TWO-WAY AND THREE-WAY SPLITTING OF TONAL SYSTEMS IN SOME FAR-EASTERN LANGUAGES[1]

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(Translated and developed by Christopher Court, and reviewed by the author)

SUMMARY

As well as two-way splitting of the tonal system brought on by the confusion of the two kinds of initial consonants: voiceless and voiced, mention should be made of a three-way split caused by the merger of three kinds of initial consonants: glottalized, aspirated and voiced, in the Miao-Yao and Tai-Tung (= Tai-Kam) language families.

0. The two-way splitting of the tonal system in Far-Eastern languages has been known for a long time. Roman Jakobson was able to cite it in his "Principles of historical phonology", as early as 1931, in the following terms:

> "In certain Chinese dialects voiced and voiceless consonants have merged. The phonemic feature of voicing which distinguished one series of consonants from another series is replaced by the phonemic distinction of pitch level in the following vowels: low tone of the vowel is substituted for the voicing of the preceding consonant, high tone on the other hand corresponds to voicelessness of the consonant in question. The difference of pitch level, at first a [non-phonemic] combinatory variation, has become a phonemic feature which distinguishes two series of vowels."[2]

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1) Originally appeared as Haudricourt (1961).

2) French text in Troubetzkoy (1949, p. 331). German original: Jakobson (1931, p. 262) and giving as source: Karlgren (1915) chap. 14, 15. A stricter translation is as follows: "... The voicing correlation in the consonants is replaced by the correlation of register in the following vowels... The difference in register, at first a combinatory variant, has become a correlation feature."

0.1 **Praguian phonology: functional, relational typological.** It would be as well here to outline briefly the theory of phonemics (or "phonology"), sound change and sound geography (the variation of sounds in time and place) which is used in this article, since it has not been widely accepted in English-speaking countries. It was developed in Continental Europe in the nineteen-twenties and nineteen-thirties by the Linguistic Circle of Prague. Here are some of its main characteristics.

0.11 **Functionalism.** Phonemics is essentially a classification of sounds according to their use or **function.** For example, in English and Standard Thai, a click sound, "tsk", is used to express feeling, but not to build words: neither Thai nor English has words like "tskah", "tskee", "tskoo" and so on, with the click sound built into them. In both English and Thai, on the other hand, the aspirated stop [tʰ] is used to build words, such as **tar, tea, too,** ทา, ที่ etc. Thus we have a functional classification into sounds used to build words in a particular language and sounds not so used. Now a sound used to build words may function as a phoneme or as an archiphoneme (see §3.0 below).

0.12 **Relationalism.** Even more important than the discussion of sounds and the function of sounds, is the discussion of the **relationship between** sounds and the function of this relationship. Two sounds in two different words are either the same (relationship of identity) or different (relationship of "opposition" or contrast). Likewise a pair of phonemes in two different words. If two sounds can distinguish two different words from one another, if, that is to say, they represent two different phonemes, then the two sounds are **in phonemic contrast** or "phonological opposition" (relationship of phonemic contrast): for example, in Standard Thai, [b] as in [ba:] บาร์ 'bar (place for drinking)' and [m] as in [ma:] มา 'to come'. Here the contrast is between a voiced stop and nasal consonant. After we establish a phonemic contrast the next question to ask is **what its position is within the system**: is it isolated or repeated? For example, in English the phonemic relation between the phonemes /r/ and /l/ is the contrast between a retroflex oral sonorant and an alveolar oral sonorant. This is an "isolated" contrast since no other pair of phonemes in the English system is distinguished in just this way. On the other hand, the contrast in English between /b/ and /m/ is not isolated but repeated (or "proportional"). The pairs /d/ and /n/, /g/ and /ŋ/ are distinguished in the same way. So we have a "proportion": /b/ : /m/ = /d/ : /n/ = /g/ : /ŋ/. This repeated relation is in some cases called a "correlation". In studying sound change from the **relational** point of view we ask not "What new **sound** was added?", or "What sound was lost", but rather "What new **phonemic contrast** was added?", or "What phonemic contrast was lost?" and further "Was the phonemic contrast isolated in the system or was it a 'correlation'?". It is of very great importance in historical sound-studies to know whether or not a phonemic contrast is isolated or is a correlation, since the loss of an isolated phonemic distinction, let us say, between /l/ and /r/ in English or Thai, is not nearly as significant to the phonemic system as a whole as the loss of an entire correlation. In the latter case, not just two phonemes, but two **series** of phonemes, lose their contrast and become one, and such a major change is likely to have its effects elsewhere in the phonemic system. For example in Ancient Chinese, the loss of

the correlation of voicing, when the pairs /p/:/b/, /t/:/d/, /k/:/g/ merged, triggered off a phonemic split in the tonal system which doubled the number of tone phonemes, as we have already seen.

0.13 **Typology.** In the Praguian approach, **type** of language is more interesting than family, and may cut across a family of languages. For instance, English, Dutch and German are relatives in the Germanic family of languages, and French stands outside this family. But Dutch and French belong to one type because they contrast voiced stops [b, d] with voiceless unaspirated stops [p, t], while English and German belong to another type because they phonemically contrast weak, sometimes voiced, stops with strong, sometimes aspirated, stops. Thus we have a Dutch-French type and an English-German type. On the other hand Dutch, French and German form a common type against English because they phonemically contrast front unrounded vowels [i, e, ɛ] with front rounded vowels [y, ø, œ]. A study of languages which classes them into types rather than families is called **typological,** and is characteristic of Prague Circle linguistics.

0.14 **Linguistic area, linguistic alliance.** If languages which belong to the same type are geographically near to one another, we call the geographic area of uniform type a "linguistic area", and say that the languages form a "linguistic alliance". In the Praguian approach the linguistic area is as important as the linguistic family, both in geography and history. In the present article it is stated that Thai and Vietnamese belong to one linguistic type because their tones originated in the same way. Thai and Vietnamese in addition share many features of **grammatical** type, but they cannot be shown to belong to the same language family: languages in the same family show similarities of a regular kind in basic vocabulary; Thai and Vietnamese do not. In the Orient we have the Sino-Tibetan family, the Tai family, the Miao-Yao family and so on, which have been recognised for many decades. But the present article attempts to establish historical and geographical **types,** and a single type may include different families, or cut across a language family, including a part of it and excluding a part of it.

0.15 **Evolutionary phonemics / (the Praguian approach to sound change): phonemicization, dephonemicization, transphonemicization.** The particular kind of linguistic evolution in which we are interested in this article is the emergence of phonemic contrasts of tone, and the increase in the number of these contrasts once they are established. We attempt to determine **not** the cause but the **prerequisites** of the evolution: it may be, for instance, the presence in a language of aspirated as well as ordinary sonorants. By comparison with ordinary sonorants, aspirated sonorants are unusual, and we call the special feature which distinguishes them from ordinary sonorants, viz. aspiration, their "mark". If there is an evolution in which the aspirated sonorants lose their aspiration and become ordinary sonorants, then of course the contrast "aspirated sonorant : ordinary sonorant" is no longer phonemic. We say that it has been "de-phonemicized". **Homophones** may result, because, for instance [hma:] 'dog' and [ma:] 'come', will normally both become [ma:]: (1) 'dog', (2) 'come'. But if the phonemic distinction, though lost in the consonants, is transferred elsewhere in some way, so that a new phonemic distinction appears elsewhere

and homophones are avoided, we have a "transphonemicization" or "rephonemicization". Many cases of transphonemicization will now be produced, in which a tonal difference in the vowels following the consonants has become phonemic, or, to use the specifically Praguian term, has been "phonemicized".

1. The type of evolution of sounds by binary fission described above by Jakobson (1931) is very widespread and we will give a series of examples before proceeding to more complicated types of evolution. One imagines that Jakobson, having seen only examples of this two-way evolution, generalized this binary type to cover the phonological structures of all comparable languages; we shall see that there exist cases of genuine **three**-way splitting, of tone systems, which are to be distinguished from cases of apparent three-way splitting, where, in fact, we have two series of tones resulting from a split, coexisting with a series of **architonemes,** i.e., a series of "un-split" tones not phonemically distinct from the first two series because they are in mutually exclusive environment with them.

In the following examples, in order to simplify the discussion, we will not speak about words with final stops [-p, -t, -k], but will deal only with words with a voiced final, either a vowel or a nasal consonant [-m, -n, -ŋ]. Where the two-way split has taken place in a non-tonal language, the result has been the emergence of two tones. If the language had two tones already—tones of a type sometimes known in Far-Eastern comparative linguistics as "Tone A" and "Tone B"—the two-way split has produced a system with four tones. If the language involved possessed three tones—of the type sometimes known in Far-Eastern comparative linguistics as Tones "A", "B" and "C"—what emerged from the split was a system of six tones.

In the following tables the tones will be noted by means of five horizontal bars signifying five phonetic pitch levels. Occasionally numbers will be used to indicate the pitch levels: from 1, the lowest, to 5, the highest.

1.1 Two-way splitting in a non-tonal language: the emergence of phonemic contrast of tone.

The appearance of phonemic tones in non-tonal languages has been recorded in two Austroasiatic [i.e., of the group comprising Mon-Khmer, Viet(namese)—Muong and Senoi-Semang] languages of the most northern group (the Palaung-Wa group): Riang (Shan States of Burma) by Gordon H. Luce, and Lamet (Upper Laos) by Karl Gustav Izkowitz.[3] The same phenomenon has been recorded in an Austronesian [i.e., Malayo-Polynesian] language, Cham (South Vietnam).[4]

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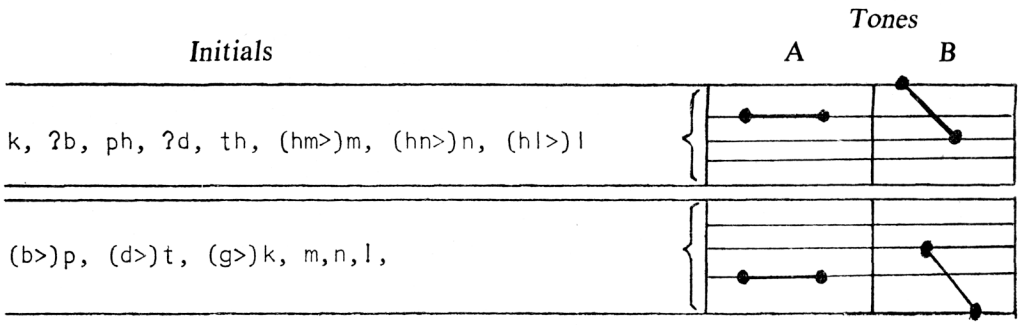
3) The vocabulary by Luce is as yet unpublished, as is that of Izkowitz, but the former has been utilized by Robert Shafer (1953).

4) Cham has "low pitch which contrasts phonemically with nonlow pitch in syllables initiated by voiceless oral stops /p, t, c, k/"—David L. Blood, (Summer Institute of Linguistics; Blood 1964, at 516 fn. 5). It is evident that the contrast of low vs. non-low pitch in the vowels replaces the original Indonesian distinction of voiced vs. voiceless initial stops.

