

A COMPARATIVE SKETCH OF WHITE, BLACK AND RED TAI

These notes are offered with affection and respect to Chao Khun Anuman in the hope that they will be of interest to him and to his friends and pupils. They deal with three languages of the Thai or Tai family spoken outside Thailand, in sections of North Vietnam and Laos. Since this area is not now accessible, the research has been conducted among refugees in South Vietnam and in Vientiane, during the course of a year of field work on Tai languages supported by the American Council of Learned Societies, the Horace H. Rackham School of Graduate Studies of the University of Michigan, and the Center for Southern Asian Studies of the University of Michigan.

What will be attempted here is a comparison of the sound systems of these three languages with each other and with Siamese. (To avoid confusion, the standard Thai language of Bangkok will be called Siamese, and the family as a whole will be referred to as Tai.) In making this comparison, certain basic principles and assumptions underlie our work.

It is assumed in comparative linguistics that when we speak of a family of related languages what we mean is that these languages are the divergent continuations ("descendants" or "daughters," if one likes the figure of speech) of a single former (or "parent") language. The system of sounds of any language is constantly changing, and changes in the sound system of a language are regular in the sense that they affect all words containing the sound or combination of sounds that undergoes change. Now when two or more languages that are related in the way just described undergo different changes in the course of time, the result is that sets of words that had the same sound in the original parent language will come to have different sounds in different related languages, but because the sound changes are regular, all the members of a set of words that originally had the same sound will in one language have one sound and in the other related language another sound, so that when we discover regular sound correspondences in related languages we may infer that we are on the track of a single sound or sound combination in the parent language.

If we have data from enough related languages, and if we work hard enough, we may be able to reconstruct the sound pattern of the parent language even though it is no longer available for direct study. In the case of the Tai family of languages much progress has been made toward this goal by scholars in Europe, America, and the Far East. In this sketch of White Tai, Black Tai, and Red Tai, however, we would be foolish to attempt very much in the way of reconstruction of the parent language of the Tai family, because these three languages are very closely related to each other, and not very distantly related to Siamese; those who work on the reconstruction of the parent language (Proto Tai, as it is called) utilize data from a much broader area, including Shan and Ahom to the west, Nung and Tho to the east, and the various Tai languages spoken in China.

If we find two words in related languages that have similar meanings and can be shown, through the kind of study of regular sound correspondences just described, to go back to one and the same word in the parent language, then we have what are called "cognates." The main purpose of the present study is to work out the sound correspondences among the languages so that we will be on firm ground in identifying cognates. That is when the fun begins; once we have proved that two words are true cognates, we can explore the differences in meaning and use in the different languages.

Another basic principle is that linguistic study must deal primarily with speech. For White Tai and Black Tai there are old writing systems, and of course also for Siamese, but this is regarded as irrelevant. Sound systems and sound changes are just as systematic and orderly in languages for which there are no writing systems as in languages with a long literary tradition. We will find sound changes in Red Tai (for which there is no writing system in the dialect here studied) that are just as systematic as any in the other languages, and Red Tai has preserved without error some distinctions of the parent language which Siamese, in spite of its writing system, has lost.

White Tai is spoken in North Vietnam in the town called Lai Chao in Vietnamese and məŋ⁴ lay⁵ in White Tai, as well as at the town called məŋ⁴ tɛ⁴ farther north. The people call themselves and their language tay⁴ dən². The word dən² is the usual word for 'white' in White Tai. Two excellent studies of this language have been published. The dictionary by Georges Minot, *Dictionnaire tay blanc-français avec transcription latine*, BEFEO 40 (1940), pp. 1-237, uses a rational transcription from which it is possible to make out the exact phonetic shape of each word, and is also excellent in its scope and its accuracy. The more I use this book, the more reliable I find it. A fine study on modern principles of the sound system of White Tai has been made by Miss Jean Donaldson of the Summer Institute of Linguistics, *White Tai Phonology*, Hartford Studies in Linguistics 5, Hartford, Conn., 1963, 50 pages. Minot also has a two-volume work on White Tai, mostly pedagogical and devoted to modern terms. There is also a *Cours de langue 'tai* by Edmond Chabant and Diew-Cingx Gnimz (no place, no date), 187 pages; this turns out to be a selection from Minot's dictionary of 1940, with a handful of additions, retranscribed in the complicated system of romanization devised by François Martini and described by him in "Romanisation des parlers 'tay du Nord Viêt-nam," BEFEO 46 (1954) pp. 555-572. I am greatly indebted to Miss Donaldson for making arrangements for my wife and myself to spend some three weeks during July, 1964, in the White Tai settlement at Tung Nghia, near Dalat in South Vietnam, and for giving me a great deal of instruction and assistance in White Tai. All of the White Tai words quoted in this paper, however, are from my own field notes. Many of them are from the speech of the Lai Chao people of the household and neighborhood where we lived. Most of them, however, are from the speech of Dao van Thuong (thəŋ⁶ in White Tai), who assisted me as interpreter in working on other more remote Tai languages spoken by other refugee groups in Tung Nghia, using White Tai in speaking to me and Vietnamese in speaking to the others. He is from məŋ⁴ tɛ⁴, but has lived

since he was a small boy among the Lai Chao people at Tung Nghia, to many of whom he is related. There are said to be differences between the dialects of mən⁴ lay⁵ and mən⁴ tɛ⁴, but I have not been able to pin them down; for example, it is said that the small frog called khet² at mən⁴ lay⁵ is called khwet² at mən⁴ tɛ⁴, but I have heard the pronunciation khwet² used by a woman from mən⁴ lay⁵. Minot's dictionary was written at mən⁴ tɛ⁴, but seems to be an accurate lexicon of the speech of mən⁴ lay⁵ as well.

It should be noted that there are other forms of Tai to the east and northeast that are also sometimes called White Tai. It is some of these that are described in François M. Savina, *Dictionnaire tày-annamite-français* (Hanoi, 1910), 488 pages. These other dialects have the same tone system as the White Tai which we are describing, but differ greatly in initial consonants.

The chief center of the Black Tai people is Son La in North Vietnam, to the south of the White Tai area. This town is called m+ən⁴ laa⁵ in Black Tai, and the people and language are called tay⁴ dam¹ or tay⁴ lam¹. Some of my Black Tai material was collected at Tung Nghia, South Vietnam, in visits with a Black Tai family from m+ən⁴ pian⁴, which is 44 kilometres from Son La in the direction of Lai Chao, that is, to the northwest. Much more of the data come from my Black Tai teacher in Vientiane, Bac cam So (bak⁵ kam⁴ sɔ¹ in Black Tai), who in the course of 16 hours of intensive work was able to give me several thousand words and phrases, all clearly explained. He is from a place called baan³ cian⁴ di¹, 35 kilometres northwest of Son La, and slightly to the east of Tuin Giao. These two dialects, as we shall see below, differ slightly in the pronunciation of one tone, but more particularly in their treatment of the consonants d and l and of b and v.

Black Tai was described long ago by Édouard Diguët, *Étude de la langue tai* (Hanoi, 1895), 88 and 192 pages. He used an impressionistic method of transcribing Black Tai sounds in French spelling. The result is quite baffling, but reexamination of his book after having heard the language spoken shows that his spelling of the vowels and consonants is consistent, and therefore decipherable. For the tones he is quite hopeless; words that occur more than once in the book seldom have the same tone mark, and careful study shows that he failed completely to discern the fifth tone. The dialect appears to be that of Son La (called m+ən⁴ laa⁵ in Black Tai); it seems to differ from the two dialects which I have studied only in the treatment of the consonants d and l and of b and v. More on this subject later.

Red Tai is shown on linguistic maps of Southeast Asia as being spoken in various places in North Vietnam, but the dialect which I have studied is from just inside the Lao border, in the province of Sam Nuea, at a place called in Red Tai baan³ naa⁴ ɲon¹, located north of the town of Sam Nuea 80 kilometres by road, or 50 kilometres by foot, in the direction of Son La. The Red Tai term for the language and people is tay⁴ lɛɛɲ¹. My data on Red Tai are much less extensive than for the other two languages, and as regards vowel length, as we shall see later, it may be that my transcription will have to be revised. I have included Red Tai here even though I have worked on it only a few hours, because it has interesting points of similarity to and differences from White Tai and Black Tai.

The names White Tai, Black Tai and Red Tai are labels which have only limited linguistic usefulness; as in many other parts of the Tai speaking area, the names by which speakers of particular dialects are known are not so important as the analysis of the dialect's sound system and identification of it geographically. One hears various theories as to why these names White, Black, and Red are used. In the case of White Tai the usual explanation is that the women wear white blouses. It is true that they do, and their white blouses distinguish them so vividly from other neighboring people that the explanation would seem to be the right one. As regards the Black Tai, some say that they are so called because the women wear black blouses. Again, this is true, but there is also an explanation sometimes heard that they are called Black Tai because they come from along the Black River (Rivière Noire). The Red Tai explain that they are so called because they came "centuries" ago from a place called m+an⁴ lɛŋ¹ ('Red Town') in Vietnam. Others deny this, and claim that the Red Tai came from along the Red River, but there is strong evidence in favor of the 'Red Town' theory in J. B. Degeorge, "Proverbes, maximes et sentences tays," *Anthropos* 22 (1927), pp. 911-32, and 23 (1928), pp. 596-616, who collected his material at Yên Khuong (Muong Deng). The dialect represented in his material turns out to be very close to the dialect represented in my data. It is accurately recorded for the most part, but for many words there is an occasional inconsistency in the marking of the tones, and this inconsistency is just serious enough that one cannot make out for sure whether or not this dialect has a tonal distinction not found in any of the other dialects described here.

Whether White Tai, Black Tai, and Red Tai ought to be called three different languages or three dialects of one language is debatable. Each differs from the others in definite, identifiable ways; on the other hand, they are certainly mutually intelligible, and much closer to each other than say, some dialects of what is called "English" or "German." Although we will speak of them as three languages, because the three language names exist, it might be wiser to call them three dialects. This problem arises throughout the Tai speaking area, from Burma to North Vietnam, because transition is for the most part gradual.

In all that follows, the abbreviations W, B, and R will be used for White Tai, Black Tai, and Red Tai respectively, and S for Siamese. Proto Tai, the assumed prehistoric parent language of the family, will be abbreviated PT. As regards phonetic symbols, they will be explained as they come up, where possible in terms of Siamese sounds; for the most part, symbols are used in accordance with general practice.

The languages under consideration, like all other languages of the Tai family, have their sounds arranged in syllables. Each syllable has an initial consonant or consonant cluster, and a vowel or diphthong as its nucleus; there may or may not also be a final consonant. Each syllable also has a tone. Our comparison will consider the sounds in each of these syllable positions in turn. It should be noted that the aim is only to distinguish the various sounds in each position in the syllable. This is sufficient for our purposes. Further study of any one of the languages would lead to a more refined analysis, since in connected speech there are modifications and additional linguistic features. Nor is the transcription used here to be regarded as useful as a practical orthography. It serves merely to identify the distinctive vowels, consonants, and tones of the syllables as pronounced in isolation.

TONES

We take up first the free or "live" syllables (kham¹ pen¹ in Siamese grammar), that is, those ending in a vowel, a nasal, or a semivowel, because syllables of this type in any Tai language turn out to have a larger number of tonal distinctions than do checked or "dead" syllables (kham¹ taay¹).

Siamese has five tones on free syllables:

1. level, slightly lower than mid: taa¹ 'eye,' mii¹ 'to have'.
2. low level: kay² 'chicken,' sii² 'four'.
3. falling: haa³ 'five,' naŋ³ 'to sit.'
4. high level, or with a slight rise and fall: maa⁴ 'horse,' chaan⁴ 'elephant'.
5. rising: khaa⁵ 'leg,' s+a⁵ 'tiger.'

Tones 3 and 4 are glottalized; that is, there is laryngeal constriction through the vowel, producing a rasping or creaky effect, with final glottal closure before pause.

Checked syllables, that is those having a final p t k or glottal stop (transcribed ʔ), have fewer possible tonal distinctions in Tai languages than do free syllables, and my reference is always to establish the number of tones occurring on free syllables first, and then arbitrarily identify each of the tones occurring on checked syllables with that tone of free syllables to which it is most similar. This is what is usually done in numbering the tones of checked syllables in Siamese, as follows:

2. low level: tat² 'to cut', kop² 'frog', dɔk² 'flower', khuut² 'to scrape'.
3. falling, on syllables having a long vowel or a diphthong: l+at³ 'blood', naɔp³ 'to like'.
4. high, on syllables having a short vowel: phak⁴ 'to rest', mot⁴ 'ant'.

Siamese has a few words with short vowel and third tone, for example khlak³ 'crowded,' and a few words with long vowel or a diphthong and fourth tone, for example kaat⁴ 'gas.' Words of these types are found to have no cognates in other Tai languages, so that we may assume that they have arisen within Siamese, through borrowing from another language, or through imitation of natural sound, or as distortions of other Siamese words.

White Tai has six tones for which we use Minot's numerical order:

1. level, slightly lower than mid (so that it sounds very much like the first tone of Siamese): maa¹ 'dog,' ho¹ 'head'.
2. high rising: paa² 'forest', dɔn² 'white'.
3. low rising and glottalized: haa³ 'five', kuŋ³ 'shrimp'.
4. level, somewhat higher than mid, and glottalized: maa⁴ 'to come,' haw⁴ 'we'.
5. level with a slight rise and fall, all at a pitch somewhat higher than mid: naŋ⁵ 'to sit', hay⁵ 'dry field'.
6. falling, glottalized: maa⁶ 'horse', caaŋ⁶ 'elephant'.

On checked syllables White Tai has the following:

2. high rising: bɔ² 'flower', sip² 'ten.' A final glottal stop is lost in close transition with a following syllable, so that maa² 'fruit' becomes maa² before names of specific fruits.

4. level, somewhat higher than mid: mot⁴ 'ant,' lət⁴ 'blood'. With a long vowel (only long aa is possible), the pitch falls slightly: kaap⁴ 'to hold in the jaws.'

Black Tai, like White Tai, has six tones:

1. level, slightly lower than mid (similar to the 1st tone of White Tai): maa¹ 'dog,' hua¹ 'head.'
2. high rising (similar to the second tone of White Tai): kay² 'chicken,' faa² 'to split.'
3. low falling in the dialect of baan³ cian⁴ di¹, but low falling and then rising in the dialect of m+an⁴ pian⁴; glottalized in both dialects: s+a³ 'shirt,' haa³ 'five.' In the m+an⁴ pian⁴ dialect this tone sometimes sounds like low falling and sometimes like low rising. The explanation seems to be that in slow speech the tone is low falling and then rising, but in more rapid speech sometimes the fall is more prominent and sometimes the rise.
4. high level: naa⁴ 'rice field,' qua⁴ 'ox.'
5. level, somewhat higher than mid: nan⁵ 'to sit,' pi⁵ 'older sibling.'
6. falling and glottalized: hu⁶ 'to know,' lin⁶ 'tongue.'

Tones 1, 4, and 5 are all level, and differ only in pitch: pi¹ 'year', pi⁴ 'fat', pi⁵ 'older sibling.'

Diguet's work on Black Tai describes the tones as follows (pp. 31-32 of the first part):

1. rising (our tone 2).
2. middle (our tone 1).
3. high falling (our tone 4, but different phonetically).
4. mid falling (our tone 6).
5. low "guttural," described as sometimes low rising (our tone 3); what we term glottalization is described by Diguet as a small interval of silence midway through the syllable.

Diguet does not have any tone corresponding to our fifth. A study of 5th tone words occurring in the vocabulary shows that he sometimes marks them with his second tone (our first) and sometimes with his third (our fourth), showing that he simply failed to detect this tone.

On checked syllables Black Tai has

2. high rising: sip² 'ten,' bo²² 'flower.' As in White Tai, final glottal stop disappears internally in a phrase, so that we hear maa²² 'fruit,' but maa² muan⁵ 'mango.'
5. level, slightly higher than mid: mot⁵ 'ant,' no²⁵ 'outside.' On syllables with diphthong or long vowel there is a slight fall: l+at⁵ 'blood,' taa²⁵ 'land leech'. Words like Black Tai no²⁵ 'outside' are identified as having fourth tone in White Tai, and in that language fourth tone always ends in glottal stop automatically. In Black Tai the situation is different; the tone is most similar to the fifth, and in any case no available free-syllable tone has final glottal stop, so that the final glottal stop has to be written. Internally in a phrase the glottal stop disappears.

Red Tai has five tones on free syllables:

1. rising from middle pitch to high pitch and then leveling off: huu¹ 'ear,' taa¹ 'eye.'
2. level and high, slightly lower than the highest point of the first tone: say² 'egg,' faa² 'to split.'

3. low rising and glottalized: hay³ 'to weep' or 'dry field,' haa³ 'five,' naŋ³ to sit.'
4. mid with slight and gradual fall: naa⁴ 'rice field,' cim⁴ 'to taste.'
5. high falling, glottalized: ɲɔŋ⁵ 'younger sibling,' haay⁵ 'bad.'

The first tone is sometimes heard with glottalization and sometimes not; at the present stage of the investigation it is felt that this glottalization is an irrelevant feature not obligatory with the first tone.

