

First published in *Studies in Linguistics in Honor of George L. Trager*, edited by M. Estellie Smith, 423–37. The Hague: Mouton, 1972. Reprinted courtesy of the publisher.

A CHECKLIST FOR DETERMINING TONES IN TAI DIALECTS

WILLIAM J. GEDNEY

Languages of the Tai family in Southeast Asia, though they show great differences in phonology and lexicon from one dialect to another across their extensive domain, from Assam in the west to the island of Hainan in the east, and from peninsular Thailand in the south to the Chinese provinces of Yunnan, Kweichow, and Kwangsi in the north, all agree in the basic framework of their phonological structure. In all known languages and dialects of the family, speech consists of a succession of unambiguously marked syllables, and each of these syllables exhibits a pattern of contrasts in various positions: initial consonant, or consonant cluster with (in diminishing order of frequency of occurrence in the various dialects) *w*, *y*, *l*, *r*; nuclear vowel (and in many dialects diphthongs consisting of high vowel *i*, *i*, and *u* followed by a centering offglide); and final consonant (or zero in this position). Each syllable also has a distinctive tone.

The system of tonal contrasts in any particular language or dialect is unique, both as to the phonetics of the tones and as to the number of permitted tonal contrasts, as well as the list of morphemes on which particular tones occur. Indeed, the most useful criterion for dialect boundaries within the Tai-speaking area is perhaps that of tonal systems; in travelling from place to place (or as is more often the case nowadays, in working with informants from various localities), one may consider that he has crossed a dialect boundary if he finds an increase or decrease in the number of tones in the system, or if he finds that a list of morphemes which in the previously studied dialect agreed in tone is now distributed among two or more different tones, or conversely, that a previously noted tonal distinction is now lost, with most or all of the morphemes previously noted as showing a tonal distinction now merging into a single list having the same tone.

As regards phonetics, the tones of a given dialect differ from one another in pitch height (e.g., high, mid, or low, with virtually infinite possibilities in intermediate pitch levels), and in contour (e.g., level, rising, falling, or combinations such as rising-falling). In addition, throughout much but not all of the Tai-speaking area, some of the tones, usually two but sometimes three, show a feature of glottal constriction, in which case the syllable, if it ends in a vowel or sonorant, usually has a final glottal closure except in close transition with the following syllable.

As regards number of tones, the greatest number of possible tonal contrasts is always found on what are sometimes called 'smooth', 'free', or 'live' syllables, i.e., those ending in voiced sounds (vowel, semivowel, or nasal). So far no Tai dialect has been found with fewer than five nor more than seven contrasting tones on syllables of this type.

On checked or 'dead' syllables, i.e., those ending in a stop (*p*, *t*, *k*, or, in some dialects, a final glottal stop which structurally has a different status from the glottal closure at the end of syllables having glottalized tones mentioned above), the number of possible tonal contrasts is always markedly smaller, usually two or three.

For example, in the best known language of the family, the Standard Thai or Siamese of Thailand, there are five contrasting tones on smooth syllables: (1) level, slightly lower than mid, with a slight fall before pause or open transition: *khaa*¹ 'to be stuck'; (2) low level: *khaa*² 'a kind of root used in cooking'; (3) falling, with glottal constriction: *khaa*³ 'to kill'; (4) high rising-falling, with glottal constriction: *khaa*⁴ 'to engage in trade'; (5) rising: *khaa*⁵ 'leg'.

But on checked syllables tones (1) and (5) never occur. If the vowel is short, the possibilities are: (2) low level: *phit*² 'to be wrong'; (4) high level: *phit*⁴ 'poison'; (3) (rare) falling: *khlak*³ 'crowded'.

And if the syllable has a long vowel or diphthong, the possibilities are: (2) low level: *maak*² 'areca nut'; (3) falling: *maak*³ 'many, much, very'; (4) (rare) high level: *kaat*⁴ 'card'.

Published descriptions of the tonal systems of Tai languages (as well as other tonal languages of the Far East) reveal two different conventions as regards the numbering of tones. Some scholars are in the habit of listing first the tones on smooth syllables, where the maximum number of contrasts is possible, and then going on to assign additional numbers to the tones occurring on checked syllables. Other scholars, recognizing that the two sets of tones are in complementary distribution, identify the tones occurring on checked syllables with the phonetically most similar tones of the other set. This is the principle used in the traditional numbering of the tones of Standard Thai, as in the data cited above, so that, for example, the high level tone of checked syllables is identified with the fourth (high rising-falling) tone of smooth syllables, to which it is phonetically most closely similar, though not identical.

