Chapter IV

PG Language Sound Correspondences

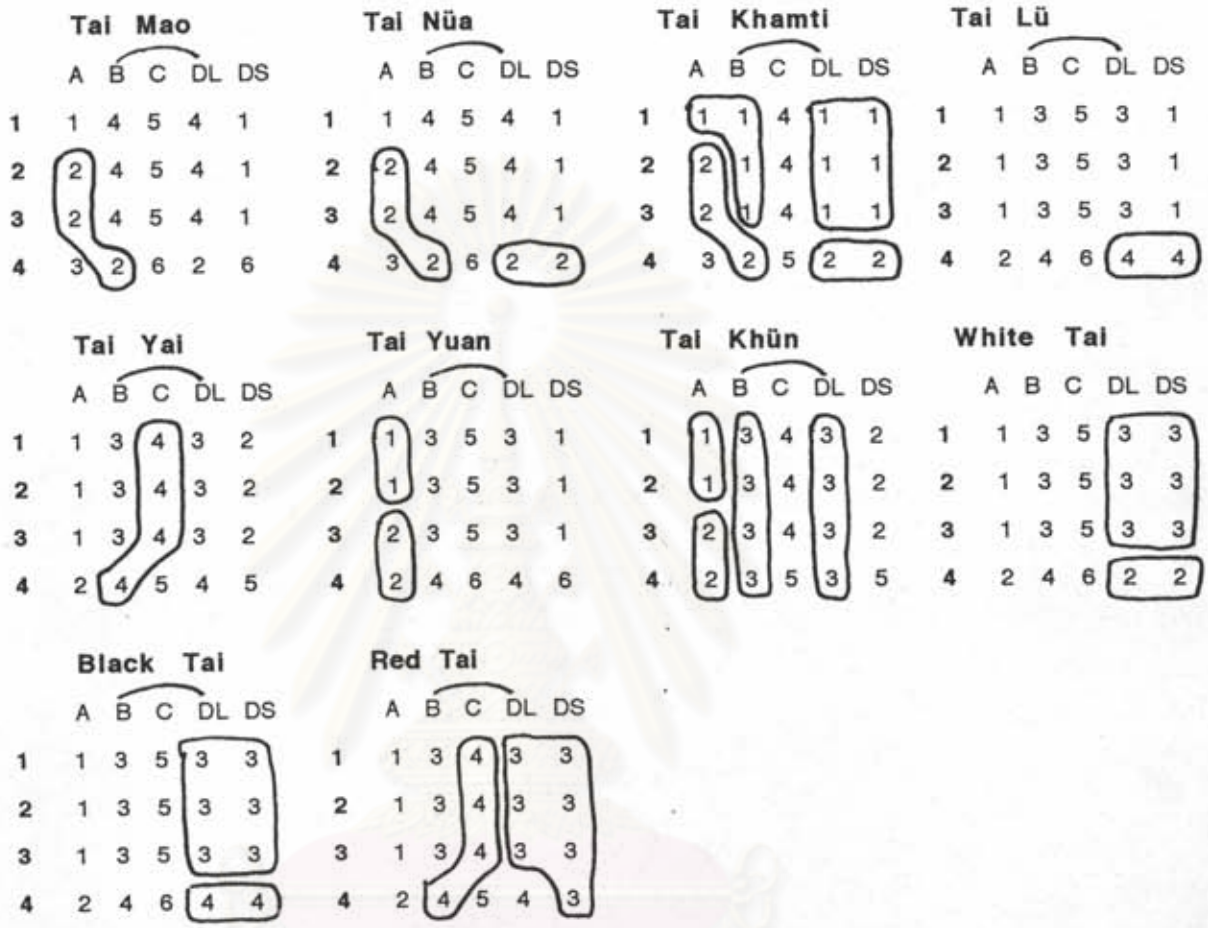
In Chapter III we presented the phonemic systems of the ten Tai PG languages. We will now look at some sound correspondences in cognate sets from these languages. The sound correspondences will be comparisons of whether two PG languages use one and the same phoneme within their phonemic systems in the cognate word sets or whether the languages use different units. Based on the diachronic linguistic Law of the Regularity of Sound Change, a difference between the phonemes used in cognate word sets indicates a phonological distinction which has either been lost in one language or which has never developed in the other. We are primarily interested here in whether the languages being considered have a phonemic contrast between a given sound in the two cognate words. Of lesser importance is whether the phonetic realization of these words differs or not. In Chapter V we will use some of these correspondences to posit historical relationships between the various PG languages.

Tone Correspondences

In Chapter II we discussed tonal development in Tai languages. Following the methodology of Gedney (1973), there are 20 different tone boxes for PT words. Each of the PT Tones; A, B, C, DL and DS are subdivided into 4 tone boxes based on PT initial consonants classes. Throughout this thesis we reference cognate words based on these 20 tone boxes which we refer to respectively as A1, A2, A3, A4, B1 ... DS4. Because this system for referencing tones makes the maximal differentiation of possible proto tone categories, it is a very convenient system for the synchronic recognition and comparison of tones in Tai languages.

In Chapter III we reviewed the patterning of tonal development in the 10 PG languages. For each language a table presenting the patterning of tones based on Gedney (1973) was presented. These tone tables are reproduced in Table 48.

Table 48 PG Language Tone Tables



For the A tone there are interesting correspondences among PG language tones. For Tai Lü, Tai Yai, White Tai, Black Tai and Red Tai, words which are from the tone boxes A1, A2, and A3 have the same tone in the modern language. For Tai Khün and Tai Yuan, A1 and A2 words and A3 and A4 words have the same tones. And in a third group of languages, Tai Mao, Tai Nüa and Tai Khamti, only A2 and A3 words share the same tone. For this third group of languages, Tai Mao, Tai Nüa and Tai Khamti, A2 and A3 words also have the same tone as B4 words. Tables 49 to 53 contain examples which show these three types of tone correspondences: **A123-4**

where A1, A2, and A3 words have the same tone which is different from A4 words, **A12-34** where A1 and A2 have the same tone which is different from the tone shared by A3 and A4 words, and **A1-23-4** where A2, A3 and B4 words have the same tone.

In Tables 49 to 53 the proto tone labels A1, A2, A3, etc. have been replaced by the numbers 1-6 representing the modern language tones as given in Table 48. This has been done for comparison purposes. The tone numbers in Table 48 were assigned as follows. The modern language tone for A1 words is labeled tone "1". If A2 words have the same tone in the modern language as A1 words then A2 word tones are also labeled as "1", but if A2 words have a different tone then A1 words then the tone on A2 words is labeled "2". The latter is the case for Tai Mao and can be seen in Table 50 where the tone on 'to die' is "2". Similarly if A3 or A4 words have the same tones as either A1 or A2 words in the modern languages then their tones are given the corresponding tone number but if they have a tone different from either A1 or A2 words then their tones are given the next appropriate number. An example of this can be seen in Table 51 where the tone of Tai Khün 'leaf' is different from the Tai Khün tone on A1 or A2 words and therefore the tone for 'leaf' is labeled as "2" instead of "1".

