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A PHONOLOGICAL RECONSTRUCTION
OF
PROTO-NORTH-BAHNARIC

Kenneth D. Smith

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**A PHONOLOGICAL RECONSTRUCTION
OF
PROTO-NORTH-BAHNARIC**

by

Kenneth D. Smith

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MAP 1.
ETHNIC MINORITIES
OF
SOUTH VIETNAM

LEGEND

Tribal Boundary -----

Tribal Name BAHNAR, etc.

Place Name BanMeThuot, etc.

Northern Tribal Resettlements:

MÁN, near BanMeThuot, etc.

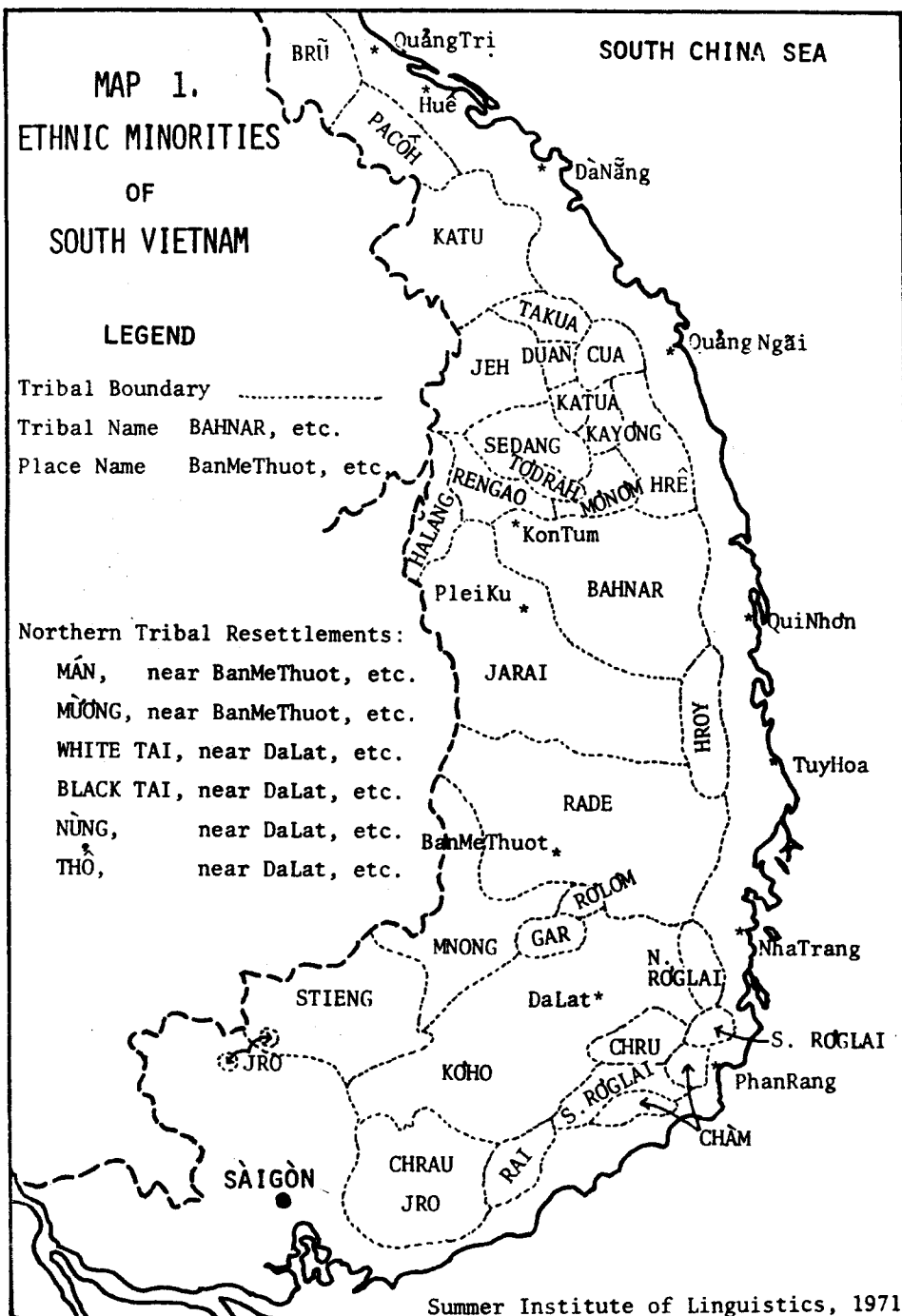
MƯỜNG, near BanMeThuot, etc.

WHITE TAI, near DaLat, etc.

BLACK TAI, near DaLat, etc.

NÙNG, near DaLat, etc.

THỎ, near DaLat, etc.



Summer Institute of Linguistics, 1971

GENERAL INTRODUCTION

Field workers of the Summer Institute of Linguistics are now engaged in the study of over 500 languages in widely scattered parts of the world. For the most part these languages have not previously been studied in any systematic way, and data collected by members of the Summer Institute of Linguistics constitute a source of information of immense importance. Unfortunately, because of high publication costs and the practical limitations in time on the part of editors and linguists, these data have in many cases remained relatively inaccessible to scholars in general.

As a partial solution to the problem, we have inaugurated Language Data for the purpose of making available in published form a broad selection of data-oriented papers authored by field workers of the Summer Institute of Linguistics. All issues of Language Data will appear in microfiche form and will be distributed jointly by Mikrobuk, Inc. of New York and the Summer Institute of Linguistics, Box 1960, Santa Ana, California 92702. In addition, selected issues of Language Data (such as this one) will be issued in printed form. There will be three series of Language Data, defined on the basis of broad geographical areas: The Asian-Pacific Series, the African Series, and the Amerindian Series. A complete listing of publications in the new series, as well as other linguistic monographs, may be obtained from the Summer Institute of Linguistics.

It is hoped that Language Data will prove to be an effective vehicle for the rapid and inexpensive dissemination of information concerning the hundreds of minority languages still spoken in nearly all parts of the world.

Irvine Davis
Editor-in-Chief

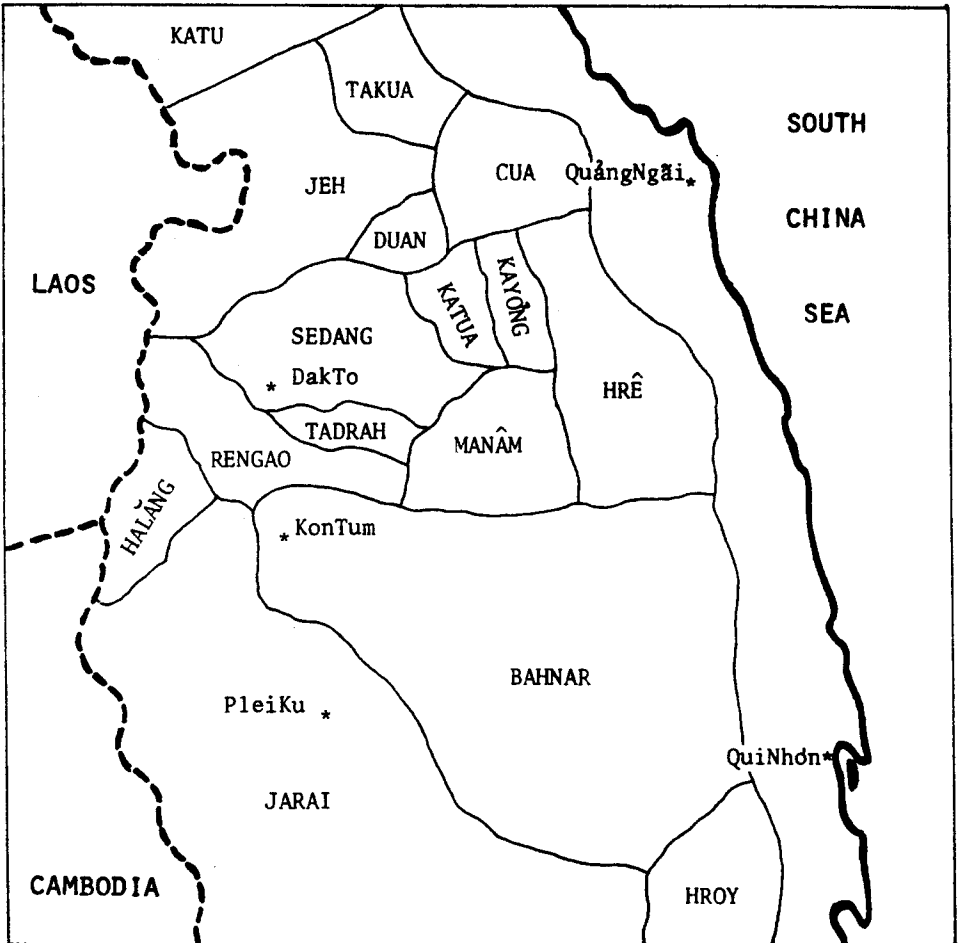
0 INTRODUCTION

The North Bahnaric languages in VietNam (Thomas, 1966a; Thomas and Headley, 1969; S.I.L., 1969) include Bahnar, Rengao, Sedang, Tódráh, Haláng, Jeh, Hré, Kotua and Cua, all located in the high-lands of Central VietNam between Pleiku and AnKhê in the south and the northern areas of KonTum and QuángNgãi Provinces. In this paper five of these languages are used for the reconstruction of Proto-North-Bahnaric (PNB): Bahnar (B), Jeh (J), Haláng (H), Hré (Hr), and Sedang (S). Of the North Bahnaric languages Bahnar is the second largest (est. pop. 85,000 (S.I.L., 1969)) and the southernmost, ranging from Pleiku and AnKhê up to KonTum City. The Jeh (10,000) are in northern KonTum Province, north of DakSut and extending into portions of QuángTin Province. The Haláng (10,000) are in the central western portion of KonTum Province, between the main north-south river and the Cambodian and Laotian borders. The Hré (100,000) are to the east in QuángNgãi Province. The Sedang (40,000) are located in the central areas of KonTum Province, northeast of DakTo and centering about Toumorong. Other languages referred to in this paper will be Rengao, Tódráh (both Módra and Didrá dialects), Kotua, and Cua. See Map 2 for their respective locations.