1.2 Two-way splitting in a language with two tones : A and B.

An example of a language whose tonal system has passed from two phonemic tones to four is Sgaw-Karen (southern Burma) :[5]

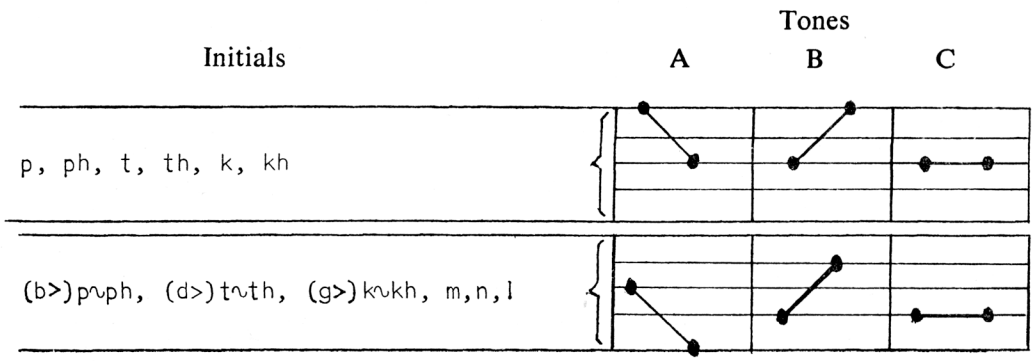
Sgaw-Karen



1.31 Two-way splitting in a language with three tones : A, B and C.

An example of a tonal system which has changed from three phonemic tones to six is the Canton dialect of Chinese, or Cantonese :[6]

Cantonese



The former voiced stops have become voiceless with tones A and B, and nonaspirated with tone C.

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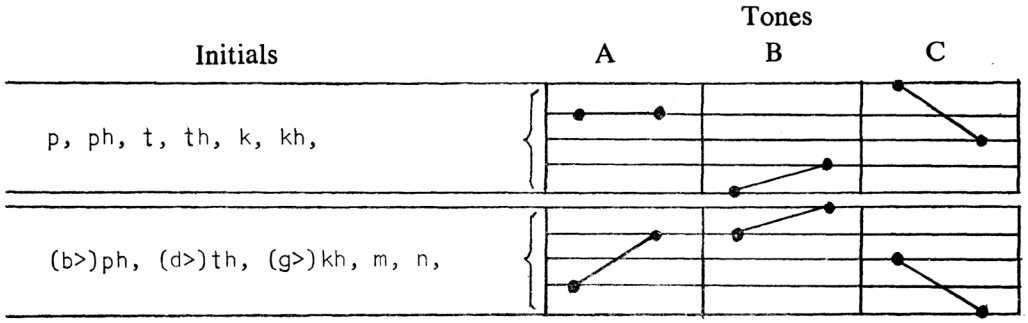
5) Gordon H. Luce (1959, p. 1-18) has provided a clarification, which takes into account my articles : Haudricourt (1942) but the phonetic realization of the tones is borrowed from Grierson (1904, I, 2).

6) Taken from Egerod (1956, p. 13) and also Karlgren (1923).

The above examples of Sgaw-Karen and Cantonese have the interest of showing a system: the old voiceless initials require a higher series of tones than the old voiced initials. However, once it is established, the tonal system evolves without regard for its old etymological pitch levels. Thus the Chinese dialect of Po-Pei of the Cantonese group, where the pitch levels of the B tones are reversed:[7]

Po-Pei Chinese

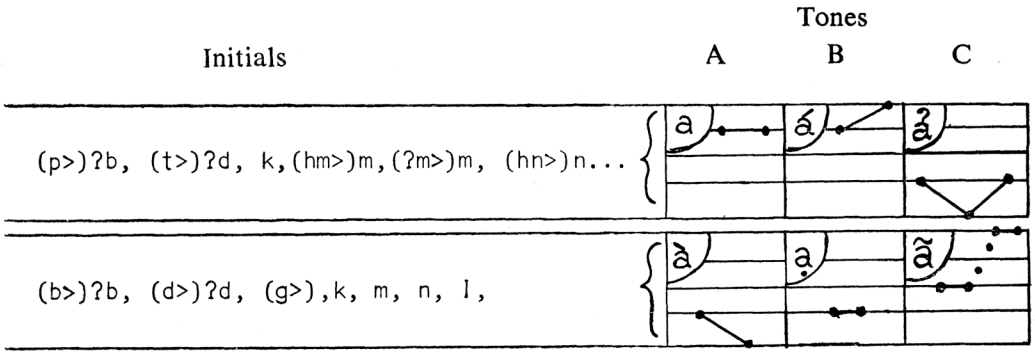


1.32 **Tonal system splits in two through merger of aspirated and voiced initial consonants: identity of tonal system of Tai languages and Vietnamese:**

Henri Maspéro showed long ago that Vietnamese and the Tai languages had the same system of tones. We will find numerous very clear examples in these two language families of two-way splitting.[8]

Let us take Vietnamese first. The tones are given in their traditional notation, and also given a phonetic realization taken from *The Principles of the International Phonetic Association* at page 41 combined with Mkhitarian[9] at p. 32-33.

Vietnamese



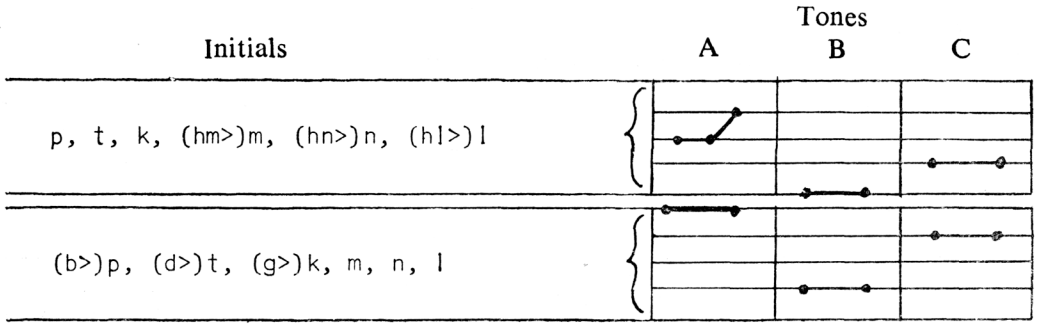
7) Wang Li (1932, p. 78-80).

8) Maspéro (1912), and my clarification (Haudricourt 1954b, p. 72).

9) Mkhitarian (1959) [The phonetics of Vietnamese] (Deals with Hanoi speech).

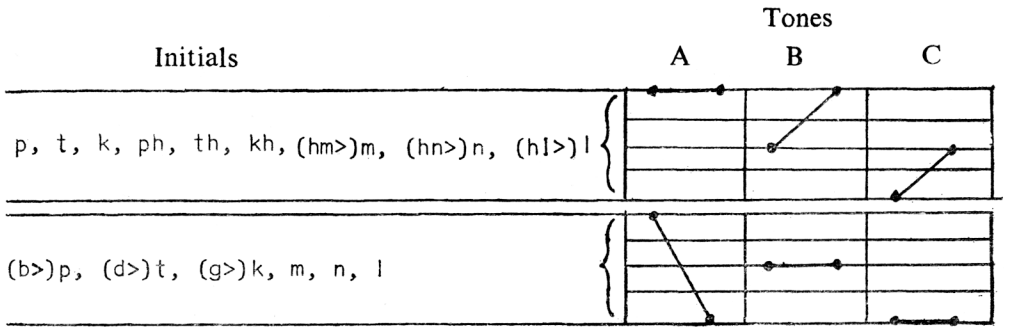
And for a number of Thai languages properly so called, such as Shan of Burma:[10]

Shan

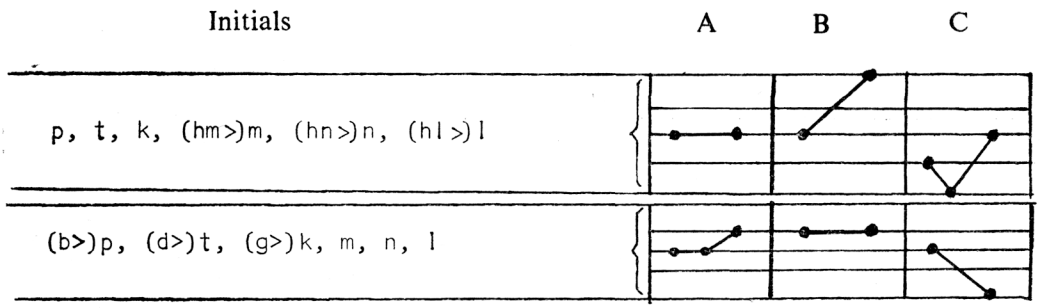


Lü of Sib Song Panna (Yünnan, China):[11]

Lü

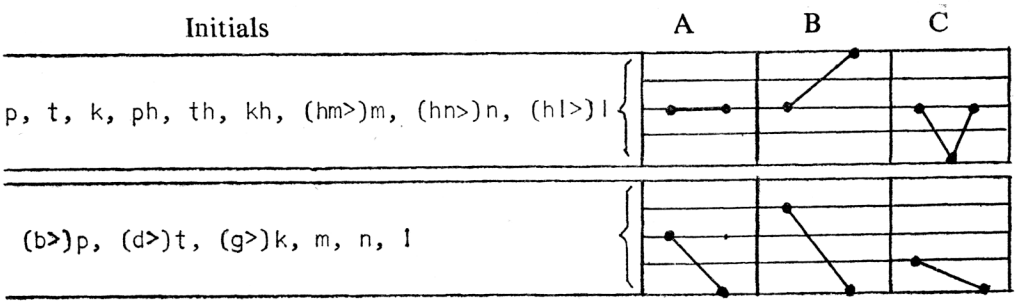


White Tai (North Vietnam):[12]

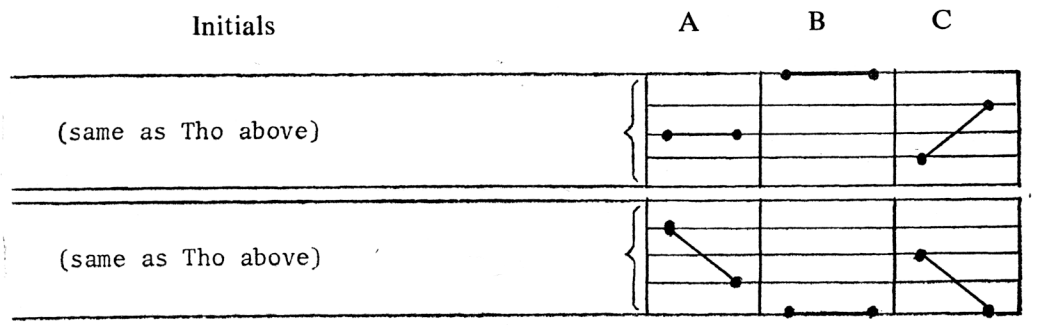


10) Egerod (1957) and Nishida (1954).
11) Fu Mao-chi and others (1956).
12) Nishida (1954), based on Minot (1940).

