DAVID L. BLOOD
Summer Institute of Linguistics
University of North Dakota

applying the criteria of patterning in cham phonology

0. Almost all linguists find the term "pattern" useful for speaking of some aspect of phonology. But when the word is used in the contexts "pattern congruity", "pattern pressure", "predominant pattern", "nonsuspicious pattern", and the like, it rapidly loses its popularity in some quarters and may either be ignored or denounced as a circularity, an outcast of scientific logic.

This paper is not intended to be a polemic defending the right of existence for the notion of "pattern congruity". It is simply an experiment in applying this as a principle in the analysis of Cham phonology.[1]

The starting point for this phonological analysis is with units labeled "nonsuspect patterns", which in turn will be used for interpreting

1 Cham is one of the larger minor languages of the Indo-China peninsula. It is divided into two major dialects, that spoken in Cambodia by over 100,000 Cham people and that spoken in Vietnam by about 50,000 persons. The material in this paper is based on a study made while residing in the Cham village of Phước Đồng near Phan Rang from May, 1960, to May, 1962.

[Tập XIII, Quyển 4 (Tháng 4, 1964)]

suspect patterns.[2] Nonsuspect patterns are made up of "clearly unambiguous sequences" of segments, specifically stops, fricatives, and low and mid vowels, since these sounds will "almost certainly" be consonants and vowels respectively.[3, 4] Nonsyllabic nasals and laterals will be included since they are also almost certain to function as consonants.[4] Members of these phonetic classes will be regarded as nonsuspect consonants and vowels, providing they have exhibited phonemic contrast with other segments.

The complete inventory of nonsuspect syllable patterns in Cham is: CV *ka* 'for'; CVC *kan* 'fish'; CCV *klɔ̀* 'brain'; CCVC blang 'yard'.[5] The basic rule for suspect sequences will be that they must be interpreted in accordance with the nonsuspect patterns.

Ambiguous sequences in Cham involve labialization, palatalization, glottalization, aspiration and retroflexion. The first four of these, *w, y, ʔ* and *h*, can be demonstrated to function as consonants in the pattern CVC. In syllable-initial position: *wan* 'to forget'; *yang* 'spirit'; *(pə) ʔ an* 'paper'; *han* 'bread'. In syllable-final position; *kaw* 'tobacco'; *kay* 'leg'; *kaʔ* 'to tie', *kàh* 'direction'.[6]

1. *Initial w, y, glottal combinations.* Combinations of one of these suspect segments with one that is nonsuspect, or combinations of two suspect segments together, readily resolve themselves into consonant clusters parallel to nonsuspect clusters like *bl. twà* 'two'; *pyaʔ* 'to go out'; *ywaʔ* 'to harvest'; *ʔwaʔ* 'to rub'; *ʔyaʔ* 'hot'.

2. *Final wʔ, yʔ, and yh.* In syllable-final position only the combinations [uʔ, iʔ, ih ~ iX] occur. [dauʔ] 'clearly'; [pàiʔ] 'to study'; [tuih ~ tuiX] 'sin'.

[2] Essentially, this is the concept presented by Pike in Chapter 12, «Analytical Procedure 4 : The phonemic interpretation of suspicious segment types and segment sequences by analogy to nonsuspicious or predominant structural types and sequences». K.L. Pike, *Phonemics : a technique for reducing languages to writing* (Ann Arbor, 1947). The terms nonsuspect and suspect were received in conversation from R. S. Pittman and are also currently used by Pike.

[3] C. V. Voegelin and J. Yegerlehner, «The scope of whole system ('distinctive feature') and subsystem typologies», *Word* 12.444-52 (1956). In this article the authors refer to the use of «clearly unambiguous sequences» for interprtieng those which are ambiguous.

[4] K. L. Pike, *Phonemics*, page 128.

[5] A grave accent /ˋ/ over a vowel indicates low pitch which contrasts phonemically with nonlow pitch /unmarked/ in syllables initiated by voiceless oral stops /p, t, c, k/.

[6] Parenthesis indicates that a syllable may be either lost or modified.

One possibility would be to consider [u?, i? and ih ~ iX] as phonetically complex units. Then each would be assigned to a phoneme which has another allophone in complementary distribution with it. A further requirement for assignment would be that the allophones of each phoneme must share common distinguishing features.