In the literature Bahnar and Sedang are the most frequently cited of these languages. All comparativists have included Bahnar with the Mon-Khmer languages. Many, however, have included Sedang with the other Austronesian languages found in VietNam, e.g. Châm, Radê, Jarai, etc. (Schmidt, 1906:18; Przyluski, 1924:390; Schmidt, 1926:138; Kieckers, 1931:114; Faublée, 1952:652; note also Father Schmidt's classification in Sebeok, 1942:206). On the other hand, other writers have correctly identified Sedang as a Mon-Khmer language (Cabaton, 1905:272; H. Maspero, 1929:65; Devereux, 1937:1; Pinnow, 1959:3; Thomas, 1966a:195). This latter classification is indisputably confirmed by this present study, although the uniqueness of Sedang is demonstrated at many points.

The data used in this paper were obtained from "Proto-Jeh-Haláng" (Thomas and Smith, 1967) (PJH), Glossary of the Hré Language (Phillips, 1961), with Bahnar cognates added by John E. Banker and Early Sedang cognates by the author. Early Sedang (ES) predates the division of Sedang into various dialects (Smith, 1967a, b) and is principally characterized by laryngealized vowels with final nasals rather than the delaryngeal-denasalized counterparts of present-day Central Sedang. The data are all based upon phonemic transcriptions (Banker, 1961; Gradin, 1966; Cooper and Cooper, 1966; Phillips, 1961; Smith, 1968).

All words in these languages have a stressed main syllable (tonique); many words also have an unstressed presyllable or preliminary syllable (prétonique) (Thomas, 1962). The general word form



Map 2. Minority language groups of South Vietnam Central Highlands, including Pleiku, KonTum, and Quảng Ngãi Provinces

in PJH, Hr, and S is (Ca)CVC, in B is (Ca)CSVC. The former word form corresponds to the reconstructed word form for PNB. Each portion of the word, including vowel nasalization, is discussed in the following sections.

The reconstructions of Section 6 are in the following order:

6.1 Final vowel-consonant combination reconstructions (with listing of all reconstructed words);

6.2 Initial consonant and consonant cluster reconstructions;
and

6.3 Presyllable reconstructions.

Though opposite of normal word order it is necessary to start the presentation first with the final vowel-consonant combinations inasmuch as these most conclusively indicate the relationship between the descendant languages. The remaining sections on the initial consonants and consonant clusters and the presyllables then fall clearly in place. If the presyllable is assimilated into or otherwise affects the form of the initial consonant or consonant cluster in a descendant language, it is included in the section on the initial consonants and consonant clusters. The concluding section on presyllables is thereby cleared of many irregular forms so that what remains reveals the basic presyllable patterns.

1 FINAL VOWEL-CONSONANT COMBINATIONS

It has been found both here and in other studies of the Mon-Khmer languages of South VietNam that the vowels are difficult to determine apart from the final consonant. For this reason many analysts construct "rhyming dictionaries" during their initial phonological study. Some final consonants occur with only a limited number of vowels; few, if any, occur with all vowels (Thomas, 1966b). In this paper all reconstructed vowels and final consonants are brought together so that the overall effect on the vowels by a given final consonant can be clearly seen.

1.1 FINAL CONSONANTS

Hr has the fullest set of final consonants; ES has the smallest set. Though Central Sedang has final q, yq, and wq, ES has final nasals ŋ, n, and m in their place, respectively. These sets are given in Chart 1.

The final consonants of B and PJH are similar to Hr except that (1) B and PJH have both final r and final l; (2) B does not have wh or wq; and (3) PJH does not have č, ñ, or wh. Final wq does not occur in the cognate sets below for either Hr or PJH; nor does Hr wh occur.

The reconstructed final consonants for PNB (as well as for the intermediate language Proto-Hrê-Sedang discussed below) are similar to Bahnar as given in Chart 1 and are the basis of the ordering of the reconstructed final vowel-consonant combinations in Section 6.1 below. For statements concerning final consonant correspondences, see Section 1.5 below.

Hr				ES			PNB			
p	t	č	k	p	t	k	p	t	č	k
m	n	ñ	ŋ	m	n	ŋ	m	n	ñ	ŋ
w		y		w		y	w		y	
(wh)		yh	h		yh	h			yh	h
(wq)		yq	q						yq	q
	r							l	r	

Chart 1. Final consonants of Hrê, Early Sedang, and Proto-North-Bahnaric (parentheses indicate final consonants not included in the cognate sets of Section 6.1 below)

1.2 VOWEL STRUCTURE IN THE DESCENDANT LANGUAGES

BAHNAR VOWELS. B has nine vowel positions and contrastive long and short vowels, although the short vowels occur in only six positions. See Chart 2.

Short			Long		
ĩ	ũ		i	ĩ	u
	ẽ		ê	ə	ô
ẽ	ă	õ	e	a	o

Chart 2. Bahnar vowels

B has no length contrast before final \emptyset (open syllable), q, h, yh, or yq. ẽ is the only front vowel that occurs before final y. õ is the only back vowel that occurs before final w. No front vowels occur before final yq. i and ĩ do not occur before final n.

PROTO-JEH-HALĀNG VOWELS. PJH has five vowel positions, contrastive long, short and glided vowels, and contrastive vowel register (clear Tense Register vowels versus breathy or "deep" Lax Register vowels).² The short breathy vowels occur in only three positions; glided vowels in only two. (PJH à was reconstructed on the basis of only one instance of J à : H à.) There is also occasional contrastive nasalization in PJH. See Chart 3.

Tense Register Clear vowels			Lax Register Breathy vowels		
Short	Long	Glided	Short	Long	Glided
(ĩ) ũ	i u	ia ua	ĩ ũ	ĩ ù	ia ùa
ẽ õ	e o			è ò	
ă	a		ă	(à)	

Chart 3. Proto-Jeh-Halāng vowels (parentheses indicate vowels not included in the cognate sets below)

There is no length contrast before \emptyset and h in PJH. Among the almost 500 words reconstructed for PJH certain restrictions of vowel-final consonant occurrence may be noted. ẽ does not occur with final

voiceless stops. ì does not occur with final nasals. e occurs only before Ø, k, ŋ, and h; ĩ only before m, q, and k; ia only before Ø, t, k, and ŋ; o only before t, k, ŋ, and q; ũ only before k, ŋ, y, and m, etc.

HRÊ VOWELS. Hr has seven vowel positions, simple vowels in contrast with glided vowels (four positions), and contrastive vowel register (tight, clear and bright Tense Register vowels versus gruff, breathy Lax Register vowels). See Chart 4.

Tense Register		Lax Register	
Clear vowels		Gruff vowels	
Simple	Glided	Simple	Glided
i u	ia ua	ì ù	ìa ùa
ê ô		ê`	èa òa
e a o	ea oa	è à ò	

Chart 4. Hrê vowels

ô does not occur gruff. Final velars k and ŋ do not occur with the simple front vowels. The non-velar stops and nasals (p, t, č, m, n, ñ) do not occur with the glided vowels. Final consonants w and wq do not occur with back vowels; final wh occurs with only ĩ. Final consonants y, yh, and yq do not occur with front vowels. r occurs only with the low vowels e, a, and o of both registers.

EARLY SEDANG. ES has seven vowel positions, simple vowels in contrast with central-glided vowels (four positions), back-glided vowels (three positions), and front-glided vowels (two positions in Lax Register only), and contrastive vowel register (laryngealized Tense Register versus clear Lax Register vowels). (Back glides eô, io, and uo do not occur in the cognate sets.) There is also occasional contrastive nasalization in Sedang, both with and without simultaneous laryngealization. See Chart 5.

Laryngealized Tense Register vowels do not occur with final voiceless stops. Nasalized vowels do not occur with final nasals and occur only after a preceding h, q, or w. Front glided vowels occur only before Ø. Back glided vowels occur only before final Ø, velars k and ŋ, and h. Final yh occurs only with a, u, and ô. Final t does not occur with ea, ô, or oa; final n does not occur with ea or oa of either register. Final w occurs only with vowels ĩ, a, and ô of both

Tense Register			Lax Register			
Laryngealized vowels			Clear vowels			
Simple	Central glided	Back glided	Simple	Central glided	Back glided	Front glided
í ú	ía úa	(i ^ó) (u ^ó)	i u	ia ua	iô uô	ie
é ó	éa óa	e ^ó	ê ô	ea oa	(eô)	oe
é á ó			e a o			

Chart 5. Sedang vowels

registers; final i occurs only with vowels ê, a, and back single vowels of both registers.

1.3 GENETIC RELATIONSHIPS OF THE LANGUAGES

The basic problem of the vowels of these languages is that contrastive vowel length and contrastive vowel register (or their absence) occur in different ways as indicated below (an x indicates the presence, a hyphen - the absence of same).

Occurrence of contrastive vowel...

	...length	...register
Jeh, Halāng	x	x
Hrê, Sedang	-	x
Bahnar	x	-

An early observation in this study was that short vowels in PJH generally correspond to short vowels in B; and that long vowels in PJH likewise generally correspond to long vowels in B. Similarly, it was observed that Tense Register words in PJH, Hr, and S generally correspond to each other; and that Lax Register words in these languages likewise generally correspond to each other. Therefore the vowel length contrast was to be attributed to the ancestor language or to a single subsequent causal factor; there was no need to consider positing separate and unrelated innovations in B and PJH. Similarly the register contrast was to be attributed to the ancestor language or to a single subsequent causal factor; there was no need to consider positing separate and unrelated innovations in PJH, Hr, and S.