Table 49 A1 Tone Correspondence

	'dog'	'sweet'	'cockscomb'	'arm'	'rightside'
Tai Mao	ma 1	wa:n 1	hɔn 1	khɛn 1	kha 1
Tai Nūa	ma 1	va:n 1	hɔn 1	xɛn 1	xa 1
Tai Khamti	ma 1	wa:n 1	hɔn 1	khɛn 1	kha 1
Tai Lū	ma 1	va:n 1	hɔn 1	xɛn 1	xwa 1
Tai Yai	ma 1	wa:n 1	ŋɔn 1	khɛn 1	khwa 1
Tai Yuan	ma 1	wa:n 1	ŋɔn 1	khɛn 1	khwa 1
Tai Khūn	ma 1	wa:n 1	hɔn 1	khɛ:n 1	kwa 1
White Tai	ma 1	va:n 1	hɔn 1	khɛn 1	xwa 1
Black Tai	ma 1	va:n 1	hɔn 1	khɛn 1	khwa 1
Red Tai	ma 1	va:n 1	hɔn 1	khɛn 1	khwa 1

Table 50 A2 Tone Correspondence

	'to die'	'full'	'to eat'	'salt'	'eye'
Tai Mao	ta:y 2	tɛm 2	kin 2	kə 2	ta 2
Tai Nūa	ta:y 2	tem 2	kin 2	kə 2	ta 2
Tai Khamti	ta:y 2	tem 2	kin 2	kə 2	ta 2
Tai Lū	ta:y 1	tim 1	kin 1	kə 1	ta 1
Tai Yai	ta:y 1	tem 2	kin 1	kə 1	ta 1
Tai Yuan	ta:y 1	tem 2	kin 1	kə 1	ta 1
Tai Khūn	ta:y 1	tɛm 1	kin 1	kə 1	ta 1
White Tai	ta:y 1	tim 1	kin 1	kə 1	ta 1
Black Tai	ta:y 1	tem 1	kin 1	kɯa 1	ta 1
Red Tai	ta:y 1			kɯa 1	

Table 51 A3 Tone Correspondence

	'leaf'	'to fly'	'moon'	'gall bladder'	'earthworm'
Tai Mao	maɯ 2	men 2	lən 2	li 2	lən 2
Tai Nūa	maɯ 2	men 2	lən 2	li 2	lən 2
Tai Khamti	maɯ 2	men 2	nən 2	li 2	
Tai Lū	bay 1	bin 1	dən 1	bi 1	dən 1
Tai Yai	baɯ 1	bin 1	lən 1	li: 1	lən 1
Tai Yuan	bay 2	bin 2	dɯan 2	di 2	dɯan 2
Tai Khūn	way 2	win 2	lən 2	li 2	lən 2
White Tai	baɯ 1	bin 1	bən 1	bi 1	dən 1
Black Tai	baɯ 1	bin 1	bɯan 1	bi 1	dɯan 1
Red Tai	bə: 1	bin 1	bɯan 1	bi: 1	lɯan 1

Table 52 A4 Tone Correspondence

	'fire'	'wife'	'house'	'water buffalo'	'road, path'
Tai Mao	phay 3	me 3	hən 3	ka:y 3	ta:ŋ 3
Tai Nūa	fay 3	me 3	hən 3	ka:y 3	ta:ŋ 3
Tai Khamti	phay 3	me 3	hən 3	ka:y 3	ta:ŋ 3
Tai Lū	fay 2	me 2	hən 2	kwa:y 2	ta:ŋ 2
Tai Yai	phay 2	me 2	hən 2	kwa:y 2	taŋ 2
Tai Yuan	fay 2	mia 2	hɯan 2	khwa:y 2	ta:ŋ 2
Tai Khūn	fay 2	me 2	hən 2	kwa:y 2	ta:ŋ 2
White Tai	fay 2	me 2	hən 2	xwa:y 2	ta:ŋ 2
Black Tai	fay 2	mia 2	hɯan 2	kwa:y 2	ta:ŋ 2
Red Tai	fay 2	mia 2	hɯan 2	khwa:y 2	ta:ŋ 2

Table 53 B4 Tone Correspondence

	'mother'	'ashes'	'father'	'easy'	'elder sibling'
Tai Mao	me 2	ta:w 2	po 2	ŋa:y 2	pi 2
Tai Nūa	me 2	taw 2	po 2	ŋa:y 2	pi 2
Tai Khamti	me 2	taw 2	po 2	ŋa:y 2	pi 2
Tai Lū	mɛ 4	taw 4	pɔ 4	ŋa:y 4	pi 4
Tai Yai	mɛ 4	taw 4	pɔ 4	ŋa:y 4	pi 4
Tai Yuan	mɛ 4	taw 4	pɔ 4	ŋa:y 4	pi: 4
Tai Khūn	mɛ 3	taw 3	pɔ 3	ŋa:y 3	pi 3
White Tai	mɛ 4	taw 4	pɔ 4	ŋa:y 4	pi 4
Black Tai	mɛ 4	taw 4	pɔ 4	ŋa:y 4	pi 4
Red Tai	mɛ: 4	taw 4	pɔ: 4	ŋa:y 4	pi: 4

For the B tone all of the PG languages show the B1, B2 and B3 words as having the same tone. For Tai Khün B4 words also have the same tone as B1, B2, and B3 words. It has already been mentioned that the tone for B4 words in the same as the tone on A2, A3 words in Tai Mao, Tai Nüa and Tai Khamti. In addition, the tone on B4 words is the same as the tone on C1, C2 and C3 words in Tai Yai and Red Tai. And in Tai Khamti, the tone on B1, B2, and B3 words is the same as the tone on A1 words. The B tones are also reported to correspond with the DL tones in all of the PG languages except White Tai although as discussed in Chapter III it is also possible to posit this correspondence for White Tai.

For the C tone all of the PG languages report the same tone on C1, C2 and C3 words as having the same tone which is always different from the tone on C4 words. As mentioned above the tone on C1, C2 and C3 words is the same as the tone on B4 words in Tai Yai and Red Tai. The tone on C4 words is never the same as the tone on any other LIVE syllable tone category.

For the DL and DS tones all of the PG languages report the same tone on DL1, DL2, and DL3 words and also a single tone DS 1, DS2 and DS3 words these tones are different from the tones on DL4 and DS4 words with the exception of Tai Khün which reports the same tone on all DL words and Red Tai which is reported to have the same tone on all DS words. In addition, Tai Khamti, White Tai and Black Tai do not distinguish between DL and DS words. Tai Lü and Tai Nüa show the same tone on DL4 and DS4 words. Red Tai has the same tone on all D words except DL4.

Invariant Consonant Correspondences

A large portion of the vocabulary from the lexicons of the PG languages show invariant correspondence for initial consonants. For all ten PG languages there is invariant correspondence for the initial consonants ʔ, k, c, t, p, h, kh, th, ph, ŋ, m, l, s, w and y. Table 54, displays these invariant correspondences of initial consonants for the PG languages utilizing Li's reconstruction of Proto-SWT (SWT) initial consonants. These invariant correspondences among the PG languages are not productive for the genetic classification of languages because there has been no sound changes to differentiate the various languages but these invariant correspondences do form the basis from which variations in the correspondence of sounds in the modern languages can be compared.