Tho (North Vietnam) :[13]



and the Tai dialect of Lungchow (Kwang-Si, China) :[14]



It seems that what is essential in all these dialects, both Tai and Vietnamese, in order to obtain the two-way split of the tonal system is the *loss of aspiration in the sonorants :* [hm, hn, hl . . .], for a Tho dialect exists (that of Cao Bang) which has retained the voicing of the old voiced stops,[15] now become voiced fricatives.

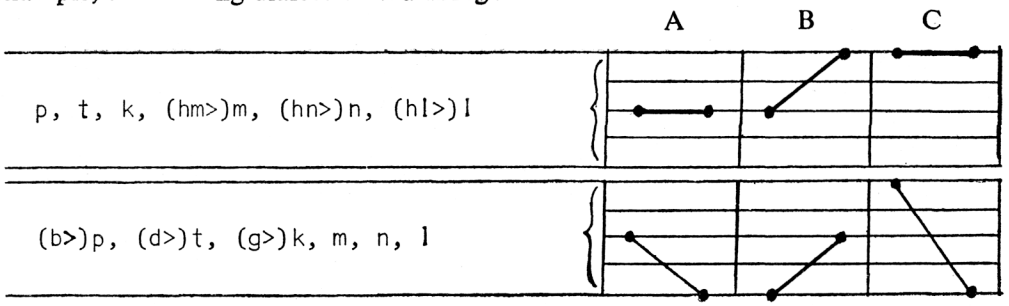
Example	Common Tai	Tho	Tho of Cao Bang
dog	*hma	ma	ma
year	*pi	pi	pi
come	*ma	ma	ma
fat	*bi	pi	βi

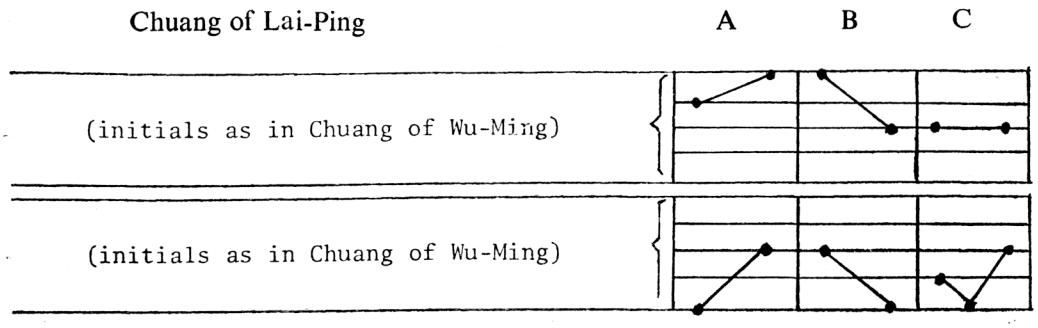
13) Nishida (1954), based on Darnault (1939).

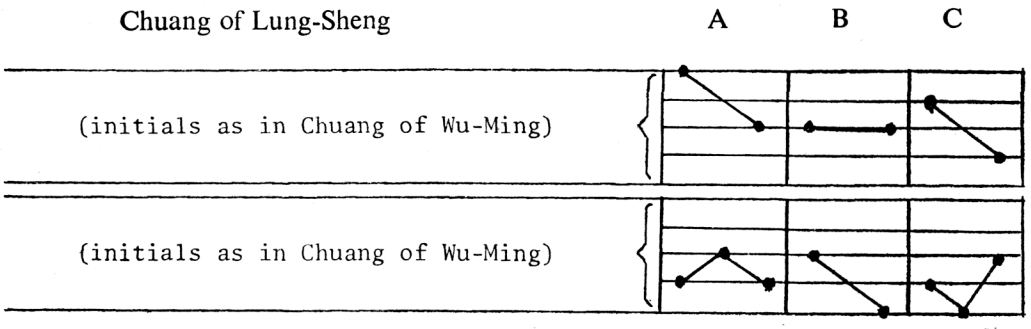
14) Nishida (1954), based on Li Fang-Kuei (1940).

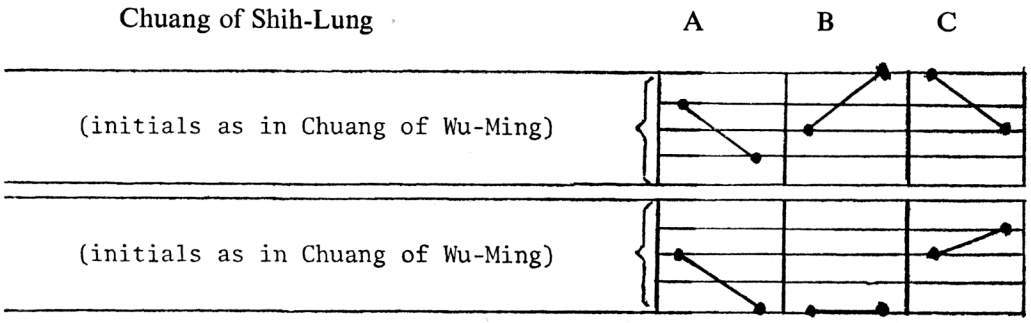
15) I had mentioned this fact as early as Haudricourt (1949), p. 251-2), then in (1950a, p. 173), and in (1950b, p. 163).

Other examples of two-way splitting of the tonal system are to be found in the dialects spoken by the Chuang, an important ethnic minority of Tai stock in Kwang-Si, China, for example, the Chuang dialect of Wu-Ming:[16]







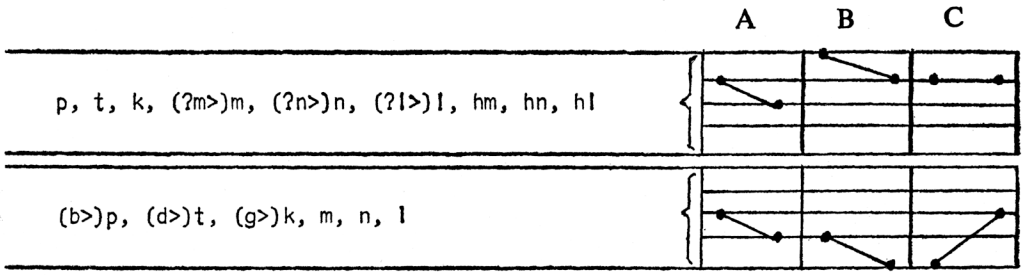


16) Li Fang-Kuei (1956, p. 3), but he had already published a phonology of Wu-Ming Tai (1947). The other Chuang dialects are described in Yuen Kia-Hua and others (1953).

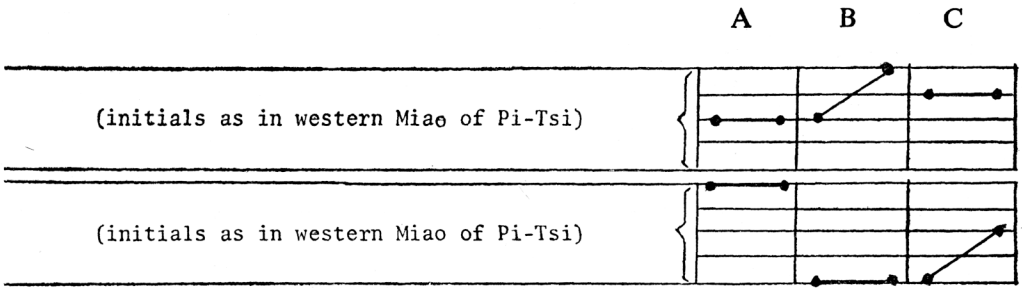
1.33 **Two-way tonal split through merger of glottalized and voiced sonorants.**

Further to the north in China (Kwei-Chow), one finds cases of two-way splitting of the tonal system associated with the retention of voiceless, aspirated sonorants, for example, in the majority of Miao-Yao dialects. For this family of languages this fact can be explained, because the language used to have glottalized sonorants (preserved in one dialect, as we shall see below), and what has taken place is the *voicing of the glottalized sonorants.*

Thus for western Miao (Pi-Tsie, N.W. Kwei-Chow) :[17]

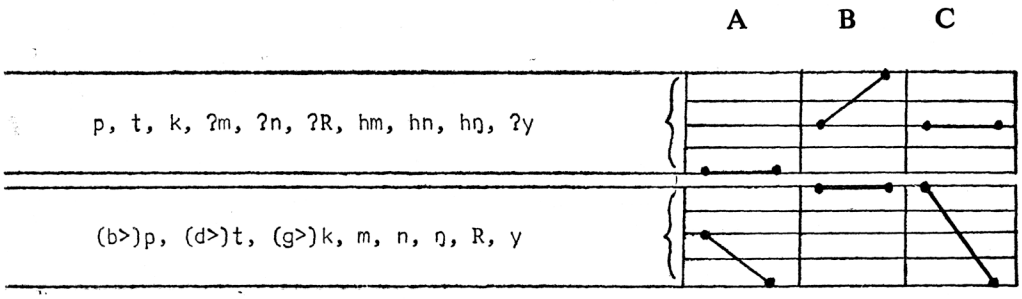


or central Miao (Lu-Shan, Kwei-Chow Province, China) :



1.34 **Two-way tonal split through merger of voiced and voiceless stops.**

On the other hand, in the same region (south-east Kwei-Chow), the Tung-Sui (or "Kam-Sui") group of languages, which is related to Tai, has one dialect which has retained all the three types of sonorants (aspirated, glottalized and voiced), and the split into two of the tonal system must be attributed to a change in the *stop* consonants. This is the case with the Sui-Ngam dialect described by Li Fang-Kuei :[18]



17) Li Yung-Sui and others (1960, p. 80); other examples in Haudricourt (1944, p. 572), which are borrowed from Chang K'uen (1947, p. 93-110).

18) Li Fang-Kuei (1943b) has defined this group of languages under the name of Kam-Sui, but he has published only three articles on Sui : Li Fang-Kuei (1948, 1949, and 1951).

2. Three-way splits in the tonal system: three-way tonal split through three-way merger of glottalized, aspirated and voiced sonorants.

We have just mentioned two-way splits in the Tung-Sui group of languages, but in other languages of the same group, such as Tung and Mak, there has been a simultaneous disappearance of glottalization and aspiration among the sonorants. Whereas the confusion of two kinds of initial phoneme produces a two-way split of the tones, the confusion of the three kinds of phoneme produces a ***three***-way split of the tonal system.

