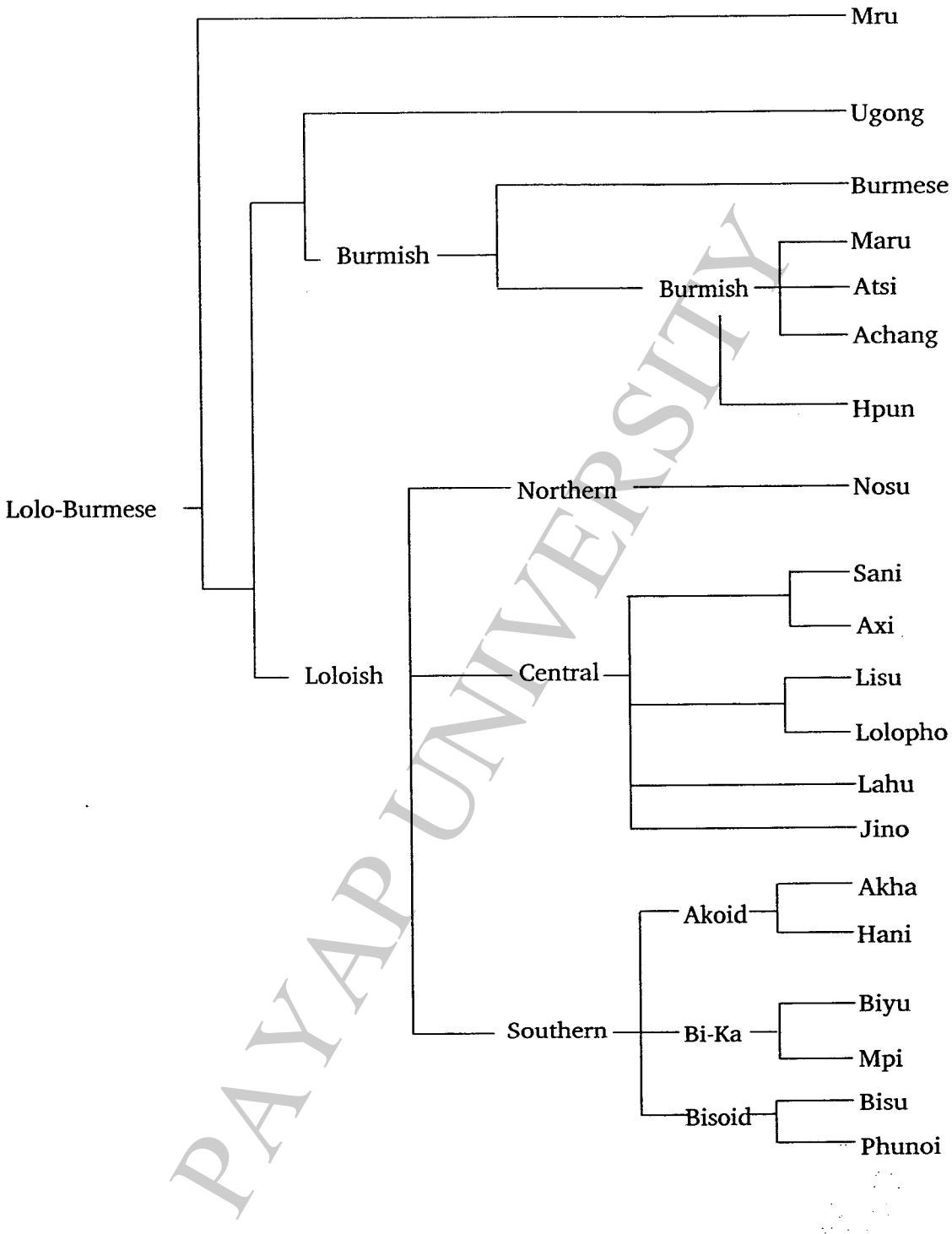

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Figure 9 Language tree of Lolo-Burmese (Bradley 1996)[40]

[40] Peiros (1996) does not mention the page number. Bradley started this work in 1996 but it was published in 1997.

The following figure provides the Lolo-Burmese language tree that Peiros constructs from his lexicostatistic comparison.