[u?] occurs only syllable-finally and [b] occurs only syllable-initially. [u?] and [b] share the features of labialization and interruption. [7] [dau?] would be phonemicized as *dab*.

[i?] occurs only syllable-finally and [c] occurs only syllable-initially. [i?] and [c] share the features of palatalization and interruption. [pài?] would be phonemicized *pàc*.

[ih ~ iX] occurs only syllable-finally and [s ~ š] occurs only syllable-initially. [ih ~ iX] and [s ~ š] share the features of palatalization and friction. [tuih] would be phonemicized *tus*.

Considering [-u?, -i? and -ih] as phonetically complex allophones of /b, c and s/, respectively, symmetrizes the distribution of the fricatives and unaspirated stops, except for /d/ which occurs in initial position only.

Initial					*Final*				
p-	t-	c-	k-	?-	-p	-t	-i?	-k	-?
b-	d-				-u?				
		s-		h-			-ih		-h

3. *Initial ?y, ?w, ?r*. The phonetically palatalized and labialized glottal stops [-i?] and [-u?] might also have been considered as variants of preglottalized semivowels [?y] and [?w], which occur initially and contrast with /y/ and /w/. *ya* 'a repetition', *?ya* 'water'; *wa?* 'to write', *?wa?* 'to wipe'. But nonsuspect clusters of stop plus lateral already exist, allowing a cluster interpretation of /?w/ and /?y/. /?r/ also occurs in *tà?ray* 'chronicle', which contrasts with *tàrah* 'blood'. Economy also indicates that the cluster solution is preferable to adding three more phonemes /?y, ?w, ?r/ to the inventory.

7 *Interruption* (stoppage) is used here in a manner somewhat similar to that of R. Jakobson, C. G. M. Fant, M. Halle, *Preliminaries to Speech Analysis*, fourth printing (M. I. T. Acoustics Laboratory, 1961). On page 21, "*interrupted* consonants (stops)" are distinguished from "*continuant* consonants (constrictives)".

4. *Combinations with /w.* The nonsuspect pattern rule is awkward in handling words like [blua?] 'more than' and [klua] 'a fish'. Rigid adherence to it would necessitate the introduction of a phonetically complex /lw/ as a phoneme. It seems more reasonable to allow a CCC cluster composed of stop plus liquid plus semivowel. So the above words would be phonemicized as *blwa?* and *klwa*. An obvious alternative would be to admit the possibility of vowel clusters, since the nonsuspect rule must be modified at this point. In this case the preceding words would be phonemicized as /blua?/ and /klua/.

5. *Retroflexion.* [ta?] 'heavy' and [ta?] 'to tie' demonstrate the phonemic contrast between [t] and [t] and introduce the problem of retroflexion. The predominant patterns as well as the principles of economy and symmetry would seem to oppose the introduction of another phoneme with the additional feature of retroflexion applying to it alone. One solution is to consider this simple segment [t] to be the phonetic manifestation of the cluster /tr/. Retroflexion would be interpreted as the phonetic realization of /r/ following /t/. The existence of other syllable-initial consonant-plus-*r* clusters would seem to favor this. *prày* 'to give' ; *kra* 'toroise' ; *tà?ray* 'chronicle' ; *brəm* 'arrow' ; *mro?* 'moment' ; *nrəng* 'stalk', *hrəy* 'day'.

6. *Aspiration.* If aspiration is interpreted as /h/ following a stop, then the CCC-cluster rule would have to be restated to include stop plus *h* plus liquid, and stop plus *h* plus semivowel, as in *khya ?* 'to burn' and *thr ± h* 'to appear'.

The problem of aspiration calls for a look at two types of phonological words in Cham. They are illustrated by :

(pə)pan 'board' (one and two syllable words)

talapat 'to bow' (three syllable wrods).

The canonical pattern for *(pə)pan* words, in accordance with the modified nonsuspect pattern rule, is (CV).C (C) (C)V(C), the minimum form being CV as in *ka* 'for' and the maximum extension being CV.CCCVC as in *pəblwa ?* 'to augment'.[8]

Aspirated stops occur word-medially but never word-finally in (*pə*) *pan*-type words. There is rare occurrence of aspirated segments word-initially as in *thənəw* 'divination'. *thənəw* and *tənaw* 'lake' come the nearest

8 E. Aymonier et A. Cabaton, *Dictionnaire Cam-Français* (Paris, 1906). page 274.

to giving evidence for contrast word-initially. These words present a strong argument for postulating a series of aspirated stops. It would be difficult to defend word-initial aspiration as being subphonemic in view of this contrast in analogous environment.

