A SPECTRUM OF PHONOLOGICAL FEATURES IN TAI

The aspect of comparative phonology and reconstruction in the Tai family that has interested scholars the most has been the rather complicated correlation between initial consonants and tones. The generally accepted view is that the parent language of the family had a smaller number of tones than any of the modern languages and dialects, and that each of the latter has undergone, at some time after separating from the others, a splitting of tones, which in each case was conditioned by the phonetic nature of the initial consonants at the time of the split. Each daughter language or dialect has differed from others in precisely which original tones underwent splitting, in the number of tones resulting from each earlier tone, and in the conditioning factors at work in each instance. It is, of course, this variety in the details of the tonal splits that makes comparative Tai phonology possible at all; if all branches had made the same changes, we would hardly be in a position to apply the comparative

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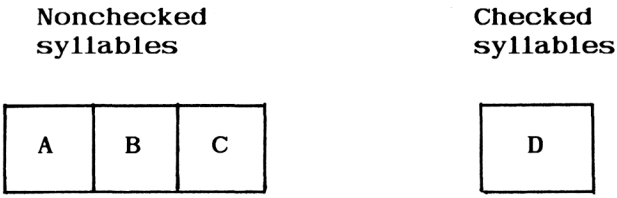
method and infer the changes or the structure of the parent language.

This paper will deal with the phonetic features that seem to have conditioned the tonal splits in the various languages and dialects. Most of the facts utilized here are not new. What is believed to be new is rather a notion that a systematic principle seems to underlie the entire phenomenon.

In order to explicate this suspected underlying general principle, it will be necessary to review a variety of specific examples of the various types of tonal splits, and their conditioning factors in the initial consonants, in a number of languages and dialects of the Tai family.

Many, though not all, scholars in this field assume that the parent language, Proto-Tai, had three tones, whose phonetic nature most of us do not attempt to describe, on syllables ending in a voiced sound--a vowel, semivowel, or nasal. In addition there were checked syllables, ending in a voiceless stop **p*, *t*, or *k*, in which the parent language showed no tonal distinction at all: these may well have been originally toneless syllables. Many of us use the symbols A, B, and C for the three contrasting tones and D for the tone (or lack of tone) of the checked syllables.



Tones of Proto-Tai

The student of comparative Tai, when confronted with a new language or dialect of the family, has to discover just how in this case each of the original tones A, B, and C has been split. In the checked syllables he often finds a somewhat more complicated situation, because here the tonal splits are usually found to have been conditioned not only by the phonetic nature of the initial consonants, as in the case of tones A, B, and C, but also by syllable length. Syllables with a short vowel followed by original final **p*, *t*, or *k* are found usually to have undergone different splits, or at least to have ended up with phonetically different tones, from syllables ending with a long vowel or a diphthong followed by one of these stops.[1]

Because of the special behavior in checked syllables, with vowel length playing a part in the conditioning in addition to the phonetic nature of the initials, we must divide the D box into two.

Turning now to specific examples of the types of tonal splits that have occurred in various daughter languages and dialects, the most common variety is a

simple binary split all across the chart, conditioned, it is believed, by a simple distinction between voiceless vs. voiced initial consonant at the time of the split. For example, White Tai, spoken at Lai Chao in the extreme west of North Vietnam, today has six tones, the historical sources of which may be represented as follows.[2]

	A	B	C	DS	DL
Voiceless initials at time of split	1	2	3	2	2
Voiced initials at time of split	4	5	6	4	4

Historical Sources of White Tai Tones

White Tai examples are as follows.

xaa^{1}	leg
paa^{1}	fish
ʔaw^{1}	to take
naa^{4}	ricefield
si^{2}	four
kay^{2}	chicken
baaw^{2}	young man
naŋ^{5}	to sit
haa^{3}	five
kaw^{3}	nine
baan^{3}	village
maa^{6}	horse
hok^{2}	six
pet^{2}	duck

dip^{2}	raw or unripe
nok^{4}	bird
haap^{2}	to carry on a shoulder pole
pɛt^{2}	eight
ʔaap^{2}	to bathe
lət^{4}	blood