On checked syllables Red Tai has

2. level, mid or somewhat higher than mid: lap² 'to close (the eyes)' or 'to harpen,' mat² 'flea' or 'to tie up in a bundle,' bɔɔk² 'flower'.
3. low rising: moot³ 'one,' l+at³ 'blood.' The nucleus of syllables of this type seems to be always a diphthong or a phonetically long vowel. Vowel length, as we shall see later, is still problematic in Red Tai.

All the languages dealt with here (W B R S) have, in addition to the types of syllables already described, other syllables having weak stress, usually prefixed to a normal syllable. Such weak syllables usually have a short *a* vowel, though sometimes other vowels occur. The tone on such syllables tends to be neutralized to a mid level pitch in all four languages. Though this phenomenon would have to be dealt with in a more thorough analysis of each language, it is so infrequent in the type of words that we are dealing with that we can get along by the simple device of placing a short mark ~ over the vowel; if we know from slower pronunciation what the reduced tone would have been, we will mark it, for example S māphraaw⁴ or mǎ⁴ phraaw⁴ 'coconut.' It is noteworthy that of the four languages here studied, Siamese has by far the greatest number of such weak syllables, Red Tai somewhat fewer, Black Tai still fewer, and in White Tai they are infrequent. This order coincides with the relative geographical location of the languages.

In the comparative study which we now begin, it should be remembered that in each language the tone numbers are arbitrary, so that when we say, for example, that kay² 'chicken' has the same tone in all four languages what we mean is that in each language it has the tone which we designate in that language by the number 2; this happens to be low level in Siamese, high rising in White Tai, and so on.

COMPARISON OF TONES

Our procedure in attacking the comparison of sounds is to copy onto a paper slip each set of cognates, for example:

S maal¹ 'to come'
 W maa⁴
 B maa⁴
 R maa⁴

or

S rɔɔy⁴ 'hundred'
 W hɔy⁶
 B hɔy⁶
 R hɔy⁵

To compare tones, the slips are sorted into stacks; in each stack the tone correspondences are the same. For example, like S maal¹ 'to come,' with the tone correspondence S 1, W 4, B 4, R 4, are

S nɔɔn¹ 'to lie down, to sleep,' W nɔn⁴ B nɔn⁴ R nɔn⁴
 S chaŋ¹ 'to hate,' W caŋ⁴ B caŋ⁴ R caŋ⁴
 S lɪ+m¹ 'to forget,' W lɪ+m⁴ B lɪ+m⁴ R lɪ+m⁴

And like S ɔɔy⁴ 'hundred,' with the tone correspondence S 4, W 6, B 6, R 5, are

S niw⁴ 'finger, toe,' W niw⁶ B niw⁶ R niw⁵
 S rua⁴ 'fence,' W ho⁶ B hua⁶ R hua⁵
 S khiaw⁴ 'to chew,' W kɛw⁶ B kɛw⁶ R kɛw⁵.

For the free syllables this process produces seven stacks or correspondences, which anticipating later findings regarding consonants and also making use of what is known about comparative Tai in general, we arrange in this chart, with seven boxes;

Box 1a S 5 W 1 B 1 R 1	Box 2 S 2 W 2 B 2 R 2	Box 3 S 3 W 3 B 3 R 3
Box 1b S 1 W 1 B 1 R1		
Box 4 S 1 W 4 B 4 R 4	Box 5 S 3 W 5 B 5 R 3	Box 6 S 4 W 6 B 6 R 5

This process of sorting gives us hundreds of slips for each of the seven boxes, with a dozen or more exceptions which fit into none of the boxes. This residue of exceptions we will leave to describe at the last, along with the exceptions in the realms of vowel and consonant correspondences.

Here are a few more examples of the tone correspondences in each of the seven boxes:

Box 1a:

S	W	B	R
sɔɔŋ ⁵ 'two'	sɔŋ ¹	sɔŋ ¹	sɔŋ ¹
saay ⁵ 'cord, string'	saay ¹	saay ¹	saay ¹
mɔɔn ⁵ 'pillow'	mɔn ¹	mɔn ¹	mɔn ¹
naaw ⁵ 'cold'	naaw ¹	naaw ¹	naaw ¹
phaw ⁵ 'to burn'	phaw ¹	faw ¹	faw ¹

Box 1b:

pen ¹ 'to be, become'	pin ¹	pen ¹	pen ¹
kwaan ¹ 'deer'	kwaan ¹	kwaan ¹	kwaan ¹
cɔɔm ¹ 'peak, summit'	cɔm ¹	cɔm ¹	cɔm ¹
kl+a ¹ 'salt'	kə ¹	k+a ¹	k+a ¹
taay ¹ 'to die'	taay ¹	taay ¹	taay ¹

Box 2:

haan ² 'goose'	haan ²	haan ²	haan ²
kay ² 'chicken'	kay ²	kay ²	kay ²
n+ay ² 'tired'	nəy ²	n+ay ²	n+ay ²
thua ² 'bean'	tho ²	thua ²	thua ²
haw ² 'to bark'	haw ²	haw ²	haw ²

Box 3:

may ³ 'to burn'	may ³	may ³	may ³
kh+n ³ 'to go up'	x+n ³	kh+n ³	kh+n ³
khay ³ 'fever'	chay ³	say ³	say ³
haa ³ 'five'	haa ³	haa ³	haa ³
kuŋ ³ 'shrimp'	kuŋ ³	kuŋ ³	kuŋ ³

Box 4:

khwaay ¹ 'water buffalo'	xwaay ⁴	kwaay ⁴	khwaay ⁴
fay ¹ 'fire'	fay ⁴	fay ⁴	fay ⁴
ruu ¹ 'hole'	hu ⁴	hu ⁴	huu ⁴
thian ¹ 'candle'	ten ⁴	tian ⁴	tian ⁴
thay ¹ 'Thai, Tai'	tay ⁴	tay ⁴	tay ⁴

Box 5:

phii ³ 'older sibling'	pi ⁵	pi ⁵	pii ³
ray ³ 'dry field'	hay ⁵	hay ⁵	hay ³
rua ³ 'to leak'	ho ⁵	hua ⁵	hua ³
khɛŋ ³ 'shin'	xɛŋ ⁵	kɛŋ ⁵	khɛŋ ³
thii ³ 'place'	ti ⁵	ti ⁵	tii ³

Box 6:

ruu ⁴ 'to know'	hu ⁶	hu ⁶	huu ⁵
lɛɛw ⁴ 'finished'		lɛw ⁶	lɛw ⁵
yɔɔm ⁴ 'to dye'	ñɔm ⁶	ñɔm ⁶	ñɔm ⁵
sam ⁴ 'to repeat'	sam ⁶	sam ⁶	
maa ⁴ 'horse'	maa ⁶	maa ⁶	maa ⁵

Note that we find no White Tai cognate for S lɛɛw⁴ 'finished,' and no Rɛd Tai cognate for S sam⁴ 'to repeat.' Gaps of this sort may mean that I simply haven't yet asked for the word, as in the case of the Red Tai cognate for sam⁴ 'to repeat,' or that the speakers of the language say the word does not occur. In White Tai the word yaa² (cognate with S yaa² 'don't') is used in the same way as Siamese lɛɛw⁴, e.g., W kin¹ yaa² means 'already finished eating,' like S kin¹ lɛɛw⁴. White Tai speakers identify lɛw⁶ as a Black Tai word. In cases like this it turns out not to be safe to assume that the word really does not occur; often it will turn up later with some other meaning which our line of questioning failed at first to remind the speaker of.

Turning now to the tones in checked syllables, again we find correspondences in tones that permit us to make a chart:

Box 7			
S	2	W	2 B 2 R 2
Box 8		Box 9	
S	4 W 4	S	3 W 4
B	5 R 2	B	5 R 3

That is to say, words having second tone in Siamese have cognates in all the other languages having second tone, but checked syllables which have fourth tone (with short vowel) turn out to have cognates in the other languages with a different set of tone correspondences as shown in Box 8, and Siamese checked syllables with third tone (those having a diphthong or a long vowel) show still a different set of tone correspondences as indicated in Box 9. Examples:

S	W	B	R
Box 7:			
cɔp ² 'hoe'	cɔp ²	cɔp ²	cɔɔp ²
nuak ² 'deaf'	no ²	nua ²	nuak ²
hɔk ² 'a spear'	hɔ ²	hɔ ²	hɔɔk ²
lek ² 'iron'	lek ²	lek ²	lek ²
piik ² 'wing'	pi ²	pi ²	piik ²
phit ² 'wrong'	phit ²	fit ²	fit ²
pɔɔt ² 'lung'	pɔt ²	pɔt ²	pɔɔt ²
mat ² 'flea'	mat ²	mat ²	mat ²

Box 8:			
met ⁴ 'a seed, grain'	mit ⁴	mit ⁵	met ²
rak ⁴ 'to love'	hak ⁴	hak ⁵	hak ²
khrok ⁴ 'mortar'	cok ⁴	cok ⁵	cok ²
nok ⁴ 'bird'	nok ⁴	nok ⁵	nok ²
nap ⁴ 'to count'	nap ⁴	nap ⁵	nap ²
chet ⁴ 'to wipe'	cet ⁴	cet ⁵	cet ²

Box 9:			
miit ³ 'knife'	mit ⁴	mit ⁵	miit ³
rɛɛt ³ 'rhinoceros'	hɛt ⁴	hɛt ⁵	hɛɛt ³
khɔɔk ³ 'a pen'	xɔ ⁴	kɔ ⁵	khɔɔk ³
khɛɛp ³ 'narrow'	xɛp ⁴	kep ⁵	khɛɛp ³
nɔɔk ³ 'outside'	nɔ ⁴	nɔ ⁵	nɔɔk ³
ch+ak ³ 'rope, cord'	cə ⁴	c+a ⁵	c+ak ³

After we have studied the initial consonants we will find that we can make various inferences from this entire pattern of tonal correspondences, but even at this stage some observations are possible.

In the first column in our charts (boxes 1a, 1b, and 4), we find that White Tai, Black Tai, and Red Tai have a different system from Siamese. Siamese requires us to divide box 1 into 1a and 1b, and treats the words in box 1b like those in box 4. The other three languages are alike in the way they divide up the words in the first column. The pattern in the first column, without other evidence, would be enough to prove that the three languages W B R may have had a common ancestor, but they cannot be derived from a language of the Siamese type, and on the other hand Siamese cannot be derived from a language of the W B R type, because once a set of words in one box has fallen together with those in another box it would be impossible for speakers to sort them out again into the former pattern. The inference from the boxes in the first column, then, is that we have here two branches, S on the one hand and W B R on the other, which must go back to a common ancestor which had a three-way distinction of some sort among words in the first column.

Turning to the second and third columns, we note that boxes 2 and 6 are self-contained; that is, none of the four languages has any overlap of words in box 2 or box 6 with words in any other boxes. But boxes 3 and 5 show Siamese and Red Tai behaving in one way but White Tai and Black Tai in another. While W and B consistently distinguish boxes 3 and 5, in Siamese and Red Tai they have fallen together. 'Dry field,' for example, is hay⁵ in W and B, but 'to weep' is hay³. In R both words are hay³. In Siamese they have the same tone, but differ in initial consonant: S ray³ 'dry field,' hay³ (actually haay³ in present-day speech) 'to weep.'

The inference from the second and third columns is that Red Tai could have come from an earlier language of the W B type; so could S, but our study of the first column has already ruled this out.

In the free syllables, White Tai and Black Tai, although there are phonetic differences, have exactly the same tone system.

Turning to the chart of tones occurring on checked syllables, we again find White and Black Tai behaving alike, with Red Tai going another way and Siamese still another. The distinction which S and R make between boxes 8 and 9 depends upon vowel length. Syllables with a short vowel have the tones indicated in box 8, while those with long vowels and diphthongs have the tones indicated in box 9. To a certain extent this distinction is reflected in W and B. In W, no long vowel occurs except aa, and checked syllables having this vowel fall into box 9. B has long aa and also the diphthongs ia + a ua, and checked syllables having any of these fall into box 9. However W B also have syllables with short vowels in box 9 (placed there, of course, on the basis of the tones of their cognates in S and R), and we find here an important tool for identifying those short vowels in W and B which go back to earlier long vowels.

We found that as regards the free syllables, W and B have the same tone system. The same is true of these two languages as regards checked syllables; it is a mere accident of phonetic similarity that causes us to identify the tones of boxes 8 and 9 as fourth in W but fifth in B.

The most astonishing thing to be observed in the chart of tones of checked syllables, and one of the most amazing features of the Red Tai language, is the fact that R does not distinguish box 7 from box 8. Thus 'seven' is S W B cet², while

'to wipe' is S chet⁴, W cet⁴, B cet⁵; both words are cet² in R. 'Vegetable' is S W phak², B fak²; 'sheath or pod' is S W B fak²; 'to incubate' is S W fak⁴, B fak⁵; all three words, 'vegetable', 'sheath or pod', and 'to incubate', are R fak². 'All, all gone' is S mot², W B met²; 'a seed, grain' is S met⁴, W mit⁴, B mit⁵; both words are R met². 'To break' is S W B hak², while 'to love' is S rak⁴, W hak⁴, B hak⁵; both words are R hak². 'To close (the eyes)' is S lap², W lap²; 'to sharpen' is S lap⁴, W lap⁴, B lap⁵; both words are R lap². 'To tattoo' is S W B sak²; 'to wash (clothes)' is S sak⁴, W sak⁴, B sak⁵; both words are R sak².

This means that in R a distinction made by S W B is lost; it is the second argument we have found for regarding the tone system of R as being derived from a tone system of the type of W B.

INITIAL CONSONANTS

Siamese has the following initial consonants: a glottal stop [?] as in [?]op² 'to bake'; unaspirated voiceless stops p t k c as in pet² 'duck', tap² 'liver', kap² 'with, and', cap² 'to catch'; aspirated voiceless stops ph th kh ch as in phit² 'wrong'; thii³ 'place', khaa⁵ 'l_g', chaa¹ 'tea'; voiced nasals m n ŋ as in maa¹ 'to come', naa¹ 'rice field', ŋaa¹ 'elephant's tusk'; voiced stops b d as in baan³ 'house', daaw¹ 'star', semivowels and sonorants w y l r as in wii⁵ 'a comb, to comb', yaa¹ 'medicine'; lɛɛk³ 'to exchange', rɛɛk³ 'first'; and voiceless spirants s f h as in sii² 'four', faa⁴ 'sky', and haa³ 'five'.

Initial consonant clusters that occur are kr kl kw, khr khl khw, pr pl, phr phl, tr. (The cluster thr, occurring only in a few literary words, is irrelevant for comparative Tai studies.) Examples are kron¹ 'to snore', klia¹ 'salt', kwaa² 'more than', khriaŋ³ 'utensil', khliin³ 'wave', khwaan³ 'to throw', proot² 'to be graciously pleased', plaa¹ 'fish', phrik⁴ 'pepper', phleen¹ 'song', and tree¹ 'trumpet'.

It will be noted that the variety of Siamese described here is the "elite" pronunciation which makes the maximum number of distinctions in initial consonants and consonant clusters.

White Tai has as initial consonants [?] as in [?]aap² 'to bathe'; p t k c as in paa¹ 'fish', tin¹ 'foot', kin¹ 'to eat', caam⁴ 'indigo'; ph th kh ch as in phum¹ 'hair of the head', thaam¹ 'to ask', khum¹ 'bitter', chay² 'egg'; m n ŋ and a palatal nasal ñ as in mu¹ 'pig', nə¹ 'above, north', ŋu⁴ 'snake', ñuŋ⁴ 'mosquito'; b d as in bin¹ 'to fly', din¹ 'earth'; v (a voiced labiodental fricative like English v) l y as in vaan¹ 'sweet', ləŋ¹ 'yellow', yet⁴ 'to do, make'; s f h and a voiceless velar fricative x as in sə³ 'shirt', fan¹ 'to dream', hən⁴ 'house', xɛn¹ 'arm'.

The consonant y is frequently pronounced as a voiced sibilant like English z, especially in slow careful speech.

The initial glottal stop [?] has not been recognized or transcribed by previous students of White Tai. The same is true of initial glottal stop in Black and Red Tai. In all of these languages, as in Siamese, every syllable has an initial consonant, if no other than glottal stop.

Initial clusters in White Tai are of velar consonant with w: kw khw xw ŋw as in kwaan² 'to rake', khwaan¹ 'axe', xwaan⁴ 'water buffalo', ŋwaan⁴ 'yesterday'. This presents a problem in phonemic analysis: Is this w to be identified with initial v? Black Tai and Red Tai, as we shall see, present a similar problem. For our purposes no decision is necessary, since we need only discover the contrasting elements.

There is a certain amount of variation in White Tai in the occurrence of this *w* after velar consonants; both *khet*² and *khwet*² occur for 'small frog', both *khi*² and *khwi*² for 'to ride'; a study of Minot's dictionary turns up many other examples. It is not clear whether this variation depends upon geographical location, social level, or what.