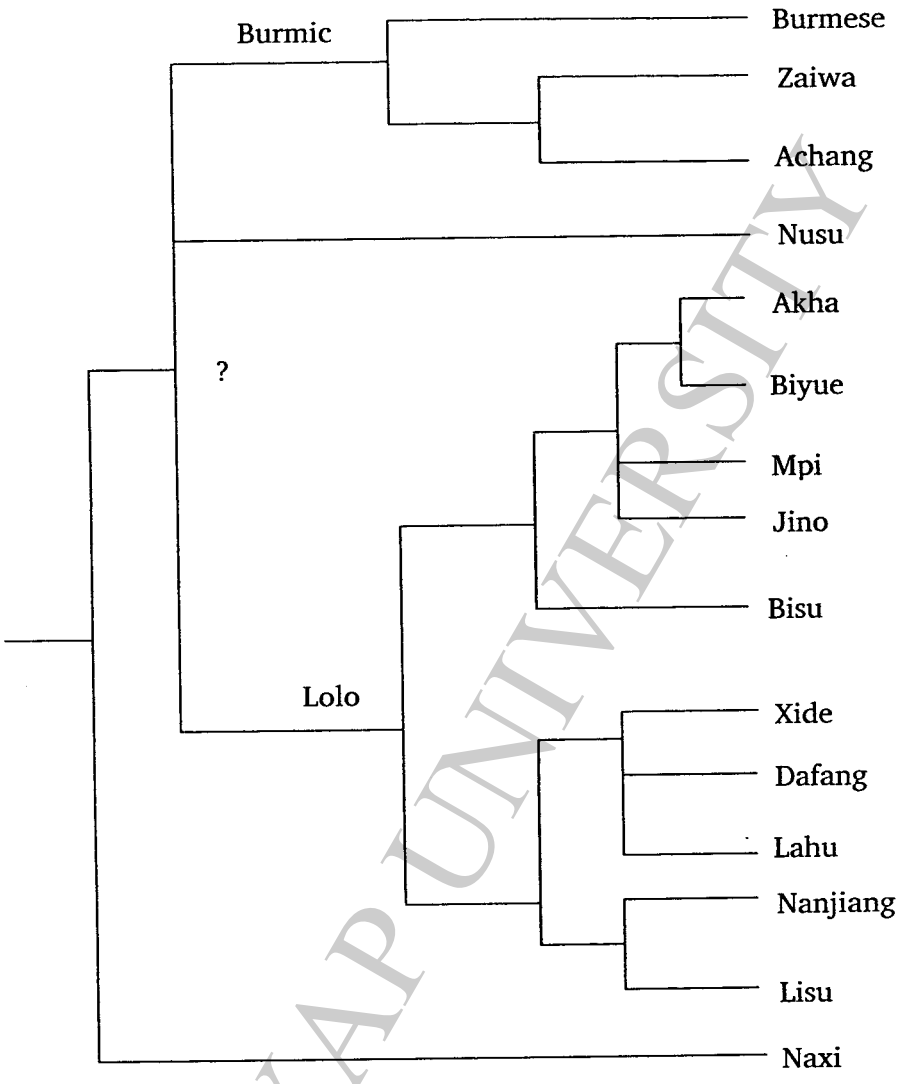

Figure 10 Language tree of Lolo-Burmese (Peiros 1996: 238)[41]

According to these two language trees of Lolo-Burmese language, Bradley includes Mru[42] but excludes Naxi. Conversely, Peiros includes Naxi but excludes Mru. Bradley has Mru grouped at the top level under Lolo-Burmese. Below this is Loloish, Burmish, and Ugong. Burmish is divided into Burmese and a lower node is

[41] Peiros marked 'Proto-Lolo-Burmese' as '?'. It could be this language needs further comments as he mentioned in his paper.

[42] Mru is spoken in Bangladesh, and Bradley regards Naxi as a remotely related language to Lolo-Burmese languages.

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inconveniently also name Burmish. In his Burmish branch, Burmese separates from other Burmish groups such as Maru, Atsi, Achang, and Hpun. In his Loloish branch, he has three branches: Northern, Central, and Southern branches. In the Northern Loloish branch, Nosu is on an independent branch while the Central and the Southern branches have several languages.

Peiros's language tree of Lolo-Burmese based on lexical comparison has two branches, Proto-Lolo-Burmese and Naxi. The branches, Burmic, Nusu, and Lolo are at the same level while Naxi is in a further branch. Peiros does not have further classification on Loloish branch as Bradley does. Since Bradley's comparison has more detail, it is more suitable to apply in this thesis.

Some other examples of lexicostatistical studies have done in Tai languages group. Apiradee studies the lexical relationships of Tai Nua in her thesis (2007: 68-87). For her comparison, she selected 100 words from the wordlists based on Mann (2004). She identified roots for the 100 lexical items by omitting presyllables, grammatical markers, and derivational or elaborative syllables (Apiradee 2007: 68).

The results of her lexicostatistic in Tai Nua speech varieties are generally quite similar. The minimum lexical similarity is 77 percent that occurred between a very isolated site and the normal sites. The maximum is 96 percent and which occurred between two sites that are geographically very near (Apiradee 2007: 79).

Owen does uses lexical comparison in his thesis (2008). His study focuses on the Khuen language of Shan State in Myanmar. He focused on finding the lexical similarity between nine Khuen dialects. He compared the words in two ways: first with 157 common words that are from all data sets and 100 highest-ranking words from Mann's (2004) wordlist. The lexical similarity between Khuen dialects are generally high and the highest percentage is 100%.

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