The standard Thai of Thailand, which, following widespread practice, will here be called Siamese to avoid risk of confusion between the terms Thai (the language of Thailand) and Tai (the usual name for the entire family), has undergone a set of tonal splits similar to the preceding except in the A column.[3] In Siamese the A column ended up with one tone for syllables assumed to have had at the time of the split what might be voiceless friction sounds, and another tone for all other types of initials. These voiceless friction sounds included aspirated voiceless stops such as **ph, th, kh*, voiceless fricatives such as **s, f, h, x*, and a set of voiceless or preaspirated sonorants, **hm, hm, hl*, and so on, or perhaps voiceless sonorants **m̥, n̥, l̥*, and so on.[4]

	A	B	C	DS	DL
Voiceless friction sounds	5	2	3	2	2
vl	1				
vd	1	3	4	4	3

Historical Sources of Siamese Tones

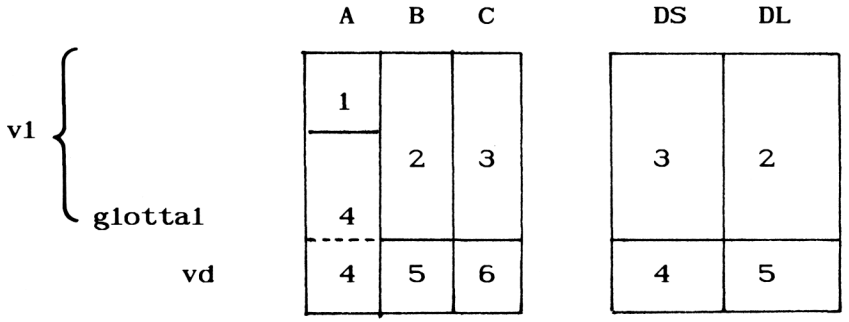
The Siamese tones are: 1 level, a little lower than mid; 2 low level; 3 falling and glottalized; 4 high rising-falling and glottalized; 5 rising. Siamese examples are as follows.

khaa^{5}	leg
plaa^{1}	fish
ʔaw^{1}	to take
naa^{1}	ricefield
sii^{2}	four
kay^{2}	chicken
baaw^{2}	young man
naŋ^{3}	to sit
haa^{3}	five
kaaw^{3}	nine
baan^{3}	house, village
maa^{4}	horse
hok^{2}	six
pet^{2}	duck
dip^{2}	raw or unripe
nok^{4}	bird
haap^{2}	to carry on a shoulder pole
peɛt^{2}	eight
lɨat^{3}	blood

For our present purposes it is necessary at this point to call attention to the perhaps ridiculously self-evident fact that if one is to use charts of this sort to show the tonal development of Siamese as compared with that of White Tai, the box for the Siamese 5th tone in the A column has to be put at the top. There is, of course, nothing sacred about this

particular method of trying to display the changes that have taken place, but others who might prefer to depict these phenomena in some other way would, it seems likely, be forced to agree in principle with these charts in what they made contiguous and what they put at one extreme or another.

The dialect of Lungming in Kwangsi divides the A column in a still different manner. In this dialect, so far as the A column is concerned, syllables that are assumed to have had initial glottal stop or preglottalized consonant, *ʔ, ʔb, ʔd, ʔy, or perhaps *ʔ, ʔm, ʔn, ʔŋ, have ended up with the same tone as syllables with originally voiced initials.



Historical Sources of Lungming Tones

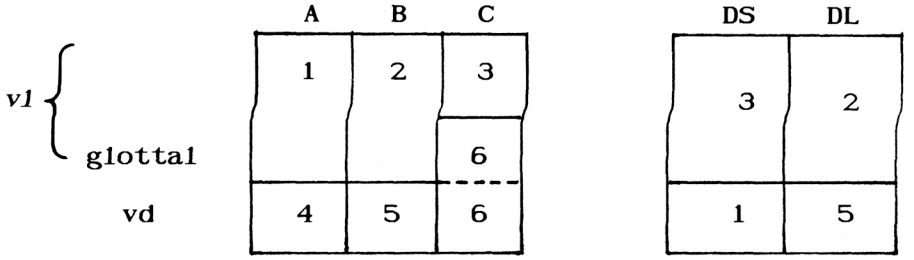
The Lungming tones are: 1 high level, 2 high rising, 3 mid level and glottalized, 4 low falling, 5 low level, 6 low falling-rising and glottalized. Lungming examples are as follows.