The initial consonants of Black Tai are ? as in ?u² 'cradle'; *p t k c* as in *pi*¹ 'year', *ti*⁵ place, *kaa*⁵ 'price, value', *ci*⁶ 'to point'; *th kh* as in *thaa*³ 'to wait', *khua*¹ 'bridge'; *m n ŋ ñ* as in *mi*¹ 'bear', *nu*¹ 'rat, mouse', *ŋu*⁴ 'snake', *ñ+a*² 'meat'; *b d* as in *bi*¹ 'gall bladder', *di*¹ 'good'; *v l y* as in *vɛn*¹ 'ring', *lua*¹ 'firewood', *yaa*¹ 'medicine, tobacco'; *s f h* as in *si*² 'four', *fua*¹ 'husband', *hi*⁴ 'long'.

Black Tai shows fluctuation between *d* and *l*, and between *b* and *v*, and the degree of fluctuation varies from place to place. Diguët's book, which presumably represents the speech of Son La, shows greater variation than either of the dialects represented in my data; of these two, my teacher from *baan*³ *ciaŋ*⁴ *di*¹ has relatively little fluctuation. The exact nature and degree of the phenomenon is not clear, and may be impossible to investigate without on-the-spot study of geographical differences, but at the present stage of the investigation it seems to be possible to make a few guesses about it. It would appear that a sound change of *d* to *l* and of *b* to *v* has been taking place, perhaps fairly recently; that some speakers (including my teacher from *baan*³ *ciaŋ*⁴ *di*¹) are aware that *d* and *b* are "correct" (perhaps because of the spelling, and because of contact with neighboring Tai languages in which no such change has taken place), and have learned in later life to use *d* and *b* where they formerly used, and their friends and neighbors still use, *l* and *v*; and that this process of "correction" sometimes results in overcorrection, so that a few words which historically ought to have *l* and *v* are pronounced with *d* and *b*. The whole matter reminds one of the fluctuation between *r* and *l* in modern Siamese.

To cite a few examples, my teacher from *baan*³ *ciaŋ*⁴ *di*¹ uses both *di*¹ and *li*¹ for 'good', usually correcting *li*¹ to *di*¹ quickly. My notes show that at times he uses *bi*¹ for 'comb' and at others *vi*¹, without correcting either; in this case, of course, *bi*¹ (if our theory is right) would be an overcorrection. Diguët's dictionary has only *li*¹ for 'good', but both *bi*¹ and *vi*¹ for 'comb'. The same teacher has *du*¹ for 'to look', while Diguët uses only *lu*¹. My notes on the Black Tai dialect of *m+añ*⁴ *piaŋ*⁴ show only *bi*¹ for 'comb', which is declared to sound the same as *bi*¹ 'gall bladder'.

As in White Tai, Black Tai *y* is often pronounced like English *z*, especially in slow, careful speech.

As for consonant clusters, Black Tai has *kw khw ŋw*, as in *kwaa*² 'more than', *khwaa*¹ 'right hand', *ŋwaa*⁴ 'yesterday'. Diguët's dictionary gives *khwi*² 'to ride'; my teachers say *khi*².

The initial consonants of Red Tai are ? as in ?ɛw¹ 'waist'; *p t k c* as in *piŋ*¹ 'leech', *taa*¹ 'eye', *kaañ*⁴ 'chin', *caw*⁵ 'morning'; *th kh* as in *thaw*³ 'old', *khɛɛn*¹ 'to hang up'; *m n ŋ ñ* as in *m+⁺5* 'day', *naa*³ 'face', *ŋiw*⁵ 'kapok tree', *ñaañ*³ 'to walk'; *b d* as in *b+an*¹ 'month', *din*¹ 'earth'; *v l y* as in *vay*⁵ 'to put away', *lom*¹ 'to smell', *y+⁺n*¹ 'to stand'; *s f h* as in *s+a*¹ 'tiger', *fii*¹ 'spirit' or 'a boil', *huay*³ 'mountain stream'.

Clusters are *kw khw ŋw* as in *kwaan*³ 'wide', *khwaan*¹ 'axe', *ŋwaa*⁴ 'yesterday'.

The inventory of consonants for B and R is exactly the same, but the two languages differ in the words in which they are used, as in B kwaay⁴ but R khwaay⁴ 'water buffalo'.

The consonants d and l, and b and v, show fluctuation much like what we found in Black Tai, but in Red Tai the situation is clearer. Red Tai has d only before the vowels i and ɨ as in din¹ 'earth', kădɨa¹ 'cockspur'.

Except for about a dozen words recorded with d before these two vowels, the language shows only l in words which have either d or l in other Tai languages: lia⁴ 'to lick', lɨat³ 'blood', lɨan¹ 'earthworm', loŋ⁴ 'to go down', lɛɛŋ¹ 'red', laap² 'sword', laay¹ 'many'. A curious item is kăraaŋ³ 'hard' (Siamese kădaaŋ³), where r seems to be a variant of the l sound occurring only in this environment. It seems clear that in Red Tai all the d's have changed to l, which then is sometimes changed to d, probably under the influence of Lao.

The case of b and v is less clear. My notes show 32 words with b, occurring before all the vowels, and 30 words with v, occurring before all the vowels except ɨ and u; Tai languages rarely have words with v or w followed by ɨ or u, so that this gap is probably irrelevant to our b and v problem. In the two lists I find these three pairs: baan³ or vaan³ 'village, town', bœk² or vœk² 'flower', and baan¹ or vaan¹ 'thin'. Otherwise I have noted no free variation. But two other items in the b list have cognates with v or w in other Tai languages: biɪ¹ 'a comb, to comb', biɪ⁴ 'to fan', and nine words in the v list have cognates with b elsewhere: vet² 'fishhook', voŋ³ 'caterpillar', vaa² 'shoulder', vaŋ² 'flying squirrel', vaay¹ 'to weed', vaaw² 'young unmarried man', vaw¹ 'light (not heavy)', vœ² 'a mine', and vœk² 'to tell'.

It may be that the true situation with regard to the confusion between d and l and between b and v in both Black Tai and Red Tai will not be clearly understood until some investigator learns the languages well enough to observe natural speech.

COMPARISON OF INITIAL CONSONANTS

In attacking the comparison of initial consonants and consonant clusters among the four languages S W B R, we discover an important correlation between consonants and the boxes in the tone chart which we used above in comparing tones.

In each language there are limitations as to the boxes in which various consonants can occur. With an occasional sporadic exception, the pattern of occurrences is as follows:

Siamese has h only in box 1 a and in the remaining boxes in the top row (2, 3, 7). It has ʔ k c d t b p only in box 1 b and again, in the remaining boxes in the top row. It has ch and r only in box 4 and the remaining boxes in the bottom row (5, 6, 8, 9). (Students of Siamese will at once object that there are S words with initial ch and fifth tone that belong in box 1 a, but the point here is that we find no cognates for such words in W B R, so that these words do not concern us.)

Siamese y occurs in boxes 1 b and 4 (together with the boxes to the right of each). The remaining initials, kh th ph m n ŋ l w s f, occur in boxes 1 a and 4 (together with the boxes to the right of each).

In all the above statements, consonant clusters behave like the first consonant, kl like k, khw like kh, and so on.

White Tai has kh ch th ph only in box 1a. (From this point on we will not add "together with the boxes to the right," as this is always taken for granted in all of these statements.) White Tai ʔ d b occur only in box 1 b. The consonant η occurs only in box 4. White Tai x n m l v s f h occur in boxes 1a and 4; k c t p y occur only in boxes 1 b and 4.

In Black Tai kh th occur only in box 1a; ʔ d (fluctuating with l) b (fluctuating with v) occur only in box 1 b; η occurs only in box 4; k c t p y occur only in boxes 1 b and 4; n m l v (fluctuating with b) s f h occur only in boxes 1 a and 4.

Red Tai shows exactly the same pattern as Black Tai.

In W B R \tilde{n} occurs in box 4 and also in boxes of the top row; since it does not occur in either box 1 a or 1 b (probably it is only an accident that no such word has turned up), we cannot be sure as to which type it belongs to.

To reexamine these findings from another point of view, the consonants that occur only in box 1 a are S h, W B R kh th, and W ch ph. The consonants that occur only in 1 b are S W B R ʔ d b , and S p t k c. The consonants that occur only in box 4 are S ch r, and W B R η .

Looking at the consonants in the various languages that occur in more than one of the categories, we find none that occurs in all 3 (1 a, 1 b, and 4). Those that occur in boxes 1 b and 4 are S W B R y, and W B R p t k c. Those that occur in boxes 1 a and 4 are S ph th kh η , Wx, and S W B R m n l v (w in Siamese) s f, plus n in W B R.

All of this is obviously not random or accidental; again and again in the above statements we see groups of consonants behaving alike with regard to tone which also share some phonetic characteristic. We will get more light on this if we now take up the correspondences of consonants in cognate words in the four languages. We will examine first those occurring in box 1 a (and boxes to its right), then those occurring in box 1 b (and boxes to its right), and finally those occurring in box 4 and the other boxes of the bottom row.

Resorting the paper slips on which we have listed the form in each of the four language for each set of cognates, we find in box 1a 13 different types of correspondence, with many examples of each. Eight of these are instances of simple identity; that is, there are eight sets of cognates in which all four languages have the same consonants, namely s f h th kh m n l. Examples:

S	W	B	R
suan ⁵ 'garden'	son ¹	suan ¹	suan ¹
siw ² 'chisel'	siw ²	siw ²	siw ²
say ³ 'intestines'	say ³	say ³	say ³
suk ² 'cooked, ripe'	suk ²	suk ²	suk ²
sɔk ² 'elbow'	sɔ ^{ʔ2}	sɔ ^{ʔ2}	sɔk ²
faa ⁵ 'wall; lid'	faa ¹	faa ¹	faa ¹
faa ² 'palm, sole'	faa ²	faa ²	faa ²
faa ³ 'cloud'	faa ³	faa ³	faa ³
fak ² 'sheath, pod'	fak ²	fak ²	fak ²
faat ² 'astringent in taste'	faat ²	faat ²	faat ²

S	W	B	R
haw ⁵ 'headlouse'	haw ¹	haw ¹	haw ¹
haa ² 'heavy shower'	haa ²	haa ²	haa ²
hɛɛŋ ³ 'dried up'	hɛŋ ³	hɛŋ ³	hɛŋ ³
het ² 'mushroom'	het ²	het ²	het ²
haap ² 'to carry on two ends of pole over shoulder'	haap ²	haap ²	haap ²
thay ⁵ 'a plow, to plow'	thay ¹	thay ¹	thay ¹
thii ² 'closely spaced; miserly'	thi ²	thi ²	thii ²
tham ³ 'cave'	tham ³	tham ³	tham ³
th+k ² 'young male animal'	thək ²	thək ²	th+k ²
thoɔt ² 'to remove'	thot ²	thot ²	
khay ⁵ 'to open'	khay ¹	khay ¹	khay ¹
khwaan ⁵ 'axe'	khwaan ¹	khwaan ¹	khwaan ¹
khun ² 'turbid'	khun ²	khun ² ('dust')	khun ²
khaaw ³ 'rice'	khaw ³	khaw ³	khaw ³
khop ² 'to bite'	khop ²	khop ²	khop ²
khiit ² 'to scratch'	khit ²	khit ²	khiit ²
maa ⁵ 'dog'	maa ¹	maa ¹	maa ¹
may ² 'new'	may ²	may ²	məə ²
mɔɔ ³ 'cooking pot'	mɔ ³	mɔ ³	mɔɔ ³
mot ² 'all, all gone'	met ²	met ²	met ²
mɔɔk ² 'fog'	mɔ ²²	mɔ ²²	mɔɔk ²
naam ⁵ 'thorn'	naam ¹	naam ¹	naam ¹
nɔɔ ² 'a sprout, shoot'	nɔ ²	nɔ ²	nɔɔ ²
n+ŋ ³ 'to steam'	n+ŋ ³	n+ŋ ³	n+ŋ ³
nak ² 'heavy'	nak ²	nak ²	nak ²
nuat ² 'beard'	not ²	nuat ²	nuat ²
lɛɛm ⁵ 'sharp pointed'	lɛm ¹	lɛm ¹	lɛɛm ¹
lɔɔ ² 'to cast (metal)'	lɔ ²	lɔ ²	lɔɔ ²
law ³ 'liquor'	law ³	law ³	law ²
lap ² 'to close (the eyes)'	lap ²	lap ²	lap ²
lɔɔt ² 'spool'	lɔt ²	lɔt ²	

Siamese w corresponds to W B R v :

waan ⁵ 'sweet'	vaan ¹	vaan ¹ or baan ¹	vaan ¹
waan ² 'to sow, scatter'	vaan ²	vaan ² or baan ²	
waay ³ 'to make a gesture of salutation'		vay ³ 'to go to see royalty'	
wat ² 'a cold'	vat ²	vat ²	vat ²
(nok ⁴) wiit ² 'a whistle'	maa ²² vit ²		

Siamese ŋ corresponds to h. This sound correspondence shows up widely among Tai languages; there is a large area of Tai speech where ŋ of other Tai languages in words of this tonal type is replaced by h, while ŋ of the type of our box 4 remains ŋ :

S	W	B	R
ɔɔn ⁵ 'cockscomb'	hɔn ¹	hɔn ¹	hɔn ¹
ɛɛn ⁵ 'to tilt the head back'	hɛn ¹	hɛn ¹	hɛn ¹
aaɣ ⁵ '(to lie) face up'	haaɣ ¹	haaɣ ¹	haaɣ ¹
ɣa ² 'sweat'	hə ²	hɨa ²	hɨa ²
aw ³ 'central root'	haw ³	haw ³	
ɣak ² 'the gums'	hə ²	hɨa ²	hɨak ²
ɔɔk ² 'grey-haired'	hɔ ²	hɔ ²	hɔɔk ²

Presumably S hɨa² 'sweat' beside ɣa² is a borrowing from one of the Tai dialects that has h instead of ɣ.

Above we found a set of cognates showing the correspondence S W B R f. There is another set showing S W ph but B R f:

phom ⁵ 'hair of the head'	phum ¹	fom ¹	fom ¹
phaa ² 'to split'	phaa ²	faa ²	faa ²
phaa ³ 'cloth'	phaa ³	faa ³	faa ³
phak ² 'vegetable'	phak ²	fak ²	fak ²
phuuk ² 'to tie'	phu ²	fu ²	fuuk ²

Siamese kh showed up in one of the sets above in the correspondence S W B R kh. There are two other correspondences for Siamese kh in syllables of this tonal type, S B R kh W x, and S kh Wch B R s:

khay ⁵ 'tallow'	xay ¹	khay ¹	khay ¹
khwan ⁵ 'whorl in the hair; spirit'	xwan ¹ or xɔn ¹	khwan ¹	khwan ¹
khaw ² 'knee'	xaw ²	khaw ²	khaw ²
khaa ³ 'to kill'	xaa ³	khaa ³	khaa ³
khap ² 'to sing'	xap ²	khap ²	
khaat ² 'torn'	xaat ²	khaat ²	khaat ²
khaj ⁵ 'to shut up, imprison'	chaj ¹	saɲ ¹	saɲ ¹
khɔɔ ⁵ 'to beg'	chɔ ¹	sɔ ¹	
(nok ⁴) kha ^w ⁵ 'dove'	chaw ¹	saw ¹	
khaaj ² 'a top for spinning'	maa ² chaaj ²	saaj ²	
khay ² 'egg'	chay ²	say ²	say ²
khay ³ 'fever'	chay ³	say ³	say ³
khɔɲ ³ 'fish basket'	chɔɲ ³	sɔɲ ³	
khaaj ³ 'side, ribs'	chaaj ³	saaj ³	saaj ³
khap ² 'to chase'	chap ²	sap ²	

The clusters with w that show up in the above examples of the correspondences S W B R khw and S B R khw Wxw require little comment except to note that sometimes the w appears regularly, as in the cognates of S khwaan¹ 'axe' listed above, or in

S khwaa⁵ 'right (hand)' xwaa¹ khwaa¹ khwaa¹
but sometimes one language or another loses the w in a particular word:

S	W	B	R
khwɛɛn ⁵ 'to hang up' (where R khɛn ¹ is the same as R khɛn ¹ 'arm')	xwɛn ¹	khwɛn ¹	khɛn ¹
khwam ³ '(to lie) face down'	xam ³	khwam ³	khwam ³
khia ² 'to scratch (as chickens do)'	khwe ²	khia ²	khia ²
khiat ² 'small frog'	khet ² or khwet ²	khiat ²	khiat ²

We probably cannot get at the truth of this complicated matter without having more geographical data to see whether loss or retention of w depends upon locality, and more lexical data to see whether it depends upon the vowel that follows. Very likely both factors have been at work.

The White Tai alternation between xɔn¹ and xwan¹ for 'whorl in the hair; spirit' is a matter which we should wait and look into when we come to examine the vowels.

The correspondence S kh W ch B R s has been treated by Professor Fang-kuei Li in his extremely important article "Consonant Clusters in Tai" (*Language* 30 (1954), pp. 368-379), where he examines a number of unusual correspondences of this sort and proposes that they go back to consonant clusters with l or r in Proto Tai. Of our nine examples, he treats five ('to shut up,' 'kind of basket,' 'top,' 'egg,' and 'dove,' pp. 376-7 in his article), and divides them into two groups on the basis of the forms in Tai languages in China, one of which he assigns to PT khl and the other khr. Our nine words show no such distinction in our languages. He adds also 'hard,' which in our languages shows the SWBR kh correspondence: it is khɛŋ⁵ in S, khɛŋ¹ in W and B. (We don't have the R form, but can predict that it ought to be khɛŋ¹ if it occurs.)