This disparity in method of counting tones is, of course, of no real importance, since a good description will always make clear which procedure has been followed, but it makes it necessary for one to find out which method has been used if, for example, he hears or reads the statement that a particular Tai dialect has, say, seven tones.

No one knows yet how many different tonal systems, and therefore, if one uses tonal systems as the criterion for dialect boundaries, how many dialects there are in the Tai-speaking domain. It seems safe to guess that the total number reaches at least three or four hundred.

Vowel and consonant contrasts offer relatively little real difficulty to the field-

worker in languages of this family. Only occasionally does a serious problem arise with respect to the transcription and analysis of these segmentals. For example, a scholar accustomed to the usual two-way distinction in velar stops between *k* and *kh* who then attacks the White Tai of Lai Chao in North Vietnam finds that he has to discipline himself not to overlook its three-way distinction among *k*, *kh*, and the voiceless velar fricative *x*. Recently in studying the variety of Nung spoken at Mung Khuong near Lao Kay in North Vietnam I spent some rather arduous days before I was able to determine whether [ʃ] was in contrast with [s] and [ch]. Finally discovery of such minimal sets as *chiw*² (the second tone of this dialect is low level) 'to roast (e.g., peanuts)': *siw*² 'chisel': *ʃiw*² 'to be wrinkled or withered' settled the question. In vowels, most languages of this family have both a mid back unrounded, commonly transcribed ə, and a high back unrounded i, and usually the difference is fairly clear, but in some Tai dialects the first of these two vowels is phonetically so high that constant care and rechecking is necessary not to mistake it for the higher i. In some of the Nung dialects of southern Kwangsi the fieldworker has great trouble with the high back vowels; he often feels unsure whether to transcribe *u* or *o*, and only after much sorting and testing discovers that in many of these dialects there is no contrast in this part of the vowel system.¹

But difficulties with consonants and vowels of the extreme sorts cited are not common. By exercising normal care and diligence, the fieldworker usually finds that the vowel and consonant distinctions in Tai languages are not formidable. But the tonal system is always troublesome from the very beginning, because it is sure to differ both phonetically and structurally from that of previously studied dialects, often in subtle ways. On the other hand, the investigator always feels that the tonal system is basic and has first priority, and that its mastery is perhaps the most important part of his task. Often it turns out that one's first transcriptions of vowels and consonants, especially if he has some previous experience with other dialects of the family, are largely valid phonemically, whereas one's first efforts to record tones phonetically often prove largely useless until the system of tonal contrasts is firmly established.

Even if one is working on a language or dialect of which previously published descriptions are available, he must undertake his own check with his informants. It may be found that previous descriptions, although perhaps flawlessly accurate, were based on a dialect spoken at some other geographical point, and that this makes a difference. Various students of the Lao dialect of the city of Vientiane, for example, have ended up with different findings depending upon which side of town their

¹ The fieldwork referred to here, and of which this entire article is an indirect product, includes a year (1964-1965) supported by the American Council of Learned Societies and by the University of Michigan Graduate School and its Center for South and Southeast Asian Studies, a summer (1966) supported by the National Science Foundation, and a year (1968-1969) supported by a Fulbright-Hays grant from the Office of Education, sponsored also by the National Research Council of Thailand. Informants have been interviewed in Taiwan, Hong Kong, South Vietnam, Thailand, Laos, and India.

informants came from. When phonetic differences appear between one geographical point and another, one always has to consider and investigate the possibility that there are structural differences as well. An interesting problem of this sort exists to the west of Bangkok. As one travels westward through Ratburi and Phetburi he finds the phonetics of the tones changing drastically. Apparently no one has yet undertaken to find out just how far one has to go in this direction before reaching the boundary dividing the tonal system of Bangkok Thai from the other tonal systems of the peninsula.