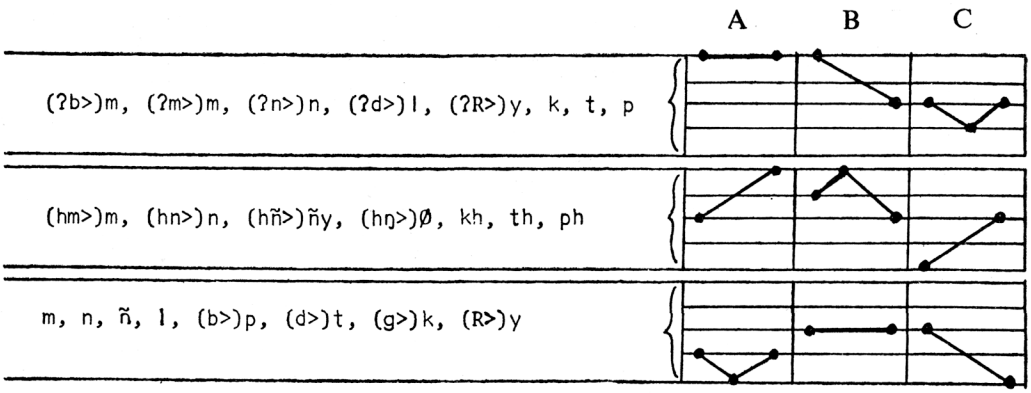
2.1 Here are the vocabulary correspondences among three languages: Sui-Ngam, Mak and Tung (dialect of Yung-Chiang):[19]

		Sui	Mak	Tung	Tone Category
glottalized	thick	ʔnaa	naa	naa	A
	nose	ʔnaŋ "	naŋ "	nan "	
	river	ʔnya "	nii "	ñya "	
	vegetable	ʔma "	maa "	maa "	
	thin	ʔbaaŋ "	ʔbaaŋ "	maaŋ "	
	well	ʔdaai "	ʔdaai "	laai "	
aspirated	dog	hmaa	maa	ŋwaa	
	come	——	maa "	maa "	
	open	hŋai "	hai "	ai "	
voiced	bamboo shoot	naaŋ "	naaŋ "	naaŋ	
	hand	mya "	mii "	mya "	
	house	Raan "	žaan "	yaan "	
	writing	lee "	lee "	lee "	
	tongue	maa	maa	maa "	

19) Since the Kam are called in Chinese "Tung", I think it is preferable so to name this people of 712,000 souls, whose language has not been recorded by any European traveller. The words above are drawn from *Gaeml-gax jianming cidian* (Tung-Chinese pocket dictionary), 254 pp., Kwei-Chow National Minorities Publishing House, 1959. The title gives an example of the romanization used: "G" for [k], "ae" for short centralized [a], "m" final consonant, "l" tone marker. An analysis of the tonal system is to be found on page 9.

		Sui	Mak	Tung	Tone Category
glottalized	salty	ʔnaŋ	ʔdaŋ	naŋ	
	wild boar	ʔdaai "	ʔdaai "	laai "	
	evening	ʔñam "	ñam "	ñyam "	
	rice field	ʔRaa "	yaa "	yaa "	
	bored	ʔbya "	ʔbii "	myaa "	
aspirated	pig	hmuu "	məu "	muu	B
	new	——	mei "	mai "	
voiced	peppery	lyaan "	liin "	lyaan	
	this	naai	naai	naai "	
Tone Category C glottalized	face	ʔnaa	naa	naa	
	soft	ʔmaa "	maa "	maa "	
	obtain	ʔdai "	ʔdai "	lii "	
	long	ʔRaai "	yaai "	yaai "	
aspirated	bow, crossbow	hnaa "	—— "	naa	C
	rat	hnoo "	noo "	noo "	
	yellow	hŋaan "	ŋaan "	maan "	
	alcohol	khaau "	laau "	khwaau "	
voiced	water	nam "	nam "	nam	
	tree	mai	mai	mai "	
	younger	nu "	nuŋ "	noŋ "	

It emerges from the above table of correspondences that we have in Mak a three-way split for Tone Category A, and in Tung a three-way split of all three Categories: A, B and C. Thus the Tung tonal system:



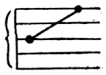
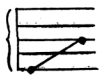
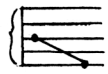
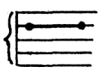
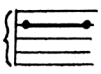
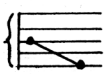
2.2 **Three-way split of tonal system with subsequent tonal mergers.**

It is rare for such a heavily loaded tonal system as that of Tung (nine tonemes) to be retained. One expects to find mergers diminishing the number of tonemes. This is what has taken place in the languages which we are now going to discuss, belonging to the Miao-Yao family in some cases, and to the Chuang or Tai group in others.

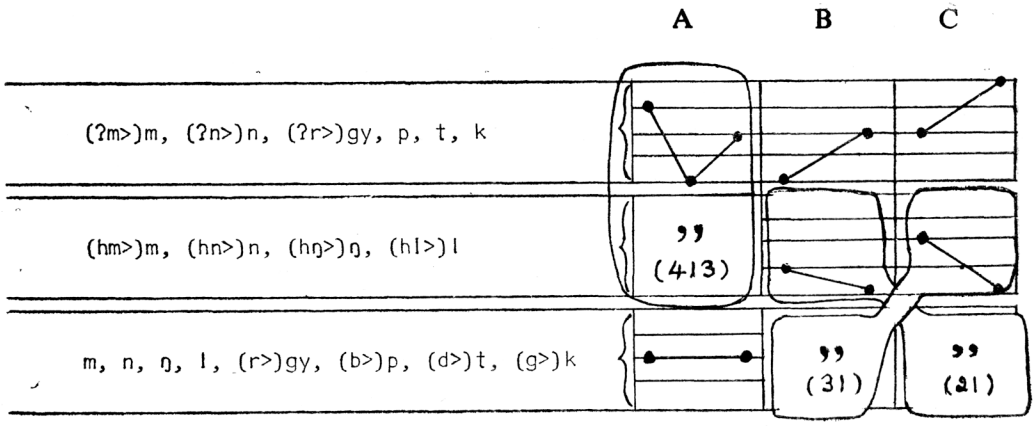
2.21 The easternmost dialects of the Miao-Yao family, in particular the Man [Mun] or Man-Yao language (N. Vietnam-China border hills west of Cao Bang), have lost the two series of sonorants (glottalized and aspirated) and thus had a three-way split of the tonal system. This can be seen from the following comparisons of vocabulary from western Miao (Szechwan-Kweichow-Yunnan), central Miao (eastern Kweichow) and Man-Yao:[20]

	W. Miao	Central Miao	Man-Yao	Tone Category
snake	naŋ	naŋ	naŋ	
worm	kaŋ "	kaŋ "	keŋ "	
day, sun	hno "	hnai "	noy "	
three	pe "	pi "	pu "	
four	pləu "	tlo "	pley "	
stone	re "	Ri "	gyaw "	A
flower	paŋ	paŋ	pieŋ	
to have	mua "	mai "	naay "	
to come	tua "	ta "	taay "	

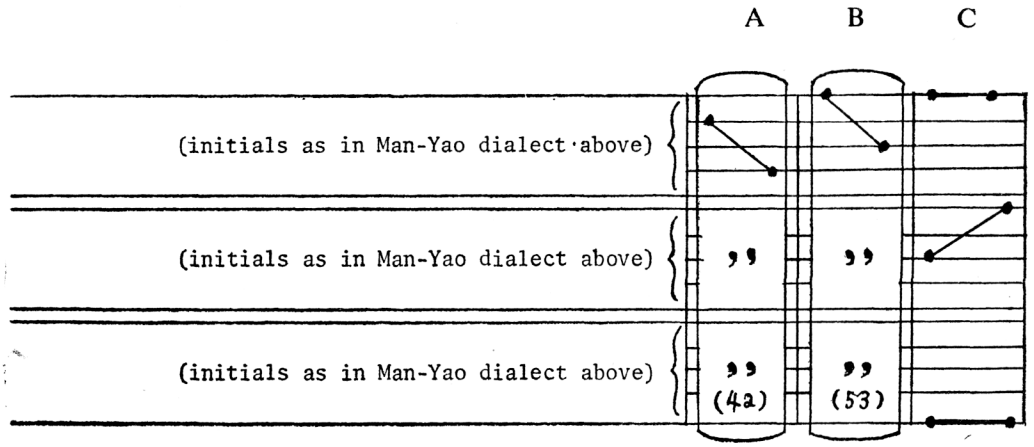
20) I have used here two dictionaries: (a) for western Miao: *Hmongb-shuad jianming cidian, Chuan-qiandian fangyan* (Miao-Chinese pocket dictionary: dialect of Szechwan-Kweichow-Yunnan), 452 pp., Kwei-Chow National Minorities Publishing House, 1958, and (b) for central Miao: *Hmub-diel jianming cidian, Qiandong fangyan* (Miao-Chinese pocket dictionary: dialect of eastern Kweichow,) 418 pp., Kweichow National Minorities Publishing House, 1958.

		W. Miao	Central Miao	Man-Yao	Tone Category
	dog	tle 	tla 	klo 	
	kite (bird)	tlaŋ "	tlaŋ "	klaŋ "	
	tail	tu "	tai "	tuoy "	
aspirated	blood	nčhaŋ "	šhan "	sam 	B
	to hear	hnao "	hnaŋ "	nom "	
	fire	təu 	tu 	təw 	
	nest	re "	Ri "	gyaw "	
	fish	nǰe "	nai "	byaw "	
	to do	ua 	ai 	aay 	
	to kill	tua "	——	tay "	
aspirated	moon	hli "	hla	la 	C
	year	——	hnyu	ñyaŋ	
	cooked rice	hnao "	——	naaŋ "	
	eye	mua 	mai 	mey 	
	to die	tua "	tai "	tay "	

Thus for Man-Yao of North Vietnam, we have a tonal system showing mergers as follows:



Let us add that Chao Yuen-Ren has mentioned a Man-Yao dialect in Kwangsi which would have the system :[21]

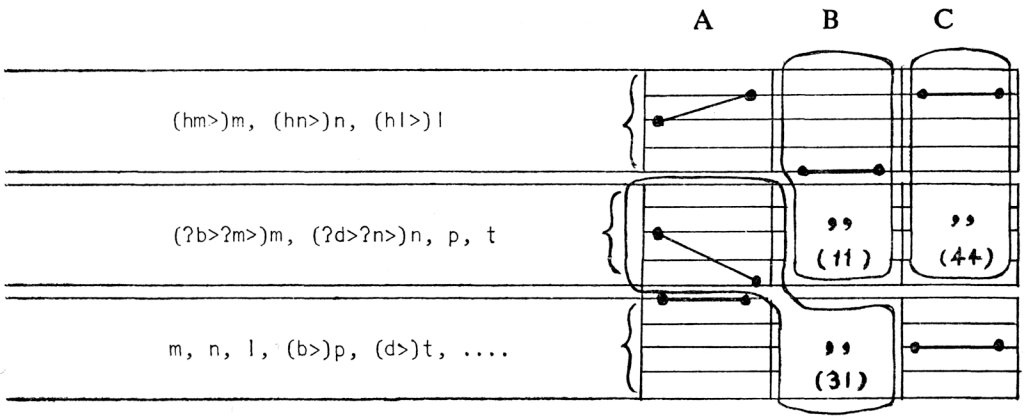


2.22 **A special development : stops > special nasals > ordinary (voiced) nasals + tonal split.**

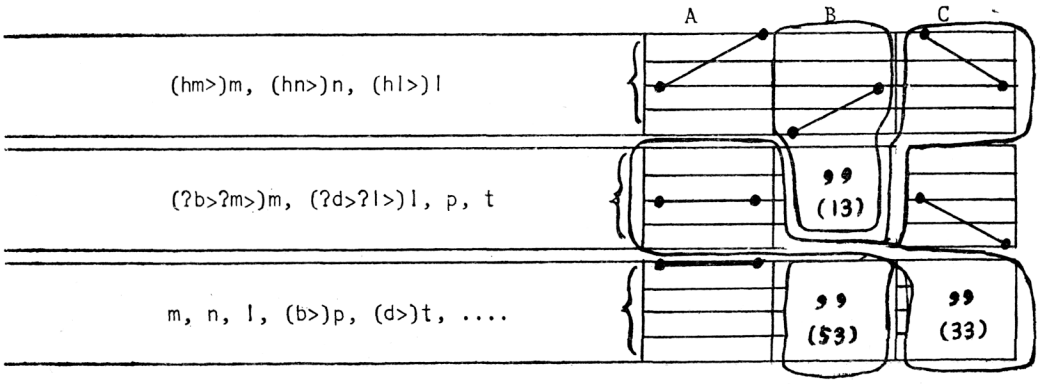
In certain peripheral dialects of Chuang or Thai, voiced preglottalized stops were converted very early in the piece to *nasal* consonants of similar articulation, i.e., to glottalized nasals. Now since these dialects already had aspirated nasals and ordinary (i.e., voiced) nasals, the prerequisite for a three-way tonal split was achieved : the coexistence of three different kinds of sonorants which could be merged. It seems that this is what is happened in the Chuang dialect of Po-Ngai (Yunnan), at the western boundary of the Chuang area :[22]

21) I had mentioned the tonal peculiarities of Man-Yao in Haudricourt (1944, 9. 561), but I had misinterpreted them in Haudricourt (1954b, p. 79). Chao Yuen-Ren (1930) does not seem to have commented on his discovery.