khaa^{1}	foot
pyaa^{1}	fish
ʔaw^{4}	to take

naa^{4}	ricefield
sey^{2}	four
kay^{2}	chicken
maaw^{2}	young man
naŋ^{2}	to sit
haa^{3}	five
kaw^{3}	nine
maan^{3}	village
maa^{6}	horse
lok^{3}	six
pyat^{3}	duck
nip^{3}	raw or unripe
nok^{4}	bird
thaap^{2}	to carry on a shoulder pole
peet^{2}	eight
ʔaap^{2}	to bathe
liit^{5}	blood

A much better-known group of Tai dialects that have made precisely this same type of tonal split in the A column, treating syllables with glottal initial like those with voiced initial, are those of Chieng-mai and other parts of northern Thailand, together with adjacent parts of Burma.

The Tai language called Yay, spoken at various places near Lao Kay near the North Vietnamese border with China, shows a similar tonal development with respect to these glottal initials, but in the C column rather than the A column.



Historical Sources of Yay Tones

The Yay tones are: 1 level, slightly lower than mid; 2 low level; 3 low rising; 4 high rising-falling; 5 falling; 6 high rising. Yay examples are as follows.

ka^{1}	leg
pya^{1}	fish
ʔaw^{1}	to take
na^{4}	ricefield
θi^{2}	four
kay^{2}	chicken
baaw^{2}	young man
naŋ^{5}	to sit
ha^{3}	five
ku^{3}	nine
baan^{6}	village
ma^{6}	horse
rok^{3}	six
pit^{3}	duck
dip^{3}	raw or unripe
rok^{1}	bird
raap^{2}	to carry on a shoulder pole
pet^{2}	eight

ʔaap^{2}	to bathe
liat^{5}	blood

For a really elegant demonstration of the validity of these charts, it would be desirable to cite enough different dialects to enable us to fill in all the horizontal lines in all five columns. This has apparently never been attempted, but one has the impression that there is now sufficient information available, on a wide variety of types of tonal systems, to enable anyone who might undertake this laborious task to fill in all, or virtually all, the horizontal lines.

We now have a total of four categories of initials whose phonetic differences conditioned tonal splits in one tonal column or another of our chart, in one dialect or another of the family. These four categories are as follows.

1. Voiceless friction sounds, including voiceless aspirated stops such as **ph*, voiceless fricatives such as **f*, and preaspirated sonorants such as **hm*.
2. Voiceless unaspirated stops such as **p*.
3. Glottal stop, **ʔ*, and preglottalized consonants such as **ʔb* (or perhaps **ʔm*).
4. Voiced consonants.

So far as we know, with information now available on well over a hundred languages and dialects of the family, when the tonal developments of any dialect are depicted in this type of chart

these categories of initials always have to be listed *in this order*. This would still be true if the charts had happened to be drawn upside down, with the voiced category at the top instead of at the bottom. That is to say, whenever in any given dialect two or more of the four categories of initials ended up producing the same tone, these were always combinations of categories that are adjacent in our chart. One never finds, for example, an instance where a dialect ends up with a particular tone in the box occupied by tone 5 in the A column of the Siamese chart and that same tone recurring, say, in syllables with earlier voiced initials, in the bottom row of our chart. This principle is so regular and invariable that one is forced to conclude that instances of the same tone in different places in different columns, for example, the third tone in one part of the B column in Siamese but in another part of the C column, are the result of syncretism, perhaps to be assumed as chronologically later than the other tonal changes.