The relationship of these languages to each other, then, based upon the innovation or loss of these features of the vowels, might be according to any of the three schemes in Chart 6, assuming that either length, register, or both, were present in the ancestor language.

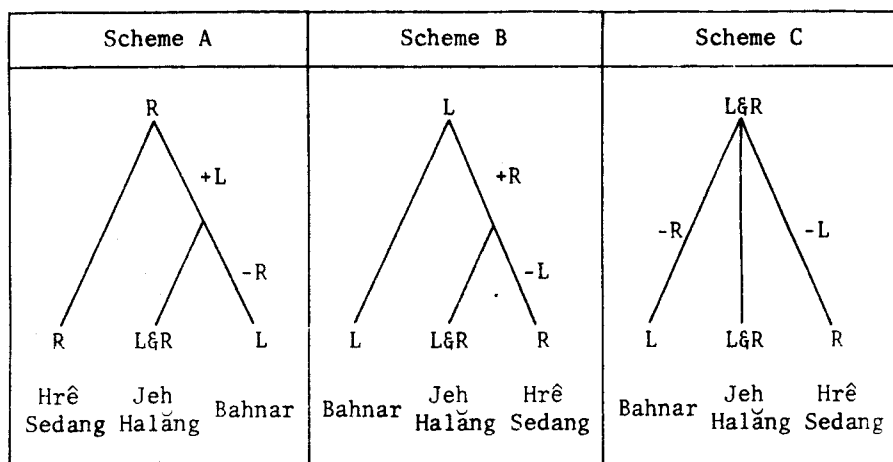


Chart 6. Various possible genetic relations among the languages based on the loss or development of contrastive vowel length ($\pm L$) and/or register ($\pm R$)

No basis for Scheme A—the development of contrastive vowel length after the splitting off of Hr and S—could be found. (And for this reason there is no basis for positing a parent language with neither length nor register.)

Scheme B—the development of vowel register after the splitting off of B—seemed plausible especially since it had been shown that vowel register developed in Khmer, conditioned by the voicing of the initial consonant (Jenner, 1966:37). But such conditioning cannot account for the development of vowel register within these languages. Interestingly, however, it was found that the vowel registers of PJH, Hr, and S corresponded to the height of the B vowels. Of the words included in the reconstructions of Section 6, the count is as follows.

1. The number of PJH, Hr and S Tense Register words corresponding to (a) B long vowels:

High vowels	i	1	e	2	u	1
Low vowels	ê, e	14	a	69	ô, o	51

(b) B short vowels:

High vowels	ĩ	0	ǣ	5	ũ	1
Low vowels	ē	14	ǣ	39	ō	10

2. The number of PJH, Hr and S Lax Register words corresponding to (a) B long vowels:

High vowels	i	15	ə	8	u, ô	34
Low vowels	e	5	a	0	o	2

(b) B short vowels:

High vowels	ĩ	7	ǰ	9	ũ	10
Low vowels	ě	6	ǻ	0	ǫ	0

The predominance of PJH, Hr and S Tense Register vowels with B low vowels (197 low versus 10 high) and PJH, Hr and S Lax Register vowels with B high vowels (83 high versus 13 low) indicates a definite correspondence between vowel register and B vowel height. The question remains, however, which feature conditioned the other? To seek an answer it was necessary to extend this study to a wider range of Mon-Khmer languages. The results of the investigation, included in Appendix 1, notes vowel register correspondences between Tense Register words of Kuy, Brū, Khmer and Mon and their North Bahnaric cognates and similarly between Lax Register cognates. Despite a small percentage of words having non-corresponding registers, the overall pattern is taken to indicate a broadly consistent pattern of register correspondence all across the Mon-Khmer area. Consequently PNB must necessarily be reconstructed with vowel register contrast. B vowel height then reflects the register contrast of PNB.³ Thus Scheme C illustrates the approximate genetic relation among these languages.

Rather than positing a simultaneous three-way split in PNB as indicated in Scheme C, one might enquire which group broke away first. Clearly PJH did not, since (1) it shares the vowel length contrast with B and the vowel register contrast with Hr and S, and (2) B shares neither of these major features with Hr or S. An inspection of the initial consonants, consonant clusters, and presyllables of Sections 6.2 and 6.3 shows that there are 47 instances of shared features between PJH and Hrê-Sedang in contrast to B. There are only 16 such instances between PJH and B in contrast to Hrê-Sedang; and only 9 instances between Hrê-Sedang and B in contrast to PJH. Thus it would appear that B broke away first from PNB forming a non-register language group. The register language group thus remaining could be termed Proto-Jeh-Halǻng-Hrê-Sedang. Subsequently Proto-Jeh-Halǻng-Hrê-Sedang split into Proto-Jeh-Halǻng on the one hand, and Proto-Hrê-Sedang (PHrS) on the other. Thus the genetic relationship of these languages is that shown in the Stammbaum of Chart 7.

From the more limited data available on other North Bahnaric languages, other tentative relationships can be posited. Kotua (Smith, 1970b) and Cua (Burton and Maier, 1966)—adjacent language groups in Quảng Ngãi Province east of the Sedang—are non-register languages which further share the unique phonological feature of having final voiceless stops where PNB has final nasals (except that

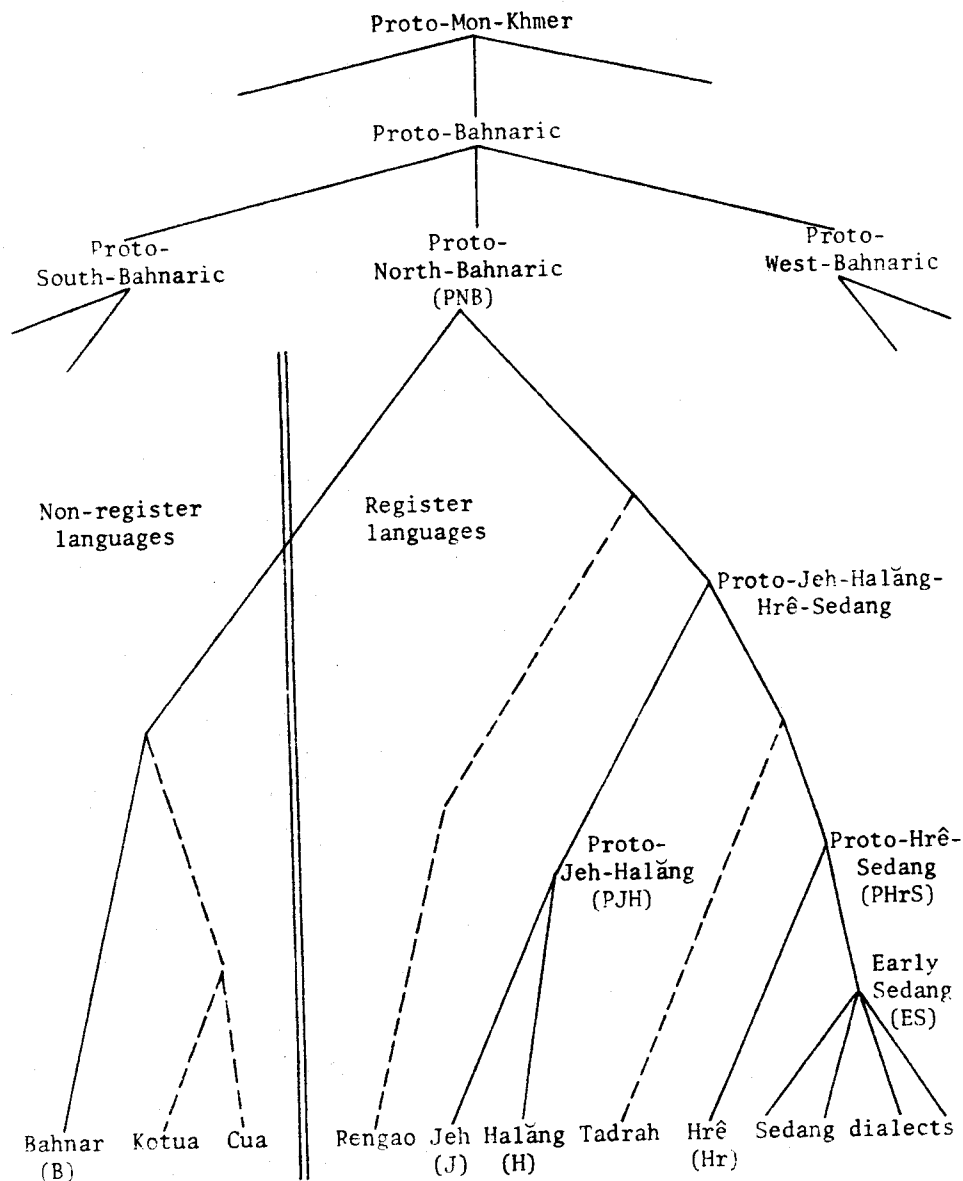


Chart 7. Genetic relationships among the languages (dashed lines indicate relationships based on shared phonological features of languages not included in the reconstructions of this paper)

in words with a PNB initial nasal, h or q, the final nasal has been retained). Therefore they are diagrammed as breaking away from B after the development of the non-register language group.

Proto-Jeh-Halǎng-Hrê-Sedang is characterized by the development of vowel glides. Rengao, though a register language, does not have vowel glides. Thus Rengao is thought to have split away from the register language group before the development of Proto-Jeh-Halǎng-Hrê-Sedang. Rengao therefore has the distinction of retaining a vowel system most closely resembling PNB.

Tadrah (Gregerson and Smith, 1970) is a register language with vowel glides and a tendency to lose some final stops, though not as completely as S. Tadrah in this respect has lost all final -l, associating it with Hrê and Sedang, but inasmuch as it seemingly retains contrastive vowel length it is thought to have broken away prior to the formation of Proto-Hrê-Sedang.