Table 54 Invariant Correspondence for Initial Consonants

SWT	Mao	Nüa	Khamti	Lû	Yai	Khün	Yuan	White	Black	Red
*ph	ph	f	ph	ph	ph	ph	ph	ph	f	f
*th	th	th	th	th	th	th	th	th	th	th
*kh	kh	x	kh	x	kh	kh	kh	kh	kh†	kh
*s	s	s	s	s	s††	s	s	s	s	s
*h	h	h	h	h	h	h	h	h	h	h
*hm	m	m	m	m	m	m	m	m	m	m
*hl	l	l	l	l	l	l	l	l	l	l
*hr	h	h	h	h	h	h	h	h	h	h
*hw	w	v	w	v	w	w	w	v	v	v
*p	p	p	p	p	p	p	p	p	p	p
*t	t	t	t	t	t	t	t	t	t	t
*c	c	c	c	c	c	c	c	c	c	c
*k	k	k	k	k	k	k	k	k	k	k
*ʔ	ʔ	ʔ	ʔ	ʔ	ʔ	ʔ	ʔ	ʔ	ʔ	ʔ
*ʔy	y	y	y	y	y	y	y	y	y	y
*b	p	p	p	p	p	p	p	p	p	p
*d	t	t	t	t	t	t	t	t	t	t
*g	k	k	k	k	k	k	k	k	k	k
*z	s	s	s	s	s	s	s	s	s	s
*ɟ	c	c	c	c	c	c	c	c	c	c
*m	m	m	m	m	m	m	m	m	m	m
*ŋ	ŋ	ŋ†††	ŋ	ŋ	ŋ	ŋ	ŋ	ŋ	ŋ	ŋ
*l	l	l	l	l	l	l	l	l	l	l
*r	h	h	h	h	h	h	h	h	h	h
*w	w	v	w	v	w	w	w	v	v	v
*y	y	y	y	y	y	y	y	y	y	y

† Gedney (1964) reports [kh] whereas Fippinger (1970, 1989) reports [x] as the phonetic realization of this phoneme.

†† Poo-Israkij (1985) uses the symbol /ts/ without giving a phonetic description of the sound it represents or how it contrasts with /c/.

††† Gedney (1976) reports [ɲ] as the phonetic realization of this phoneme in Tai Nüa.

Some correspondences in the modern language can be reconstructed as a single phoneme in PT. The *ʔ is one example. In Table 55 examples of the /ʔ/ are listed. Notice that all of items in Table 55 come from the PT initial consonant class 3.

Table 55 Examples of /ʔ/ Correspondence

	'cough'	'sugar cane'	'to lean back'	'to go out'	'chest'
Tai Mao	ʔay A3	ʔɔy C3	ʔiŋ A3	ʔɔk DL3	ʔok DS3
Tai Nūa	ʔay A3	ʔɔy C3	ʔiŋ A3	ʔɔk DL3	ʔok DS3
Tai Khamti	ʔay A3	ʔɔy C3	ʔiŋ A3	ʔɔk DL3	
Tai Lū	ʔay A3	ʔɔy C3	ʔiŋ A3	ʔɔk DL3	ʔok/ʔək DS3
Tai Yai	ʔay A3	ʔɔy C3	ʔiŋ A3	ʔɔ:k DL3	ʔok DS3
Tai Yuan	ʔay A3	ʔɔ:y C3	ʔiŋ A3	ʔɔ:k DL3	ʔok DS3
Tai Khūn	ʔay A3	ʔɔ:y C3	ʔiŋ A3	ʔɔk DL3	ʔɔk DS3
White Tai	ʔay A3	ʔɔy C3		ʔɔʔ DL3	ʔək DS3
Black Tai	ʔay A3	ʔɔy C3	ʔiɲ A3	ʔɔʔ DL3	ʔək DS3
Red Tai	ʔay A3	ʔɔy C3	ʔiŋ A3	ʔɔ:k DL3	ʔək DS3

In Tables 57 and 58 some examples of the phonemes /t/ and /m/ are given. The examples of /t/ can be reconstructed as coming from *t and *d. Those items in Table 56 which have PT initial consonant class 2 tones ('south, under', liver' and 'expose to sun') are reconstructed with *t whereas those items with PT initial consonant class 4 tones ('ashes', and 'road, path') are reconstructed with *d initials. The examples for /m/ can be reconstructed as coming from *m and *hm. Those items in Table 57 which have PT initial consonant class 1 tones ('dog', 'new' and 'cooking pot') are reconstructed with *hm whereas those items with PT initial consonant class 4 tones ('mother' and 'to tie up') are reconstructed with *m initials.

Table 56 Examples of /t/ Correspondence

	'ashes'	'south, under'	'road, path'	'liver'	'expose to sun'
Tai Mao	ta:w B4	taɯ C2	ta:ŋ A4	tap DS2	ta:k DL2
Tai Nūa	taw B4	taɯ C2	ta:ŋ A4	tap DS2	ta:k DL2
Tai Khamti	taw B4	taɯ C2	ta:ŋ A4	tap DS2	ta:k DL2
Tai Lū	taw B4	tay C2	ta:ŋ A4	tap DS2	ta:k DL2
Tai Yai	taw B4	taɯ C2	taŋ A4	tap DS2	ta:k DL2
Tai Yuan	taw B4	tay C2	ta:ŋ A4	tap DS2	ta:k DL2
Tai Khūn	taw B4	tay C2	ta:ŋ A4	tap DS2	ta:k DL2
White Tai	taw B4	taɯ C2	ta:ŋ A4	tap DS2	ta:ʔ DL2
Black Tai	taw B4	taɯ C2	ta:ŋ A4	tap DS2	ta:ʔ DL2
Red Tai	taw B4	tə: C2	ta:ŋ A4	tap DS2	ta:k DL2

Table 57 Examples of /m/ Correspondence

	'dog'	'new'	'mother'	'cooking pot'	'to tie up'
Tai Mao	ma: A1	maɯ B1	me B4	mo C1	mat DS4
Tai Nūa	ma: A1	maɯ B1	me B4	mo C1	mat DS4
Tai Khamti	ma: A1	maɯ B1	me B4	mo C1	mat DS4
Tai Lū	ma: A1	may B1	mɛ B4	mɔ C1	mat DS4
Tai Yai	ma: A1	maɯ B1	mɛ B4	mɔ C1	ma:t DS4
Tai Yuan	ma: A1	maɯ B1	mɛ B4	mɔ C1	mat DS4
Tai Khūn	ma: A1	may B1	mɛ B4	mɔ C1	mat DS4
White Tai	ma: A1	maɯ B1	mɛ B4	mɔ C1	mat DS4
Black Tai	ma: A1	maɯ B1	mɛ B4	mɔ C1	mat DS4
Red Tai	ma: A1	mə: B1	mɛ: B4	mɔ: C1	mat DS4

Other Initial Consonant Correspondences

In addition to the 15 initial sound correspondences cited in the previous section, there are several sound correspondences which reflect the consistent use of different phonemes in different languages for cognate word sets. There are four of these which we would like to consider: 1) the correspondence of velar phonemes with labialized velar phonemes, 2) the correpondence of palatal phonemes with velar phonemes, 3) the correspondence between /b/, /m/ and /w/, and 4) the correspondence between aspirated stops and fricatives.