This completes the consonant correspondences in words of the box 1a tonal type. These tempt us to indulge in interpretation as to the meaning of all this, but we will be wiser to defer our theorizing until after we have examined the consonant correspondences in all the other tonal types.

Turning now to the consonant correspondences in words of the tonal type of box 1b, we find ? p t k kw c y identical in all four languages, and d and b identical except for B's alternation of d with l and b with v, R's similar alternation of b with v, and R's replacement of d by l in most instances. S kl corresponds to W B R k, and S pl to W B R p. There is also a correspondence S d W B R b, and one example of S kr W B R k.

S	W	B	R
?ay ¹ 'to cough'	?ay ¹	?ay ¹	?ay ¹
?im ² 'full (after eating)'	?im ²	?im ²	?im ²
?ɔy ³ 'sugarcane'	?ɔy ³	?ɔy ³	?ɔy ³
?ok ² 'chest'	?ək ²	?ək ²	?ək ²
?ɔk ² 'to go out'	?ɔ?2	?ɔ?2	?ɔk ²

S	W	B	R
p++n ¹ 'gun', but 'arrow' in W B R	p+n ¹	p+n ¹	p++n ¹
paa ² 'forest'	paa ²	paa ²	paa ²
paa ³ 'aunt (older sister of either parent)'	paa ³	paa ³	paa ³
pet ² 'duck'	pet ²	pet ²	pet ²
pɛɛt ² 'eight'	pɛt ²	pɛt ²	pɛɛt ²
tem ¹ 'full'	tim ¹	tem ¹	tem ¹
naa ³ taan ² 'window'	taan ²	taan ²	huu ⁴ taan ²
t++n ³ 'shallow'	t+n ³	t+n ³	t++n ³
tap ² 'liver'	tap ²	tap ²	tap ²
taak ² 'to expose to the sun'	taa ²	taa ²	taak ²
kan ¹ 'each other, together'	kan ¹	kan ¹	kan ¹
kɔɔn ² 'before'	kən ²	kən ²	kɔɔn ²
kom ³ 'to bend over'	kum ³	kom ³	kom ³
kop ² 'frog'	kop ²	kop ²	kop ²
kaap ² 'husk'	kaap ²	kaap ²	kaap ²
kwaan ¹ 'deer'	kwaan ¹	kwaan ¹	kwaan ¹
kwɛŋ ² 'to shake, swing'			kwɛŋ ²
kwa ² 'more'			kwa ²
kwaan ³ 'wide'	kwaan ³	kwaan ³	kwaan ³
kwaat ² 'to sweep'	kwaat ²	kwaat ²	kwaat ²
(kwaat ² means 'to rake' in W B R, all of which use cognates of S phɛw ³ for 'to sweep'.)			
cuŋ ¹ 'to lead by the hand'	cuŋ ¹	cuŋ ¹	cuŋ ¹
cum ² 'to dip in water'			cum ²
cim ³ 'to pick (the teeth)'	cim ³	cim ³	cim ³
cep ² 'to hurt; to be ill'	cep ²	cep ²	cep ²
ciip ² 'to pleat'	cip ²	cip ²	
yaa ¹ 'medicine'	yaa ¹	yaa ¹	yaa ¹
(also 'tobacco' in B R, and 'flashlight batteries' in W)			
yu ² 'to be (in a place)'	yu ²	yu ²	yu ²
yaaw ³ r+an ¹ 'home'	yaaw ³ h+an ⁴	yaaw ³ h+an ⁴	
yip ² 'to pick up with the fingers'	yip ²	yip ²	
yua ² 'banana stem'		yua ²	yua ²
(say ³) d+an ¹ 'earthworm'	dən ¹	d+an ¹	l+an ¹
(Diguët gives B l+an ¹ . 'white')	dən ²	dən ²	lən ²
(Diguët gives B lən ² . In R dən ² means 'albino (buffalo)'. The Royal Institute Dictionary gives S dən ² 'albino, white'.)			
dam ³ 'handle (of knife)'	dam ³	dam ³	lam ³
(Diguët has B lam ³ .)			
d+k ² 'late at night'	dək ²	d+k ²	l+k ²

S	W	B	R
(Diguët has B l+k ² .)			
dɛɛt ² 'sunshine'	dɛt ²	dɛt ²	lɛt ²
(Diguët has B lɛt ² .)			
bin ¹ 'to fly'	bin ¹	bin ¹	bin ¹
baaŋ ² 'flying squirrel'	baaŋ ²	baaŋ ²	vaanŋ ²
baa ³ 'crazy'	baa ³	baa ³	vaa ³
bet ² 'fish hook'	bet ²	bet ²	vet ²
bɔɔt ² 'blind'	bɔt ²	bɔt ²	bɔɔt ²
klaan ¹ 'middle'	kaan ¹	kaan ¹	kaan ¹
klam ² 'dark (red)'	kam ²	kam ²	kam ²
kluay ³ 'banana'	koy ³	kuay ³	kuay ³
klet ² 'scales (of fish)'	ket ²	ket ²	ket ²
klɛɛp ² 'chaff'	kɛp ²	kɛp ²	kɛɛp ²
plaay ¹ 'end, tip'	paay ¹	paay ¹	paay ¹
plɔy ² 'to release'	pɔy ²	pɔy ²	pɔy ²
plam ³ 'to wrestle'	pam ³	pam ³	pam ³
(in W B R also 'to fell (a tree)')			
plit ² 'to pluck'	pit ²	pit ²	
pluak ² 'white ant'	pɔ ²²	pua ²²	puak ²
dii ¹ 'gall bladder'	bi ¹	bi ¹	bi ¹
d+an ¹ 'month, moon'	bən ¹	b+an ¹	b+an ¹
săd+ ¹ 'navel'	saay ¹ bi ¹	saay ¹ b+ ¹	săb+ ¹
daay ¹ 'to weed'	baay ¹	baay ¹	vaay ¹
dɔɔŋ ¹ 'to pickle'	bɔŋ ¹	bɔŋ ¹	
dɔɔk ² 'flower'	bɔ ²²	bɔ ²²	bɔɔk ² or vɔɔk ²

A variation of this correspondence appears as S B R d W b in S daan² 'spotted, splotched', B nan¹ daan² daaw¹ 'freckles' (nan¹ 'skin', daaw¹ 'star'), W baan² 'spotted, splotched'.

This d-b correspondence has been treated by Fang-kuei Li at pp. 373-4 in his article on consonant clusters referred to above, and he has precisely this same list of seven words.

The only example of S kr, and the only certain set of cognates for any S word with a cluster of kr, pr, or tr, is

kron ¹ 'to snore'	xɔ ⁴ k+n ¹	kɔ ⁴ kon ¹	kon ¹
(Wxɔ ⁴ and B kɔ ⁴ mean 'neck'.)			

There remains one correspondence, S R y W B ñ, which turns up in the upper row of boxes in our chart but not in l a or l b, so that we cannot be sure as to which type it belongs to.

y+a ² 'bait'	ñə ²	ñ+a ²	y+a ²
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(The W B R words all mean 'meat'; in B R it is the usual word, while in W it is heard occasionally instead of ñam², the usual word for 'meat'. Tai languages show great variety in the words for 'meat', as if in prehistoric times there might have been

a taboo on this word. If so, it might have been connected with living flesh as opposed to spirits.)

yay ² 'big'	ñay ²	ñay ²	yəə ²
(W B ñay ² mean 'to grow big'. In R yəə ² is a less frequent synonym of təəp ² , the usual word for 'big'.)			
yuy ³ 'confused'	ñuy ³	ñuy ³	
yaa ³ 'grass'	ñaa ³	ñaa ³	yaa ³
yaap ² 'coarse; vulgar'	ñaa ²	ñaa ²	

Another example of this correspondence probably occurs in S yəm² 'small tuft, as of hair or grass,' B ñəm². Still another occurs in S yiam³ naa³ taan² and B ñiam³ bəŋ² 'to look out the window,' and R naa³ yiam³ 'a small mirror,' bəŋ² naa³ yiam³ 'to look at a small mirror'.

My R notes show ñ as well as y once or twice in words of this set; this is probably an instance of momentary confusion of dialects.

Turning now to the consonant correspondences found in the lower boxes of our chart, that is box 4 and the boxes to the right of it, we find seven sets of cognates in which all four languages show the same consonant: m n ŋ y l s f. Siamese w corresponds to W v, and to B R v fluctuating with b. In addition to the S W B R y correspondence, S y shows two other correspondences: S y W B R ñ and S R y W B ñ. S r corresponds to W B R h in a very large set of cognates. Siamese aspirated voiceless stops correspond to W B R unaspirated ones: S ph W B R p, S th W B R t, S kh W B R k, S ch W B R c. Siamese phr and phl behave exactly like ph: S phr W B R p, S phl W B R p. For Siamese kh, besides the correspondence S kh W B R k there is another correspondence SR kh W x B k; the Siamese cluster khw is found also patterning in both these ways. Finally, S khr and khl correspond to W B R c, with two or three aberrant words which we will treat later under exceptions. Examples:

S	W	B	R
mɪ̃ɪ̃ ¹ 'hand'	mɪ̃ ⁴	mɪ̃ ⁴	mɪ̃ ⁴
mɛɛ ³ 'mother'	mɛ ⁵	mɛ ⁵	mɛɛ ³ 'woman'
may ⁴ 'wood'	may ⁶	may ⁶	may ⁵
mat ⁴ 'to tie up; a bundle'	mat ⁴	mat ⁵	mat ²
mɪ̃ɪ̃t ³ 'dark'	mɪ̃t ⁴	mɪ̃t ⁵	mɪ̃ɪ̃t ³
naa ¹ 'rice field'	naa ⁴	naa ⁴	naa ⁴
naŋ ³ 'to sit'	naŋ ⁵	naŋ ⁵	naŋ ³
naam ⁴ 'water'	nam ⁶	nam ⁶	nam ⁵
nok ⁴ 'bird'	nok ⁴	nok ⁵	nok ²
naak ³ 'otter'	naa ⁴	naa ²⁵	naak ³
ŋuu ¹ 'snake'	ŋu ⁴	ŋu ⁴	ŋuu ⁴
ŋua ¹ 'ox'	ŋo ⁴	ŋua ⁴	ŋua ⁴
ŋaay ³ 'easy'	ŋaay ⁵	ŋaay ⁵	
ŋiw ⁴ 'kapok tree'	ŋiw ⁶	ŋiw ⁶	ŋiw ⁵
ŋɪ̃ak ³ 'mythical water creature'	ŋə ⁴	ŋɪ̃a ²⁵	ŋɪ̃ak ³

S	W	B	R
yay ¹ 'spider web'	yay ⁴	yay ⁴	
yaa ³ 'paternal grand mother'	yaa ⁵	yaa ⁵	
yaŋ ⁴ 'to stop'	yaŋ ⁶	yaŋ ⁶	
yaak ³ 'difficult'	yaa ⁴	yaa ²⁵	
y+i+t ³ 'to stretch'	y+i+t ⁴	y+i+t ⁵	
lɔy ¹ 'to float'	lɔy ⁴	lɔy ⁴	lɔy ⁴
('to swim' in W B R)			
lay ³ 'to chase'	lay ⁵	lay ⁵	
lin ⁴ 'tongue'	lin ⁶	lin ⁶	lin ⁵
lak ⁴ 'to steal'	lak ⁴	lak ⁵	lak ²
luuk ³ '(one's) child'	lu ⁴	lu ²⁵	luuk ³
saay ¹ 'sand'	saay ⁴	saay ⁴	saay ⁴
s+i+3 'honest' ('straight' in W B)	s+i ⁵	s+i ⁵	
saay ⁴ 'left (hand)'	saay ⁶	saay ⁶	saay ⁵
sak ⁴ 'to wash (clothes)'	sak ⁴	sak ⁵	sak ²
saak ³ 'carcass'		saa ²⁵	
faŋ ¹ 'to listen, obey'	faŋ ⁴	faŋ ⁴	faŋ ⁴
faa ⁴ 'sky'	faa ⁶	faa ⁶	faa ⁵
fak ⁴ 'to incubate'	fak ⁴	fak ⁵	fak ²
faak ³ 'split bamboo flooring'	faa ²⁴	faa ²⁵	
waa ¹ 'fathom'	vaa ⁴	vaa ⁴	vaa ⁴
(In all four languages the meaning is a measure equal to the distance between the ends of the outstretched arms.)			
waa ³ 'to say'	vaa ⁵	vaa ⁵	vaa ³
(In W B R used after verbs of speaking, thinking, etc., as in S.)			
way ⁴ 'to put away'	vay ⁶	vay ⁶	vay ⁵
wit ⁴ 'to scoop up (water) with both hands'		vit ⁵ or bit ⁵	vit ²
'work'	ve ⁴	via ²⁵	viak ³
(The ordinary noun meaning 'work' in W B R, used like S ɲaan ¹ .)			
yaŋ ¹ 'still, yet'	ñan ⁴	ñan ⁴	ñan ⁴
yɔɔ ¹ 'to praise'	ñɔ ⁴	ñɔ ⁴	ñɔɔ ⁴
(In W B R 'to lift in both hands')			
yam ³ 'to step on'	ñam ⁵	ñam ⁵	ñam ³
yɔɔm ⁴ 'to dye'	ñɔm ⁶	ñɔm ⁶	ñɔm ⁵
yɔɔt ³ 'highest point, tip'		ñɔt ⁵	ñɔɔt ³
yuŋ ¹ 'mosquito'	ñuŋ ⁴	ñuŋ ⁴	yuŋ ⁴
yij ¹ 'to shoot'		ñij ⁴	yij ⁴
(In B 'to take aim')			
'broom'	ñu ⁴	ñu ⁴	yuu ⁴
yaaw ¹ 'long'		ñaa ⁴	yaaw ⁴
(In B used only of sections of bamboo; otherwise 'long' is hi ⁴)			
yok ⁴ 'to raise'	ñok ⁴	ñok ⁵	yok ²

Note that this set differs from the preceding one only in R. As we have had occasion earlier to suspect dialect mixture in R resulting in confusion of ñ and y, the latter set remains doubtful.

S	W	B	R
riml 'edge'	him ⁴	him ⁴	him ⁴
rom ³ 'shade'	hum ⁵	hom ⁵	hom ³
ronn ⁴ 'hot'	hon ⁶	hon ⁶	hon ⁵
rak ⁴ rɛɛ ⁴ 'armpit'	hak ⁴ hɛ ⁶ or haan ¹ hɛ ⁶	hak ⁵ hɛ ⁶	hak ² hɛɛ ⁵
raak ³ 'root'	haa ⁴	haa ²⁵	haak ³
phɛɛl 'raft'	pɛ ⁴	pɛ ⁴	pɛɛ ⁴
phoo ³ 'father'	po ⁵	po ⁵	po ³⁵
(in R 'grown man')			
phap ⁴ 'to fold'	pap ⁴	pap ⁵	pap ²
phaat ³ 'to lay (a cloth, etc.) across'	paat ⁴	paat ⁵	
thaa ¹ 'road, way'	taan ⁴	taan ⁴	taan ⁴
thaw ³ 'ashes'	taw ⁵	taw ⁵	taw ³
thoon ⁴ 'stomach'	ton ⁶	ton ⁶	ton ⁵
thop ⁴ 'to fold double'	top ⁴	top ⁵	top ²
thaak ³ 'land leech'	taa ⁴	taa ²⁵	taak ³
(in B R also 'to measure')			
khon ¹ 'person, human being'	kun ⁴	kon ⁴	kon ⁴
khoy ³ 'gradually, slowly, carefully'	koy ⁵	koy ⁵	koy ³
khaa ⁴ 'to trade'	kaa ⁶	kaa ⁶	
khoh ⁴ 'crooked'	kot ⁴	kot ⁵	
khaap ³ 'to hold in the jaws'	kaap ⁴	kaap ⁵	kaap ³
chaay ¹ 'man'	caay ⁴	caay ⁴	caay ⁴
choŋ ³ 'crack, hole'	coŋ ⁵	coŋ ⁵	coŋ ³
chii ⁴ 'to point'	ci ⁶	ci ⁶	ci ⁵
chet ⁴ 'to wipe'	cet ⁴	cet ⁵	cet ²
ch+ak ³ 'rope, cord'	cə ⁴	c+a ²⁵	c+ak ³
phrɛɛl 'silk cloth'	pɛ ⁴	pɛ ⁴	
phray ³ 'common people'	pay ⁵	pay ⁵	
phraa ⁴ 'big knife'	paa ⁶	paa ⁶	
mi ⁴ phraaw ⁴ 'coconut'	maa ²² paaw ⁶	maa ²² paaw ⁶	maak ² paaw ⁵
phraak ³ 'to separate'		paa ²⁵	
phluu ¹ 'betel'	pu ⁴	pu ⁴	puu ⁴
phlik ⁴ 'to turn (something) over'	pik ⁴	pik ⁵	
(in W B also 'to return')			
kham ¹ 'gold'	xam ⁴	kam ⁴	kham ⁴
khoo ¹ 'neck'	xo ⁴	ko ⁴	khoo ⁴
kham ³ 'night, nightfall'	xam ⁵	kam ⁵	kham ³
(in W B R 'afternoon, evening')			
khon ⁴ 'hammer'	xon ⁶	kon ⁶	khon ⁵
(in W also 'to beat')			
kh++p ³ 'a measure'	x+p ⁴	k+p ⁵	kh++p ³

(In all four languages a noun referring to the distance from the end of the thumb to the end of the middle finger; in S W B also a verb meaning to move as a measuring worm does)

The preceding set is similar to the one above which showed the correspondence S kh W B R k except that W has x and R has kh in this set. Neither S nor B would enable us to distinguish them. If anyone needs convincing that the study of speech is more important than the study of written records for purposes like ours, Red Tai, with no writing system (at least in the area of our dialect) serves as a valuable object lesson; it has preserved a distinction of the parent language which many other Tai languages with greater prestige and literary cultures have lost. The reason, of course, is that sound changes occur in speech unconsciously and systematically regardless of cultural and social circumstances.