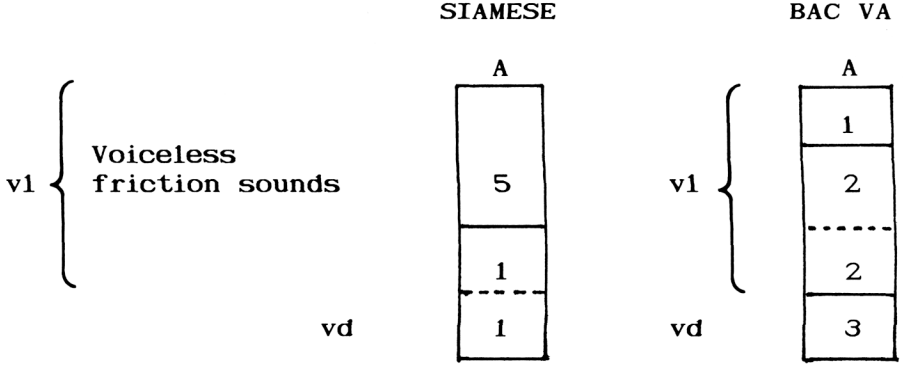
Those of us who work with this material have sometimes wondered why on the one hand most dialects of the family have treated initial glottal stop and originally preglottalized consonants like voiceless initials, while on the other hand some other dialects have, in one column or another of the chart, treated them like the voiced ones. To speculate that the preglottalized initials lost their initial glottal stop and so became voiced initials in some dialects gets one nowhere. They would then apparently have had to fall together with various other originally

voiced initials, which they did not do. Moreover, such a hypothesis would not account for the simple glottal stop. The theory advanced in this paper now renders speculation along such lines as that meaningless and unnecessary.

It is the purpose of this paper to propose that the explanation of this whole phenomenon, the fixed order of consonantal categories in our charts, lies somehow in an ordering of distinctive phonological components in a kind of spectrum.

Some more unusual instances of tonal splits, which are still different from any of those described above, seem to strengthen the suspicion that a fixed ordering of phonological features underlies this whole phenomenon.

In the Nung dialect spoken at the village of Bac Va in northeastern North Vietnam, the A column of our tonal chart[5] is found to have undergone two splits, resulting in three tones. One split has occurred at the voiced/voiceless boundary, as in White Tai and many other dialects; the other split is similar to the Siamese one in being high in column A, but in the Bac Va dialect of Nung the boundary has to be placed even higher.



The three Bac Va tones involved here are: 1 low rising, 2 high rising, 3 mid level. Bac Va examples are as follows.

khaa^{1}	foot
pii^{2}	year (Siamese pii^{1})
ʔaw^{2}	to take
m̥ii^{3}	hand (Siamese m̥ii^{1})

What sorts of sounds conditioned this unusual split at Bac Va? Syllables that in the Bac Va dialect ended up with the first tone are those that usually are regarded as having been, at the time of the splits, voiceless aspirated stops of the type **ph, th, kh* or voiceless fricatives such as **f, h*. Thus, this dialect gives us a more refined analysis of the category "voiceless friction sounds," which were defined for us by the tonal split in column A in Siamese. Other syllables that in Siamese were found to have belonged in this "voiceless friction sound" category are in Bac Va treated like the next box below (voiceless unaspirated stops like **p, t, k*); these include **s* (> l̥ at Bac Va) and the preaspirated

initials such as **hm*, *hn*, *hl*, and so on. Examples are as follows.

	SIAMESE	BAC VA
garden	suan^{5}	l̥uun^{2}
dog	maa^{5}	maa^{2}
skin	naŋ^{5}	naŋ^{2}
many, much	laay^{5}	laay^{2}