1. Labialized Velar Stop Correspondences

In Tai Mao, Tai Nüa and Tai Khamti there are no initial consonant clusters or labialized velar phonemes. Table 58 shows the correspondence of velar stops in Tai Mao, Tai Nüa and Tai Khamti with labialized velar phonemes in the other PG languages.

Table 58 /k/ and /k^w/ Correspondence

SWT	Mao	Nüa	Khamti	Lü	Yai	Khün	Yuan	White	Black	Red
*k^w	k	k	k	k^w	k^w	k^w	k^w	k^w	k^w	k^w
*kh^w	kh	x	kh	x^w	kh^w	kh^w	kh^w	kh^w	kh^w	kh^w

Table 59 gives examples of the correspondence between velar and labialized velar phonemes.

Table 59 Examples of Labialized Velar Correspondences

	'wide, broad'	'water buffalo'	'deer'	'rightside'	'axe'
Tai Mao	ka:ŋ C2	ka:y A4	ka:ŋ A2	kha A1	kha:n A1
Tai Nûa	ka:ŋ C2	ka:y A4		xa A1	xa:n A1
Tai Khamti	ka:ŋ C2	ka:y A4	ka:ŋ A2	kha A1	kha:n A1
Tai Lû	kwa:ŋ C2	kwa:y A4		xwa A1	xwa:n A1
Tai Yai	kwa:ŋ C2	kwa:y A4	kwa:ŋ A2	khwa A1	
Tai Yuan	kwa:ŋ C2	khwa:y A4	kwa:ŋ A2	khwa A1	khwa:n A1
Tai Khûn	kwa:ŋ C2	kwa:y A4	kwa:ŋ A2	kwa A1	kwa:n A1
White Tai	kwa:ŋ C2	xwa:y A4	kwa:ŋ A2	xwa A1	khwa:n A1
Black Tai	kwa:ŋ C2	kwa:y A4	kwa:ŋ A2	khwa A1	khwa:n A1
Red Tai	kwa:ŋ C2	khwa:y A4	kwa:ŋ A2	khwa A1	khwa:n A1

2. Palatal vs. Velar Phonemes

Among the PG languages there is a set of correspondences between languages which have words with initial /ch/, /s/ or /c/ and the majority of the PG languages which have /k/ or /kh/ initials. This correspondence occurs in words which Li (1977) has reconstructed as having the velar clusters *kl, *kr, *gl and *gr in SWT. For White Tai, Black Tai and Red Tai these words no longer have a velar initial. For White, Black and Red Tai *gl and *gr became /c/ and *kl and *kr became /ch/ (Subsequently all ch > s in Black and Red Tai.) Table 60 shows the correspondence of these initial phonemes.

Table 60 /kh/ and /ch/ Correspondence

SWT	Mao	Nūa	Khamti	Lū	Yai	Khūn	Yuan	White	Black	Red
*k h	k h	x	k h	x	k h	k h	k h	k h	kh†	k h
*k	k	k	k	k	k	k	k	k	k	k
*k h l	k h	x	k h	x	k h	k h	k h	c h	s	s
*k h r	k h	x	k h	x	k h	k h	k h	c h	s	s
*g l	k	k	k	k	k	k	k	c	c	
*g r	k h	x	k h	x	k h	k h	k h	c	c	c

Table 61 gives examples of the correspondence between /ch/ or /s/, and /c/ in White, Black and Red Tai with velar stops in the other PG languages.

Table 61 Examples of /ch/ and /kh/ Correspondence

	'egg'	'fever'	'side, ribs'	'to crawl	'lazy'	'mortar'
Tai Mao	khay B1		khaŋ A1	ka:n A4	kha:n C4	khok DS4
Tai Nūa	xay B1	xay C1		ka:n A4	xa:n C4	xok DS4
Khamti	khay B1		khaŋ A1	ka:n A4	kha:n C4	khok DS4
Tai Lū	xay B1	xay C1		ka:n A4	xa:n C4	xok DS4
Tai Yai	khay B1	khay C1		ka:n A4		khok DS4
Yuan	khay B1	kha C1	khaŋ A1	ka:n A4	kha:n C4	khok DS4
Tai Khūn	khay B1	khay C1	khaŋ A1	ka:n A4	kha:n C4	khok DS4
White Tai	chay B1	chay C1	chaŋ A1	ca:n A4	ca:n C4	cok DS4
Black Tai	say B1	say C1	saŋ A1	ca:n A4	ca:n C4	cok DS4
Red Tai	say B1	say C1	saŋ A1		ca:n C4	cok DS4

† Gedney (1964) reports [kh] whereas Fippinger (1970, 1989) reports [x] as the phonetic realization of this phoneme.

3. Voiced Labial Consonant Correpondence

Among PG languages there is a correspondence between initial /b/, /m/, and /w/. Words which in one PG language have an initial /b/ have an initial /m/ or an initial /w/ in the other PG languages. In our data, Tai Lü, Tai Yai and Tai Yuan consistently have /b/ initials, Tai Mao, Tai Khamti and Tai Nüa consistently have /m/ initials and Tai Khün, Black Tai and Red Tai are reported to have a free variation between [b] and [w] or [v]† for these cognates. This correspondence occurs for sounds which Li (1977) reconstructs as *ʔb. Table 62 shows these invariant correspondences.

Table 62 /b/, /m/ and /w/ Correspondence

SWT	Mao	Nüa	Khamti	Lü	Yai	Khün	Yuan	White	Black	Red
*ʔb	m	m	m	b	b	b~w	b	b	b~v	b~v

Table 63 gives examples of the correspondences between /b/, /m/ and /w/.

† Tai Khün (Petsuk 1978) [b] ~ [w], Black Tai (Gedney 1964) and Red Tai (Gedney 1964) report a variation between [b] ~ [v]. Fippingers (1970) report a variation from /v/ to /b/ for Black Tai.

Table 63 Examples of /b/, /m/ and /w/ Correspondence

	'leaf'	'single man'	'to fly'	'fishhook'	'blind'
Tai Mao	maɯ A3	ma:w B3	men A3	met DS3	mɔt DL3
Tai Nūa	maɯ A3	ma:w B3	men A3		mɔt DL3
Tai Khamti	maɯ A3	ma:w B3	men A3	met DS3	mɔt DL3
Tai Lū	bay A3	ba:w B3	bin A3		bɔt DL3
Tai Yai	baɯ A3	ba:w B3	bin A3	bet DS3	bɔt DL3
Tai Yuan	bay A3	ba:w B3	bin A3	bet DS3	bɔ:t DL3
Tai Khūn	way A3	wa:w B3	win A3	wɛt DS3	wɔ:t DL3
White Tai	baɯ A3		bin A3	bet DS3	bɔt DL3
Black Tai	baɯ A3	ba:w B3	bin A3	bet DS3	bɔt DL3
Red Tai	bə: A3		bin A3	vet DS3	bɔ:t DL3

4. Homorganic Aspirated Stop vs. Fricative

The fourth initial consonant correspondence sets which we will consider are the correspondences between aspirated stops and fricatives in the labial and velar points of articulation. This occurs in both the labial and velar points of articulation although not always in both points of articulation in a given language. White Tai and Tai Lü (Li 1964) are reported to have a contrast between /kh/ and /x/ which does not exist in the majority of the PG languages. White Tai, Tai Nüa, Tai Lü and Tai Yuan are reported to have a contrast between /ph/ and /f/ which does not exist in the other PG languages. These contrasts represent Li's SWT reconstructions: *x, *f, and *v. Table 64 shows these correspondences.