To finish up our examples, the preceding set also occurs with w in:

khwaay ¹ 'water buffalo'	xwaay ⁴	kwaay ⁴	khwaay ⁴
khwan ¹ 'smoke'	xwan ⁴ or xon ⁴	kwan ⁴	khwan ⁴
khwaam ¹ 'matter, substance, affair'	xaam ⁴	kwaam ⁴	khwaam ⁴

(In W B R 'word, language')

khwaan ³ 'to throw'	xwaan ⁵	kwaan ⁵
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Note that w is sometimes lost in W, as in other clusters with w studied earlier.

If R naay⁴ kwaan⁴ caaŋ⁵ 'elephant rider,' corresponding to S khwaan¹ chaŋ⁴ is not a loanword from some other dialect, then it provides an example of a w cluster belonging with the earlier set S kh W B R k.

There remain the striking sets S khr W B R c and S khl W B R c:

khraam ¹	'indigo'	caam ⁴	caam ⁴	caam ⁴
khraaŋ ¹	'to moan'	caaŋ ⁴	caaŋ ⁴	
khrua ¹	'kitchen'		cua ⁴	

(B has cua⁴ or h+an⁴ cua⁴ 'kitchen' and cua⁴ h+an⁴ 'family')

khri+a ¹ 'vine'	c+a ⁴	c+a ⁴
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(The W B words refer to the long flat row of threads (the warp) in a loom reaching out in front of the weaver; my identification with S khr+a¹ 'vine' may seem bold.)

khraŋ ³ 'sticklac'	caŋ ⁵	caŋ ³
khri+ŋ ³ 'half'	c+ŋ ⁵	c+ŋ ³

(In W R B used after kaŋ¹, meaning 'between, in the middle.')

(s+a⁵) khrooŋ³ 'big (tiger)' W (sə¹) cuŋ⁵

B (s+a¹) coŋ⁵

R (s+a¹) coŋ³

(S khrooŋ³ is regarded as a loanword from Cambodian by the Royal Institute Dictionary. We appear to have proved that it is a Tai word, with long oo before a final nasal the result of vowel lengthening within Siamese, as in so many other Siamese words.)

khri+aŋ ³ 'tools, equipment'	caŋ ⁵	c+aŋ ⁵	c+aŋ ³
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(The W B R words are used in expressions corresponding to Siamese usage, referring to clothing and other possessions and (followed by cognates of m+¹ 'hand') meaning 'tool.')

khraan ⁴ 'lazy'	caan ⁶	caan ⁶	caan ⁵
khrok ⁴ 'mortar'	cok ⁴	cok ⁵	cok ²
khraap ³ 'discarded snake skin'		caap ⁵	caap ³
khlaan ¹ 'to crawl'	caan ⁴	caan ⁴	
khlam ¹ 'to grope, feel'	cam ⁴ caa ⁴	cam ⁴ caa ⁴	
khloŋ ⁴ khɔɔ ¹ 'to lassoo'		cɔŋ ⁶ kɔ ⁴	cɔŋ ⁵ khɔɔ ⁴

The two preceding sets have been studied in other languages by Fang-kuei Li on p. 377 of his article on consonant clusters referred to earlier.

We have now completed our study of initial consonant correspondences in the three tonal types. Let us consider our findings in the light of the generally accepted theoretical view of what happened to the sound system of Proto Tai as it broke up into different branches and underwent changes.

It is generally believed, on the basis of the comparative study of Tai languages aided by evidence from the way in which various Tai languages adapted Indian writing systems in the early centuries before many of the basic sound changes took place, and also aided by study of how foreign loanwords that were borrowed early have changed in the various languages, that Proto Tai had three tones on free syllables, and then checked syllables with short or long vowels on which there was no tonal distinction.

Then after the languages had separated they underwent sound changes which increased the number of tones, making splits in the original pattern on the basis of the phonetic nature of the original initial consonants, some of which then (or later) underwent various changes of their own.

The most basic split divided the original three tones into two sets of three, resulting in six, and divided the checked syllables into two types, all on the basis of the voiced or voiceless nature of the initial consonant, so that a system which originally looked like this:

Free syllables			Checked syllables	
Tone A or 0	Tone B or 1	Tone C or 2	Short vowel	Diphthong or long vowel

came to look like this:

	Original Tone A or 0	Original Tone B or 1	Original Tone C or 2	Checked Syllables	
Original voiceless initial				Short	Long
Original voiced initial				Short	Long

The first of these two charts must represent the state of affairs at the time the Siamese and also the White Tai and Black Tai writing systems were invented; from the first, and to this day, the Siamese script has marked the tones in accordance with the first chart, with no tone mark for tone A or 0, the first tone mark for tone B or 1, and the second tone mark for tone C or 2 (Professor Li uses A B C; Professor Søren Egerod uses 0 1 2.) One is tempted to theorize that tone A or 0 was somehow neutral or toneless, and so also the checked syllables. Aside from the support for this idea afforded by the Siamese system for marking the tones, there is the additional argument that no matter what Tai language one is studying, or at what stage of its history, he always finds about twice as many words in the tone A or 0 box as in either the tone B or 1 or the tone C or 2 boxes.

Our second chart, representing the state of affairs after the split, actually shows the present-day tone system of White Tai and Black Tai, in which there are six tones on free syllables and a pattern in the checked syllables similar to what we see in the second chart. All our work on tonal categories amounted to starting from scratch, ignoring temporarily the historical information which we have now allowed ourselves to consider, and sorting things out with results that agree completely with this historical picture.

Red Tai has the same tonal system as White Tai and Black Tai except that in Red Tai (as in Siamese) the tone of the third box of the upper row and that of the second box in the lower row have fallen together. Red Tai has also combined the two short-vowel boxes in the checked syllables.

Siamese, like some other Tai languages outside the scope of our study, has made an additional split of the upper row into two, but in the first box only; the basis of the split was whether the then voiceless initial consonant was accompanied by aspiration or not. The initials of words in what we called box 1a in our earlier chart had such aspiration, while those in our earlier box 1b did not. Siamese, like White, Black, and Red Tai, made no such distinction elsewhere in the top row.

There are Tai languages which have made still further splits; some, including some Tai dialects within Thailand, made a further tonal split in the tones of syllables having an original voiceless unaspirated stop, so that those beginning with sounds like p t k went one way while those beginning with ʔ went another. The latter group has been found to include words now having initial b and d and some words having initial y. This was worked out by Fang-kuei Li in "The hypothesis of a pre-glottalized series of consonants in Primitive Tai" (Bulletin of the Institute of History and Philology, Academia Sinica 11 (1947), pp. 177-188). Careful study of the DeGeorge collection of Red Tai proverbs referred to earlier leads one to suspect that in the dialect of Red Tai which he studied there was a tonal distinction in these ʔb ʔd ʔy syllables not found in any of the dialects that we have been treating. His tone markings are remarkably consistent, and agree with the tones of our Red Tai dialect, except in words of this category, where he becomes very inconsistent.

Now to interpret our findings with regard to correspondences of initial consonants in the light of all this. In what we have called type 1a, where presumably the parent language had voiceless initials with aspiration, it is not surprising to find the correspondences S W B R s, S W B R f, S W B R h, since these are all still voiceless fricatives. Presumably S W B R th and S W B R kh go back to voiceless aspirated stops; that is what they still are. And S W ph B R f surely goes back to ph.

Proof that S W are more conservative here lies in the fact that the distinction made by S W between words with S W B R f and S W ph B R f has clearly been lost by B R, rather than the reverse; in B R fii¹ 'ghost,' and 'boil' have fallen together, whereas S W and most other Tai languages keep them separate.

For S kh W x B R kh, together with the w cluster of the same type, it is usually assumed that the parent language had a voiceless velar fricative x. Among our four languages only White Tai has kept it distinct from S W B R kh.

In the case of S kh W ch B R s, if Professor Li is right, we have survivals of consonant clusters khr and khl in the parent language. Students of Siamese will not find this hard to believe, since Siamese has only a few words with initial khr or khl, suggesting that the older clusters became kh and then later a few words were borrowed, none of which is found to have cognates in other Tai languages.

We are left with the correspondences S W B R m, S W B R n, S W B R l, S W B R w (with v in W B R and sometimes b in B R), and S η W B R h. The usual theory, suggested by the spelling hm, hn, etc., not only in Siamese script but in White Tai and Black Tai and other old scripts, is that these sounds were originally preceded by aspiration, which caused them to fall into this category with respect to tonal behavior, and then later the aspiration was lost, except in the case of S η W B R h where it alone survived.

Our mysterious correspondence S y W B ñ R y probably belongs also in this group, going back in all likelihood to hñ.

Turning to our category lb, which presumably originally had voiceless unaspirated initials, it is not surprising to find the correspondences S W B R ? p t k (with kw) c; all of these are still voiceless unaspirated stops. In the light of Professor Li's theory of preglottalized initials, the correspondences S W B R d b y would go back to ?d, ?b, and ?y. In S kl W B R k, S kr W B R k, S pl W B R p, W B R have simply lost the l or r without a trace. As has been pointed out, Professor Li has surmised that S d W B R b go back to a preglottalized cluster.

Everything in the lower row (our earlier type box 4) is presumed to have had originally a voiced initial. This is not hard to believe in the case of the correspondences S W B R m n y η l w (with W v and so on). S y W B R ñ presumably goes back to earlier ñ. Whether S y W B ñ R y is genuinely different from it is still a question; if so, we will have to look farther afield, in other Tai languages, for evidence as to the nature of the distinction. In the case of S r W B R h it is obvious that Siamese preserves the original sound.

S W B R s f must stand for earlier voiced sounds which have become voiceless. The same is true of S ph W B R p, S th W B R t, S kh W B R k, and S ch W B R c. Siamese phl and phr are simply subvarieties of Siamese ph. In S kh W x B k R kh, together with the w cluster, we have evidence of an original voiced velar spirant. S khr W B R c and S khl W B R c, if Professor Li is right, reflect earlier clusters beginning with a voiced initial.

Vowels

The generally accepted analysis of Siamese vowels lists nine:

i	ɨ	u
e	ə	o
ɛ	a	ɔ

which also occur long (written double), plus three diphthongs ia ɨa ua. Examples (given to explain the symbols) are:

kin ¹ 'to eat'	
mɨ ¹ 'you'	
khut ² 'to dig'	
phet ² 'spicy hot'	
ŋən ¹ 'silver, money'	
son ³ 'heel'	
kɛŋ ² 'rapids'	
tam ¹ 'to pound'	
klɔŋ ² 'box'	
dii ¹ 'good'	diit ² 'to kick'
mɨɨ ¹ 'hand'	mɨɨt ³ 'dark'
muu ⁵ 'pig'	khuut ² 'to scrape'
thee ¹ 'to pour out'	neen ¹ 'novice'
kləə ¹ 'comrade'	təəm ¹ 'to add'
phoo ¹ 'Bo tree'	khloon ¹ 'mud'
mɛɛ ³ 'mother'	dɛɛt ² 'sunshine'
ʔaa ³ 'to open the mouth'	daap ² 'sword'
rɔɔ ¹ 'to wait'	hɔɔk ² 'spear'
mia ¹ 'wife'	kliat ² 'to hate'
rɨa ¹ 'boat'	lɨat ³ 'blood'
khrua ¹ 'kitchen'	nuak ² 'deaf'

White Tai also has nine vowels, for which the same symbols are used. There is a distinction between short and long vowels only in the case of short a versus long aa. There are no diphthongs. Examples:

hi ⁴ 'long'	hin ¹ 'to see'
mɨ ⁴ 'hand'	mɨt ⁴ 'dark'
hu ¹ 'ear'	khut ² 'to dig'
me ⁴ 'wife'	cet ² 'seven'
hə ⁴ 'boat'	lət ⁴ 'blood'
tho ² 'beans'	not ² 'beard'
tɛ ⁶ 'really'	dɛt ² 'sunshine'
	tap ² 'liver'
xaal ¹ 'leg'	naam ¹ 'thorn'
tɔ ¹ 'stump'	tɔ ² 'to pound'

Although all the vowels in the first column above have the same length, and sound very much like the vowels written long in Siamese, only aa is written long by Donaldson and Martini and other students of White Tai. The argument, as I interpret it, seems to go like this: pairs like hap² 'to close' and haap² 'to carry on the two ends

of a pole over the shoulder' show a distinction which must be indicated in the transcription. The vowel of a word like xaa¹ 'leg' sounds like that of haap², while in the case of the other vowels there is no such parallel. Moreover, when a word like maa²² 'fruit' loses its final glottal stop internally in a phrase it is indistinguishable from maa² or any similar word which never had a final glottal stop. It would seem that one might accept all of this argument and then go one step further and decide to write all the vowels double when there is no final consonant, on the grounds that they all sound (as regards duration) like the vowel written aa. But for White Tai I have simply followed the accepted system.

Black Tai has the same nine vowels as White Tai, plus three diphthongs ia +a ua, with a length distinction only in a versus aa:

- mi⁴ 'to have'
- s+¹ 'writing'
- pu¹ 'crab'
- pe³ 'to carry on the back'
- cə⁴ 'time, hour'
- to¹ clf. for animals
- ke³ 'to undo, untie'
- paa¹ 'fish'
- to² 'to join'
- mia⁴ 'wife'
- k+a¹ 'salt'
- hua¹ 'head'

- tin¹ 'foot'
- ?+t² 'to go hungry'
- ?um³ 'to carry in the arms'
- pet² 'duck'
- sək² 'war'
- som³ 'sour'
- bən² 'to shoot'
- tap² 'liver'
- kwaan³ 'wide'
- nən⁶ 'younger sibling'
- siam¹ 'spade'
- b+an¹ 'month, moon'
- suan¹ 'garden'

The same principles have been followed here as in transcribing White Tai vowels. It should therefore be kept in mind that the final vowels written with a single symbol, as in mi⁴ 'to have', actually sound as long as the vowel of paa¹ 'fish', or as long as the vowels written double in the transcription of Siamese.

The list of Red Tai vowels is the same as for Black Tai. At this early stage of the investigation, however, it is not certain whether there is a distinction in vowel length in other vowels than a versus aa. The speaker insists that khut² 'to dig' differs from khuut² 'to scrape' (as in Siamese), and it is clear that they do indeed differ in length in his pronunciation. The question is whether this is really a Red Tai distinction or the result of contamination from Lao.

The vowels of third-tone checked syllables like moot³ 'one' are phonetically long as compared with the vowel of mot² 'ant', but this may be an automatic feature of the tone. This question can be solved if and when we find in Red Tai a minimal contrast, or lack of it, in words with second tone checked syllables, for there the tones are so phonetically similar that any difference in length of vowels other than a and aa would be critical.

This means that the Red Tai material used in this paper is not really ready, but since the rest of the sound pattern of the language is clear, and since nothing has been available on this Tai language, which shows so many interesting similarities to and differences from White Tai and Black Tai, it has been included. Because the question of vowel length is uncertain, I have transcribed final vowels long, as in Siamese, and elsewhere transcribed them as I heard them:

thii ² 'closely spaced'	iq ¹ 'to lean back'	piik ² 'wing'
m+i+ ⁴ 'hand'	n+i ³ 'to steam'	kh+i+n ⁴ 'night'
muu ¹ 'pig'	khut ² 'to dig'	khuu ² 'to scratch'
tak ² kee ⁵ 'gecko'	hen ¹ 'to see'	
sæ ² 'to put'	ʔək ² 'chest'	tæp ² 'big'
khoo ¹ 'dry'	bot ² 'cloudy'	moot ³ 'one'
pεε ⁴ 'raft'		pεεt ² 'eight'
	kan ¹ 'each other'	
khaa ¹ 'leg'		khaat ² 'torn'
hoo ² 'to wrap'		book ² 'flower'
mia ⁴ 'wife'		khia ² 'small frog'
y+a ² 'meat'		l+at ³ 'blood'
khua ¹ 'bridge'		suan ¹ 'garden'

Red Tai ε and o are strongly diphthongal, with a centering offglide.