Older descriptions may even be found to have overlooked tonal distinctions (to say nothing, of course, of early studies which disregarded tones entirely). I found a few years ago that Diguët's description of the Black Tai language of Son La in North Vietnam, which scholars have been using and citing for decades, had missed the distinction between the high level tone in a word like *pii*⁴ 'fat' and the mid-high level tone in a word like *pii*⁵ 'older sibling'. (This matter was discussed in Gedney 1964). Such inaccuracies are, of course, especially frequent in the work of early writers on languages of this area, most of whom were amateurs, but they are not unknown even in more sophisticated recent publications. One has also to keep in mind the sad fact that misprints in tonal symbols are a common hazard.

For all these reasons, then, a fieldworker has to recheck tonal facts even if previously published descriptions of the tones of his dialect exist.

Educated informants in an area where there is a tradition of writing may claim to know how many tones there are in their dialect. Often such claims prove to be correct, and informants with this kind of expertise can save the fieldworker days or weeks of work. The former ruling prince of the Lue-speaking city of Chieng Rung in Sipsongpanna, Yunnan, now living at Mae Sai in northern Thailand, startled the present writer at their first meeting in 1964 by stating, correctly, that his dialect of Lue differed from the Lue spoken at the Burmese city of Moeng Yong in the distribution of tones on words having initial *ɿ*, *b* and *d*. Even in cases where there is no writing system, some informants are so intelligent that they are able to follow and criticize the analyst's effort to work out the system of contrasts, and once this is done to tell him explicitly which tone occurs on a morpheme that may be causing doubt. But it is never safe to place too much faith in the informants' notions about the tones of their own speech. Aside from occasional errors in detail, there is also the danger of fundamental misconceptions. A Shan speaker from Sen Wi in Burma once caused the present writer considerable confusion by insisting that his dialect had five tones, whereas it actually has six; his bias turned out to be caused by his having learned to read and write Shan at Si Po, where there is indeed a five-tone system. A little work with the checklist which will be presented at the end of this paper convinced him of his error. In another instance a speaker of a Chinese Shan dialect from southwestern Yunnan which has a five-tone system thought he had six tones in his speech, because as a young man he had been educated in Burma at a place where the local Shan dialect does indeed have six tones.

Sooner or later, if he amasses enough lexical material, the investigator is likely to find a syllable on which all the permitted tones actually occur, like the Siamese syllable *khaa* cited above. Such minimally contrasting sets are, of course, elegant material for use in the final description of the phonology of the dialect, but unfortunately such sets usually include one or more rather out-of-the-way words, and one's usual experience is that he is unable to discover sets of this kind until long after he has worked out the analysis of the tonal system from other evidence.

The usual and obvious procedure, in the first days of fieldwork, is, while collecting single lexical items, to note the phonetics of the tones and try to decide in each case, by comparing one form with another, which syllables have the same tone and which ones differ. (Some informants can tell which syllables, of different segmental shape, have the same tone, or can be trained to do so, but most cannot, and often the informants who are in other respects most productive and helpful are quite blind in this respect, and are often so puzzled and distressed if one asks about this point that in general it is better never to ask; those who are able to give help will sense the problem and volunteer the information). By this process of comparing and sorting, the fieldworker will usually find that by the time he has recorded and indexed a couple of thousands of miscellaneous words and phrases he feels pretty certain of the main outlines of the tonal system of the dialect.

This method is, however, slow and laborious, and fieldworkers using it not infrequently discover, after days or even weeks or months of work, that a tonal contrast has been overlooked, so that it is necessary then to reexamine all the data previously collected.

There is, however, a short-cut to discovering the structure of the tonal system of a Tai dialect. This has been used for some years by a handful of scholars, each of whom apparently hit upon the principles of it independently. They have found that it enables them to attack a Tai dialect cold and master its tonal system within the first hour or two of work with the informant. It is the purpose of this essay to divulge this device, in the hope that others in future may find it helpful in fieldwork.

The procedure to be described involves linguistic history. Those who use this method are well aware that a synchronic description cannot depend upon or involve historical information, and the tonal analysis which the technique here described produces must, of course, stand on its own feet regardless of the historical insights that may have facilitated its discovery.

What is involved here is an understanding of the basic principles of comparative Tai phonology, that is, of the presumed tonal structure of Proto-Tai, the prehistoric parent language of which all modern Tai languages and dialects are assumed to be divergent continuations, and of the types of tonal changes which are known to have occurred in various branches of the family.