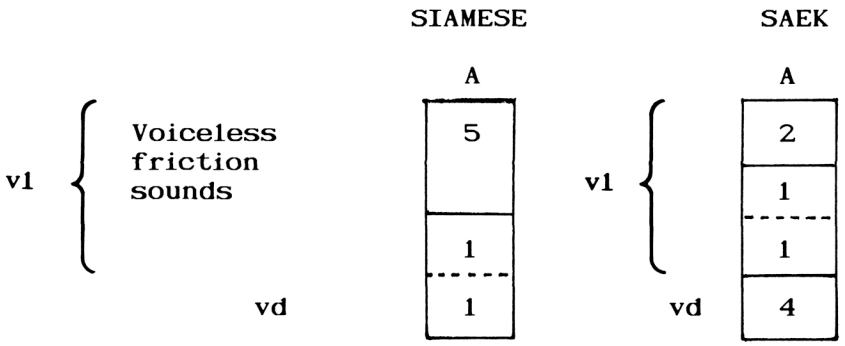
Again, the procedures we have used in constructing our charts have forced us to put the first of the two Bac Va types at the top of the column and the second type below it, next to the voiceless unaspirated initials with which it shares the same behavior with respect to conditioning of tonal splits, so that again we find ourselves having to adhere to a fixed ordering of phonological features.

Can we find elsewhere in the available data on dialects of this family any evidence for additional types of conditioning of tonal splits which might enable us to test and refine our theory still further?

There seem to be at least two other bodies of evidence that may be relevant, one from the Saek language of Nakhon Phanom Province in northeastern Thailand and the other from the large group of Tai languages spoken mostly in southern China and sometimes called the Northern branch of the Tai family. Both of these sources of information, however, seem to fail to elucidate our theory in any very helpful way. On the contrary, it seems possible that our theory, once it is developed more fully, may have to

be drawn upon to help us determine the peculiar phenomena involved in these two cases. But that these two problematic cases are somehow involved with our theory seems so likely that they will be described here for what they are worth.

Saek is of special interest because, in spite of its present location in Thailand, it is clearly a member of the so-called Northern branch of Tai, which is otherwise spoken far to the north, in southern China, with some small spillover into North Vietnam as in the case of the Yay language cited earlier. Saek is thus included in the general Northern phenomenon, which will be taken up in a moment, but first we should look at a phenomenon peculiar to Saek. Saek, like the Bac Va dialect of Nung, has split the A column of our tonal chart in two places, resulting in three tones, and like the Bac Va dialect it has made one split very high, dividing, as it were, the top box of the Siamese A column in two.



The Saek tones are: 1 mid rising, 2 low level, 4 high rising-falling. Saek examples are as follows.

maa^{2}	dog (Siamese maa^{5})
plaa^{1}	fish
ʔaw^{1}	to take
naa^{4}	ricefield

What sorts of initials are involved in the top box of the A column in Saek, with 2nd tone in the modern language? The answer is found to be almost all the sorts of initials represented by the larger, "voiceless friction sounds" box at the top of the A column in Siamese--aspirated voiceless stops such as **ph*, fricatives such as **s*, and preaspirated sonorants such as **hm*. Examples are as follows.

	SIAMESE	SAEK
hair of the head	phom^{5}	phram^{2}
to plow	thay^{5}	thay^{2}
to crow	khan^{5}	hal^{2}
young woman	saaw^{5}	saaw^{2}
to seek	haa^{5}	raa^{2}
a bear	mii^{5}	mii^{2}
skin	naŋ^{5}	naŋ^{2}
back	laŋ^{5}	laŋ^{2}

Examples like the foregoing are so extremely frequent that one cannot escape the impression that this tonal correspondence, Saek 2nd tone corresponding to Siamese 5th tone, is the usual one for syllables beginning originally with what we have called "voiceless friction sounds."

Examples of Saek 1st tone corresponding to Siamese 5th tone are much rarer.

	SIAMESE	SAEK
leg	khaa^{5}	kwaa^{1}
needle	khem^{5}	kim^{1}
arm	khɛɛn^{5}	keen^{1}
to sell	khaay^{5}	kwaay^{1}
horn	khaw^{5}	kaw^{1}
body hair, feather	khon^{5}	pul^{1}
wall; lid	faa^{5}	vaa^{1}
to braid	*fia^{5} (WT fə^{1})	pia^{1}
to disappear	haay^{5}	rɛɛy^{1}

Obviously these cluster around a few phonetic types of initials, and we are struck by the fact that, although the number of examples is small, they all involve the types of initials that our Bac Va findings forced us to place in a special small box at the top of column A. But our Saek chart would invite us to put these sounds, whatever their sources in the parent language, at the lower side of our top box on column A, next to syllables beginning with voiceless unaspirated initials. For the first time our attractive principle of a fixed vertical order of categories of initials is violated.