22) Li Fang Kuei has described it in three articles : (1943a, 1954, and 1957), and "The Jui dialect". He calls "northern Tai" the group of languages which I call here "Chuang".



and in the Tai dialect of Lienshan (Yunnan) on the western boundary :[23]



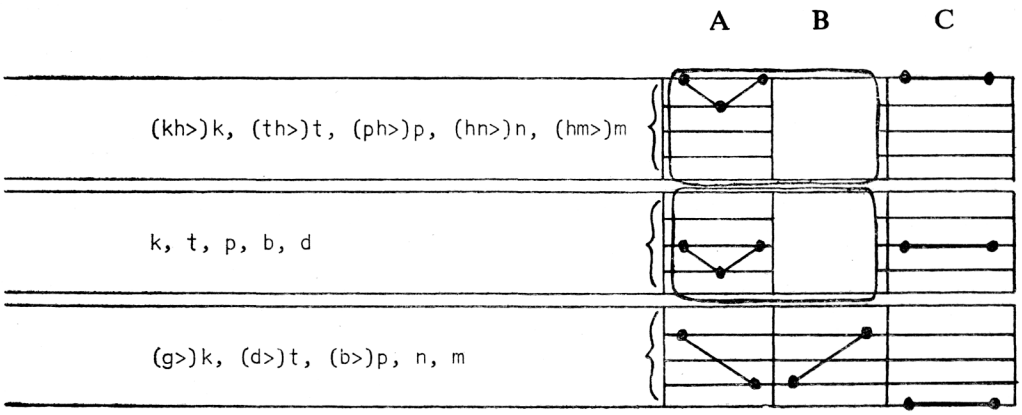
It seems that the two changes, [?b>?m] and [?m>m], must be simultaneous in order for the tones A, B and C to be split into three as above, for in the Thai dialects properly so called, where glottalized sonorants did not appear until later, shifts such as [?b>?m>m], [?d>?l>l] in Burmese Shan, and [?b>?m>m], [?d>?n>n] in Hkamti Shan, have in no way affected the tonal system of these languages.

2.23 **A special development : voiced stops > aspirated stops + two-way split of tones + "unsplit" residue of tones in other environments; then aspirated stops > unaspirated voiceless stops + phonemicization of "unsplit" tones : end result—three-way split of tonal system.** The Siamese dialect of Trang province[24] near the southern border of Thailand is in

23) This dialect is known to me only through the quotations in Nishida (1954), the source of the latter being : Lo Ch'ang-Pei and Hing K'ing-Lan (1950). This work has not been accessible to me.

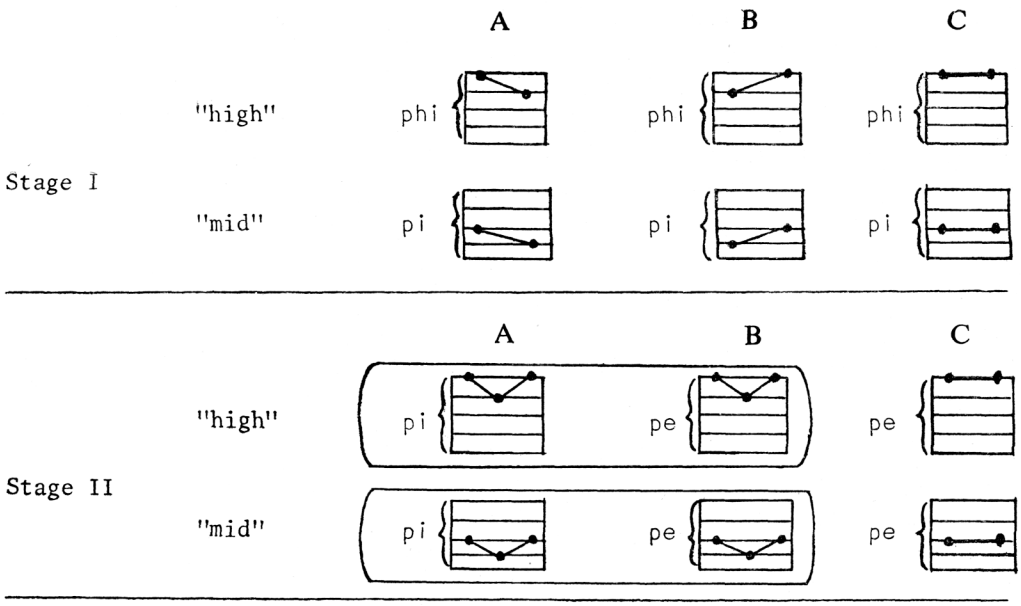
24) Egerod (1961).

contact with Malay and has lost its aspirated stops, under the influence of Indonesian or Austroasiatic languages which have no such consonants. The aspirated stops themselves represented a merger of the old aspirated stops and old voiced stops, a merger which in other Siamese dialects has produced a two-way split of the tonal system with an "unsplit" residue (after "mid" consonants: see § 3 below). The further "Malay-style de-aspiration" merger of the aspirated consonants ("high and "low") with the voiceless unaspirated "mid" consonants has meant that the *phonetic* tones following "mid" voiceless, unaspirated stops, have become *phonemically* contrastive with the tones following the "high" voiceless unaspirated stops and the "low" voiceless unaspirated stops. In other words, this double merger of the initial consonants has meant a three-way splitting of the tonal system:



The system of three tonemes, A, B, and C should by rights have become a system of nine tonemes as a result of the three-way split, but in this region, bordering on non-tonal languages, it would have been paradoxical to end up with such a heavily loaded system; so a merger came about between tones A and B in syllables introduced by consonants which originally had no voicing: i.e., after the "high" and "mid" class consonants.

This merger of tones A and B after "high" and "mid" class consonants did not produce confusion between words, because the loss of distinction in tone was compensated for by a new split among the vowels: the high vowels [i, u, ɨ] split into two. In tone class A they remained the same, but in tone classes B and C they opened to become [e, o] and [ə] respectively. We can represent this in the following scheme (the exact phonetic contours of tones A, B and C in Stage I are conjectural):



(Similarly in the move from Stage I to Stage II, [u] and [ɨ] in tones B and C become [o] and [ə] respectively. By comparing Stages I and II we can see that the distinction of *tone* contour making a phonemic contrast between Tones A and A has been replaced by a distinction of quality: [i] : [e], [u] : [o], [ɨ] : [ə]).

This is a case of "transphonemicization" (or rephonemicization) of Type III", in Jakobson's classification:[25] a phonemic contrast of one kind phonetically (here, of tonal contour) is transformed into a phonemic contrast of another kind phonetically (here, of vowel-quality). Cases of transphonemicization with tonal contrasts replaced by vowel contrasts have been observed only very rarely up till now. They may explain how the changes of the initial consonants in Mon and Khmer have been able to influence the vowels.[26]

2.3 Three-way splitting of tones caused by the loss of final consonants: the origin of Tones A, B and C.

Another example of three-way tonal splitting is that which has given rise to the Tone Categories A, B and C in the languages of which we have just been speaking. I believe that I have been able to demonstrate with regard to Vietnamese (see p. 10 above) that what was originally involved was a three-way system of phonemic contrasts, but this time in **final** position:[27] tones of Category B come from a final glottal stop, preserved in a number of Palaung-Wa dialects and in Khmu:

25) In Troubetzkoy (1949) at pp. 324-326.

26) "There are at least three types of change of initial stops in Mon-Khmer: a 'Germanic' type: [p, t, k] > [ph, th, kh] while [b, d, g] > [p, t, k], which is found in Phay, Samré and Khasi; a real 'Mon-Khmer' type where the confusion of [p, t, k] with [b, d, g] splits into two the system of vowels; and a 'Far Eastern' type, where the same confusion splits into two the system of tones"–Haudricourt (1965, p. 160).

27) Haudricourt (1954b, p. 80-81).

	Palaung-Wa	Vietnamese
leaf	hla? (Khmu), la? (Riang)	lá
fish	ka? (Khmu, Riang)	cá
dog	so? (Khmu)	chó
rice	rənko? (Khmu), ko? (Riang)	gạo

Category C originates from a final aspiration, preserved in Mon and Khmu:

	Mon	Vietnamese
seven	tpah	bảy
nose	muh (also Khmu)	mũi
root	rüh (Khmu rieh)	rễ

In 1960 R.A.D. Forrest, showed that Tone C in Archaic Chinese in its morphological values corresponds very well to the Tibetan suffix [-s], and that consequently the three tones of Archaic Chinese may have a similar origin.[28]

2.4 Let us recapitulate briefly. We are in many cases dealing with a phonemic system in which **two** series of phonemes are "marked": that is they have a special feature or "mark" which distinguishes them from their ordinary or "unmarked" partner. For example, we have ordinary sonorants contrasting phonemically at one and the same time with **glottalized** sonorants and with **aspirated** sonorants. Sometimes one of the marked series of phonemes disappears first—the glottalized ones in Miao, and sometimes both marked series disappear together, as in Tung; in the former case we have a two-way splitting of the tonal system: we pass from three tonemes to six; in the second case we have a three-way split: we pass from three tonemes to nine. When there was only one series of marked phonemes, the aspirates, as was the case in Chuang and Tai, the loss of this one series has produced only a two-way split, the three tonemes becoming six. Only the early shift of the preglottalized initials in two peripheral dialects, giving glottalized sonorants, was able to produce locally a three-way split: nine tonemes, soon reduced to seven.

3. Two-way splitting of tonal systems with uninvolved tones as residue: architonemes. Architonemes with realization not phonetically distinct from tonemes produced by the split.