Thomas' lexico-statistical studies (1966a) have indicated a clear break of the Bahnaric languages in VietNam into North Bahnaric (those north of the Austronesian group) and South Bahnaric (those south of the Austronesian group). Bahnar, the principal non-register language of North Bahnaric, interestingly is the southernmost language of this group. Inasmuch as the languages of South Bahnaric are all non-register languages, the possibility occurs (1) that Proto-Bahnaric may have split into a group in the north retaining register and a non-register group in the south, and (2) that subsequent to this the Austronesian group forced its wedge into the southern non-register Bahnaric group such that Bahnar was placed north but Mnong, Koho, etc. were placed south of the wedge. Thus the phonological shape of Bahnar may have South Bahnaric similarities, but due to the subsequent geographical proximity to the register languages its vocabulary closely resembles North Bahnaric. If this hypothesis should be true, then (1) the PNB reconstructed in this paper may in actuality be something like Proto-Eastern-Bahnaric or Proto-Bahnaric, and (2) the node in the genealogical tree below PNB including Rengao and Proto-Jeh-Halǎng-Hrê-Sedang would instead be PNB.

1.4 RECONSTRUCTED VOWEL SYSTEMS

PROTO-NORTH-BAHNARIC. The vowels of PNB have been reconstructed with both Tense Register and Lax Register vowels. Each register has three short and five long vowels. The short Tense Register vowels are low vowels and the short Lax Register vowels are high vowels (*a can be thought of as having a mid-central schwa vowel quality). See Chart 8.

In the reconstructions PNB *w does not occur with any back vowel; and finals *y, *yh and *yq do not occur with any high front vowels. In the Tense Register there is no vowel length contrast before *h, *yq,

Tense Register		Lax Register	
Short	Long	Short	Long
*ē	*ī *u *e *o *ă	*ĩ *ũ *ă	*ì *ù *è *ò *à

Chart 8. Proto-North-Bahnaric vowels

or *ø; *ă is the only Tense Register short vowel reconstructed before final *q, based only on a Jeh contrast aq : ăq. In the Lax Register there is no vowel length contrast before finals *yq, *q or *ø. Where no vowel length contrast exists in PNB the (unmarked) long vowel is written.

Chart 9 indicates the relative frequency of the PNB vowels in the reconstructions of Section 6.1 as well as their occurrence with the various PNB final consonants. *ă, *a and *â are notably the most frequently recurring vowels in contrast to *à, the least attested vowel. In the Tense Register low vowels *o and *e are more frequent than high vowels *i and *u; likewise in the Lax Register high vowels *ĩ and *ũ are more frequent than low vowels *ò and *è. Thus the B vowel height and PNB register correspondences discussed above have revealed an essential feature of PNB itself. Gregerson (1970) has shown that the retracted tongue-root of the Tense Register naturally produces a relatively lower set of vowels while the advanced tongue-root of the Lax Register produces a relatively higher set of vowels.

PROTO-JEH-HALANG-HRÊ-SEDANG. The vowel system of PJHrS is not reconstructed here because it would closely resemble PNB. The most significant differences would probably be the inclusion of glided vowels *ia, *ua, *îa, *ûa, and the exclusion of *â.

PROTO-HRÊ-SEDANG. The vowels of PHrS have been reconstructed as five simple and three glided Tense Register vowels, and five simple and two glided Lax Register vowels. See Chart 10.

In the reconstructions PHrS final *w does not occur with back vowels, nor does *y, *yh or *yq occur with high front vowels. Tense Register glided vowels occur only with finals *ñ, *ŋ, *t, *k and *ø; Lax Register *îa occurs only with finals *m, *t and *ø; *ôa only with *t, *k and *ø.

The specific occurrences of each of the vowels in these two reconstructed vowel systems are given in the reconstructions of Section

Tense Register					Lax Register					
Final	*ě *ǣ *ō	*i *e *a *u *o	PHrS only	Total Tense Reg.	*ī *ē *ā *ū	*î *ê *â *û *ò	PHrS only	Total Lax Reg.	Total both Reg.	
*m	9 1	1 1 7 5	3	27	1 2 4	1 3 2 2	7	22	49	
*n	2 2	1 3 3 4	2	17	1 2	1 1	7	12	29	
*ñ	4	1 2 1 1	2	11	2 1	2 1		6	17	
*ŋ	3 12 10	3 1 15 9	3	56	2 6 3	1 1 1 4 5	3	26	82	
*p	1 5	6 1 3		16	1 4	2 2	2	11	27	
*t	1 5 1	3 1 3 3		17	1 2 2	1 1 2 1	6	16	33	
*č	5 1 2	1 2 2 1	5	19	3	1 1 1		6	25	
*k	4 8	1 3 3 3	2	21	1 3 3	1 1 1 1		10	31	
*w	3	1 2 1 1	3	20	4	1 2		7	27	
*y	2 1 1	9 2 7	3	25	4 1	3 2 2 2	1	13	38	
*yh	2	3 5 1 3		14	1	1 2 1		5	19	
*h		5 8 5 8	5	31	6 1 8	2 3 1 4		25	56	
*yq		1 1		2		1 2		3	5	
*q	7/4	3 2/5 5 4	3	24		3 2 1 1 2	5	14	38	
*l	2 3	1 2		8	1 1 1	2	1	6	14	
*r	1 3	3 1 3	2	13	1 2	3 1 1	1	9	22	
*∅		1 13 17 2 10	4	47		7 1 3	1	12	59	
Total	23 55 23	12 32 94 28 64	37	368	19 31 25	23 18 6 22 21	38	203	571	

Chart 9. Number of examples of PNB reconstructions for each final vowel-consonant combination

Tense Register		Lax Register	
Simple	Glided	Simple	Glided
*i *u	*ia	*ì *ù	*ìa
*e *a *o	*ea *oa	*è *à *ò	*òa

Chart 10. Proto-Hrê-Sedang vowels

6.1 below.

1.5 DEVELOPMENT OF THE FINAL VOWEL-CONSONANT COMBINATIONS

FINAL CONSONANTS.

(a) The final nasals *m, *n, and *ŋ are invariable in all languages.⁴ See Sections 6.1.1, 6.1.2 and 6.1.4.

(b) The voiceless stops *p, *t, and *k, as well as *h are invariable in all the languages except that in S after PHrS Tense Register they are always Ø.⁵ See Sections 6.1.5, 6.1.6, 6.1.8 and 6.1.10.

(c) PNB *ñ and *č always occur as such in Hr, usually in B. PNB *ñ occurs in PJH and S as ñ after PNB or PHrS central and back vowels and as ŋ elsewhere. These reflexes apparently arose independently in these two languages. PNB *č occurs in PJH as k after front and central vowels, and as t after back vowels. PNB *č occurs in S as another voiceless stop after the Lax Register vowels of PHrS: k after front vowels, t after back vowels; PNB *č occurs in S as Ø or y after the Tense Register vowels of PHrS: Ø after front and central vowels, y after back vowels. This corresponds to a combined pattern established by the reflexes in S of other voiceless stops (note (b) above) and *y (note (h) below). In B ŋ occurs as a reflex of *ñ, though infrequently, without any observable pattern; similarly k occasionally occurs as a reflex of *č. See Sections 6.1.3 and 6.1.7.

(d) The final glottal stop *q is invariable in all the languages except that in S it is Ø.⁶ See Section 6.1.9.

(e) Final *l is invariable in all the languages except Hr and S. PHrS *l has w reflexes in Hr after front and central vowels, a Ø reflex after back vowels. In opposite fashion PHrS *l has a Ø reflex in S after front and central vowels, a w reflex after back vowels.⁷ See Section 6.1.11.

(f) Final *r is invariable in B and PJH. In PHrS can be seen

the beginning of a trend toward the complete loss of final r. PHrS retains *r only in PNB *ur, *är, and *ër, the latter two corresponding to Hr r. Elsewhere PHrS and Hr have a Ø reflex. In S the loss of final r is complete.

The reconstructed PHrS vowels in this set are usually centrally glided vowels in words having a long vowel in PNB, and a simple vowel in words having a short vowel in PNB.⁸

(g) The final *w is invariable in all the languages except that in S after some PHrS front vowels there are back glided vowel reflexes iô (for Lax Register) and eô (for Tense Register). See Section 6.1.13.

(h) The final *y is invariable in all the languages except (1) that after PNB *è it becomes Ø in PHrS, and (2) that PHrS *ày becomes S ê and PHrS *ey and *ay become S é. See Section 6.1.14.

(i) A final yq or yh in any descendant language is reconstructed as such in the ancestor languages inasmuch as these "complex unit phonemes" are the least stable final consonants and are quickly disappearing in these languages. These usually become final q or h, respectively, and generally follow the patterns already stated for these final consonants occurring separately.⁹ See Sections 6.1.15 and 6.1.16.

(j) Final *Ø (open syllable) is invariable in all the languages except that in Hr vowel glides sometimes occur and in S finals y and w sometimes occur. See Section 6.1.17.

Chart 9 above indicates the relative frequency of the various final consonants in the reconstructions of Section 6.1 as well as their occurrence with the various vowels. Finals *ŋ, *h, *m, and *y are the most frequently reoccurring consonants whereas *yq, *l, *r, *ñ, and *yh are the least frequent consonants. Considering that 65% of the words are of the Tense Register, finals *Ø and *q are relatively more frequent in the Tense Register than the Lax Register, whereas finals *t and *p are relatively more frequent in the Lax Register than in the Tense Register. Though these statements are based specifically on the restricted PNB data of this paper, they are generally true also for the descendant languages.

The most solidly attested final *VC combinations are *aØ, *aŋ, *eØ, *aw, *äŋ, *oØ, *oŋ, *öŋ, and *äm, each having nine or more cognate sets.