There are serious problems with these Saek examples. Some, such as the word for 'body hair, feather', are famous problems; this word has initial *p-* in languages of the Northern branch of Tai, which includes Saek, but a velar in all other Tai languages, so that some have doubted whether the Northern word is really cognate with non-Northern forms like Siamese *khon*^{5}. The words for 'leg' and

'to sell' have been cited elsewhere as peculiar in that alone among Tai languages Saek has a post-initial *-w-* in these words, and one of F. K. Li's Sui dialects has in precisely these two words an unusual initial *p-* rather than a velar.

One is tempted to wonder, especially since these words violate our principle of a fixed order of phonetic features, whether in the many cases where Saek has an unaspirated initial (*k-*, *p-*) it might not have been this fact that ultimately gave these words the same tone as other Saek words with an unaspirated initial stop having a genuine legitimate origin in a sound of that type in Proto-Tai, implying a late and local change.

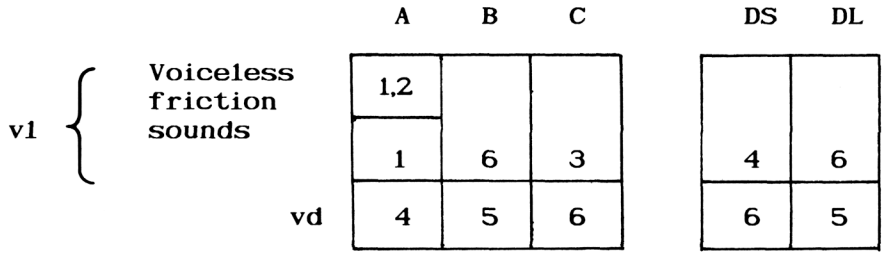
And, as we have said before, we may find ultimately that this curious phenomenon may for its explanation make more use of our theory of a spectrum of distinctive phonological features (once the theory has been thoroughly developed) than it can offer by way of support for the theory and help in working it out. Thus it may turn out that for our present purposes it might have been better to have temporarily swept these Saek examples under the rug.

But, on the other hand, if further study confirms and refines our hypothesis, it may turn out that it will be found to be so powerful that it will assist us in solving problems such as this. For example, it might point the way to our positing various consonantal changes as having taken place prior to the tonal splits, or perhaps various others as having been later.

Finally, the Northern Tai languages as a whole exhibit a peculiarity of tonal behavior whose relevance to our theory of a spectrum of phonological features seems certain, though as yet unclear.

One of the distinguishing characteristics of languages of this Northern branch of Tai is that many words that in all other Tai languages belong in one or another of the boxes across the top row of our chart (the one defined by the "voiceless friction sound" category of the Siamese chart) have in all languages of this branch the tones that usually go in the bottom row of boxes, with syllables having originally voiced initials. In a smaller number of examples the converse is true, that is, a few words in the bottom row of boxes in all other Tai languages have in langauges of this Northern branch the tones that usually belong in the top row. Various theories have been suggested regarding these tonal aberrations of the Northern branch--that the parent language had doublets or that sounds preceding the initials and causing unusual tonal changes have since been lost. I have argued elsewhere that the explanation is phonological, even if we do not yet understand what original sounds were involved or what precise changes took place. I have also suggested the possibility that, as far as this phenomenon is concerned, we may ultimately find that the Northern languages have remained closer to the prior state of affairs, at least as regards the sounds involved here, so that it then would have to have been the other Tai languages that made changes of voiced sounds to voiceless, and vice versa, before the time of the tonal splits.

The chief argument for a phonological explanation of these apparent Northern Tai tonal aberrations is that the words in which they occur appear to involve only certain types of initials. Examples will be cited from Siamese, White Tai, and Lungming among non-Northern Tai languages, and from Yay and Saek from the Northern branch. For readers who wish to verify the tonal details, charts of the tonal developments in each of these languages have already been given except for Saek, which follows.