Table 64 Aspirated Stop vs. Fricative Correspondences

SWT	Mao	Nūa	Khamti	Lū	Yai	Khūn	Yuan	White	Black	Red
*kh	kh	x	kh	x	kh	kh	kh	kh	kh†	kh
*x	kh	x	kh	x††	kh	kh	kh	x	kh†	kh
*ph	ph	f	ph	ph	ph	ph	ph	ph	f	f
*v	ph	f	ph	f	ph	ph	f	f	f	f
*v	ph	f	ph	f	ph	ph	f	f	f	f

Tables 66 and 67 give examples of these invariant correspondences.

Table 65 Examples of /kh/ and /x/ Correspondence

	'knee'	'tooth'	'cross, across'	'arm'	'to go up'
Tai Mao	khaw B1	khew C1	kha:m C1	khɛn A1	khɯn C1
Tai Nūa	xaw B1	xew C1	xa:m C1	xɛn A1	xɯn C1
Tai Khamti	khaw B1	khew C1	kha:m C1	khɛn A1	khɯn C1
Tai Lū	xaw B1	xew C1	xa:m C1	xɛn A1	xɯn C1
Tai Yai	khaw B1	khew C1	kha:m C1	khɛn A1	khɯn C1
Tai Yuan	khaw B1	khiaw C1	kha:m C1	khɛn A1	khɯn C1
Tai Khūn	khaw B1	khew C1	kha:m C1	khɛ:n A1	khɯn C1
White Tai	xaw B1	xɛw C1	xa:m C1	xɛn A1	xɯn C1
Black Tai	khaw B1	khɛw C1	kha:m C1	khɛn A1	khɯn C1
Red Tai	khaw B1	khɛw C1	kha:m C1	khɛn A1	khɯn C1

† Gedney (1964) reports [kh] whereas Fippinger (1970, 1989) reports [x] as the phonetic realization of this phoneme.

†† Yu Sui Hong (1979) has this unit as /x/ but there is no contrast with /kh/ in this Tai Lü word list. Li (1964) reports a contrast between /kh/ and /x/ but Williams (1986) only has this contrast for Li's dialect of Tai Lü from Cheng Tung, Yunnan.

Table 66 Examples of /ph/ and /f/ Correspondence

	'fire'	'sky'	'straw'	'rain'	'astringent'
Tai Mao	phay A4	pha C4	phəŋ A4	phon A1	pha:t DL1
Tai Nūa	fay A4	fa C4	fəŋ A4	fon A1	
Tai Khamti	phay A4	pha C4	phəŋ B4	phon A1	pha:t DL1
Tai Lū	fay A4	fa C4	fəŋ A4	fun A1	
Tai Yai	phay A4	pha C4	phəŋ A4	phon A1	pha:t DL1
Tai Yuan	fay A4	fa C4	fɯaŋ A4	fon A1	fa:t DL1
Tai Khūn	phay A4	pha C4	phəŋ A4	phɔn A1	pha:t DL1
White Tai	fay A4	fa C4		fun A1	fa:t DL1
Black Tai	fay A4	fa C4	fɯaŋ A4	fon A1	fa:t DL1
Red Tai	fay A4	fa C4			fa:t DL1

Invariant Vowel Correspondences

In Chapter II we discussed the reconstruction of PT. We mentioned that the tones and consonant systems of the proto language are well understood and that there is general agreement among linguists on the inventory of consonant sounds in the proto language. The vowel system of PT is much more of an enigma. In reviewing the 10 PG languages in this study, there are only 5 PT vowels, Li (1977), which show invariant correspondence. Table 67 lists these regular vowel correspondences.

Table 67 Invariant Vowel Correspondence

PT	Mao	Nūa	Khamti	Lū	Yai	Khūn	Yuan	White	Black	Red
*i	i	i	i	i	i	i	i	i	i	i
*ɯ	ɯ	ɯ	ɯ	ɯ	ɯ	ɯ	ɯ	ɯ	ɯ	ɯ
*u	u	u	u	u	u	u	u	u	u	u
*a	a:	a:	a:	a:	a:	a:	a:	a:	a:	a:
*ə	a	a	a	a	a	a	a	a	a	a

A significant problem in the reconstruction of PT vowels is the correspondence between the vowels in NT languages ST languages. In the reconstruction of the SWT vowels there is also a question of when the vowel length distinctions present in some of the languages was first introduced. Sarawit considers vowel length to be contrastive for PT. Li distinguishes between long and short vowels in his inventory of SWT vowels for *i vs. *i:, *ɯ vs. *ɯ: and *u vs. *u: but the lack of contrastive vowel length† among the majority of PG languages provides evidence that vowel length is a feature which developed after the period of SWT. Even with these difficulties in the reconstruction of the PT vowels, there are a few vowel correspondences which can be productively used in the classification of PG languages.

Other Vowel Correspondences

In addition to the regular vowel correspondences considered above there are four other types of consistent vowel correspondence among the PG which we would like to consider. These are: 1) the

† With the exception of /a/ verses /a:/ which is common among PG languages.

correpondance of mid vowels /e/ and /o/ with low vowels /ɛ/ and /ɔ / in OPEN syllables, 2) the correpondance of the vowel diphthongs ia, ɯa, and ua, with e, ə and o. 3) the correspondance of high vowels with mid vowels proceeding a syllable final nasal, and 4) the correspondence of /aɯ/ with /a y/.

1. Low vs. Mid Vowel Correspondences

In OPEN syllables there is an invariant correspondence between the low vowels /ɛ/ and /ɔ/ and the mid vowels /e/ and /o/. Tai Mao, Tai Nüa, and Tai Khamti, have the vowels /e/ and /o/ in OPEN syllables for words which in the other PG languages have /ɛ/ and /ɔ /. Table 68 shows this correspondence.

Table 68 Low vs. Mid Vowels in OPEN Syllables

	Mao	Nūa	Khamti	Lū	Yai	Khūn	Yuan	White	Black	Red
*ɛ	e	e	e	ɛ	ɛ	ɛ	ɛ	ɛ	ɛ	ɛ:
*ɔ	o	o	o	ɔ	ɔ	ɔ	ɔ	ɔ	ɔ	ɔ:

Table 69 shows examples of the correspondence between /e/ and /ɛ/ and Table 70 shows example of the correspondence between /o/ and /ɔ/ in OPEN syllables.