VOWEL REGISTER. As stated above, vowel register is reconstructed for PNB and PHrS. PJH and Hr have the same register correspondences as PNB and PHrS with only rare exceptions. With finals *p and *h all PNB Lax Register long vowels have switched to the Tense Register in PJH while the Lax Register short vowels remained Lax Register. There are also other instances in PJH where Lax Register long vowels have

become Tense Register, though not all long vowels have done so.

Sedang maintains the register contrast in all words having a PHrS final nasal, *w, *y, *l, *r, and *Ø. However all words of both registers in PHrS having a final stop, *yh, *h, *yq, or *q occur in S with only clear Lax Register vowels. In these latter cases S has lost the register contrast found in PNB, PJH, and Hr, except that the retained final consonants despite the vowel register neutralization indicate the former PHrS Lax Register. The Lax Register open syllables in S do not suggest the PHrS register for they have been derived from both Tense Register (formerly final *l, *r, *Ø) and Lax Register (formerly final stops, *yh, etc.). Thus, whereas approximately 2/3 of all words in PNB, PJH and Hr are of the Tense Register, in S approximately 2/3 of all words are of the Lax Register.

After Hr and S split apart, the two registers in S became relatively more tense; i.e. the former clear Tense Register vowels became laryngealized, and the former breathy Lax Register vowels became clear. To account for the S register development, however, it is necessary to posit two intermediate three-register stages. This is necessitated by the observation that (1) if S had lost the Tense Register stops before the Tense Register open-syllable vowel became laryngealized, then the vowels before those lost stops would have become laryngealized in S—but they are clear. Likewise (2) if the Lax Register stops had become clear before the Tense Register stops were lost, then all stops would have been lost—but the Lax Register stops have been retained. Therefore at an intermediate stage there necessarily had to be (1) open-syllable laryngealized vowels, (2) clear vowels with stops, and (3) breathy vowels with stops.¹⁰ Chart 11 diagrams these stages. In

PHrS register	PHrS	Stage 1	Stage 2	ES	ES register
Tense Register (clear)	*VØ	→	*V̌Ø *V̌Ø V̌Ø		Tense Register (laryngealized)
	*VP *VP	→	*V̌Ø V̌Ø		
Lax Register (breathy)	*V̌P *V̌P *V̌P		→	VP	Lax Register (clear)

Chart 11. Intermediate three-register system in the development of ES from PHrS. (V represents any vowel; Ø, open syllable. w, y; P, any voiceless stop, q, yq, h, yh.)

these register shifts, finals *w and *y are subsumed under open-syllable *Ø; and finals *q, *yq, *h, and *yh are subsumed under voiceless stops *P. The other shifts involving final *r, *l, and all nasals from clear to laryngealized vowels (Tense Register) and from breathy to clear vowels (Lax Register) all occurred at Stage 1.

The loss of so many final consonants in S (i.e. all *q, *l, *r, *yq; some *p, *t, *č, *k, *h, *yh) accounts for the considerably higher proportion of open-syllable words in S (50%, including final w and y) than most other Mon-Khmer languages in VietNam (about 15-20%). The occurrence of homonyms in S is thereby increased considerably.

VOWEL LENGTH. B and PJH words are very consistent in their corresponding vowel lengths, except that PJH always has a long vowel corresponding to B long and short vowels following a B semivowel. PNB has been reconstructed therefore with these same vowel lengths; where both a long and short reflex occur, a short vowel is usually reconstructed because of the tendency to lengthen short vowels rather than vice-versa. B semi-vowel plus short vowel, however, are reflexes of PNB long vowels. PNB long vowels frequently have vowel glides in both PJH and PHrS. Thus the B vowel system has short and long vowels; PJH short, long, and glided vowels; and PHrS only unglided and glided vowels.

PNB Lax Register short vowels were reconstructed before final *p and *h where PJH preserved the Lax Register but Lax Register long vowels were reconstructed where PJH switched from Lax to Tense Register.

Short vowels and their reflexes in the descendant languages are quite stable, retaining their respective vowel heights. Contrariwise long vowels are less stable and have more frequently split into low, high, and glided vowels.

GLIDED VOWELS. Each of the descendant languages has centrally glided vowels except B. These glided vowels generally correspond to the semivowels of B. B semivowels i and u phonetically modify the preceding consonant rather than the following vowel. (H also has semivowels which function as liquids occurring as last members of clusters (Cooper, 1966:94). The few instances of labialization in S have alternate interpretations: kw is interpreted as kô-, introducing a back-glided vowel; and hw is interpreted as voicelessness before w.) The semivowels of B which are included in the data occur only with low vowels (except one: B yuq).

The tendency in these languages (except B) has been to increase the number of glides, as shown in Chart 12.

DEVELOPMENT OF THE VOWEL SYSTEMS. PNB, B, and PHrS represent the three major vowel systems of the North Bahnaric group of languages. (1) PNB with PJH has both vowel length and vowel register

PNB	None												
B	None												
PJH	ia		ua			ìa		ùà					
PHrS	ia	ea		oa		ìa			òà				
Hr	ia	ea	ua	oa		ìa	èà	ùà	òà				
S	ía	éa	úa	óa	eố	ia	ea	ua	oa	iô	uô	ie	oe

Chart 12. The vowel glides of the various languages

contrasts. (2) B has only vowel length contrast. (3) PHrS with Hr and S has only vowel register contrast.

The development from PNB to each of the latter two types is diagrammed in Charts 13 and 14. Chart 13 shows how B vowel height reflects PNB vowel register. PNB Tense Register vowels are reflected by B low vowels and the two B semivowels i and u (as in B iě, iă, uě, uă). Correspondingly, PNB Lax Register vowels are reflected predominantly by B high vowels. This tense-low and lax-high relationship is very consistent with short vowels, only slightly less so with the long vowels.

Chart 14 shows how the PNB short and long vowels merge in PHrS. The two registers correspond exactly in the two languages. PNB short vowels of both registers retain their vowel positions very regularly in PHrS as do the long vowels of the Lax Register. However the PNB Tense Register long low vowels are less stable and split into low, high and/or glided vowels. Furthermore PNB *a has some low front vowel reflexes—but no back vowel reflexes.

The Hr vowel system is identical to PHrS except that two additional simple and one glided Tense Register vowels, one simple and two glided Lax Register vowels have developed in Hr. The S vowel system has filled out slightly more than Hr plus the development of front and back vowel glides in S.

COMPARISON OF THE VOWEL SYSTEMS. Chart 15 compares the major features of the six vowel systems discussed in this paper. "Other glides" of Row 6 refers to the front and back glides of Sedang. "Total number of phonemic vowel distinctions" of Row 8 is computed by adding to the number of vowel positions (Row 1) one for each other feature of the vowel system (e.g. length contrast, register contrast, central glides, front glides, back glides). The total number of vowels (Row 7) decreased with both B and PHrS where a major vowel

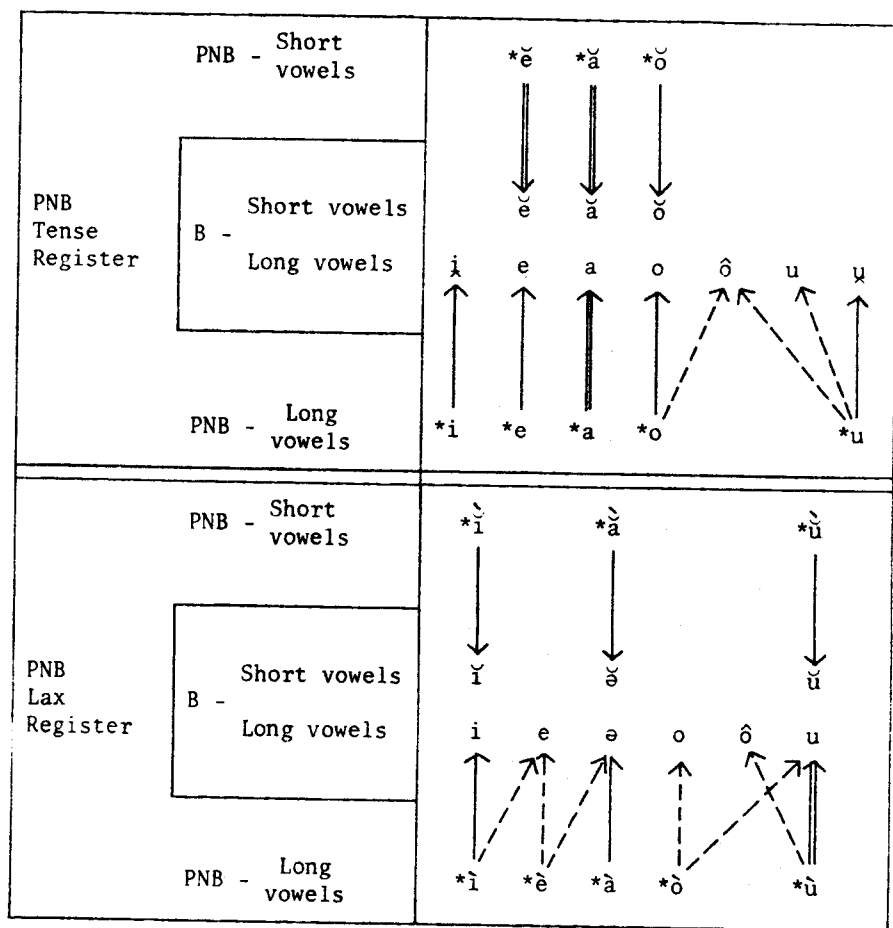


Chart 13. Development of the Bahnar vowel system from Proto-North-Bahnaric (solid arrows indicate the predominant correspondences with most final consonants; dotted arrows, less frequent correspondences; double arrows, highly consistent correspondences)

feature was lost (e.g. register or vowel length). Otherwise there has always been an increase (cf. PJH, Hr, ES). The total number of phonemic distinctions (Row 8) has always increased with each descendant language, except for PHrS where it remained the same balancing off PNB length contrast with PHrS vowel glides.