All these languages have other vowel sequences which phonetically are diphthongs or triphthongs. These are analyzed as ending in w y or ʏ, and will be treated in the section on final consonants.

Comparison of Vowels

Much of this subject is very simple and so obvious that it hardly need be given special mention; for example long aa occurs in hundreds of sets of cognates without variation. Other problems are easily solved. But there are still other problems concerning the vowels for which no solution seems possible at the present stage of our knowledge of comparative Tai linguistics.

To make sure we have spotted all the similarities and differences in vowels in our four languages, we will take up each of the Siamese vowels in its various environments and look at the vowels in the cognates.

Among the vowels not followed by a final consonant, we find the following instances of identity.

S	W	B	R
phii ¹ 'fat'	pi ⁴	pi ⁴	pii ⁴
m+i+ ⁴ 'meal'	m+i ⁶	m+i ⁶	m+i+ ⁵

(The usual word for 'day' in W B R)

phu ¹ 'mountain'	pu ⁴	pu ⁴	puu ⁴
kεε ² 'old (of living beings)'	kε ²	kε ²	kεε ²
(in W B R 'adult and married')			
haa ⁵ 'to seek'	haa ¹	haa ¹	haa ¹
kɔɔ ¹ 'clump (as of bamboo)'	kɔ ¹	kɔ ¹	kɔɔ ¹
(in W B R 'tree, plant' used like S ton ³)			

Each of the above six correspondences is extremely frequent. No cognates are found for Siamese words ending in ee əə oo, nor for e ə o in Black Tai (to¹ clf. for animal is an exception which will be discussed later), nor for ee oo in Red Tai; Red Tai əə, as we shall see later, corresponds to S ay W B ay.

The diphthongs ia ÷a ua of S B R correspond to W e ə o, with a great many instances:

mia ¹ 'wife'	me ⁴	mia ⁴	mia ⁴
s+a ³ 'shirt'	sə ³	s+a ³	s÷a ³
hua ⁵ 'head'	ho ¹	hua ¹	hua ¹

Turning now to the vowels when followed by nasals, we find Siamese i always corresponding to i in W B R. The distinction between short i and long ii in Siamese before m and n is not made by W B; we do not yet feel certain about R.

chim ¹ 'to taste'	cim ⁴	cim ⁴	cim ⁴
khiim ¹ 'pliers, tongs'	kim ⁴	kim ⁴	kiim ⁴
hin ⁵ 'stone'	hin ¹	hin ¹	hin ¹
tiin ¹ 'foot'	tin ¹	tin ¹	tin ¹
piŋ ¹ 'leech'	piŋ ¹	piŋ ¹	piŋ ¹

Siamese ÷ always corresponds to W B R ÷ before m n ŋ, but the length distinction found in Siamese does not occur in W B.

l÷m ¹ 'to forget'	l÷m ⁴	l÷m ⁴	l÷m ⁴
kh÷n ³ 'to go up'	x÷n ³	kh÷n ³	kh÷n ³
kh÷n ¹ 'night'	x÷n ⁴	k÷n ⁴	kh÷n ⁴
ph÷ŋ ³ 'bee, beeswax'	ph÷ŋ ³	f÷ŋ ³	f÷ŋ ³

Siamese u corresponds to W B R u in the same way.

ʔum ³ 'to carry in the arms'	ʔum ³	ʔum ³	ʔum ³
nun ³ 'kapok'	nun ⁵	nun ⁵	nun ³ ŋiw ⁵
muŋ ¹ 'to roof'	muŋ ⁴	muŋ ⁴	muŋ ⁴
suuŋ ⁵ 'high, tall'	suŋ ¹	suŋ ¹	suuŋ ¹

When we come to S e before m n ŋ, we find the regular correspondence S B R a. W i. Again the length distinction does not appear in the other languages. It is clear that W has made the change, because it fails to make a distinction between, for example, 'stone' and 'to see' which the other languages make consistently.

khem ⁵ 'needle'	xim ¹	khem ¹	khem ¹
hen ⁵ 'to see'	hin ¹	hen ¹	hen ¹
leen ⁵ 'great-grandchild'	lin ¹	len ¹	laan ¹ len ¹
beŋ ² 'to strain'	biŋ ²	beŋ ²	

The only word having ə before a nasal for which cognates are known is

ŋən¹ 'silver, money' ŋ + n⁴ ŋən⁴ ŋən⁴

It is hardly safe to draw conclusions from a single word, but we cannot help being struck by the fact that as in the preceeding set B R agree with S, but W has the vowel which phonetically is higher. The same is true when we come to the vowel o, where B R agree with Siamese but W has raised the o to u before a nasal:

tom ³ 'to boil'	tum ³	tom ³	tom ³
son ³ 'heel'	sun ³	son ³	son ³
plon ¹ 'to take down, put down'	puŋ ¹	poŋ ¹	poŋ ¹

The vowel ɛ occurs before all three nasals:

kɛɛm ³ 'check'	kɛm ³	kɛm ³	kɛm ³
khɛɛn ⁵ 'arm'	xɛn ¹	khɛn ¹	khɛn ¹
mɛɛŋ ¹ 'insect'	mɛŋ ⁴	mɛŋ ⁴	mɛŋ ⁴

Since contrasts of short ɛ and long ɛɛ before m n ŋ are difficult to find even in Siamese (S khɛŋ⁵ 'hard' and S sɛɛŋ⁵ 'light' are among the few examples), it is not surprising that W B R show no contrast in length.

khɛŋ ⁵ 'hard'	khɛŋ ¹	khɛŋ ¹
sɛɛŋ ⁵ 'light'	sɛŋ ¹	sɛŋ ¹

(W sɛŋ¹ means 'jewel'; B sɛŋ¹ means both 'jewel' and 'light'.)

The distinction between short a and long aa is consistently maintained before m n ŋ:

tam ² 'short (not tall)'	tam ²	tam ²	tam ²
khan ⁵ 'to crow'	xan ¹	khan ¹	khan ¹
taŋ ² 'stool'	taŋ ²	taŋ ²	taŋ ²

(the usual word for 'chair' in W B R)

khaam ³ 'to cross'	xaam ³	khaam ³	khaam ³
?aan ¹ 'saddle'	?aan ¹	?aan ¹	?aan ¹
haaŋ ⁵ 'tail'	haaŋ ¹	haaŋ ¹	haaŋ ¹

In some cases Siamese has made a change in vowel length; for example the modern S pronunciation chaŋ³ 'expert, skilled' differs from W B caaŋ⁵ with the same meaning. R has the pronoun taan³ 'you', which in modern Siamese pronunciation has shortened its vowel to than³.

Cases of Siamese lengthening of a to aa are more frequent:

naam ⁴ 'water'	nam ⁶	nam ⁶	nam ⁵
daam ³ or dam ³ 'handle (of knife)'	dam ³	dam ³	lam ³
(Diguët gives B lam ³)			
daaŋ ² 'lye (water)'	daŋ ²	daŋ ²	laŋ ²

S khaaŋ³ 'kind of ape', may be another example. R has kaaŋ³, B has kaŋ⁵, for kinds of monkeys or apes, but it is not certain that they all refer to the same animal or are really cognates.

The vowel ɔ resembles ɛ in that length contrasts before m n ŋ are difficult to find before S m n ŋ and absent in the other languages:

hɔɔm ⁵ 'fragrant'	hɔm ¹	hɔm ¹	hɔɔm ¹
?ɔɔn ² 'young, soft'	?ɔn ²	?ɔn ²	?ɔɔn ²
khɔɔŋ ⁵ 'thing; of'	xɔŋ ¹	khɔŋ ¹	khɔɔŋ ¹

The diphthongs ia ÷ a ua of S B R shift to e ə o in W before nasals as they do elsewhere:

siam ⁵ 'spade'	sem ¹	siam ¹	siam ¹
thian ¹ 'candle'	ten ¹	tian ⁴	tian ⁴
sian ⁵ 'sound'	sen ¹	sian ¹	sian ¹
ɲuu ¹ lɪam ⁵ 'python'	ɲu ⁴ lɛm ¹	to ¹ lɪam ¹	ɲuu ⁴ lɪam ¹
rɪan ¹ 'house'	hən ¹	hɪan ⁴	hɪan ⁴
lɪaŋ ⁵ 'yellow'	ləŋ ¹	lɪaŋ ¹	lɪaŋ ¹
luam ⁵ 'loose fitting'	lom ¹	luam ¹	
suan ⁵ 'garden'	son ¹	suan ¹	suan ¹
kluaŋ ¹ 'hollow'	koŋ ¹	kuaŋ ¹	kuaŋ ¹

(In W B R not 'hollow,' but the usual word for 'in, inside')

It remains only to consider the vowels of checked syllables, before final stops, since vowels followed by w y ɣ will be discussed under final consonants.

Before p t k, the S vowels i and ii are always i in W B, with no length distinction; length appears to be preserved sometimes in R, but this is not yet certain.

sip ² 'ten'	sip ²	sip ²	sip ²
kiip ² 'hoof'	kip ²	kip ²	kip ²
(In W the cloven foot of a pig, not of a horse)			
miit ³ 'knife'	mit ⁴	mit ⁵	miit ³
phit ² 'wrong'	phit ²	fit ²	fit ²
piik ² 'wing'	pi ^{ʔ2}	pi ^{ʔ2}	piik ²
phlik ⁴ 'to turn over'	pik ⁴	pik ⁵	

(In W B 'to turn (something) over; to return, turn back')

Before p and t, the vowel ÷ behaves like i:

krä ² th÷p ³ 'to stamp (on)'	t÷p ⁴	t÷p ⁵	
m÷t ³ 'dark'	m÷t ⁴	m÷t ⁵	m÷t ³

But ÷ before k (always short in all the languages) is always ə in W but ÷ in R. The situation in B is not certain; it is usually B ə, but both my notes and Diguët have ÷ in the word for 'late at night,' while for 'deep' my notes show ÷ but Diguët gives ə.

s÷k ² 'enemy, war'	sək ²	sək ²	
th÷k ² 'young male animal'	thək ²	thək ²	th÷k ²
d÷k ² 'late at night'	dək ²	d÷k ²	l÷k ²
(B l÷k ² in Diguët)			
l÷k ⁴ 'deep'	lək ⁴	l÷k ²	
(B lək ² in Diguët)			

S u and uu are W B u; R seems to maintain the distinction in length:

hup ² 'to make smaller'	hup ²	hup ²	
luup ³ 'to stroke'	lup ⁴	lup ⁵	
khut ² 'to dig'	khut ²	khut ²	khut ²
khuut ² 'to scrape'	xut ²	khut ²	khuut ²
suk ² 'cooked, ripe'	suk ²	suk ²	suk ²
pluuk ² 'to plant'	pu ^{ʔ2}	pu ^{ʔ2}	puuk ²

The vowel e before p t k is uniform in all four languages. Siamese words with long ee have no cognates in the other languages.

lep ⁴ 'fingernail, toenail'	lep ⁴	lep ⁵	lep ²
cet ² 'seven'	cet ²	cet ²	cet ²
lek ² 'iron'	lek ²	lek ²	lek ²

The Siamese vowel ə shows no cognates before p t k. For o the situation is as with e:

khop ² 'to bite'	khop ²	khop ²	khop ²
(The usual word in W B R; S kat ² is not used)			
plot ² 'to remove'	pot ²	pot ²	pot ²
hok ² 'six'	hok ²	hok ²	hok ²

In words for which cognates exist the vowel ε is always long εε in S R and without length distinction in W B:

khεεp ³ 'narrow'	xεp ⁴	kεp ⁵	khεεp ³
pεεt ² 'eight'	pεt ²	pεt ²	pεεt ²
tεεk ² 'to break'	tε ²	tε ²	tεεk ²

The vowel ɔ shows the same behavior as ε:

cɔɔp ² 'hoe'	cɔp ²	cɔp ²	cɔɔp ²
tɔɔt ² 'to nibble (of fish)'	tɔt ²	tɔt ²	tɔɔt ²

(also 'to bite (of a snake)' in W B R, and 'to peck (of birds and chickens)' in W)

tɔɔk ² 'bamboo strip for tying'	tɔ ²	tɔ ²	tɔɔk ²
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Short a before p t k agrees in all four languages:

lap ⁴ 'to sharpen (a knife)'	lap ⁴	lap ⁵	lap ²
sat ² 'animal'	sat ²	sat ²	sat ²
hak ² 'to break'	hak ²	hak ²	hak ²

And likewise long aa:

? aap ² 'to bathe'	? aap ²	? aap ²	? aap ²
tã ² paat ² 'kind of small frog'	kop ² paat ²	paat ²	kãpaat ²
laak ³ 'to pull, drag'	laa ⁴	laa ²	laak ³

The S B R diphthongs ia ÷a ua correspond to W e ə o before p t k, as elsewhere. Only ÷a before p presents a problem; the one known example shows wild variation in the final consonant:

l÷ap ² 'gadfly'	lə ²	l÷a ²	l÷at ²
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This bizarre example would be relegated to our residue of incomprehensible exceptions except that it may be relevant to the system. Perhaps ÷a did not occur before p in earlier stages of Tai. No examples of ia before p have been found except S B siap² 'to impale.'

Examples of the other diphthongs are:

khiat ² 'small frog'	khet ² , khwet ²	khiat ²	khiat ²
'work'	ve ⁴	via ²	viak ³
l÷at ³ 'blood'	lɔt ⁴	l÷at ⁵	l÷at ³
ŋ÷ak ³ 'mythical water creature'	ŋə ⁴	ŋ÷a ²	ŋ÷ak ³
buap ² 'kind of squash'	maa ² bop ²	maa ² buap ²	maak ² buap ²
nuat ² 'beard'	not ²	nuat ²	nuat ²
nuak ² 'deaf'	no ²	nua ²	nuak ²

Little can be inferred from our study of vowels as to the vowel system of Proto Tai. If all Tai languages resembled these four in their vowels, the problem might be soluble, but it is known that strange things appear when one examines the vowels of more remote Tai languages of Vietnam and China. Moreover, even in these four rather closely related languages there are unexpected vowels (see below in the section on exceptions) which make one reluctant to start making a reconstruction on the basis of the rather simple and regular vowel pattern that we have just examined.

But some interesting questions suggest themselves. For example, W B have a distinction in vowel length only in short a versus long aa, while S and apparently R have length distinctions in some of the other vowels. Did the S length distinction in the high vowels i + u arise within S, or in an area including S and R, or on the other hand do S and R preserve an earlier distinction that W B have lost? We will find more evidence for the solution of this problem when we study the final consonants.

Did W change SBR ia +a ua to e ə o, or vice versa? SBR have very frequent e ə o in words that are no doubt original, but SBR also have long ee əə oo; these appear to be recent innovations, so that it is conceivable that older long ee əə oo of SBR changed to ia +a ua.

Another point seems more promising: many S words with short e and o have cognates in the other languages, but S words with long ee and oo have none. On the other hand, S long εε and ɔɔ seem to be real Tai vowels while short ε and ɔ appear to have arisen within S. This suggests two possible theories. It may be that the parent language had four vowels in this area e ε o ɔ, of which e and o became short in S and ε and ɔ became long, while in W B the four vowels survived with no length distinction. Or perhaps the parent language had only one vowel e (and no ε) and only one vowel o (and no ɔ), but with a distinction in vowel length, so that e became S W B R e and ee became S R εε but W B ε. Similarly, short o would have become S W B R o, but long oo would have become S R ɔɔ but W B ɔ. At least it is worth keeping in mind, when we examine the vowels in other branches of Tai, that the four languages we have been studying would suggest not a full array of short e ε o ɔ and long ee εε oo ɔɔ in the parent language, but some pattern only half so extensive as this.

Final Consonants

Most aspects of this subject can be skipped over quickly, because we have unavoidably displayed most of the final consonants in the preceding section. Examples will be found there showing how extremely uniform all four languages are in syllables with no final consonant, in final nasal consonants m n ŋ, and in final stops p and t.

Readers will already have noticed that final k of SR often becomes final ? in WB, but not always. The rule here is very simple: final k of syllables in which SR have a short vowel remains k in WB, but final k of syllables in which SR have a long vowel or a diphthong becomes ? in WB. Examples:

phlik ⁴ 'to turn over'	pik ⁴	pik ⁵	
piik ² 'wing'	pi ^{?2}	pi ^{?2}	piik ²
s+k ² 'enemy, war'	sək ²	sək ²	
pluk ² 'to awaken (someone)'	puk ²	puk ²	
pluuk ² 'to plant'	pu ^{?2}	pu ^{?2}	puuk ²

lek ² 'iron'	lek ²	lek ²	lek ²
ʔεεk ² 'yoke'	ʔεʔ ²	ʔεʔ ²	ʔεεk ²
pok ² 'to cover'	pok ²	pok ²	pok ²
pɔɔk ² 'to peel'	pɔʔ ²	pɔʔ ²	pɔɔk ²
tak ² 'to dip out'	tak ²	tak ²	tak ²
taak ² 'to expose to sun'	taaʔ ²	taaʔ ²	taak ²
'work'	ve ⁴	via ^{ʔ5}	viak ³
l+ak ³ 'to choose'	lɔ ⁴	l+a ^{ʔ5}	
luak ³ 'to scald'	lo ⁴	lua ^{ʔ5}	

No final glottal stop appears in the transcription of White Tai words of this type having fourth tone. These sound exactly like fourth tone words with final vowel in free syllables where no earlier final stop existed; the fourth tone has automatic glottal constriction with a final glottal stop which is lost internally in a phrase, both in free syllables and in words like those in the table above. W second tone words also lose their final glottal stop internally in a phrase, but in isolation words like pɔʔ² and taaʔ² are different from anything else, so that the glottal stop has to be written.