Table 69 Examples of /e/ and /ɛ/ Correspondence

	'mother'	'old'	'win/defeat'	'soak'	'real, genuine'
Tai Mao	me B4		pe C4	ce B4	te C4
Tai Nūa	me B4	ke B2	pe C4		te C4
Tai Khamti	me B4	ke B2		ce B4	te C4
Tai Lū	mɛ B4	kɛ B2	pɛ C4		tɛ C4
Tai Yai	mɛ B4	kɛ B2	pɛ C4	cɛ B4	tɛ C4
Tai Yuan	mɛ B4	kɛ B2	pɛ C4		tɛ C4
Tai Khūn	mɛ B4	kɛ B2	pɛ C4	cɛ B4	tɛ C4
White Tai	mɛ B4	kɛ B2			
Black Tai	mɛ B4	kɛ B2	pɛ C4	cɛ B4	tɛ C4
Red Tai	mɛ: B4	kɛ: B2			

Table 70 Examples of /o/ and /ɔ / Correspondence

	'father'	'doctor'	'neck'	'cast metal'	'cooking pot'
Tai Mao	po B4	mo A1		lo B1	mo C1
Tai Nūa	po B4	mo A1	xo A4		mo C1
Tai Khamti	po B4		kho A4	lo B1	mo C1
Tai Lū	pɔ B4	mɔ A1	xɔ A4		mɔ C1
Tai Yai	pɔ B4	mɔ A1	khɔ A4	lɔ B1	mɔ C1
Tai Yuan	pɔ B4	mɔ A1		lɔ B1	mɔ C1
Tai Khūn	pɔ B4	mɔ A1	khɔ A4	lɔ B1	mɔ C1
White Tai	pɔ B4		xɔ A4	lɔ B1	mɔ C1
Black Tai	pɔ B4	mɔ A1	khɔ A4	lɔ B1	mɔ C1
Red Tai	pɔ: B4		khɔ: A4	lɔ: B1	mɔ: C1

2. Diphthong Correspondences

Tai Yuan and Black Tai have vowel diphthongs of the form /ia/, /ɯa/ and /ua/. These diphthongs correspondwith the monophthongs /e/, /ə/ and /o/ in the other PG languages. Table 71 shows these correspondences.

Table 71 Correspondence for Diphthongs /ia/, /ɯa/ and /ua/

	Mao	Nūa	Khamti	Lū	Yai	Khūn	Yuan	White	Black	Red
*ia	e	e	e	e	e	e	ia	e	ia	e
*ɯa	ə	ə	ə	ə	ə	ə	ɯa	ə	ɯa	ə
*ua	o	o	o	o	o	o	ua	o	ua	o

Tables 72 to 74 show examples of these correspondences with Black Tai and Tai Yuan diphthongs.

Table 72 Examples of /ia/ and /e/ Correspondence

	'wife'	'to lick'	'sticky'	'sound'	'a small frog'
Tai Mao	me A4	le A4	lew A1	seŋ A1	khet DL1
Tai Nūa	me A4	le A4		seŋ A1	xet DL1
Tai Khamti	me A4	le A4	new A1	seŋ A1	khet DL1
Tai Lū	me A4	le A4		seŋ A1	xet DL1
Tai Yai	me A4	le A4	new A1	seŋ A1	khet DL1
Tai Yuan	mia A4	lia A4	niaw A1	siaŋ A1	khiat DL1
Tai Khūn	me A4	le A4	new A1	seŋ A1	khet DL1
White Tai	me A4			seŋ A1	khet DL1
Black Tai	mia A4	lia A4	niaw A1	siaŋ A1	khiat DL1
Red Tai	mia A4			siaŋ A1	khiat DL1

Table 73 Examples of /ɯa/ and /ə/ Correspondence

	'house'	'moon'	'yellow'	'earthworm'	'blood'
Tai Mao	hən A4	lən A3	ləŋ A1	lən A3	lət DL4
Tai Nūa	hən A4	lən A3	ləŋ A1	lən A3	lət DL4
Tai Khamti	hən A4	nən A3	ləŋ A1		nət DL4
Tai Lū	hən A4	dən A3	ləŋ A1	dən A3	lət DL4
Tai Yai	hən A4	lən A3	ləŋ A1	lən A3	lət DL4
Tai Yuan	hɯan A4	dɯan A3	lɯaŋ A1	dɯan A3	lɯat DL4
Tai Khūn	hən A4	lən A3	ləŋ A1	lən A3	lət DL4
White Tai	hən A4	bən A3	ləŋ A1	dən A3	lət DL4
Black Tai	hɯan A4	bɯan A3	lɯaŋ A1	dɯan A3	lɯat DL4
Red Tai	hɯan A4	bɯan A3	lɯaŋ A1	lɯan A3	lɯat DL4

Table 74 Examples of /ua/ and /o/ Correspondence

	'head'	'leak'	'banana'	'beard'	'deaf'
Tai Mao	ho A1	ho B4	kɔy C2	lot DL1	lok DL1
Tai Nūa	ho A1	ho B4	koy C2	lot DL1	lok DL1
Tai Khamti	ho A1	ho B4	koy C2	not DL1	nok DL1
Tai Lū	ho A1	ho B4	koy C2	not DL1	nok DL1
Tai Yai	ho A1		koy C2	not DL1	nok DL1
Tai Yuan	hua A1	hua B4	kuay C2	nuat DL1	nuak DL1
Tai Khūn	ho A1	ho B4	koy C2	not DL1	nok DL1
White Tai	ho A1		koy C2	not DL1	no? DL1
Black Tai	hua A1	hua B4	kuay C2	nuat DL1	nua? DL1
Red Tai	hua A1		kuay C2	nuat DL1	nuak DL1

3. Nasal Umlaut Correspondence

In Tai Lü and White Tai the PT mid vowels in syllables which end with a nasal have been raised to high vowels. In syllables with a final nasal /i/ and /u/ correspond with /e/ and /o/ in the other PG languages. Table 75 shows this correspondence.

Table 75 Nasal Umlaut Correspondence

	Mao	Nūa	Khamti	Lū	Yai	Khūn	Yuan	White	Black	Red
*e / C_N	e	e	e	i	e	ɛ†	e	i	e	e
*o / C_N	o	o	o	u	o	ɔ†	o	u	o	o

Tables 77 and 78 gives example of the nasal umlaut correspondence.

Table 76 Examples of Nasal Umlaut Correspondence for *o

	'person'	'rain'	'heel'	'send'	'boil'
Tai Mao	kon A4	phon A1	son C1	soŋ B1	tom C2
Tai Nūa	kon A4	fon A1	son C1	soŋ B1	tom C2
Tai Khamti	kon A4	phon A1	son C1	soŋ B1	tom C2
Tai Lū	kun A4	fun A1		suŋ B1	tum C2
Tai Yai	kon A4	phon A1	son C1	soŋ B1	
Tai Yuan	khon A4	fon A1	son C1	soŋ B1	tom C2
Tai Khūn	khɔn A4	phɔn A1	sɔn C1	sɔŋ B1	tɔm C2
White Tai	kun A4	fun A1	sun C1	suŋ B1	tum C2
Black Tai	kon A4	fon A1	son C1	soŋ B1	tom C2
Red Tai	kon A4		son C1		tom C2

† In Tai Khūn *e > ɛ * o > ɔ as part of the process of the development of length contrast in the low vowels possibly motivated by a monophthongization of the vowel diphthongs where: 1) *ia > e and *ua > o, 2) *e > ɛ and *o > ɔ and 3) *ɛ > ɛ: and *ɔ > ɔ: .