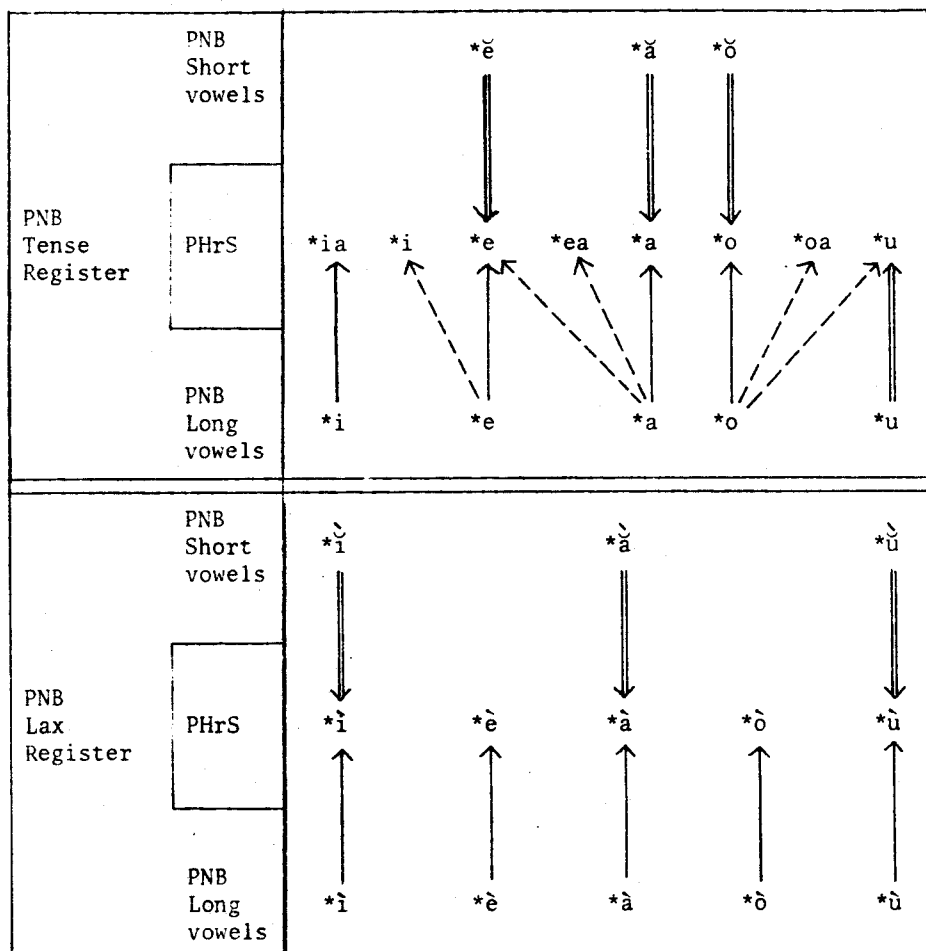


Chart 14. Development of the Proto-Hrê-Sedang vowel system from Proto-North-Bahnaric

	PNB	B	PJH	PHrS	Hr	ES
1. No. of vowel positions	5	9	5	5	7	7
2. Length contrast	Yes	Yes	Yes	No	No	No
3. Register contrast	Yes	No	Yes	Yes	Yes	Yes
4. No. of vowel positions having central glides	0	0	2	3	4	4
5. Total no. of central glides	0	0	4	5	8	8
6. Total no. of other glides	0	0	0	0	0	8
7. Total no. of contrastive vowels	16	15	21	15	21	30
8. Total no. of phonemic distinctions	7	10	8	7	9	11

Chart 15. Comparison of the vowel systems. (ES above does not include nasalized vowels; with nasalization the last four figures would read: 13, 11, 51, 12; Central Sedang dialect with nasalization, the last four figures would read: 13, 19, 59, 12)

2 INITIAL CONSONANTS AND CONSONANT CLUSTERS

The initial consonants of each of the languages, as shown in Chart 16, are identical except that (1) S does not have y, and (2) S voiced

p	t	č	k	q
b ^{ll}	d	j	g	
m	n	ñ	ŋ	
	s			h
w	l r	y		

Chart 16. Basic pattern of the initial consonants of the languages

stops are prenasalized whereas the voiced stops in the other languages are not prenasalized. The reconstructed initial consonants for PNB and PHrS are also identical to the Chart 16 except that PNB *ts is positioned where the reflexes are B t, PJH s, PHrS *s/*y. The reconstruction is confirmed in Rengao (corresponds to their x phoneme), in Kotua (in words such as K kōtsek 'bone'; see word no. 83, Section 6.1 below), and in Mōdra, a dialect of Tōdrah (M kōtsēng 'bone'). (Glottal stop q is not written word initial before vowels.) The specific correspondences are listed in Section 6.2 below.

Consonant clusters are described here as consisting of a cluster center modified by a cluster modifier. Each of the initial consonants may be a cluster center except h and q. č and j are cluster centers only in PNB and B (*čh, *qj, and *jr). Cluster modifiers are the same for all of these languages. Voiceless cluster modifiers are q- (pre-glottalization before voiced consonants), h- (voicelessness before nasals, w, l, r, and y), and -h (aspiration with voiceless stops). Voiced cluster modifiers are -r and -l. Each of these cluster modifiers is reconstructed in PNB and PHrS. The specific consonant clusters are listed in Section 6.2, grouped under the cluster center which is modified therein.

The consonant reflexes are generally the same in all languages, except that in S the voiced stops have lost their voicing and have merged with the voiceless stops. (S has nevertheless maintained the voiceless/voiced distinction in the tr/dr clusters.) S voiced (and prenasalized) stops seem to date back no further than PHrS where they

were perhaps introduced through loans from some other language. The merger of voiceless and voiced stops and then the subsequent development of other voiced stops in S accounts for the high frequency of voiceless stops over voiced stops in S (e.g., a sample S lexicon count shows 34 b's, 268 p's).

The consonant cluster modifiers -h, -l, and -r are invariable in the descendant languages. Voicelessness, h-, is sometimes dropped in the descendant languages. Preglottalization, q-, reconstructed when it occurs in any descendant language, is most frequent in B, less frequent in PJH, and infrequent in Hr and S.

Consonant clusters in some cognate sets which include only Hr and S require the reconstruction of prenasalized consonant clusters in PHrS, a feature which today occurs only in S prenasalized voiced stops. See Chart 17.

mb	nd	--	ŋg
qmb	--	--	--

Chart 17. Proto-Hrê-Sedang
prenasalized
consonant clusters

As indicated in Section 6.2, most consonant clusters of PNB occur without a preceding presyllable, suggesting that these are contractions of a former presyllable and a single consonant. There are 23 instances given where this process of contraction into consonant clusters has occurred in some language(s), but has not yet occurred in others which retain the presyllable.

3 NASALIZATION

Nasalization is very infrequent in each of the languages—to the extent that it is often disregarded in writing, especially in B, J, and Hr. B and PJH indicate nasalization in only one word in the data (#467) whereas S indicates it for eight words. In the entire S lexicon only 63 words have nasalization of the vowel. The environment in which nasalization occurs is very restrictive: nasalization is preceded by q, h, or w; it is followed by a voiceless stop, q, w, y, or Ø. Most words with a presyllable followed by q have nasalized vowels: CVqV(C).

Nasalization is reconstructed from nasalized vowel reflexes (e.g. #197) and from sets of cognates where nasal consonant reflexes correspond to nasalization-permitting environments without the nasal consonant in the ancestor language (e.g. #230). Nasalization is rapidly disappearing; the factors which have caused the slight retention of nasalization or the creation of nasal consonants are not at all clear.

Words in which vowel nasalization occurs are: words #197, 230, 259, 281, 304, 436, 438, 459, 467, 482, and 571.

4 PRESYLLABLES

Each of the languages has an optional unstressed presyllable (prétonique) in its word form. The quality of the presyllable vowel is a non-contrastive schwa ə except before q in PJH and S where a- contrasts with i-. In Hr and S the presyllable vowel is i- or u- if the presyllable consonant duplicates the main syllable consonant. B and PJH have identical presyllable consonants; S does not have the palatal or voiced stops. These are shown in Chart 18. The S la- presyllable occurs only as an affix. B a- alternates with ha-; B sa- with ha-; and S ha- with ra-.

B, PJH, PNB					PHrS				
p	t	č	k	q	p	t	č	k	q
b	d	j	g		b			g	
m					m				
	s			h			yi-		h
	r					r l			
Hr					S				
p	t	č	k	q	p	t		k	q
b	d		g						
m	n				m				
w	s	yi-		h		s	(qi-)		h
	r l					r l			

Chart 18. Presyllable consonants of the languages (presyllable vowels are schwa ə except as shown or i or u with reduplication of the main syllable consonant in the presyllable)

The PNB reconstructed presyllable consonants are identical with B and PJH; those of PHrS are more like those of Hr. The specific correspondences are listed in Section 6.3 below. Unaccounted for in the reconstructions are Hr presyllables ča-, da-, wa-, and sa-; and S presyllable sa-.

This unstressed syllable is the least stable part of the word and is frequently omitted in speech or lost entirely in the development of the languages. Only 25% of the words listed below have regular presyllable correspondences. In sixteen cognate sets only one language has a presyllable. In 23 other sets it is shown that the presyllable consonant has been assimilated into the main syllable, usually creating a consonant cluster (these presyllables are included in Section 6.2 below). Both B and PHrS show considerable devoicing of the voiced presyllable consonants. Presyllables *ha-, *sa-, and *a- are frequently affected by the following consonants.

5 DOUBLETS

Seven sets of PNB two-word doublets are apparent from the cognate sets of the descendant languages. In some instances only one language retains evidence of the former doublet as the other languages have shortened it to a single syllable; whereas in other instances they all retain the full form. The doublets included in the reconstructions are: words #4 and 49; 142 and 380; 192 and 414; 265; 318 and 249; 328; and 396.