The cases of two and three-way splitting which we have just been discussing are relatively simple because **all** the initial consonants were involved. Thus there was **no environment** in which the change did **not** take place, or, in other words, there was no environment in which there was an unaffected residue of initial consonants, where the phonemic distinction stayed with the initial consonant and did not shift to the tone of the following vowel. If there had been some initial consonants not involved in the merger, then old Tone A, for example would still remain Tone A, a single tone, in the environment following these consonants, and would not have split into Tones A_1, A_2, and A_3, as it would have done in the environment following the consonants which had suffered merger. We can say that the split of Tone A (or B or C as the case may be) is "arrested" in the environment following the unaffected consonants, or, in other words, that the phonemic **contrast** between the new tonemes A_1, A_2, and A_3 is neutralized in this environment.

28) Forrest (1960).

3.0 Neutralization of phonemic contrast: archiphoneme, architoneme.

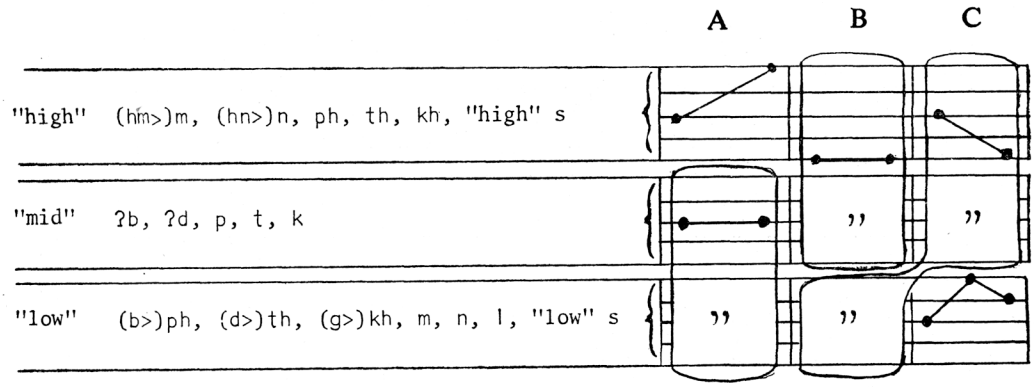
One of the concepts of the Prague School which has won least acceptance in English-speaking countries is that of the neutralization of phonemic contrast. In order to illustrate this concept, let us take a case from English. In English we have two different phonemes /p/ and /b/. This is proved by dozens of minimal pairs, such as **pit : bit, pat : bat** and so on. */p/ is a fortis or* ***strong*** *sound, sometimes, but not always* aspirated. /b/ is a lenis or **weak** sound, sometimes, but not always voiced, but always weaker in its articulation than /p/. However there is one environment, following the phoneme /s/ in the same syllable, in which the phonemes /p/ and /b/ do not contrast: we do not have pairs of words **spit : sbit, spat : sbat,** and so on. The sound which we spell with a **p** in the words **spit, spat** etc., is phonetically something between a /p/ and a /b/, and the exact sound of /p/ or /b/ cannot occur in this environment. We say that the phonemic contrast between /p/ and /b/ is neutralized in this environment, and that the sound which is spelled **p** in **spit, spat** and so on, does not represent either the phoneme /p/ or /b/, but the "mother" phoneme, so to speak, of both /p/ and /b/. This "mother" phoneme is called the **archi**phoneme of the phonemes /p/ and /b/. Let us write it as **"P"**. Then **pit, bit** and **spit** are phonemically /pit/, /bit/ and /sPit/. The actual sound which represents the archiphoneme /P/—phonetically an unaspirated, voiceless stop—is called the phonetic "realization" or "representation" of the archiphoneme. Whenever we find an environment in which two closely related phonemes like /p/ and /b/ cannot **both** occur, we say that the one sound which **can** occur represents the archiphoneme of the two phonemes, and does not represent one or other of the two corresponding phonemes, even if phonetically it is exactly the same as one or other of the phonemes. Simply because the phonemes cannot **both** occur in that environment we say that the sound which does occur is, or represents, an archiphoneme.

In some cases the sound representing the archiphoneme will be something in between the two phonemes, as is the English /P/ in /sPit/, /sPæt/ and so on, but in other cases the sound representing the archiphoneme may be exactly the same as one or other of the phonemes. The important thing is that the sound [p] does not represent the phoneme /p/ in a particular environment, unless the sound [b] can **also** occur and contrast phonemically with it in the **same** environment. Thus we could have a language very much like English, in which a sound, say, [p] represented the phoneme /p/ in one environment, because in that environment the sound [b] also occurred and contrasted phonemically with it, whilst in another environment the selfsame sound [p] represented the archiphoneme (/P/) of /p/ and /b/, because in that second environment the partner-sound [b] could not occur and contrast with [p]. Let us now imagine a **tone** language with two tones in **open** syllables: rising tone and falling tone. Now in syllables checked by a stop or fricative this language has only one tone possible: level. We would say that this level tone in checked syllables is not the same "toneme" as either the rising toneme or the falling toneme of the open

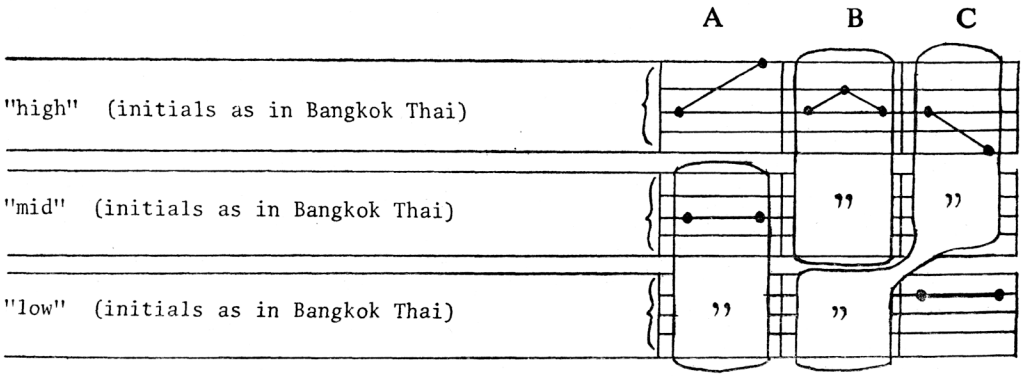
syllables, but is an "architoneme". Now suppose a second tone language identical with the first except that the one tone permissible in checked syllables is a **falling** tone phonetically identical with the falling tone of open syllables. It would be commonsense to say that this falling tone in the syllable is the same toneme as the falling tone in the open syllable, and we should certainly mark the tone in the same way in a practical orthography. But since it does not contrast with a rising tone in the checked syllable, we say that the "value" of falling tone in a checked syllable is not the same as the "value" of a falling tone in an open syllable, any more than the "value" of a man with a million dollars in a country where everybody has a million dollars is the same as the "value" of a millionaire in a country where his fellow-citizens have only a few thousand dollars. Because of this difference in "value" we say that a falling tone represents a tone phoneme or "toneme" in open syllables, but an "architoneme", in which the falling quality is of no phonemic significance, in checked syllables. It simply happens that the phonetic "realization" of this architoneme is identical with a toneme which occurs in other environments. In the discussion which follows we shall have occasion to speak of architonemes, and sometimes their phonetic realization or representation will be identical will be identical with one or another toneme occurring in other environments, and sometimes the architoneme will have a distinct and special phonetic realization or representation of its own.

3.1 Architonemes with realization not phonetically distinct from corresponding tonemes,

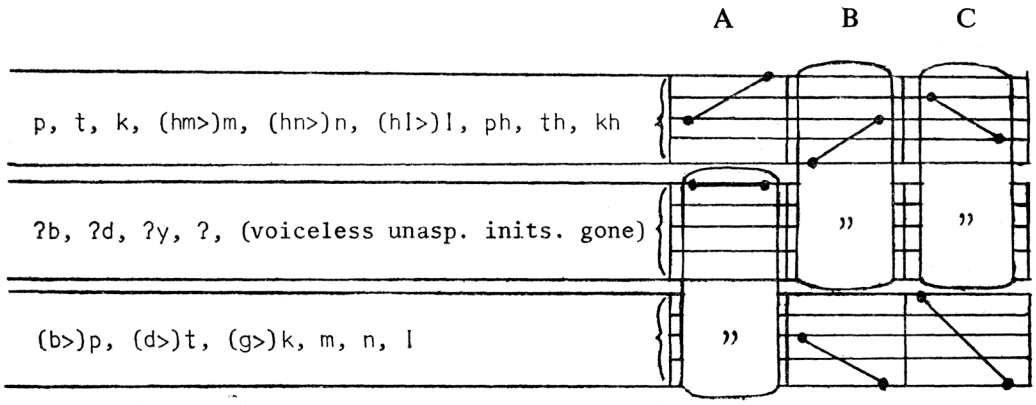
Let us take for example "Siamese" properly so called, or the Tai language of Bangkok, which has conserved habits of spelling going back at least to the 13th century, so that the tones are noted by the initial letter of the word working in conjunction with a tonal sign, the latter indicating tonal category A, B or C. The initial letters are classed into "high" letters, "mid" letters and "low" letters: the "high" letters represent the old voiceless aspirates: [ph, th, . . . hm, hn, hl]: and the "low" letters represent the old voiced series: [b, d, m, n]. Thus the "high" letters and the "low" letters represent the two ancient series of initials—the voiceless aspirates and voiced consonants—which fell together in pronunciation and so caused the tones of the following vowels to split. The "mid" letters on the contrary represent the voiceless, non-aspirated stops, or glottalized consonants. These "mid" consonants were neither modified nor confused with the "high" and "low" series in the course of the change; the three old tones A, B and C thus had no reason to be modified phonetically after "mid" initials, but since the confusion of the "high" and "low" initials had given rise to a system of six tonemes for the vowels in the environment following "high" and "low" consonants, then the three tones in the environment following "mid" initials became phonemically speaking three architonemes, each of which tended to be confused phonetically with one or other of its corresponding tonemes; here is the resulting table:



Lao presents an analogous system:[29]

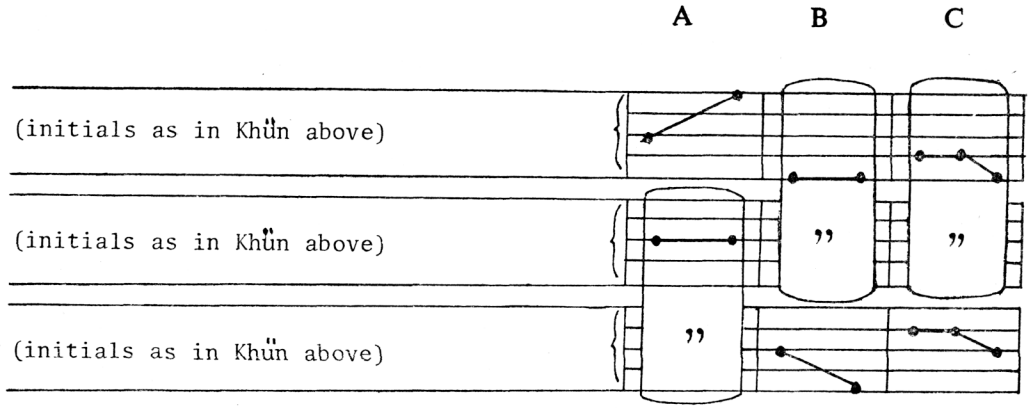


Another analogous system is shown by the Thai language of the Khün, of the Burmese Shan State of Keng Tung (Chieng Tung).[30]