Table 77 Examples of Nasal Umlaut Correspondence for *e

	'full'	'needle'	'to be'	'porcupine'	'civat cat'
Tai Mao	tem A2	sem A1	pen A2	men C1	hen A1
Tai Nūa	tim A2	xem A1	pen A2	men C1	hen A1
Tai Khamti	tem A2	khem A1	pen A2	men C1	hen A1
Tai Lū	tem A2	xim A1	pin A2	min C1	
Tai Yai	tem A2	khem A1	pen A2	men C1	hen A1
Tai Yuan	tem A2	khem A1	pen A2	men C1	hen A1
Tai Khūn	tɛm A2	khɛm A1	pɛn A2	mɛn C1	hɛn A1
White Tai	tim A2	xim A1	pin A2		hen A1
Black Tai	tem A2	khem A1	pen A2	men C1	hen A1
Red Tai		khem A1	pen A2		hen A1

4. Mai-Muan Correspondence

A correspondence set exists for words which are written with a mai-muan, ๆ, in Standard Thai. In Tai Mao, Tai Nüa, Tai Khamti, Tai Yai, White Tai and Black Tai these PT cognates have the vowel /aɯ/ while in other PG languages these words have a syllable final /-ay/ or the vowel /ə/. Table 78 shows this correspondence.

Table 78 Correspondence between /aɯ/ and /ay/ or /ə/

	Mao	Nūa	Khamti	Lū	Yai	Khūn	Yuan	White	Black	Red
*aɯ	aɯ	aɯ	aɯ	ay	aɯ	ay	ay	aɯ	aɯ	ə

Table 79 gives examples of the mai-muan correspondence. The verb 'to give' is also included in Table 79. It is the only example noted of the vowel /ɯ/ corresponding with /aɯ/.

Table 79 Examples of the /aɯ/ Correspondence

	'new'	'in, inside'	'leaf'	'big'	'to give'
Tai Mao	maɯ B1	laɯ A4	maɯ A3	yaɯ B1	haɯ C1
Tai Nūa	maɯ B1	laɯ A4	maɯ A3	yaɯ B1	haɯ C1
Tai Khamti	maɯ B1	naɯ A4	maɯ A3	yaɯ B1	haɯ C1
Tai Lū	may B1	nay A4	bay A3	yay B1	hɯ C1
Tai Yai	maɯ B1	naɯ A4	baɯ A3	yaɯ B1	hɯ C1
Tai Yuan	may B1	nay A4	bay A3	ɲay B1	hɯ C1
Tai Khūn	may B1	nay A4	way A3	yay B1	hɯ C1
White Tai	maɯ B1	naɯ A4	baɯ A3	ɲaɯ B1	haɯ C1
Black Tai	maɯ B1	naɯ A4	baɯ A3	ɲaɯ B1	haɯ C1
Red Tai	mə: B1	nə: A4	bə: A3	yə: B1	hə: C1

Second, we will consider those sound correpondences which seem to reflect contact relationships or independent changes.

Sound Correspondences - Definitive

1. Sound Correspondences for Proto-NK

Five sound correspondences are found which distinguish NK from the other PG languages, and these may be taken as the criteria which define a Proto-NK. They are: 1) labialized velar stops become velar stops, 2) a tripartite split in the A tone, 3) a coalescence of the A23 and B4 tone boxes, 4) the low vowels /ɛ/ and /ɔ/ become mid vowels /e/ and /o/ in OPEN syllables and 5) *ʔb becomes /m/ in the modern languages.

1.1 Labialized Velar Stops

One unique characteristic of NK is that the SWT labialized velar phonemes become velar stops. The well established SWT initial clusters *kw, *khw, *xw which appear consistently throughout SWT languages as /khw-/ and /kw-/ are reduced to velar stops in NK. SWT words such as 'right-side' *khwa: and 'wide' *kwa:ŋ which are realized as /khwa:/ and /kwa:ŋ/ in all other PG languages are /kha:/ and /ka:ŋ/ respectively in NK. (Further examples are given in Table 59).

The fact that this reduction of labialized velar initials occurs

consistently and only in these three PG languages† provides strong initial evidence for a hypothesis that NK are genetically related as a separate division of PG languages.

1.2 Tripartite A Tone Split

Scholars working in comparative Tai linguistics have utilized differences in tone split patterns in the determination of genetic relationships among Tai languages. This determination is based on the theory that tonal development in Tai languages developed from a loss of distinction between initial consonants.

As discussed in Chapter IV, NK have the same tripartite split in the A tone. Words whose initial consonant belongs to the PT class 2 initial consonants: voiceless unaspirated stops and class 3: glottal sounds, have the same tone and this tone is distinct from the tone of those words whose initial consonant belongs to the PT initial consonant class 1: voiceless friction sounds or class 4: voiced sounds. No other language in this study†† has a tripartite split in the A tone. It is a tone split unique to these three languages and provides strong support for the grouping of these three languages as a separate division of PG languages.

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† Ahom also has velar stops in PT labialized velar cognates such as:

kha:ŋ	'width'	kha:n	'axe'
kha:m	'word, language'	kheɲ	'to hang'
kham	'to be upside down'		

Barua (1964). This loss of labialized-velar clusters can be used to argue for a connection between NK and Ahom possibly a pre-Proto-NK as Proto AHOM-NK. See Chapter VI for further discussion.

†† Theraphan L-Thongkum (personal communication) reports that the A1-23-4 tone split also occurs in the Tai Long dialect of Lashio, Myanmar, and in a SWT dialect spoken in Maguan, Yunnan. An A23 and B4 tone box coalescence is not reported for these dialects but rather the coalescence of B4 and C123. It is yet to be determined if these languages belong to a NK grouping.

1.3 Coalescence of A23 and B4

In addition to the unique tone split for the A tone in NK, namely A1-23-4, there was a subsequent or perhaps simultaneous coalescence of the A2 and A3 tone boxes with the B4 tone box. In all three of these languages words from the tone boxes A2, A3 and B4 have the same tone. No other PG language has been reported to coalesce the A2, A3 and B4 tone boxes. The fact that the coalescence of these tone boxes is unique to NK provides additional support for the hypothesis that these three languages are closely related.