6 RECONSTRUCTIONS

The sound correspondences and reconstructed forms are given in the following three sub-sections: Section 6.1, Final vowel-consonant combination reconstructions; Section 6.2, Initial consonant and consonant cluster reconstructions; and Section 6.3, Presyllable reconstructions. The 571 numbered examples with full word forms are listed only in Section 6.1. Sections 6.2 and 6.3 make references to the examples using the assigned word numbers; or, if there are many examples, they indicate in parentheses only how many such examples can be found in the data.

The following reconstructions utilize six columns: one column for each of the reconstructed and descendant languages included within this paper. The first column is PNB. The three succeeding columns then correspond to the three languages directly descended from PNB, and similarly the last two columns correspond to the descendant languages of the reconstructed language of column 4. Thereby the columns are in an order resembling the genetic tree branching diagram, Chart 7 of Section 1.3 above. Thus the genetic relations in columnar form are shown in Chart 19.

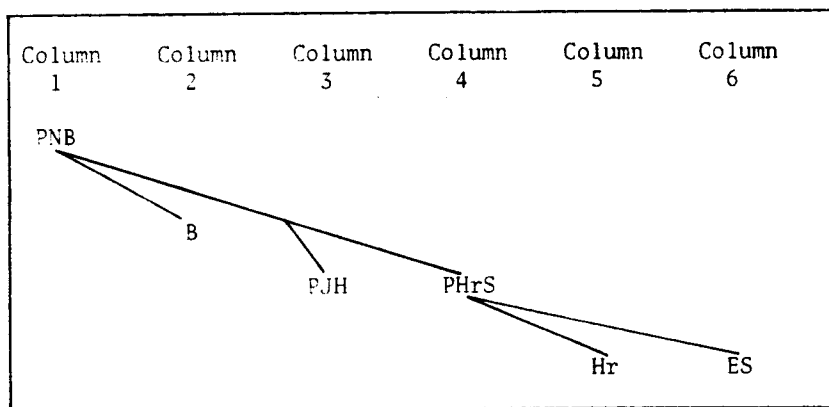


Chart 19. Genetic relations of the columns used in the reconstruction tables

J and H, as members of PJH, are not included here inasmuch as the PJH data was taken from Thomas and Smith (1966). Although all PJH forms should be preceded by a star (*), such a star is not used with PJH in this paper so that all starred forms will correspond to reconstructions initiated in this paper.

Reconstructions are made if two of the descendant languages are known, but according to the following two rules:

(1) PNB is reconstructed if any two of the following three are known — (1) B, (2) PJH, and (3) Hr or S. Occasionally R (Rengao) is substituted for PJH if neither B nor PJH is known to permit reconstructions of PNB.

(2) PHrS is reconstructed if either Hr or S is known.

The reconstructions of Section 6.1 are grouped according to the final consonant; i.e. Section 6.1.1 includes all vowels of PNB which are followed by final *m; Section 6.1.2, final *n; etc.

Within each of these sections the PNB Lax Register vowels (first short, then long) are listed first; then, after a long dividing line, the PNB Tense Register vowels (first short, then long). Shorter dividing lines are used to separate examples of differing vowel correspondences.

Because of the multiplicity of final vowel-consonant combinations, the number of examples for most reconstructed vowel-consonant combinations is necessarily small. The general patterns which consistently recur, however, substantiate the otherwise seemingly little attested reconstructions.

In the listing of sound correspondences if a cognate set(s) lacks the word from a crucial language so that a particular sound correspondence cannot be determined from two or more possibilities, a separate line is used for such correspondences. For example, eight PJH and PHrS *č are listed following PNB *č and PNB *čh in Section 6.2 because the lack of B cognates of the former prohibits definite inclusion with either of the latter.

ABBREVIATIONS USED. A PNB starred form in parentheses, e.g. (*îm), indicates a "hole" in the basic pattern. Parentheses, as in *(q)bèn, indicate that the feature so enclosed may not be reconstructed with certainty. That which is enclosed within parentheses in a line of sound correspondences is the sound that is expected of that language because of other evidence despite the absence of any word for the language in the examples cited for that line. For example, Hr (în), opposite PHrS *în, is within parentheses despite lack of Hr examples for that line because elsewhere Hr în occurs as a reflex of PHrS *în.

A blank, as in *ka_ăm, indicates a phoneme not yet satisfactorily reconstructed.

A question mark following a form indicates that considerable doubt exists with respect to the inclusion of that form.

Ellipses (...) indicate one member of a doublet.

A slash, as in hanām/sanām indicates alternate forms.

The abbreviation exc. introduces exceptions to the basic reflex; the exceptions are listed below it. For example,

PNB	B
*om	ôm <u>exc</u>
	əm/*C _{ns1} -

is to be read: the B reflex for every PNB *om is ôm except that after PNB nasal consonants the B reflex is əm.

C represents consonant; V, vowel; Ø, zero; C_{v1}, voiceless consonant; C_{st}, consonantal stop (p, t, č, k, b, d, j, g); C_{ns1}, nasal consonant (m, n, ɲ, ŋ); C_{v1-st}, voiceless stop (p, t, č, k); C_{vd}, voiced consonant; V_{ft}, front vowel (i, e); V_{bk}, back vowel (u, o); V_{bk-ct}, back or central vowel; V_{ft-ct}, front or central vowel; V_{ft-hi}, high front vowel; V_{ft-lo}, low front vowel. After ES forms, SR indicates a neighboring dialect, Sedang Rengao.

6.1. FINAL VOWEL-CONSONANT COMBINATION RECONSTRUCTIONS

6.1.1 FINAL VOWEL-CONSONANT COMBINATIONS WITH m

PNB	B	PJH	PHrS	Hr	ES	Meaning/ Examples
*ĩm	ĩm	ĩm	*è̃m	è̃m	em	1-2
*ã̃m	õ̃m	ã̃m	*à̃m	à̃m	am	3-5
*ũ̃m	ũ̃m	ũ̃m	*û̃m	û̃m	uam	6-9
(*ĩm)						
*è̃m	em	ĩm ?	*ĩ̃m	ĩ̃m	êm	10
*ã̃m	əm	è̃m	*ĩ̃am	è̃m	iam	11-14
*ũ̃m	um	ũ̃m	*ũ̃m	ũ̃m	uam	15-18
*ỗm	um	ũ̃am	*ỗm	ỗm	ôm	19-22
<hr/>						
(*ẽ̃m)						
*ã̃m	ã̃m	ã̃m	*am	am	ãm	23-32
*õ̃m	ôm	om	*om	om	úm/úam	33-34
*im	ĩm	iam	*em		ém	35

PNB	B	PJH	PHrS	Hr	ES	Meaning/ Examples
*em	iěm	iam	*em	em	ém	36
*am	am	am	*im	im	<u>exc</u> éam	37-44
					êm/*C _{v1} -st-	
(*um)						
*om	ôm <u>exc</u>	um	*um	ôm	úm <u>exc</u>	45-49
	em/*C _{ns1} -				úam/*ph_	

Examples:

1	*rĩm	rĩm	rĩm	*rèm	rèm	rem	'every'
2				*lèm	lèm	lem	'to roof'
3	*krãm	kadrēm	krãm	*krãm	krãm	kram	'crowded' ¹²
4	*ka_ãm...	kaqnēm		*kandàm		kađam	'under' ¹³
5				*cãm	cãm	čam	'below'
6	*hũm	hũm	hũm	*hũm	hũm	huam	'bathe'
7	*dagũm	tagũm	dagũm ?			(gum)	'help'
8	*jarũm	jrũm	jarũm	*jrũm	jrũm	truam	'needle'
9	*tačhũm	tačũm		*tačũm		tač ^u am	'to kiss'
10	*čẽm	sem	čĩm	*cĩm	čĩm	čẽm	'bird'
11	*plãm	pləm	plēm	*pliãm	plēm	pliam	'leech'
12	*klãm	kləm	klēm	*kliãm	klēm	kliam	'liver'
13	*_tsãm	təm	R baxəm	*basĩam	basēm	pasiam	'begin'
14				*yihĩam	yihēm	ihiam	'heart'
15	*qdũm	qdum	dũm	*dũm	dũm	tuam	'ripe, red'
16	*ũm	um	ũm	*ũm	ũm	uam	'winnow'
17				*pajũm	pajũm	pač ^u am	'together'

	PNB	B	PJH	PHrS	Hr	ES	
18				*qñũm	qñũm	qñuam	'hair bun'
19	*qbòm	qbum	buàm	*bòm	bòm	pòm	'tubers'
20	*kasòm		kasuam	*kasòm		kasôm	'lizard'
21		(hãm)		*hòm	hòm	hôm	'too, okay'
22				*gòm	gòm	kôm	'wait for'
23	*baqdām	paqdām	badām	*padam	padam	patám	'five'
24	*hanām	hanām/ sanām	hanām	*hanam	hanam	hanám	'year'
25	*krām	krām	krām	*kram	kram	krám	'to sink'
26	*mām	mām	mām	*mam		mám	'salt fish'
27	*hḡām	hḡām		*hḡam		hḡám	'heavy'
28	*lām	lām	lām				'in, into'
29	*trām	trām	trām				'soak'
30	*ām		R ăm	*am	am	ám	'give'
31				*hapam	hapam	hapám	'rice house'
32	*lām		R nām	*lam	lam	lám	'go'
33	*tròm	tròm	trom	*trom	trom	trúam	'hole'
34				*nom	nom	núm	'urinate'
35	*gaqdim	kaqdĩm	gadiam	*kadem		katém	'onion'
36	*lem	liēm	liam	*lem	lem	lém	'good'
37	*maham	pham	-ham	*mahim	mahim	mahéam	'blood'
38	*tahḡam	tahḡam	taham	*tahim	nahim	tahéam	'eight'
39	*qḡam	qḡam	qḡam	*ḡim	ñim	ḡéam	'sweet'
40	*tam	tam	tam	*tim	têm	téam	'not yet'; H 'on time'
41	*katam	katam	katam	*katim	katêm	katéam	'crab'
42	*pam	pam	pam	*pim	pêm	péam	'fish trap'
43	*tamam	tamam		*tamim		taméam	'things'