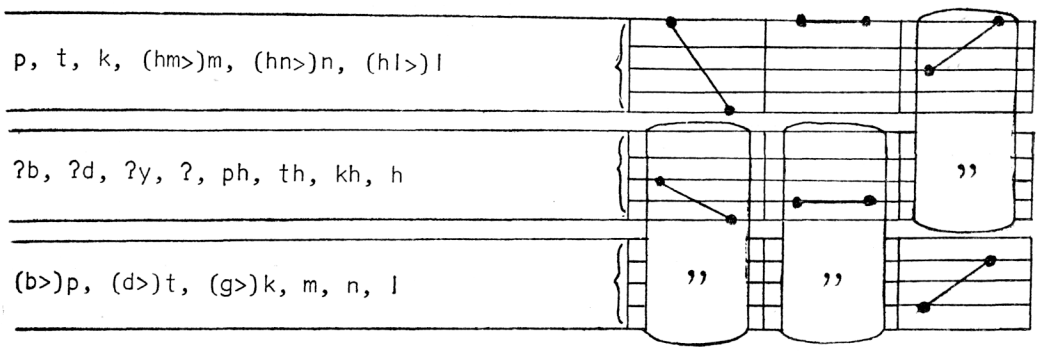


Note that in Khün the "mid" series is reduced to the glottalized consonants. The same thing applies in the neighbouring Yuan (or Kam Meuang or Northern Thai) dialect of Chieng Mai in northern Thailand:[31]

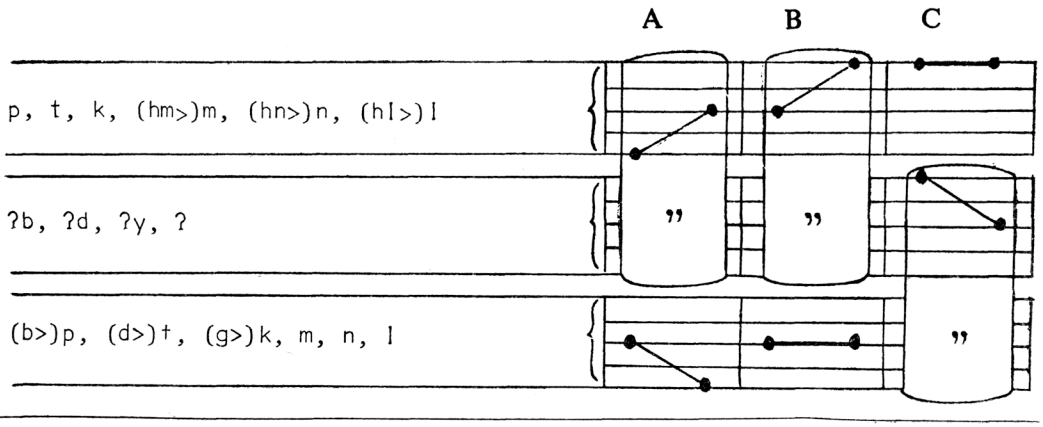
29) According to Tatsuo Nishido (1954).
30) Egerod (1959).
31) According to Nishida (1954), Egerod (1959, p. 127), and Haas (1958).



Lastly, another Tai dialect situated on the border of Chuang presents a "mid" series comprising, with the glottalized initials, aspirated stops (but not the old aspirated sonorants). This is the Tai of T'ien-Pao (or Tö-Pao) [32]

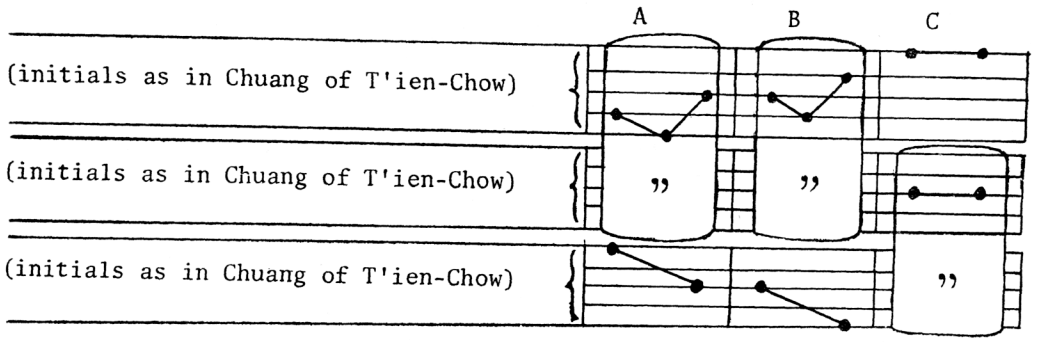


The Chuang dialects, as a general rule, do not have aspirated stops, so that the "mid" series is there reduced to the glottalized consonants. This is the case with the dialect of T'ien-Chow :[33]

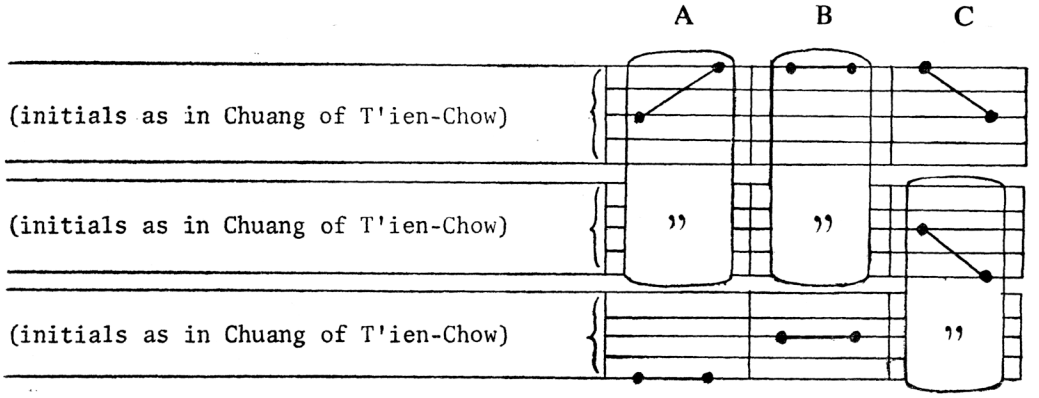


32) According to Li Fang-Kwei (1943a) and Yuen Kia-Hua and others (1953).
33) Li Fang-Kwei (1954).

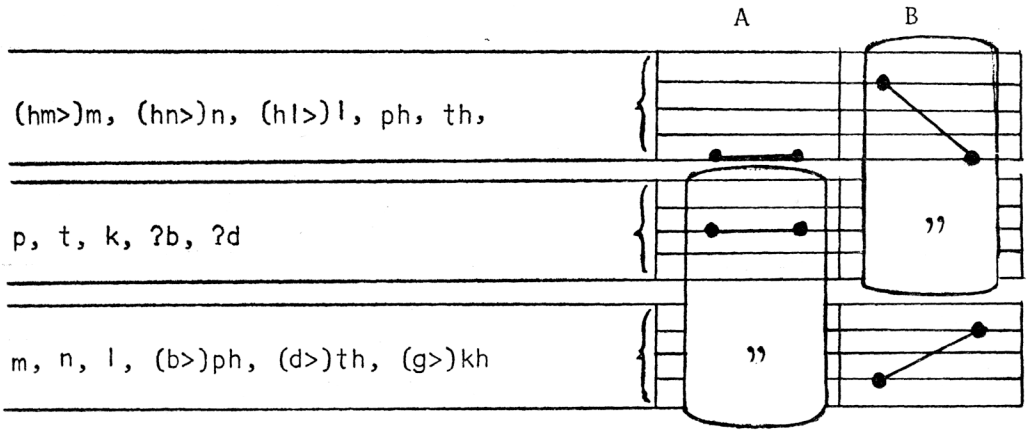
with the dialect of T'ien-yang:[34]



and with the language of the Pu-yi (Kwei-Chow), already known by the name of Dioi:[35]



Finally in the Karen group, we have the Pwo language, which presents a development analogous to that of Bangkok Thai, and so has the same "mid" series:



3.2 **Architonemes with realization phonetically distinct from the tonemes produced by the split.**

In all the examples of systems with archiphonemes which we have discussed so far, we see that in its phonetic realization the archiphoneme was soon confused with the

34) Yuen Kia-Hua and others (1953).

35) Li Fang-Kwei (1943a) and Nishida (1954) refer to Esquirol and Williate (1908). We now have Yu-Shih-Chang (1956) describing on p. 4 a very similar tonal system.

toneme of the "high" series, or with that of the "low" series. However Mary Haas has observed Siamese dialects in which the realization of the archiphonemes has remained distinct from that of the tonemes.[36] Here are the examples she gives (without, unfortunately, distinguishing between toneme and architoneme):

Tone Category A (in spelling no tone sign)

				Bangkok	Roi-Et	Nakhorn Sithammarat
"high"	dog	หมา	hmaa	maa	maa	maa
"mid"	to eat	กิน	kin	kin	kin	kin
"low"	to come	มา	maa	màa "	maa	maa

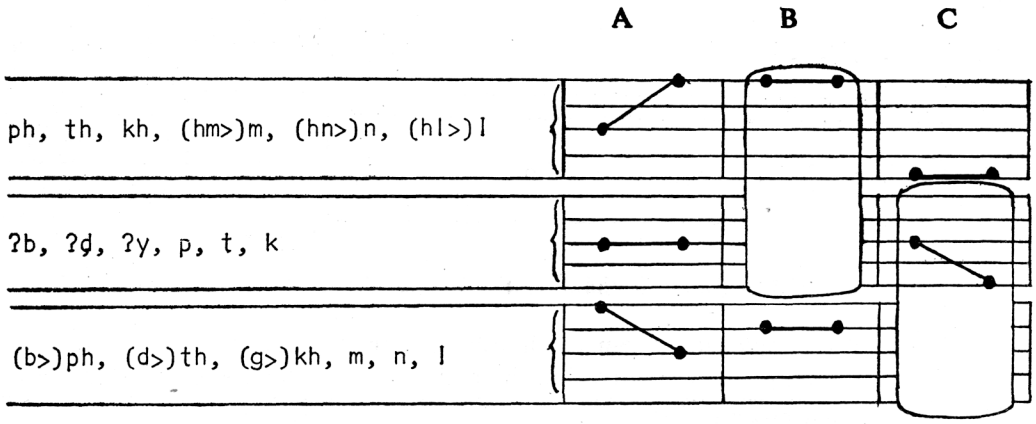
Tone Category B (in spelling, first tone sign, mai ek)

"high"	four	สี่	sii$_1$	sii	sii	sii
"mid"	chicken	ไก่	kai$_1$	kay "	kay "	kay
"low"	father	พ่อ	bɔɔ$_1$	phɔɔ	phɔɔ	phɔɔ

Tone Category C (in spelling, second tone sign, mai tho)