Further tonal evidence for a NK grouping may exist among DEAD syllable tones. In each of the NK languages the tone distinction between the DS and DL tone categories is not clear. For Tai Khamti there is no tone distinction between DS and DL words. For Tai Nüa dialects there is frequently no distinction between the DS4 and DL4 tone categories. Also for Tai Nüa, Gedney (1976) reports that his two informants had the exact opposite tones from each other on DS123 and DL123 words. For Tai Nüa, Yu Tsui Nung (1979) reports that some DS words have typical DL tones. In Tai Mao, there are also examples of this phenomena as well as DL words with DS tones such as /tap 4/: 'liver'. Although variation of words between DS and DL tone boxes in not unusual in Tai languages, further investigation may yet provide an explanation for the apparent confusion in these tone categories among the NK dialects.

1.4 Mid vs. Low Vowels in OPEN Syllables

In Chapter IV we saw a selection of vocabulary items where NK had the vowel /e/ or /o/ but the other PG languages had /ɛ/ or /ɔ/. (See Tables 69 and 70.) This correspondence occurs consistently in OPEN

syllables for words which Li (1977) reconstructs as having a PT *ɛ and *ɔ. Examples include such well established PT cognates as 'mother' /me/ versus /mɛ/, 'old' /kɛ/ versus /ke/, 'doctor' /mɔ/ versus /mo/, and 'father' /pɔ/ versus /po/. Although the number of examples of this particular change is fairly small, its consistency across NK dialects as well as the fact that this vowel shift is limited to NK leads us to posit this sound correspondence as a defining criteria for Proto-NK.

1.5 *ʔb becomes /m/

The evolution of the PT *ʔb > /m/ is unique to NK. Among the PG languages words with *ʔb initials are realized as /b/, /w/ or /m/. (See Table 63.) Some PG languages have a phonemic voiced vs. voiceless distinction for initial stops. In Tai Lü, Tai Yai, Tai Yuan, and White Tai words which are proposed as having *ʔb in the proto language have /b/ in the modern languages. Tai Khün, Black Tai and Red Tai are reported to exhibit a free variation between [w] or [v] and [b] in *ʔb words.† Only in NK are words with an initial *ʔb realized consistently and without free variation with the phoneme /m/. For example, 'to fly' and 'leaf' which are /bin/ and /bay/ or /baɯ/ or /win/ and /way/ in all of the other PG languages are /min/ and /maɯ/ in NK. The evolution of *ʔb > /m/ occurs consistently in the NK languages and in none of the other primary sources of PG language data used in this study. Although before we come to a final

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† "Black Tai shows fluctuation between d and l, and between b and v, and the degree of fluctuation varies from place to place. ... It would appear that a sound change ... has been taking place, perhaps fairly recently ..." (Gedney 1964: 427). Fippingers report the same phenomena but claim that it is a shift from v to b. Regardless of the resultant phonetic realization, there apparently is a merging of the phonemes /b/ and /v/ in Black and Red Tai.

conclusion on *ʔb > /m/, there are several other sources of data which need to be considered.

In several sources of data for "Shan"†, there are examples of *ʔb > /m/. Li (1960) provides one example of *ʔb in "Shan"; 'blind'; mɔt D1. In the cited article Li does not give a reference dialect for this form although from Li (1943: 178) it appears that he is speaking of the Laihka and Müng Nai dialects. These cities are centrally located within the Shan States of Myanmar. Unfortunately 'blind' is the only PT cognate for *ʔb which Li cites. More detailed information is provided by Egerod and Cushing.

Egerod (1961) reports a free variation between [w ~ m] in the words 'village': /waan.m ~ maan.m/, 'to fly': /win.r ~ min.r/, 'leaf': /way.r ~ may.r/, 'mute': /way.m ~ may.m/, and 'twist': /wid.h ~ mid.h/. Egerod's informants come from cities in the northern portion of the Shan States. The cities are as far or further north than Mandalay. Tai Mao is spoken in the northern part of the Shan States but no dialect study has been done to determine how far south Tai Mao is spoken. Even if the dialect boundaries between Tai Mao and "Shan" were known, Egerod casts further doubt on the dialect integrity of his data by stating that Shan is spoken in Burma, Yunnan and Thailand. Egerod's failure to make dialect distinctions may be a result of an ethnic rather than linguistic identity made by his informants. My own informants when speaking with Central Thai speakers or when speaking in a geo-political context will refer to themselves as Tai Yai rather than Tai Mao. Considering this, it seems that if Egerod's informants

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† The word "Shan" has been used widely by outsiders to refer to various and sometimes different ethnic, linguistic, cultural or geopolitical groups of people frequently although not always associated with the Shan States in Myanmar.

were speaking Tai Mao or even Tai Nüa he may not have distinguished their language from "Shan" and therefore the variation between [m] and [w] which he is reporting could actually be a inter-language or dialect variation rather than a free variation as defined by Pike (1947).

Similar to Egerod, Cushing appears to lump Tai languages and dialects together. Cushing (1881) in the introduction of his "Shan" dictionary writes that: "Dialect differences exist in several localities, but they are of no great importance. The most noticeable dialects are the Kheun ... and the Leu ..." (Cushing 1881: 6). It appears that Cushing is not making much of the distinctions between Tai Yai, Tai Mao, Tai Khün, Tai Lü and Tai Nüa. Because Cushing viewed dialect differences as unimportant for "Shan" it seems that his data is likely to contain an admixture of data and/or phonological characteristics from various Shan languages. Keeping that in mind, Cushing's statement that:

> Even in the region where the purest Shan is spoken, different forms exist for the same word. Thus <m> and <w> are interchanged as <meen> *meen*, and <ween> *ween*, 1c, to fly (Cushing 1881: 7).

could be taken to refer to variations between "Shan" languages or dialects rather than as a free variation within a particular dialect of "Shan".

Finally, even if we accept that "Shan" has a free variation between /m/ and /w/ in *ʔb words, this does not contradict our hypothesis that only in NK does PT *ʔb become exclusively /m/. That is *ʔb becomes /m/ without a free variation with /w/ or /b/. There is no report of a free variation between /m/ and /w/ in PT *ʔb words for NK dialects.

In addition to the problem with "Shan" data discussed above, there are two reported dialects of Tai Nüa which show *ʔb > w. Gedney's (1976) Tai Nüa from Mung Vo and Harris' (1975) Tai Nüa from Van Poong Tong have *ʔb > w instead of *ʔb > m. The villages where the speakers of these two dialects are from seem to be located at the eastern edge of the NK area. The region nearest the Tai Khün where Petsuk (1978) reports the variation between [b] and [w] in *ʔb words. It seems possible to posit that the *ʔb > /m/ change in Proto-NK occurred later than other Proto-NK changes and that the dialects at the eastern edge of the NK group were separated from the other NK dialects at the time of that change. In support of the hypothesis it can be pointed out that there is no reported variation in the *ʔb > m change in the data for all of the other NK dialects west of Mung Vo and Van Poong Tong.

Although further research on the Tai Yai in Myanmar regarding *ʔb cognates needs to be carried out, at this point and with the available data it is possible to claim that *ʔb > /m/ occurred as a relatively late change in the phonology of Proto-NK and that at that point in time the dialects in the eastern portion of the NK area had already separated from the main group of NK dialects. As stated, this sound change provides further support for our hypothesis that NK are closely related. Figure 8 diagrams these features of Proto-NK.