Most students of comparative Tai linguistics are agreed that Proto-Tai had a system of three tones on smooth syllables, which are sometimes designated *A*, *B*, and *C*. Checked syllables had a fourth tone, *D*, with no tonal contrast at all; perhaps

these were what might be better regarded as toneless syllables. This tonal system lasted at least until after the time (about 1300 A.D.) when alphabetic writing systems were devised for some of the languages of the southwestern part of the Tai-speaking domain, including Siamese. In general morphemes with Proto-Tai tone *A* are those which in Standard Thai or Siamese are still written with no tonal marker, those with Proto-Tai tone *B* are those written with the symbol called in Siamese *may⁴ peek²*, and those with Proto-Tai tone *C* are those written with the symbol called *may⁴ thoo¹*. One cannot rely entirely on the Siamese spelling of a word. Some words have undergone special local distortions, or have undergone inter-dialectal borrowing, with the result that their tone in modern Siamese is historically aberrant. Also, some words, although pronounced in the manner which would indicate direct, undistorted inheritance, have acquired unhistorical spellings in modern Siamese. And for a great many morphemes found in other branches of the Tai family, no Siamese form is available. In such cases, and indeed in all cases, the comparatist's knowledge as to whether a given morpheme had tone *A*, *B*, *C*, or *D* in Proto-Tai rests on his inferences from its modern shape in various languages of the family.

At some time after the period of Proto-Tai unity, when groups of Tai speakers had dispersed to various new locations (and incidentally, as we have seen, at some time after the introduction of writing in some of the southwestern languages), a wave of drastic sound changes swept this entire area, including much of Southeast Asia and the Far East. In tonal languages such as those of the Tai family, these sound changes involved splits in the tonal system, with the splits conditioned by the phonetic nature of initial consonants of the syllables. In non-tonal languages such as those of the Mon-Khmer family, vowel systems underwent similar splits likewise conditioned by initial consonants.

In the Tai languages the details of these changes differed from place to place — hence the great variety in tonal systems found today — but in general what happened was that each of the original tones *A*, *B*, *C*, and *D* split into two or more tones, with, in some dialects, various coalescences of the resulting tones with other tones from other sources in the previous pattern. Checked syllables from Proto-Tai tone *D* underwent not only tonal splits conditioned by initial consonants, but also splits conditioned by vowel length; or, to put it another way, checked syllables underwent different tonal splits in some dialects depending upon whether the vowel was long or short.

Although most scholars are agreed that it was the phonetic nature of the initial consonants that conditioned the tonal splits, so that, for example, what had been one tone became differentiated into two depending upon whether the initial consonant at the time of these changes was voiced or voiceless, subsequent changes in consonants in the various languages and dialects have obscured these conditioning features, which therefore must be inferred. Every modern dialect has some voiced initial consonants which the comparatist knows must have been voiceless at one time, and vice versa. This means that the phonetics of the consonants of a modern dialect can be of no help in tonal analysis.

On smooth syllables, the simplest type of change, and one which apparently occurred in many of the languages of the family, was a simple binary split of the original three tones into six, depending upon the voiced or voiceless nature of the initial consonants at the time of the split. See Diagram 1.

		Proto-Tai tones		
		A	B	C
Initials at time of split	Voiceless	1	3	5
	Voiced	2	4	6

Diagram 1

Such six-tone systems are very frequent throughout the Tai-speaking domain, and are often quickly discoverable by using some such brief checklist as the following, though, as will be seen later, one cannot be sure that he has uncovered the entire tonal structure without making a more refined analysis. Test words are given with their Siamese consonant and vowel values (or those they would have if they occurred in Siamese, as in the case of the word for 'arrow of crossbow'), but without indication of tone, since it is precisely tones that are being sought.

Column A:

- Box 1. *pii* 'year'
naa 'thick'
 Box 2. *phii* 'fat'
naa 'ricefield'

Column B:

- Box 3. *pii* 'flute, oboe'
naa 'arrow of crossbow'
 Box 4. *phii* 'older sibling'
rua 'to leak'

Column C:

- Box 5. *naa* 'face'
maa 'to increase'
 Box 6. *naa* 'mother's younger sibling'
maa 'horse'
rua 'fence'