Attempts have been made by some students of White Tai to devise systems of romanization (really transliterations of the White Tai writing system) in which fourth tone words with no earlier final consonant would be written without a final, while fourth tone words like those in our table above would be spelled with a final k or c. These attempts have resulted in constant error, since it is difficult to remember, and sometimes impossible to know, what the earlier form was.

In Black Tai, as has been pointed out earlier, all the final glottal stops have to be indicated, because neither of the tones involved falls together with any automatically glottalized tone of the free syllables.

We now have proof of some of our tentative theories regarding vowel length in S R. Since W B change k to ʔ only in words which in S R have a long vowel or diphthong, W B must also go back to a language which had length distinctions not only in a versus aa but in other vowels as well. The distinction between i and ii appears to be original, as well as that between u and uu. No example of long ++ has been found. And it looks as if our theory that e and o were originally short, while εε and ɔɔ were their corresponding long forms, has been confirmed, or at least strengthened, and if this theory turns out to be correct then we have strong reason to believe that S B R ia +a ua are original, and have changed to e ə o within W, since there would now no longer be an earlier long set ee əə oo available as their source.

All four languages have diphthongs ending in w and y, and W B have a diphthong ay, ending in a semivowel similar to the vowel ɨ. The diphthongs of each language that appear in real Tai words (those having cognates in the other languages) will appear in our discussion. Each language has a few additional diphthongs appearing in loanwords or exclamations or onomatopoetic words.

Taking up first the diphthongs ending in w, Siamese iw appears as iw in W B R:

siw ⁵ 'pimple'	siw ¹	siw ¹	siw ¹
pliw ¹ 'to blow away'	piw ¹	piw ¹	piw ¹
hiw ³ 'to carry as one carries a suitcase'	hiw ³	hiw ³	hiw ³

For Siamese iaw there are two correspondences, W B R ϵw in some words and New B R iaw in others, suggesting that in S two earlier diphthongs have fallen together.

khiaw ⁴ 'to chew'	k ϵw ⁶	k ϵw ⁶	k ϵw ⁵
khiaw ⁵ 'green'	xew ¹	kh ϵw ¹	kh ϵw ¹
khiaw ³ 'tooth'	x ϵw ³	kh ϵw ³	kh ϵw ³
hiaw ² 'withered'	h ϵw ²	h ϵw ²	

(In W B also 'wrinkled (of face or clothing)')

niaw ⁵ 'tough, sticky'	new ¹	niaw ¹	niaw ¹
diaw ¹ 'single, same'	dew ¹	diaw ¹	diaw ¹

(B liaw¹ in Diguet)

S ϵw and eew are W B R ϵw , with no length distinction; the length distinction in S seems also to be inconsistent except perhaps in rew¹ 'fast' versus eew¹ 'bad'; it may be that only eew is old in Siamese.

plew ¹ 'flame'	p ϵw ¹	p ϵw ¹	p ϵw ¹
?ew ¹ 'waist'	? ϵw ¹	? ϵw ¹	? ϵw ¹
leew ⁵ 'liquid, soft'	l ϵw ¹	l ϵw ¹	
heew ⁵ 'chasm'		h ϵw ¹	huu ⁴ h ϵw ¹

Siamese $\epsilon\epsilon w$ is W B R ϵw :

r $\epsilon\epsilon w$ ⁴ 'a snare'	h ϵw ⁶	h ϵw ⁶	h ϵw ⁵
ph $\epsilon\epsilon w$ ³ 'to clean'	ph ϵw ³	f ϵw ³	f ϵw ³
('to sweep' in W B R)			
n $\epsilon\epsilon w$ ¹ 'line, row'		n ϵw ⁴	n ϵw ⁴
(also 'kind' in B R)			

The above four sets of correspondences suggest an earlier four way distinction which S has reduced to three and W B R to two.

For Siamese aaw and aw the other languages also have aaw and aw :

daaw ¹ 'star'	daaw ¹	daaw ¹	laaw ¹
(B laaw ¹ in Diguet)			
haaw ¹ 'to yawn'	haaw ¹	haaw ¹	haaw ¹
paaw ² 'to announce'	paaw ²	paaw ²	
saaw ⁵ 'young unmarried woman'	saaw ¹	saaw ¹	saaw ¹
?aw ¹ 'to take'	?aw ¹	?aw ¹	?aw ¹
paw ² 'to blow'	paw ²	paw ²	
khaw ³ 'to enter'	xaw ³	khaw ³	khaw ³
raw ¹ 'we (you and I, exclusive of others)'	haw ⁴	haw ⁴	haw ⁴

A number of words of this type have long aaw in modern Siamese speech; the other languages show the older form.

chaaw ⁴ 'morning'	caw ⁶	caw ⁶	caw ⁵
kaaw ³ 'nine'	kaw ³	kaw ³	kaw ³
klaaw ³ 'hair knot'	kaw ³	kaw ³	kaw ³
khaaw ³ 'rice'	khaw ³	khaw ³	khaw ³
plaaw ² 'empty'	paw ²	paw ²	paw ²

Modern Siamese has caw³ as a pronoun meaning 'you', but caaw³ meaning 'owner, lord, master.' W B R have caw³ in both meanings.

Turning to diphthongs ending in y, for S uay the usual correspondence is S B R uay W oy:

kluay ³ 'banana'	koy ³	kuay ³	kuay ³
huay ³ 'mountain stream'	hoy ³	huay ³	huay ³
thuay ³ 'cup'	thoy ³	thuay ³	thuay ³
('bowl' in W B R)			

But for S chuay³ 'to help' W B have cøy⁵, and for S duay³ 'with' there is the very surprising cognate W døy³.

For S +ay the regular correspondence is S B R +ay W əy:

m+ay ³ 'stiff and tired'	məy ⁵	m+ay ⁵	
p+ay ² 'tender; decayed'	pəy ²	p+ay ²	p+ay ²
n+ay ² 'tired'	nəy ²	n+ay ²	n+ay ²

For S pl+ay¹ B R p+ay¹ 'naked' my notes show no W cognate, and Minot's dictionary gives none. Something is seriously wrong in the following example:

d+ay ¹ 'cockspur'	də ¹	d+a ¹	kəd+a ¹
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Apparently the Siamese form is out of line, but this word also has unexpected shapes in other Tai languages outside the scope of this study.

Siamese oy and cøy (there really is no consistent distinction in S, where the length depends usually upon tone) correspond to W B R əy:

høy ⁵ 'mollusc'	həy ¹	həy ¹	həy ¹
nəy ⁴ 'small, few'	nəy ⁶	nəy ⁶	nəy ⁵
ŋəy ³ 'crippled'	ŋəy ⁵	ŋəy ⁵	ŋəy ³

For aay all four languages agree:

saay ⁵ 'late in the morning'	saay ¹	saay ¹	saay ¹
laay ¹ 'stripe, design, mark'	laay ⁴	laay ⁴	laay ⁴
maay ³ 'widowed'	maay ³	maay ³	maay ³

(In all four languages preceded by the cognate of S mɛɛ³ for 'widow' and of S phəw³ for 'widower')

laay ⁵ 'many'	laay ¹	laay ¹	laay ¹
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(In W B R the usual word for 'very' or 'much', equivalent to S maak³)

Similarly ay:

lay ⁵ 'to flow'	lay ¹	lay ¹	lay ¹
khay ⁵ 'to open'	khay ¹	khay ¹	khay ¹
pay ¹ 'to go'	pay ¹	pay ¹	pay ¹
kə ² day ¹ 'stairs, ladder'	day ¹	day ¹	khan ³ lay ¹

(B lay¹ in Diguet)

In many words of this type modern Siamese speech has lengthened the vowel; W B R show the older form:

haay ³ 'to weep'	hay ³	hay ³	hay ³
daay ³ 'can; to obtain'	day ³	day ³	lay ³

(B lay³ in Diguet)

taay ³ 'torch'	tay ³	tay ³	tay ³
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(in W B R 'to light (a lamp)')

thaay ² 'to change'	thay ²	thay ²	
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(in W B 'to change (clothes)')

taay ² 'to crawl'	tay ²	tay ²	tay ²
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(used in W B R of crossing a bridge)

naay ³ 'to soften over the fire'	nay ⁵		
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S ʔay¹ 'steam; vapor' corresponds to W B R ʔaay¹ 'steam, odor'; Siamese has apparently shortened the vowel.

W B have the diphthong ay, ending in a semivowel similar to the vowel ɨ. The corresponding sound in R is ə; this appears not only in my notes but also in the Red Tai dialect recorded by Degeorge. Siamese has ay, but, as every schoolchild knows, the Siamese writing system has a different symbol for these words from the usual ay symbol, indicating that the distinction still existed at the time when the script was devised. Examples:

bay ¹ 'leaf'	bay ¹	bay ¹	bəə ¹
bay ³ 'dumb, mute'	bay ³	bay ³	
('stupid' in W B)			
day ¹ 'which, what, any'	day ¹	day ¹	ləə ¹
(B lay ¹ in Diguët)			
cay ¹ 'heart'	cay ¹	cay ¹	cəə ¹
tay ¹ 'kidney, gland'	tay ¹	tay ¹	təə ¹
('gizzard' in W B R)			
loŋ ⁵ lay ⁵ 'forgetful'		lay ¹	
('to talk in one's sleep' in B)			
may ² 'new'	may ²	may ²	məə ²
hay ³ 'to give'	hay ³	hay ³	həə ³
fay ² 'to dream of'	fay ²	fay ²	
say ² 'to put'	say ²	say ²	səə ²
say ⁵ 'clear, transparent'	say ¹	say ¹	səə ¹
yay ² 'big'	ñay ²	ñay ²	yəə ²

('to grow bigger' in W B, which use B luan¹, or W loŋ¹, for 'big'; the usual word for 'big' in R is təə².)

yay ¹ 'spider web, fiber, membrane'	yay ⁴	yay ⁴	
sā ² phay ⁴ 'daughter-in-law'	pay ⁶	pay ⁶	pəə ⁵
'dry'	xay ²	khay ²	khay ²
nay ¹ 'in'	nay ⁴	nay ⁴	nəə ⁴

('yonder' in W B R; the S meaning is puzzling)

In two words of this type modern Siamese speech has lengthened the vowel:

taay ³ 'below, south'	tay ³	tay ³	təə ³
chay ⁴ or 'to use'	cay ⁶	cay ⁶	
chaay ⁴			

(in W B 'to employ as a servant, to send on an errand')

Exceptions

In the case of many of the correspondences described throughout this study, we find no exceptions whatsoever. For others there is sometimes an occasional aberrant form in one language or another. The rarity of exceptions reinforces our belief in the principles on which this study has been based. It is one of the strengths of the method that it produces a residue of exceptions which then invite explanation.

In some cases they may mean that we have not yet perceived all the details of the sound changes. In others the exceptional words were simply not in the language at the time of the change, but were later borrowed from some other Tai dialect in which the sound changes had been different. What look like cognates but do not

correspond in all respects often turn out to be loanwords from an unrelated language, borrowed by our languages and adapted in different ways in pronunciation. Cases like this sometimes enable us to make inferences about cultural history. Sometimes one language may distort an inherited word, for example through assimilation of a final consonant to the initial of a following word with which it frequently occurs, or through reduction resulting from frequent use in unstressed position. In some cases, of course, words in related languages which show similarity in form and meaning but do not correspond properly may turn out to have completely separate origins, and the resemblance is a coincidence.

The following are exceptions with regard to tone:

th ⁺ i ⁺ 5 'to hold, carry'	t ⁺ 4	t ⁺ 4	t ⁺ i ⁺ 4
(W B R 'to wear (hat, shoes); to carry')			
n ⁺ iŋ ² 'one'	n ⁺ iŋ ⁵	n ⁺ iŋ ⁵	n ⁺ iŋ ²
yiŋ ⁵ 'woman'	ñiŋ ⁴	ñiŋ ⁴	ñiŋ ⁴
m ⁺ k ² 'ink'	m ⁺ k ⁴	m ⁺ k ⁵	m ⁺ k ²
tuu ³ 'cupboard'		tu ⁵	
yaa ² 'don't'	ñaa ⁴	ñaa ⁴	
to ² 4 'table'			to ² 2
kronj ¹ 'cage'		koŋ ⁴	
khəəy ¹ 'accustomed'		khəy ⁴	
kɔ ³ , kɔɔ ³ 'also, then'	kɔ ⁶	kɔ ³	kɔɔ ³
kɛŋ ² 'rapids'		kɛŋ ³	kɛŋ ³
kii ² 'how many'	ki ³	ki ³	kii ³
cak ⁴ kǎ ² can ² 'cicada'		cak ² can ²	cak ² can ²

For the first item the Siamese ought to be th⁺i⁺1 rather than th⁺i⁺5; W B R agree. Perhaps the S word is not related to the others.

The words for 'one' and 'woman' in Siamese are well known examples of irregularity. The suggestion has often been made that in each case the parent language had two forms, one with voiceless initial and one with voiced, and Siamese inherited the first while other Tai languages inherited the second. This has never seemed plausible to me. Another possibility is that both words became rare, and then were borrowed from another Tai dialect in which the sound changes which they had undergone gave them tones which were different phonetically from the tones they ought to have had in Siamese if they had been in the language continuously. This is not so incredible as it sounds; Red Tai uses another word moot³ for 'one', and some Tai languages use the cognate of S diaw¹ 'single, same'. For 'woman' many Tai languages use the cognate of S mɛɛ³ 'mother'. In the case of S n⁺iŋ² 'one' there is another possibility: even today this word in Siamese has acquired first tone n⁺iŋ¹ in some unstressed positions. Perhaps some such distortion occurred in the past, and came to be the usual form. Note that in the case of 'one' R agrees with S, but in the case of 'woman' R agrees with W B.

'Ink' is known to be a loanword in W B from Vietnamese. 'Cupboard' is probably a loanword in both S and B. Professor Søren Egerod in his article "Swatow loan words in Siamese" (*Acta Orientalia* 23 (1958) pp. 137-156) identifies Siamese tuu³ 'cupboard' as a loanword from Swatow.

In the case of 'don't' we have apparently two different words. Besides W ñaa⁴ W also has yaa² meaning 'finished, already done', used like Siamese lɛɛw⁴. W B ñaa⁴ ought to be yaa¹ in Siamese. Somehow this came to be pronounced like yaa², which in its other meaning 'to divorce' is probably a true cognate with W yaa².

'Table' is another loanword, identified by Egerod as Swatow. Red Tai has borrowed many modern terms from Siamese and Lao, of which this is probably one. Another interesting one is thaay² huup³ 'to take a picture,' for which W B use thoɔt² hun², which is striking because it is also the expression used in Chiang Mai.

'Cage' is no doubt a loanword in B or perhaps in both S and B. The same is probably true of 'accustomed'; that the B form is genuine, and not something picked up by my teacher during residence in Laos, is shown by the fact that Diguët also has it, with the same shape.

In the case of the word 'also, then', W has probably made a distortion resulting from the position of the word in the sentence; in Siamese nowadays it is sometimes given a distorted tone.

In the case of 'rapids' one would want to seek further afield before concluding that the W B form is original. If it is, then S must have borrowed it from another dialect, which could easily have happened if Siamese speakers had lost the word as a result of living in the plains.

Siamese is clearly out of step in 'how many'. This may have resulted from a distortion in unstressed position.

The word for 'cicada' is cited as one example of a frequent phenomenon, Siamese cak⁴ or tak⁴ in the first syllable of names of small animals where other Tai languages have the tone that ought to be cak² or tak² in Siamese. The phenomenon recurs in S tuk⁴kǎ²taa¹ 'doll', which although probably not a Tai word is aberrant in having fourth tone on a syllable beginning with t. One suspects distortion in playful talk to small children, perhaps affecting only a few words at first and then taking over the whole lot.

Other instances of exceptions in tone, too complicated to list in the table above, are the following:

S tä²khray⁴ 'lemon grass', in W hɔm¹ cay⁴ and in B fak² cay⁴ (W hɔm¹ 'fragrant plant', B fak² 'vegetable'). W B agree with each other but not with S. Clearly one group or the other lost knowledge of the plant and then relearned the name from another Tai group. Note that the consonant and vowel correspondences, though complicated, are regular.

S ruŋ⁴ 'rainbow', B to¹ huŋ⁴, R too¹ ŋak³ huŋ⁴. I do not have the W form, but Minot's dictionary gives phi¹ huŋ⁴, which agrees with B R. Why S is out of step is not clear.

S niip² 'to pinch', W nip² 'to hold in claws or tongs or under the arm', B nip² 'to pinch with claws; to hold under the arm.' So far everything agrees, but R has khāniip³, in which the prefixed reduced syllable, whatever its original form, may have altered the tone to niip³.