With three-syllable words, as *taləpat* 'to bow', there is phonemic contrast in the first consonant position based on the presence or absence of aspiration. *thaləpən* 'nine' and *taləpat* 'to bow'. It is obvious that rigid adherence to the dictates of the nonsuspect pattern, which does not permit consonant clusters word-initially in two and three-syllable words, will force the conclusion that an aspirated series of voiceless oral stops exists in Cham. The principle of economy would call for another amendment to the nonsuspect pattern rule, allowing stop plus fricative /h/ clusters word-initially for all word types.

7. Vowel glides Besides these problems of consonant interpretation, there is one vowel problem. This is the question of how to interpret the glided vocoids [iə] and [uə].

In closed syllables the glided vowels are never contrastive with their unglided analogs *i*, *ɛ*, *ɨ*, *u* and are frequently in free variation with them. [ciəng ~ cɨng] 'ability' *cɨng;* [ciəp ~ cɛp] 'bush bean' *cɛp;* [ciəp ~ cip] 'Thursday' *cip;* [puən ~ pun] 'garden' *pun*. So in closed syllables the glides could be handled simply as variants of *i*, *ɛ*, *ɨ* and *u*.

But in open syllables the following contrasts occur : [diə] 'to be inclined' contrasts with the second syllable of [pə.di] 'manner' and [luə] 'amuse' contrasts with [kəlu] 'Cambodian'. Palatalization of /d/ and labialization of /l/ have not been considered as possibilities since the syllabic peaks are invariably [i] and [u], respectively. [ə] in both cases is a mid-central off-glide.

In accordance with the non-suspect CV patterns of Cham in which no vowel clusters occur, [iə] and [uə] could be interpreted as complex vowel phonemes. This, of course, would add two phonemes to the vowel inventory. A more economical solution in this instance would be to interpret [ə] as an allophone of the liquid flap /r/. The above words would then be phonemicized as *dir* and *lur*. /r/ would be chosen since /l/ has been used to represent neutralized final /l/ and /r/. Writing /r/ indicates a case in which the contrast between /l/ and /r/ is not neutralized and the allophonic manifestation of /r/ is a nonsyllabic [ə]. This is definitely an *ad hoc* solution. For consistency, [iə] and [uə] should be treated similarly in both

open and closed syllables. So interpreting *iə* and *uə* as glided vowel phonemes would be preferable. [9]

8. *Conclusions.* Adhering rigidly to the nonsuspect CV pattern in Cham would increase the consonant inventory by seven phonemes and the vowels by two over an analysis not applying this as an axiom.[10] But, for the unaspirated stops and fricatives of Cham, applying the nonsuspect pattern rule would yield a more symmetrical distribution than would an approach which rejects this so-called "useful circularity". [11]

What has this experiment shown about the criteria of patterning ? It has shown that there is some value in using nonsuspect CV patterns as starting points for interpreting ambiguous data. But it has also shown that this must be balanced with other criteria, such as economy and simplicity.

[9] Another solution would be to consider the glided vocoids as the long counterparts of /i/ and /u/. The main problem with this last possibility is that phonemic vowel length seems to be absent from the other seven vowels.

[10] The phoneme inventories of two analyses, the first rigidly adhering to the nonsuspect pattern rule, and the second rejecting it altogether, are given below.

(1)

p	t	c	k
p^h	t^h	c^h	k^h
b	d		
			h
	n	ñ	ng
w	l, r	y	
	lw		
iə			uə
	ɨ		u
e	ə		o
ɛ	a		ɔ

(2)

		c	k ?
b	d		
			h
m	n	n	ng
	l, r		
	ɨ		u
e	ə		o
ɛ	a		ɔ

w and *y* have been eliminated from the second consonant inventory, since they would be interpreted as nonsyllabic allophones of *u* and *i*, respectively.

[11] M. Joos, ed. *Readings in Linguistics* (Washington, 1957) page 420. This is not a direct quotation. Joos said, "Pattern congruity has never been defined with any precision to my knowledge but is intuitively clear enough to serve in practice (none the less for being circular...) as a criterion for a good total (phonological) description..."