Historical Sources of Saek Tones

Examples follow in which non-Northern languages have tones that seem to reflect earlier voiceless initials, but Northern languages have tones that seem to reflect earlier voiced initials.

	SIAM-ESE	WHITE TAI	LUNG-MING	YAY	SAEK
person	phuu^{3}	phu^{3}	phow^{3}	pu^{6}	phuu^{6}
to arrive	thɨŋ^{5}	thɨŋ^{1}	thəŋ^{1}	taŋ^{4}	thaŋ^{4}
to wear, carry	thii^{5}	tɨ^{4}	thəy^{1} (sic)	tɨ^{4}	thii^{4}
forest	thian^{2}	thən^{2}	thiiŋ^{2} (sic)	tian^{5}	thuaɪ^{5}
bean	thua^{2}	tho^{2}	thuu^{2}	tua^{5}	thua^{5}
closely spaced	thii^{2}	thi^{2}	thay^{2} (sic)	ti^{5}	thii^{5}
bowl	thuay^{3}	thoy^{3}	thuy^{3}	tɨay^{6}	thooy^{6}
male (animal)	thɨk^{2}	thək^{2}	tək^{3}	tak^{1}	thak^{6}
cheap; to hit	thuuk^{2}	thu?^{2}	thok^{3}	tɨk^{1}	thɨk^{6}
bitter	khom^{5}	khum^{1}	khom^{1}	ham^{4}	ɣam^{4}
hole, pit	khum^{5}	khum^{1}	khom^{1}	kum^{4}	khum^{4}
right (hand)	khwaa^{5}	xwaa^{1}	saa^{1} (sic)	kwa^{4}	khwaa^{4}
to ride	khii^{2}	khi^{2} khwi^{2}	khwey^{2}	kɨay^{5}	khoy^{5}
rice	khaaw^{3}	khaw^{3}	khaw^{3}	haw^{6}	ɣaw^{6}
excrement	khii^{3}	khi^{3}	khii^{3}	hay^{6}	ɣay^{6}
to bite	khop^{2}	khop^{2}	khop^{3}	hap^{1}	ɣap^{6}
ten	sip^{2}	sip^{2}	sip^{3}	sip^{1}	sip^{6}
enemy	sɨk^{2}	sək^{2}	--	sak^{1}	--
cooked ripe	suk^{2}	suk^{2}	sok^{3}	suk^{1}	suk^{6}

For the opposite, less frequent phenomenon, a famous example is Siamese *maa*^{1} 'to come', which in all non-Northern Tai languages has a tone reflecting

an earlier voiced initial, in the bottom box of column A of our charts (Siamese *maa*^{2}), but in all Northern languages has a tone reflecting an earlier voiceless initial (Yay *ma*^{1}, Saek *maa*^{2}), so that it is homonymous with the word for 'dog' (Siamese *maa*^{5}, Yay *ma*^{1}, Saek *maa*^{2}). But examples of this type of tonal shift (not to attempt to decide which group made the shift) seem to be sporadic, with only a handful of examples available altogether, and seldom more than one or two illustrating the same initial consonant correspondences, so that perhaps we should not hope to find for these any systematic explanation.

Returning to our set of examples, however, it seems obvious that something systematic underlies these; there are examples involving Siamese initial *ph*, *th*, *kh*, and *s*, each with fairly regular initial correspondences in the other languages. For each of these sets of consonant correspondences there are other examples where no such tonal aberration has occurred. May we not then suspect that these particular instances of *ph*, *th*, and so forth, were somehow phonetically different from the *ph*, etc., that behaved otherwise with respect to tonal shifts, that is, those that agree in both Northern and non-Northern languages in being associated only with tones that reflect always earlier voiceless initials?