In using this list, as well as other lists presented in this article, there are various points that must be kept in mind. Certain among even these very common words may not occur in the dialect under consideration, so that it is necessary to have two or three test words at hand for each box. Also, the Siamese consonant and vowel values indicated in the list may vary in other dialects; for example, the aspirated *ph*

in the words for 'fat' and 'older sibling' are found only in Standard Thai and in Lao, whereas other Tai languages usually have an unaspirated *p* in these words, providing a nice minimal contrast with such words as *pii* 'year'. Or 'to leak' and 'fence' may have an initial *h* or *l* instead of *r*, and the diphthong *ua* may turn up as a monophthongal *oo* or *uu*. Such variations do not vitiate these test words for checking tones. More serious for our purposes is the danger that in a particular dialect or group of dialects one of our test words may have the 'wrong' tone, because of local distortion or interdialectal borrowing, or because of special tonal changes affecting only this dialect or group of dialects. For example, in languages of what is often called the Northern branch of the Tai family, in southern China (see Li 1959 and 1960), the word for 'older sibling' falls into Box 6 rather than Box 4, while the word for 'mother's younger sibling' falls into Box 4 rather than Box 6 in many groups of Tai languages. These circumstances suggest that we ought to seek test words which never show such tonal deviation. This turn out not to be practicable, however, because almost any test word one might select turns out to have a deviant tone in some dialect or other, and one cannot be absolutely certain in advance that any particular word he selects will be certain never to show tonal deviation in any dialect anywhere. The better policy, therefore, seems to be to have available a battery of two or three test words for each box, so that if one word turns out to be deviant there will be others which will serve the purpose.

If the investigator has had previous experience with other Tai languages, he will, as he proceeds through such a checklist as this, interpolate other test words. If, as happens in some dialects of the southern peninsula of Thailand, Boxes 1 and 3 appear to coincide, a fieldworker who knows Siamese will see at once that he must ask about such pairs as *khaa* 'leg' (Box 1 in Siamese) vs. *khaa* 'a root used in cooking' (Box 3 in Siamese), or *sii* 'color' (Box 1) vs. *sii* 'four' (Box 3). In other words, the principle of a diagram of boxes with test words for each box invites the imaginative and experienced scholar to add other test words which, as he progresses with his study of a particular dialect, suggest themselves as especially relevant. When possible it is wise to use words ending in a vowel, or in a semivowel or nasal preceded by a long vowel, so that the tone's pitch level and contour will be maximally audible. Because they are so easy to cite by pointing or gesturing, words for body parts such as *huu* 'ear' and *taa* 'eye' (both in Box 1), or number words like *haa* 'five' (Box 5) are especially useful. For Box 4 the present writer has always found *nan* 'to sit' useful, and *nam* 'water' is always handy as a quick check for Box 6.

As we shall see presently, a more complicated diagram and checklist are necessary for absolute certainty. This is especially true for Column *A* of the diagram, where many Tai dialects have undergone more complicated tonal splits than those indicated in Diagram 1. Most Tai dialects, however, have in Columns *B* and *C* undergone the simple binary split indicated above. Some dialects of Lao have not split Column *B* at all, so that Boxes 3 and 4 coincide. If one suspects such a situation, he can quickly test for it by using the pair *khaa* 'a root used in cooking' (Box 3) and *khaa* 'price,

value' (Box 4). Rarer, but not entirely unknown, is the situation where Column *C* remains undifferentiated; it is found, for example, in the Nung dialect of Lei Ping in southern Kwangsi, where such pairs as *may* 'to burn' (Box 5) and *may* 'wood' (Box 6) are homonymous.

Turning to checked syllables, reflecting tone *D* of Proto-Tai, our diagram must allow not only for tonal splits conditioned by initials but also for distinctions which may have been conditioned by vowel length, since some dialects are known to have made different tonal changes in checked syllables depending on vowel length. See Diagram 2.

		Proto-Tai Tone <i>D</i>	
		short	long
voiceless	7	9	
voiced	8	10	

Diagram 2

Useful test words are the following.

Box 7. *lak* 'stake'

mat 'flea'

Box 8. *lak* 'to steal'

mat 'to tie up'

Box 9. *maak* 'fruit'

Box 10. *maak* 'classifier for tools'

For Boxes 9 and 10 it is not easy to find minimal pairs which are universally usable. Since the long vowel in this column renders the tone rather easily audible, minimal pairs are not really necessary, and the investigator can usually get what he wants by using such test words as *khaat* 'torn' and *pɛɛt* 'eight' (Box 9) and *liat* 'blood' and *nɔk* 'outside' (Box 10).