In B the house lizard (S ciŋ³ cok²) is called mɛŋ⁴ yaa¹ h+an⁴, which is explained as meaning literally 'the creature (mɛŋ⁴) that takes care (yaa¹) of the house.' But R uses too¹ yaa³ h+an⁴, in which yaa³, if it means anything, would be the

word for 'paternal grandmother.' One group or the other must have made a reinterpretation ("folk etymology") because of failure to understand the meaning. No doubt both terms are relatively recent local inventions.

For the space beneath an elevated house B uses $k\eta^3\ la\eta^5$ ($k\eta^3$ 'under,' $la\eta^5$ cognate with S $la\eta^3$ 'below'). The word $la\eta^5$ is widely used in Tai languages in terms for this space. But R uses $ta\eta^4\ k\eta^3\ la\eta^2$, in which $la\eta^2$ has the wrong tone. Probably R borrowed the term from another dialect, which would be easily possible if elevated houses had not been used and the inherited term had been lost.

S $khiip^3$ 'to take up with tongs, pinch with claws' agrees with W kip^4 B kip^5 'to pick up with chopsticks.' R has not the expected form kip^2 but rather $khiip^2$ 'to pick up with chopsticks, pinch with claws,' in which both the initial consonant and the tone are wrong; probably a loanword.

A few exceptions in initial consonants have already been mentioned in connection with tonal irregularities. Others follow.

If the correspondence of the Siamese initial clusters khr and khl with W B R c in the originally voiced series is valid, then the following are aberrant:

$khii^3$	$khl\dot{a}y^1$	'dried sweat and dirt on skin,	khi^3	kay^4	$khay^4$
$khl\dot{a}n^1$		'to wobble; not firm or tight'	$k\dot{a}n^4$		
$khray^1$		'who'	$phay^5$	fay^1	$f\dot{a}a^1$
$khruu^1$		'teacher'			$naay^4\ kuu^4$
$khrop^4$		'entire, complete'	kop^5		
$khr+a^1$		'bunch of bananas'	$h\dot{a}^4$	$h+a^4$	$h+a^4$

Some of these are easily explained:

The S word for 'who' is usually believed to be a contraction of $khon^1\ day^1$ or $khon^1\ ray^1$. Sophisticated W and B speakers explain their word as a similar contraction of the phrase which in Siamese would be $phuu^3\ day^1$. The difference in tone suggests recent invention. The R word for 'teacher' is obviously a loanword, and the S word is well known to be non-native.

For 'to wobble' and 'entire', two explanations are possible. The B forms may have been borrowed, or on the other hand the l and r in the S forms may be non-original. The S and B forms for 'dried sweat' could be explained also in either of these ways, but the R form would still be aberrant. Whatever the explanation of the B form, the R form must be a borrowing.

'Bunch of bananas' is more puzzling, and equally inexplicable is

say^1	'banyan'	hay^4	hay^4
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(Minot's dictionary gives W hay^4 .)

It will be recalled that in the voiceless series we found a correspondence S kh W ch B R s , with many convincing examples. Somehow connected with these but highly aberrant would seem to be the following two items:

$klay^3$	'near'	$chay^3$	say^3	$kh\dot{a}a^3$
	'spider'	$chiq^2\ chaaw^1$	$siq^2\ saaw^1$	$sum^3\ saaw^3$

For 'near', if S is historically genuine then W B R ought to have kay^3 . If W B are right, then S ought to have $khray^3$ and R ought to have the same form as B. If R were right, then innumerable wild possibilities would arise, because the form

could belong to either the voiced or voiceless series. Professor Li also found aberrations in Tai words for 'near' (p. 376 of his article on consonant clusters), where his data suggest that two different original words are involved. It is perhaps significant that in W and B this is not the usual word for 'near'.

There are a few instances of t in one language or another where some other consonant would be expected. For S $siaŋ^5 kəŋ^3$ 'to echo' B has $siaŋ^1 təŋ^3$. This is probably an entirely different word, the one found in S $təŋ^3$ 'to touch; to need'. For $chiau^3$ 'swift (of water)' B has $tiau^5$. For S $huan^2$ 'loop' B has $tuan^2$, and for S W B hap^2 'to close' R has tap^2 . The last instance may be meaningless; R tap^2 could belong in either series, and may be cognate with W tap^4 and B tap^5 'to strike', but B $tuan^2$ reminds one that t for h turns up sporadically in a few words in various other Tai dialects of North Vietnam.

It was stated earlier that in the voiceless series S words with initial ch have no cognates. The single exception, which is inexplicable, is

$chiik^2$ 'to tear' $ci^{?2}$ $ci^{?2}$

'Stinger (of a bee)' is S nay^1 but W B R lay^4 (the W form from Minot's dictionary.) Professor Li grouped this word (p. 376 of his article on consonant clusters) with S $naam^4$ 'water', nok^4 'bird', and $nək^3$ 'outside', because the four words have initial l in Po-ai, a Tai language of China. Probably 'stinger' is a separate problem from the three other words, all of which have initial n in all four of our languages.

S $liik^2$ 'to dodge, avoid' agrees with W $li^{?2}$ but B has $ni^{?2}$. This is a mystery.

Less puzzling are these three items:

$l+i+n^3$ 'slippery, smooth'	$m+i+n^5$	$m+i+n^5$
$laaŋ^4$ 'to destroy'	$maaŋ^6$	$maaŋ^6$
$lɛɛp^3$ lin^4 'to stick out the tongue'		$mɛp^5$ lin^6

These belong to the group of words in which even within Siamese we find both m and l appearing, sometimes both: met^4 or $mɛ^4let^4$ 'seed, grain,' $mɛ^4$ $lɛŋ^1$ or $mɛŋ^1$ 'insect'. Professor Li collected eight of these words (p. 374 of his article on consonant clusters), but does not have the three given above.

Somehow related to this group, but with an additional irregularity in the final consonant, is

$l+i+m^1$ 'to open (the eyes)' $m+i+n^4$ $m+i+n^4$ $m+i+n^4$

Professor Li (p. 379) has also proposed connecting two words meaning 'to nourish, to bring up', but both his words occur in W:

$lian^4$ 'to raise, feed'	$leŋ^6$	$lian^6$	$lian^5$
'to tend (animals)	$cəŋ^6$		

It is possible, of course, that these are still reflexes of the same word, and in that case W would have inherited one form and borrowed the other.

Both W and B have mun^1 for S nun^1 'to rest the head on a pillow; to put something underneath in order to raise an object higher.'

A number of words show variation in y or ñ before the vowels i and e:

yin^1 'to hear'	$ŋin^4$	$ŋin^4$	yin^4
yep^4 'to sew'	$ŋip^4$	$ñip^5$	yip^2
'to do, make'	yet^4	yet^5	$^?et^2$
hen^5 'civet cat'	hin^1	$ñen^1$	yen^1
$yiaw^3$ 'to urinate'	$nɛw^5$	$nɛw^5$	$yiaw^3$

For 'to sew' Minot has W ñip⁴; Diguët's B ñip⁵ agrees with our data. No doubt when we look at the evidence from other languages we will find that these words go back to different initials behaving in various ways before different front vowels, causing also irregular changes in some of the vowels.

The word for 'day' in W B R is the cognate of S m++ 'meal', but cognates of S wan¹ 'day' appear in all three languages in various phrases, with these shapes:

wan ¹ 'day'	vin ⁴	ven ⁴	ŋen ⁴
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But S mɛŋ⁴ wan¹ 'fly' is W mɛŋ⁴ mun⁴, B R mɛŋ⁴ ŋwan⁴.

In the following examples Siamese probably has a word completely unrelated to the W B R words:

yaay ¹ 'maternal grandmother'	naay ⁴	naay ⁴	naay ⁴
phɛ ²⁴ 'goat'	bɛ ³	bɛ ³	bɛɛ ³
baaŋ ¹ 'some'		laaŋ ⁴	

The same may be true of words for 'saw':

l+ay ³ 'a saw, to saw'	k+ ⁵	k+a ⁵	l+a ³
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The forms with initial k are probably irrelevant (a word of different origin, probably a loanword from another language and hence the lack of correspondence in vowel), but R l+a³ reminds one that other languages lacked the final y in cognates of S d+ay¹ 'cockspur'. The picture is further confused by the existence of W ləy⁵ 'to take leaves off vegetables' and R l+ay³ 'to cut bamboo strips'.

S phiw⁵ 'to whistle' is W B thiw¹.

S len³ 'to play' is W din³ B lin³, with another word B R ʔin³ also meaning 'to play'. Probably W din³ is related to S din³ 'to flop up and down' rather than to S len³.

Among irregularities in vowels one of the most striking is

tua ¹ clf. for animals	to ¹	to ¹	too ¹
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where B R ought to have the diphthong ua. R has a similar phenomenon in R doŋ¹, clf. for the moon and certain other round objects, which corresponds to S duaŋ¹, W doŋ¹, B duaŋ¹ (luan¹ in Diguët). Classifiers precede the noun in these languages: W soŋ¹ to¹ maa¹ 'two dogs'. Perhaps this position led to loss of stress and change of the vowel.

As we have seen, Siamese o before p t k normally corresponds to W B R o, in a great many words. Exceptions are

ʔot ² 'to go hungry'	ʔ+ ² t ²	ʔ+ ² t ²	ʔ+ ² t ²
ʔok ² 'chest'	ʔək ²	ʔək ²	ʔək ²

Also, beside S W B R tok² 'to fall' R has t+²k² vet² 'to fish' (S tok² bet²), and beside S plot² W B R pot² 'to remove, take down' W has p+²t² in certain expressions. There is probably some regular sound change involved here, with + changing to ə secondarily before final k; all these words would seem to have a different source from those showing the more frequent correspondence S W B R o. Perhaps still another origin accounts for

S mot ² 'all, all gone'	met ²	met ²	met ²
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R moot³ 'one' must be of recent origin; checked syllables with this tone have only diphthongs and originally long vowel, and never long oo. Similarly, R tæp² 'big' shows an otherwise impossible vowel in this environment.

Siamese o before n corresponds normally to W u B R o, but these two words are exceptional:

fon ⁵ 'rain'	f+n ¹	fon ¹	f+n ¹
kron ¹ 'to snore'	xo ⁴ k+n ¹	ko ⁴ kon ¹	kon ¹

S ʔut² 'to plug (a hole)' corresponds to W B ʔot², whereas normally W B R have u corresponding to S u in this environment.

Siamese met ⁴ 'a seed, grain' has i in W B rather than the expected e:			
met ⁴ 'a seed, grain'	mit ⁴	mit ⁵	met ²

This is probably due to an original cluster containing l.

We have already cited the W words xwan¹ or xon¹ 'whorl in the hair, spirit', and xwan⁴ or xon⁴ 'smoke'. Speakers of White Tai regard xwan¹ and xwan⁴ as preferable, suggesting that xon¹ and xon⁴ are recent "corruptions." Change of the sequence wa between consonants to ɔ is encountered occasionally also in other Tai branches. One wonders if such a change also explains the two formsB num² and B nom² used for 'young (of either sex)', cognate with S num² 'young (of men only)'.

Siamese differs inexplicably from W B R in the following:

khəy ⁵ 'son-in-law'	khəy ¹	kh+ay ¹	kh+ay ¹
khiaw ⁵ 'unpleasantly pungent'	khiw ¹	khiw ¹	

We find these other irregular correspondences in vowels:

sə ² dɔ̃+ɰ ¹ 'navel'	saay ¹ bi ¹	saay ¹ b+ɰ ¹	səb+ɰ ¹
mii ⁵ 'bear'	mi ¹	mi ¹	m+ay ¹
cha ¹ 'tea'	ce ⁴	ce ⁴	ceɛ ⁴

In the aberrant W vowel in 'navel' we are reminded that this word has been suspected of having an original consonant cluster.

R m+ay¹ 'bear' shows up in a number of Tai languages in place of S mii⁵; this would look like a phonological problem except that the Tai dialect of Sam Nuea province in Laos has both words, referring to different kinds of bears. Probably they are words of different origin.

'Tea' is no problem; this Chinese word has been borrowed into many languages in many shapes.

Finally:

thaw ³ 'equal'	to ⁵	to ⁵	to ³
'not'	baw ²	baw ²	bo ²

It would seem likely that the forms with ɔ instead of aw may have arisen as reductions in unstressed position.

Irregularities in final consonant are very infrequent. Some appear to have resulted from assimilation of a final to the following initial in a phrase:

dek ² 'child'	dek ² nɔy ⁶	dek ²	din ³ nɔy ⁵
	or din ² nɔy ⁶		

Professor Li in his article on consonant clusters (p. 373) suggested a similar origin for S phruŋ³ 'tomorrow', with k changing to ŋ because of the following n of nii⁴ 'this'.

phruŋ³

pu²⁵

puuk³

(W uses m+⁶ ʔ+n², literally 'another day', for 'tomorrow'.) In the same place Li suggested that the final n of S waan 'yesterday' resulted from a wrong cut of the phrase S waa¹ nii⁴, since other Tai languages do not have the final n:

waan¹ 'yesterday'

ŋwaa⁴

ŋwaa⁴

ŋwaa⁴

I would like now to suggest a similar origin for the final n of S mǎ⁴r++n¹ nii⁴ 'day after tomorrow':

mǎ⁴ r++n¹ 'day after tomorrow' h+⁴

h+⁴

h++⁴

Quite aberrant and mysterious is final p in the W word for bone:

kǎ² duuk² 'bone'

dup²

du²²

luuk²

Equally inexplicable are the vagaries of the terms for 'twins':

S luuk³

faa⁵

fɛɛt²,

W lu⁴

faa¹,

B lu²⁵

khaa¹

fɛp²,

R luuk³

faaŋ⁵

fɛɛp².

Finally:

nim³ 'pangolin'

lin⁵

lin⁵

in which S differs from the other languages in both initial and final consonants.

It should be reemphasized that exceptions of the kinds we have described are extremely rare; one's experience is usually that he finds in a collection of fifty or a hundred examples of a sound correspondence only one or two such exceptions, and often none. It is the extreme rarity of exceptions that makes the comparative method so convincing.

Conclusion

For students of Siamese one of the great pleasures of studying other Tai languages is in running across words and phrases that illuminate Siamese. This is not because these languages are older. All contemporary branches of a language family go back to a common parent language and are therefore equal in age. But inevitably some branches of a language preserve words or meanings or other features which other branches change or lose. Speakers of White or Black or Red Tai interested in the history of their own language would undoubtedly find as much illumination in Siamese as we find in their languages. And it is only after working out the sound correspondences as we have done that one can search confidently for genuine cognates.

I wish now to offer just a couple of morsels gleaned from studying these languages which are relevant to Siamese studies.

For lunch or the midday meal, eaten at any time from 10 to 12, all three of our languages use W B R ŋaay⁴. For the evening meal eaten at dusk W and B use lɛŋ⁴, but R uses paw⁴. These are, of course, cognate with the terms S ŋaay¹, S lɛŋ¹, and S phraw¹ found in older Siamese literature. The Royal Institute Dictionary glosses S phraw¹ as 'morning'. I offer the above information to the dictionary committee for its consideration.

And the final item I am particularly pleased to present to Chao Khun Anuman, as it appears to correct our interpretation of a passage in the celebrated Sukhothai inscription. In the lower part of the first side, where the author is describing King Rama Khamheng's kindness to people from elsewhere who are in need, he says (lines 28-31, reading in modern Siamese pronunciation)

khon¹ day¹ . . . bɔɔ² mii¹ chaŋ⁴ bɔɔ² mii¹ maa⁴ bɔɔ² mii¹ pua²
 bɔɔ² mii¹ naaŋ¹ bɔɔ² mii¹ ŋ+an¹ bɔɔ² mii¹ thɔɔŋ¹ hay³ kɛɛ² man¹
 chɔy³ man¹ tuaŋ¹ pen¹ baan³ pen¹ m+aaŋ¹.

This has been interpreted, paraphrasing the various current translations, as meaning: "(If) anyone . . . has no elephants, has no horses, has no servants, has no women, has no silver, has no gold, (he) gives to him, helps him . . ."

Now in White and Black Tai the word naaŋ⁴ (cognate with S naaŋ¹) means not 'woman' but 'royal lady, princess,' as indeed it often does in Siamese. Moreover, all three languages have a word, White Tai po¹, Black and Red Tai pua¹ which means 'king', not just hereditary chief of a city (S caw³ m+aaŋ¹), but a king like the king of Laos or the King of Thailand. This ought to be pua¹ in Siamese, if Siamese had the word. In these languages, as well as in Lao and some Tai dialects within Thailand, the cognates of pua¹ are also used as a verb meaning 'to care for (a sick person)' and sometimes 'to protect'. The reading pua² in the inscription is probably an error; the area above the word is so marred that one cannot tell whether there was a tone mark or not. If the inscription has pua¹ 'king' then the passage would mean "(If) anyone . . . has no elephants, has no horses, has no king, has no queen (to depend upon), has no silver, has no gold . . ."

I hope that the Chao Khun and his friends will find this reinterpretation convincing.

First published in *The Social Science Review* (Bangkok). Special number, 14 December 1964. Separate pagination, 1-47. Reprinted with corrections by the author.