What one would like to do now is find a way to put these special Northern initials, the ones that have behaved as if voiced in this branch, but as if voiceless in the non-Northern languages, in a special row of boxes at the extreme top of our chart, for two reasons. The first reason is already familiar; if we

can do this, we would then be putting the residue of initials in the "voiceless friction category" lower in the columns, next to other initials with which they share the same behavior. But the particular sounds involved do not permit us to do this, because we found earlier (at Bac Va) that some of these same sounds belonged there in the lower part of our "voiceless friction" boxes. It is difficult not to persist in hoping that a way will be found out of this dilemma, perhaps through working out the details of what sound changes must have occurred before the tonal splits, as suggested earlier in connection with Saek, because the second reason is so compelling. This second reason is that, if we can get these special Northern consonants moved to the very top of the chart, this would make them contiguous to the voiced initials of the bottom row of boxes--if we roll the chart into a cylinder with the top now joining the bottom, making our spectrum continuous, as in a color spectrum, with "violet" at one extreme found to be adjacent to "red" at the other.

One of the puzzling features of this entire problem, which was recognized before this "spectrum" was conceived, and which still persists, is that we seem to find nowhere any subdivision of the very large category of originally voiced initials; it is always the voiceless initials that, as research progresses, we find more and more reason to subdivide. And among the voiceless initials it is interesting (although the details of this matter have not been presented here) that we seem to tend to isolate sets of four. There are four in the glottal

category, *ʔ ʔb ʔd ʔy, and four in the unaspirated-stop category, *p t c k. As further study of the top row of "voiceless friction sounds" progresses, it will be interesting to learn whether the subdivisions adumbrated in this paper produce more such systematical sets of four.

Of what use is our theory? Perhaps not much in its present embryonic form. But it seems to have a number of possible uses if it can be developed and refined. For comparative Tai studies it may, if valid, be found to throw light on the phonetic nature of various initials that have previously been found problematical, especially in instances where it has seemed necessary to posit special original initials to account for unusual sets of correspondences. It may ultimately help us to arrive at a more rational and credible picture of the consonantism of the parent language than otherwise.

If the theory is discovered to work among the Tai languages, it will surely be worthwhile to inquire whether anything similar has been at work in other language families in the Far East and Southeast Asia in which phonological splits, tonal or other, were conditioned by phonetic features of initials.

And for theorists in such areas as distinctive features, markedness, generative phonology, and the like, our findings (when finally more explicitly and reliably formulated) may be of some interest. At the present stage of our understanding, however, it is likely that phonological theorists may be of more help to Tai scholars in suggesting avenues of investigation of this hypothesis than the reverse, and one

of the motives for offering this paper has been to present the facts, so far as they are now perceived, to scholars interested in general phonological theory, in the hope that they can offer explanations or suggest future lines of inquiry.

Notes

1. The attractive notion that D syllables in the parent language were toneless perhaps encounters trouble here. How could toneless syllables undergo tonal splits? Perhaps the notion is wrong, or perhaps by the time of the tonal splits the D syllables had become identified tonally with one of the tones A, B, or C. It is perhaps significant that more often than not the D-long syllables undergo the same split as B-tone syllables, and moreover the resultant tones of D-long syllables are often phonetically similar to the corresponding resultant tones of B-tone syllables. But this interesting matter, though deserving of further study, is not relevant to the problem at hand.

2. The phonetic characteristics of these White Tai tones, not relevant to our problem, are as follows: 1 level, slightly lower than mid, 2 high rising, 3 low rising and glottalized, 4 high level and glottalized, 5 mid-high level, 6 falling and glottalized. The tones of checked syllables, according to the practice followed here, are assigned the numbers of the phonetically most

closely similar tones of nonchecked syllables, with which they are in complementary distribution.

3. A curious feature of this whole phenomenon is that the A tone of Proto-Tai seems to have undergone in the various daughter languages and dialects more splitting, and more varied types of splits, than tones B and C. Whatever the reason for this special susceptibility to splitting of tone A might have been, perhaps involving the phonetic nature of this tone, it is assumed to be irrelevant to our problem.

4. It will be noted that throughout this paper there is a reluctance to cite starred sounds or forms more than is absolutely necessary. This is because the hypothesis being advanced here seems to lend hope of assisting us in reexamining, and in some cases perhaps reformulating, current views on these specifics.

5. Other columns will not be discussed here, as there is nothing unusual in their treatment in this dialect.