The tones that occur in the *D*-long column (Boxes 9 and 10) almost always turn out to be identical, phonetically as well as with respect to structural splits, with those of the *B* column of the smooth syllable chart. The historical reason for this peculiar circumstance is not yet understood, but it is so nearly universal among Tai languages that the fieldworker is wise to check his analysis of the *D*-long column against his findings in the *B* column; if they are not identical, the chances are that he has made an error.

One needs next to decide whether any of the tones in the *D*-short column are phonetically so similar to tones in the *D*-long column as to be identifiable as the same. In Siamese, for example, one finds that the tones in Boxes 7 and 9 are both low level and may be identified as the same tone, but the tones of Boxes 8 and 10 are very

different, high level and falling respectively. Experience has shown that it is most economical of time not to force a decision on these matters in the very beginning. What happens in actual fieldwork is that very soon, as one proceeds with his questionnaire, phrases crop up involving combinations that clearly show, for example, that words of Boxes 7 and 9 have tones that are identical, or conversely that they are not. This is also true with respect to identifying the tones of checked syllables with the phonetically most similar tones of smooth syllables. Forcing the issue at the very beginning can result in serious loss of time, as the phrases which one may try to devise as tests may be awkward or unrealistic. If the fieldworker is willing to defer these questions, he will find that as he goes on he will inevitably encounter, within perhaps the third or fourth hour of work, combinations of syllables which automatically decide the matter. To cite a simple example, the present writer's questionnaire takes up, immediately after the tonal checklist, the number words. If, as in Siamese, Boxes 3, 7, and 9 have tones which are phonetically so similar as to be identifiable as allophones of the same tone, this will be revealed automatically when one elicits *sip sii* 'fourteen' and *sip pɛt* 'eighteen'.

An additional remark is necessary concerning the tones of checked syllables. In each modern dialect there are parts of the phonological system for which the comparatist knows there are no historical sources. In the smooth syllable pattern of Siamese, for example, comparative Tai studies show us that syllables with such initials as *p*, *b*, *d*, *p*, *t*, *c*, *k* and having fourth or fifth tone can have no possible source in earlier stages of the language, so that morphemes of such shapes must be late innovations. None of this, however, needs to concern the fieldworker so far as smooth syllables are concerned. But in the checked syllable pattern, where every dialect has severe restrictions on the occurrence of tones, and where the historical possibilities for tonal variation are extremely limited, many Tai dialects have introduced, often in loanwords or onomatopoeic morphemes, checked syllables with historically unjustifiable tones. This, for example, is the historical explanation for the unusual Siamese forms *khlak*³ 'crowded' and *kaat*⁴ 'card' cited earlier. The technique of tonal analysis expounded in this paper provides no method for eliciting such historical anomalies.

Although for many dialects a diagram like the above, providing for a simple binary split conditioned by the voiced/voiceless nature of the initial consonants at the time of the change, is sufficient, many other dialects have in one column or another of the diagram undergone splits conditioned by other phonetic features of initials. Column *A* turns out to be especially vulnerable to special changes, but they are sometimes found to have occurred also in other columns, that is to say, in others of the original tones.

In Siamese, for example, original tone *A* has, as in the preceding chart, split into two, but the conditioning factor is found to have been different. The fifth tone of modern Siamese occurs on syllables of Column *A* which are believed to have had at the time of the tonal split voiceless friction consonants as initials, that is, such sounds

as the voiceless fricatives *s, f, x, h*, voiceless aspirated stops such as *ph, th, kh*, and preaspirated (or perhaps voiceless) sonorants such as *hm* and *hl* (or perhaps *ɲ* and *l̥*). All other column *A* morphemes have ended up with first (mid level) tone in modern Siamese. In other columns Siamese has behaved as in the earlier diagram. To depict the historical sources of Siamese tones we would therefore need a diagram which divides column *A* differently from the other columns. See Diagram 3.