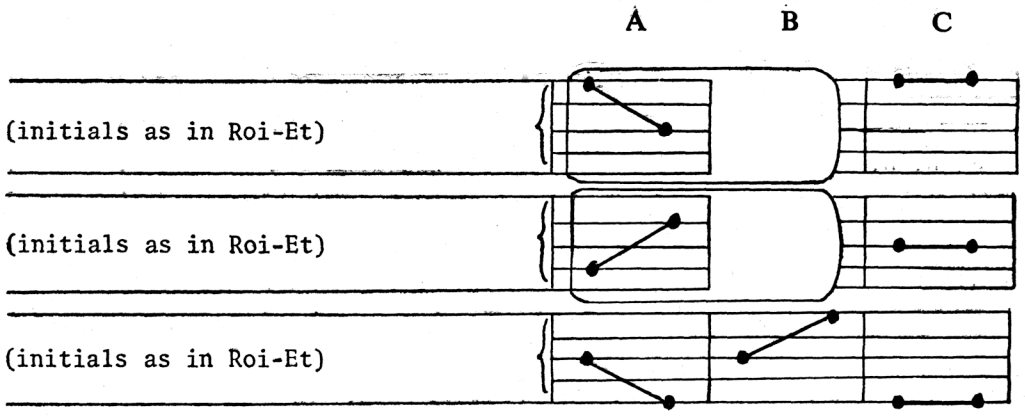
"high"	five	ห้า	haa$_2$	haa	haa	haa
"mid"	nine	เก้า	kau$_2$	kaw "	kaw	kaw
"low"	horse	ม้า	maa$_2$	maa	maa "	maa

We could deduce from this the following systems: for Roi-Et:



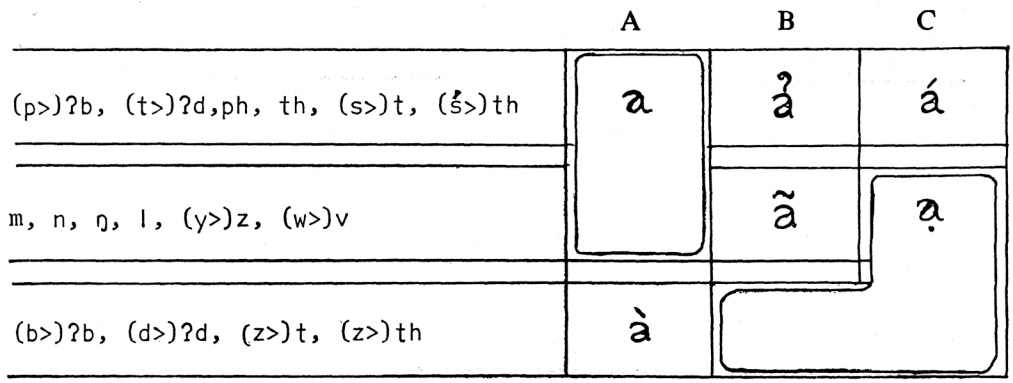
36) Haas (1958, p. 820-826).

and for Nakhorn Sithammarat, a region situated in the extreme south of Thailand, hence in contact with non-tonal languages:



This last example, Nakhorn Sithammarat, shows confusions between tonemes following the same class of initials. Confusions of this type may explain certain phenomena noted in dialects of Chinese.

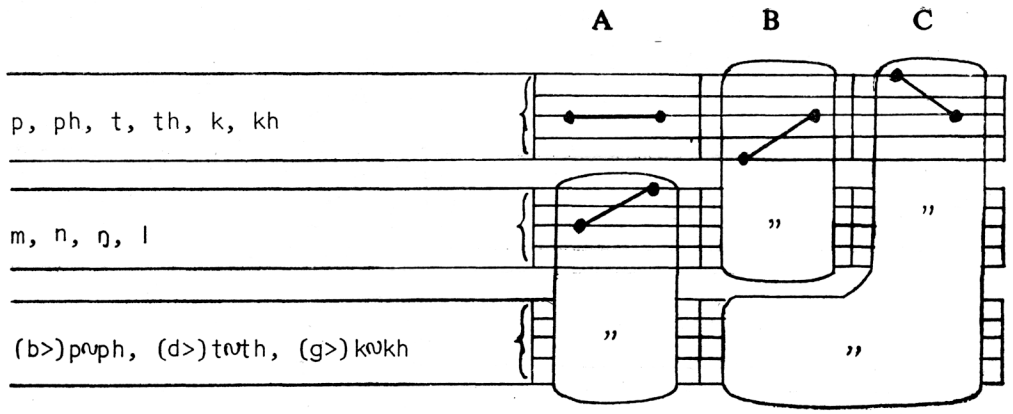
We have seen that Ancient Chinese had only one series of sonorants. These sonorants were not involved when the voiced and voiceless initial stops merged, and so they form a "mid" series of initials. For example, in Sino-Vietnamese, [=Sino-Annamese], a Chinese dialect of the 10th century preserved in Vietnam as a language of high culture:[37]



We see the paradox that B and C have been confused in the low series, while they remained distinct in the "mid" series. The paradox is only apparent: the tonemes of the "mid" series had no reason to be modified, whereas those of the "low" series had to be distinguished from whose of the "high" series.

Modern Chinese has an analogous treatment:[38]

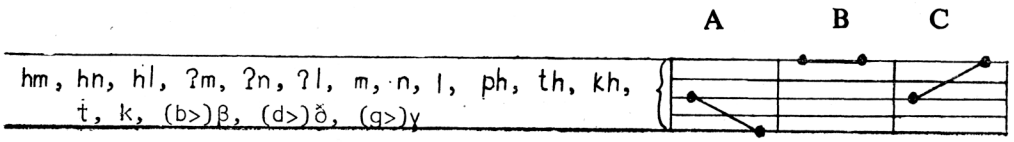
37) Maspéro (1912, p. 91-93).
38) Egerod (1956, p. 24).



It should be noted that the treatment of the old voiced stops depends on the tonal category, A, B or C. For words of category A the old voiced stops had become voiceless aspirates, while for the words of category C with which B had been confused, the old voiced stops had become voiceless non-aspirates. The confusions of tones which are produced before the tones are phonemicized into tonemes are thus produced between tones of the same horizontal or vertical series.

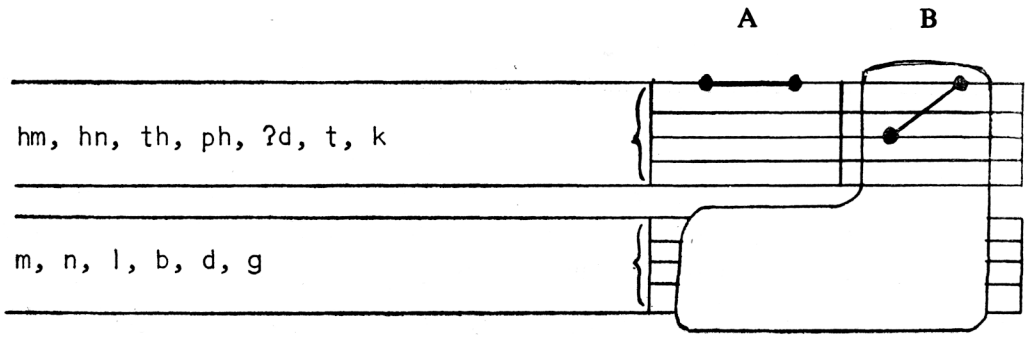
4. Unmerged initials—unsplit tones.

Very rare cases are known in which the two-way splitting of the tonal system has not yet taken place, the sonorants being intact. This is the case with the Miao dialect of Shui-Wei, in the district of Lung-Li (Kwei-Chow Province), where we have[39]:



5. Unmerged sonorants—split tones.

In the conservative Karen dialects mentioned by Gordon H. Luce,[40] with the exception of the dialects of the Geba and the Western Bwe, the preservation of the ancient initials has not prevented an evolution in the sound system which has given the following results:



39) Li Yung-Sui and others (1960, p. 78 and 60).
40) Luce (1959), tables p. 30.

We must have had something analogous in Chinese, in the Wu dialects, in so far as these have retained their voiced initials. In his description of the tones of Kiang-Yin, Fu Liu indicates that there is a tone lacking in the low series: there has been a confusion of tones B and C.[41]

6. **Concluding remark.**

The evolution of the variants of the tonemes does not take place solely because of mechanical, phonetic causes, but is oriented by the phonemic structure of the language. Neutralizations (confusions of tonal variants) are produced before the appearance of new tonemes. This is one of the lessons which can be drawn from this rapid review.

Additional Note by Christopher Court

After the preceding paper had received its final form, a personal communication from Haudricourt to Court, dated 17 October 1972, provided additional information which should be borne in mind in the reading of the paper. The following is an amplified translation of the relevant portions of this communication, with the system of references modified to suit the style of this volume:

"Western Miao: of Pi-tsie (or "Bìjié" in contemporary mainland Chinese romanization) in north-western Kwei-Chow: for location see map in Haudricourt (1969, p. 232)... I have noted in the present paper, for central Miao, words beginning with "kl-". What we have here is in reality a voiceless non-aspirated "l": see Haudricourt (1969, pp. 225, 228, 229).

"As regards the notation 'B', 'C', I have used it in imitation of Fang-Kuei Li, who uses it for Tai, where the correspondence with Chinese is clear. For Vietnamese I have examined these tonal categories in the ancient stratum of loanwords going back to the period in which Tais and Vietnamese were under Chinese domination (Han and following period), the words being cited in Haudricourt (1954b). Sino-Vietnamese, on the other hand corresponds to the form of Chinese taught in Vietnam in the tenth century, when Vietnam had become independent of China. The Chinese pronunciation of the tones had changed sufficiently for the same correspondences no longer to hold."

41) Fu Liu (1925, p. 71-75).

Now regarding the tonal categories B and C, a careful perusal of Haudricourt (1954 and 1966) together with the present paper has convinced Court that an accidental inversion has occurred in the present paper. Taken together, these three papers affirm the correspondences set out in the following table:

Tai-Tung	no orthographic tone mark	mai ek	mai tho
Tibetan	(?)	final -s	(?)
Chinese	p'ing-sheng	ch'ü-sheng	shang-sheng
Vietnamese	a/à	a̰/ã or a/à	á/ạ
Sino-Vietnamese	a/à	á/ạ	a̰ /ã/ạ
Austroasiatic and Proto-Miao	voiced final vowel or sonorant	final -h or other fricative	final -ʔ or other stop

Now since *mai ek* and *mai tho* belong by (Li's) definition to B and C respectively (see, e.g., Li (1954), it will be seen that the letters B and C need to be interchanged throughout the preceding paper wherever they refer to any language or group of languages shown in the above table other than Tai-Tung. The inversion was no doubt caused by the fact that the tone-categories of Chinese, Vietnamese and Miao-Yao are conventionally cited in the literature in an order corresponding to A, C, B of Li's terminology.

Since the French version of this article appeared, Brown's compendious study (1965) has come out. Among other things this work postulates the phonetic composition of the categories A, B and C in "Ancient Thai" (the ancestor of (Li's) south-western Tai), as yet undifferentiated into upper, middle and lower registers (p.38). It is interesting to note that Brown postulates a final glottal stop for C, thus agreeing with the thesis of the present paper. He does not postulate a final [-h] anywhere, but he does posit a whispered ending (which is, after all, rather similar to [h]) for category A (!), while giving B plain voicing to the end of the syllable. Time will tell if this apparent difference of opinion over the antecedents of categories A and B can be resolved.