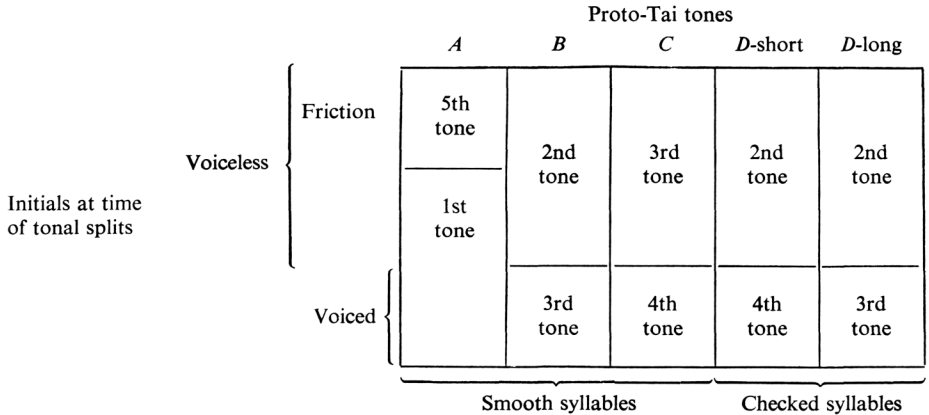


Diagram 3

Historical Sources of the Tones of Siamese

Although the special split that Siamese has made in the *A* column is not common, it is not unknown in other parts of the Tai-speaking area, and some dialects have made a split of this sort in one or another of the other columns of the diagram. We must, therefore, in devising a test diagram which is to allow for a maximum of possibilities, include this type of split.

Another type of special split has been conditioned in some dialects, in one column or another of the diagram, by a small group of initials. These include glottal stop and three other consonants which, because of this circumstance, are believed to have been preglottalized at the time of the tonal splits. These are transcribed by some scholars as **ɸb*, **ɸd*, and **ɸy*, and by others as **ɸm*, **ɸn*, and **ɸñ* (see Li 1947; the nasal symbols are preferred by Brown [Brown 1965]).

Whereas in most Tai dialects morphemes having these initials have behaved with respect to tonal changes like syllables having original voiceless initials, in a few dialects they have fallen together, in one column or another of the diagram, with syllables having original voiced initials. The phenomenon has been noted by a number of scholars in the dialect of Chiangmai in northern Thailand, and by others elsewhere (see, for example, Haas 1958 and Gedney 1965). While the articulatory phenomena involved here may seem to be puzzling, and we may hope someday to understand them better, the resulting tonal facts are indisputable. Our test diagram

must therefore include another horizontal division to allow for tonal splits of this kind.

Diagram 4 displays a maximum of possible tonal distinctions resulting from the various types of tonal splits that have been described. In any given dialect there will be a division of each column of the chart into two or three tones, or in some cases no such division at all in one column or another. Most dialects will also show coalescence or syncretism between two or more boxes belonging to different columns.

		Proto-Tai Tones				
		<i>A</i>	<i>B</i>	<i>C</i>	<i>D</i> -short	<i>D</i> -long
Initials at time of tonal splits	Voiceless friction sounds, <i>*s, hm, ph, etc.</i>	1	5	9	13	17
	Voiceless unaspirated stops, <i>*p, etc.</i>	2	6	10	14	18
	Glottal, <i>*ʔ, ʔb, etc.</i>	3	7	11	15	19
	Voiced, <i>*b, m, l, z, etc.</i>	4	8	12	16	20
		Smooth Syllables			Checked Syllables	

Diagram 4

The following checklist of test words has been developed over a period of several years during the course of fieldwork on over a hundred Tai dialects belonging to every branch of the family.

Column *A*:

- Box 1. *huu* 'ear'
khaa 'leg'
hua 'head'
- Box 2. *pii* 'year'
taa 'eye'
kin 'to eat'
- Box 3. *bin* 'to fly'
dεεη 'red'
daaw 'star'
- Box 4. *mii* 'hand'
khwaay 'water buffalo'
naa 'ricefield'

Column B:

- Box 5. *khay* 'egg'
phaa 'to split'
khaw 'knee'
- Box 6. *paa* 'forest'
kay 'chicken'
kεε 'old'
- Box 7. *baa* 'shoulder'
baaw 'young man'
daa 'to scold'
- Box 8. *phii* 'older sibling'
phɔɔ 'father'
ray 'dry field'

Column C:

- Box 9. *khaw* 'rice'
sia 'shirt'
khaa 'to kill'
khay 'fever'
haa 'five'
- Box 10. *paa* 'aunt (older sister of either parent)'
klaa 'rice seedlings'
tom 'to boil'
- Box 11. *baa* 'crazy'
baan 'village'
ʔaa 'to open (the mouth)'
- Box 12. *nam* 'water'
nɔɔŋ 'younger sibling'
may 'wood'
maa 'horse'

Column D-short:

- Box 13. *mat* 'flea'
suk 'cooked, ripe'
phak 'vegetable'
- Box 14. *kop* 'frog'
tap 'liver'
cep 'to hurt'
- Box 15. *bet* 'fishhook'
dip 'raw, unripe'
ʔok 'the chest'
- Box 16. *nok* 'bird'
mat 'to tie up'
lak 'to steal'

Column *D*-long:

- Box 17. *khaat* 'broken, torn'
ɲiak 'the gums'
haap 'to carry on a shoulder pole'
- Box 18. *pɔɔt* 'the lungs'
piik 'wing'
tɔɔk 'to pound'
- Box 19. *dɛɛt* 'sunshine'
ʔaap 'to bathe'
dɔɔk 'flower'
- Box 20. *miit* 'knife'
luuk '(one's) child'
liat 'blood'
nɔɔk 'outside'

For each box, experience has shown that a battery of at least three test words is needed, to allow for loss of a word in the particular dialect, or for special changes which have moved a word to another box. It also frequently happens that although a particular test word is found later to exist in the dialect, the informant happens to give another word, which in these first few minutes of work the investigator may hesitate to argue about.

It is possible that further research may show that our four horizontal tiers are not enough. Already additional tonal distinctions have been discovered. There is one variety of Nung spoken in the extreme northeast of North Vietnam which splits Box 1 of Column *A* into two. Saek, an unusual Tai language now spoken in a few villages in Nakhon Phanom province in northeastern Thailand and across the river in Laos, also splits this box into two, but on a different basis. When someday we fully understand the historical reasons for the tonal irregularities found in languages of the Northern branch of the Tai family, we may find it necessary to make still further horizontal subdivisions in our chart. But for purposes of practical fieldwork, it would probably be wasteful to consider refining our chart further, since for the vast majority of Tai dialects, especially the more accessible ones, the chart is already more refined than necessary.

Aside from its primary purpose in enabling the investigator to master the tone system of a Tai dialect quickly and at the very beginning of his fieldwork, this device has been found to have certain beneficial side-effects. By starting out with this kind of questioning, the investigator shows the informant at once, without elaborate instructions, that what he needs, particularly in the early stages of the work, is slow, careful pronunciation of ordinary words in isolation. The present writer has also had the experience that after a few minutes of this work the informant or a bystander will remark that he had thought he might be able to serve as an informant for some other dialect but this work shows him that only a genuine native speaker would be able to demonstrate all the subtle distinctions that this checklist calls for.

This paper is offered to George Trager, in grateful and warm recollection of the author's indebtedness to him for much of whatever skill he has in linguistic fieldwork and analysis.

REFERENCES

- Brown, J. Marvin
1965 *From Ancient Thai to Modern Dialects* (Bangkok).
- Egerod, Søren
1961 "Studies in Thai Dialectology", *Acta Orientalia* 26:43-91.
- Gedney, William J.
1964 "A Comparative Sketch of White, Black, and Red Tai", *Social Science Review*, special number 14, December 1964 (Bangkok).
1965 "Yay, A Northern Tai Language in North Vietnam" in *Indo-Pacific Linguistic Studies*, Part 1, *Historical Linguistics*, G. B. Milner and E. J. Henderson, eds. (= *Lingua* 14) (Amsterdam, North Holland Publishing Co.), pp. 180-193.
- Haas, Mary R.
1958 "The Tones of Four Tai Dialects", *Academia Sinica, Bulletin of the Institute of History and Philology* 29:817-826.
- Li, F. K.
1947 "The Hypothesis of Pre-Glottalized Series of Consonants in Primitive Tai", *Academia Sinica, Bulletin of the Institute of History and Philology* 11:177-188.
1959 "Classification by Vocabulary: Tai Dialects", *Anthropological Linguistics* 1,2:15-21.
1960 "A Tentative Classification of Tai Dialects" in *Culture in History, Essays in Honor of Paul Radin*, Stanley Diamond, ed. (New York, Columbia University Press), pp. 951-959.