	PNB	B	PJH	PHrS	Hr	ES	
44	*mam	mam		*mim	mim	méam	'metal'
45	*tom	tôm	tum	*tum	tôm	túm	'all'
46	*khloṃ	hlôm	khluṃ	*hlum		hlúm	'blow'
47	*mom	môm	mum	*mum		múm	'whiskers'
48	*phom	phôm	phum	*phum		phúam	'pass gas'
49	... *krom	... rôṃ	krum				'under' ¹⁴

6.1.2 FINAL VOWEL-CONSONANT COMBINATIONS WITH n

*ĩn	ĩn	ĩn	*ĩn	ĩn <u>exc</u>	en <u>exc</u> .	50-53
				èn/*kh,h_	ên/*č_	
					& in/*l_	
*ǎn	ěṃ	ǎn	*ǎn	àn	an	54-56
(*ũn)						
*ĩn	en		*ĩn	(ĩn)	en	57
*èn		R èn	*èn	èn	ian	58-59
(*àn, *ũn)						
(*òn)			*òn	òn	on	60-61
<hr/>						
*ěṃ	en <u>exc</u>	ian	*en	en	én	62-64
	ǎn/*q_					
*ǎn	ǎn	ǎn	*an	an	án	65-67
(*ǒn)						
*in	ên ?	ian	*ĩn		ían	68
(*en)						
*an	an	an	*en		én/*kh,h_	69-71
*un	uǎn	uan	*un	un	úan	72-74
*on	on	on	*on	on	uán	75-78

Examples:

50	*tačĩn	tasĩn	tačĩn	*tačĩn	hačĩn	tačên	'nine'
51				*lĩn	lĩn	lin	Hr 'gums'; S 'lips'

	PNB	B	PJH	PHrS	Hr	ES	
52	*khĩn	khĩn		*khĩn	khèn	khen	'dare'
53	*h _ĩ n		R hăn	*hìn	hèn	hen	'many'
54	*hamăn	haběn	hamăn	*hmàn		hman	'pants'
55	*kăn		R kăn	*kăn	kăn	kan	'big, tall'
56				làn	làn	lan	'flood'
57	*ñin	ñen		*ñin		ñen	'clearly'
58	*(q)bèn		R bèn	*bèn	bèn	pian	'we all-inci.'
59				*akèn	akèn	kian	Hr 'pillow'; S 'to lie on'
60				*plòn	plòn	plon	'tadpole'
61				*qmòn	qmòn	mon	'pimple'
62	*raqěn	raqen	rian	*ren		rén	'bite'
63	*kapěn	kapen		*kapen	kapen	kapén	'loincloth' ¹⁵
64				*hwen	hwen	hwén	'tendon'
65	*khăn	khăn		*khan		khán	'blanket'
66	*(q)băn		băn	*ban		pán	'raise animals'
67				*ŋan	ŋan	ŋán	'to watch'
68	*lin	jên ?	lian	*lin		lián	'money'
69	*khan	khan		*khen		khén	'say'
70	*han	han		*hen		hén	'sharp'
71	*ra _{an}	rawan	ralan				'play'
72	*pun	puăn	puan	*pun	pun	púan	'four'
73	*yun	yuăn	yuan	*yun		súan	'Vietna- mesel ⁶
74	*ramun	ramuăn		*ramun		ramúan	'soft'

	PNB	B	PJH	PHrS	Hr	ES	
75	*kon	kon	kon	*kon	kon	kúan	'child'
76	*mon	mon	mon	*mon	mon	múan	'nephew'
77	*kaqmon	haqmon	kaqmon	*haqmon		haqmúan	'legend'
78	*qdon	qdon		*don	don	túan	'ear'

6.1.3 FINAL VOWEL-CONSONANT COMBINATIONS WITH ŋ

*ĩñ	ěñ	ĩŋ	*ĩñ	ĩŋ	eŋ	79-80
(*ǎñ)						
*ũñ	ũñ	ũñ	*ũñ	ũñ	on	81
(*iñ)						
*èñ	añ/iŋ	iaŋ	*èñ	èñ	eŋ	82-83
(*ǎñ)						
*ũñ	uñ		*ũñ	ũñ	on	84
(*õñ)						
<hr/>						
*ěñ	ěñ	ěŋ	*eñ	eñ	éŋ	85-89
(*ǎñ, *õñ)						
*iñ	ěŋ	eŋ	*iañ	iñ	íŋ	90-91
*eñ	ěŋ ?	eŋ <u>exc</u>	*iñ	eñ	íŋ	92-93
		iŋ/*k_				
*añ	añ	an	*añ	añ	én	94
(*uñ)						
*oñ	oñ		*uñ		ún	95

Examples:

79	*pliñ	plěñ	pliŋ ?	*pliñ	pliñ	plen	'sky'
80	*qbiñ	qběñ	biŋ	*biñ	biñ	pen	'full'
<hr/>							
81	*ũñ	ũñ	ũñ	*ũñ	ũñ	on	'fire'
<hr/>							
82	*hèñ	hañ/hiŋ		*hèñ		heŋ	'to crave'
83	*katsèñ	katiŋ	kasiaŋ	*kasèñ	kasèñ	kasèŋ	'bone'

	PNB	B	PJH	PHrS	Hr	ES	
84	*qdũñ	qduñ		*dũñ	dũñ	ton	'long time'
85	*saněñ	saněñ	iněñ	*haneñ	haneñ	haněñ	'tooth'
86	*pěñ	pěñ	pěñ	*peñ	peñ	pěñ	'shoot'; B 'beat cotton'
87	*kasěñ	kasěñ		*kaseñ		kasěñ	'twisted rope'
88	*maněñ		maněñ	*maneñ	paneñ	maněñ	'cross- bow' ¹⁷
89				*reñ	reñ	rěñ	'fast'
90	*hriñ	hrěñ	reñ	*hriañ	hriñ	hríñ	'hundred'
91				*kiañ	kukiñ	kuñ kíñ	'elbow' ¹⁸
92	*teñ	(kiěñ)	teñ	*tiñ	teñ	tíñ	'tail'
93	*keñ		kiñ	*kiñ	keñ	kíñ	'edge'
94	*tañ	tañ	tan	*tañ	tañ	těñ	'weave'
95	*katsoñ	katoñ		*kasuñ		kasún	'fern'

6.1.4 FINAL VOWEL-CONSONANT COMBINATIONS WITH ŋ

*ĩñ	ĩñ <u>exc</u>	ĩñ	*ěñ		ěñ	96-97
	in/*Cvd—					
*ǎñ	ǎñ	ǎñ	*ǎñ	ǎñ	añ	98-104
*ũñ	ũñ	ũñ	*ũñ		ôñ <u>exc</u>	105-107
					on/*d—	
*iñ	iñ		*iñ		iñ	108
*ěñ		iañ	*ěñ		ěñ	109
*ǎñ	əñ		*ũñ		ôñ	110
*ũñ	uñ <u>exc</u>	ũañ	*ðañ	ðañ	ôñ/*k,t,h—	111-115
	ôñ/*t—				& uôñ/*č,y—	
*ðñ	ôñ <u>exc</u>	uñ	*ðñ	ðñ	on	116-121
	uñ/*l—					

PNB	B	PJH	PHrS	Hr	Es	
*ěŋ	ěŋ	ěn <u>exc</u>	*eŋ		íŋ <u>exc</u>	122-124
		eŋ/*C _{vd} —			éŋ/*č—	
*ǎŋ	ǎŋ	ǎŋ	*aŋ	aŋ	áŋ	125-137
*ǒŋ	ǒŋ	ǒŋ	*oŋ	oŋ	óŋ	138-147
*iŋ	iŋ <u>exc</u>	iaŋ	*iaŋ	iaŋ	íaŋ	148-150
	iǎŋ/*j—					
*eŋ	eŋ	iŋ	*iŋ		íŋ	151
*aŋ	aŋ	aŋ	*eaŋ	eaŋ <u>exc</u>	éaŋ	152-166
				iaŋ/*l—		
(*uŋ)						
*oŋ	oŋ	oŋ	*oaŋ	oaŋ	óaŋ	167-177

Examples:

96	*čhĩŋ	čĩŋ		*čèŋ		cêŋ	'small gongs'
97	*qdĩŋ	qdiŋ	dĩŋ				'bamboo pipe'
98	*gǎŋ	gǎŋ	gǎŋ	*gàŋ	gàŋ	kaŋ	'spirit pole'
99	*pǎŋ	pǎŋ	pǎŋ	*pàŋ		paŋ	'pound'
100	*tǎŋ	tǎŋ		*tàn	taŋ ?	taŋ	'if'
101	*hǎŋ	(haŋ)	hǎŋ	*hàn		haŋ	'peppery'; B 'to heal with pepper'
102	*tǎŋ		R tǎŋ	*tàn	tàn	taŋ	'hear'
103	*krǎŋ		R krǎŋ	*kràn	kukràŋ	kraŋ	'knee' ¹⁹
104				*tamàn	tamàn	tamaŋ	'listen'
105	*gadũŋ	kadũŋ	gadũŋ	*kadũŋ		katoŋ	'pocket'
106	*rahũŋ	rahũŋ	hũŋ				'papaya'
107	*nũŋ	ŋũŋ		*nũŋ		nôŋ	'goose'
108	*tarĩŋ	tariŋ		*tarĩŋ		tariŋ	'group of villages'

	PNB	B	PJH	PHrS	Hr	ES	
109	*tən		tian	*tən		tên	'to dry'
110	*akən	akən		*akən		kôn	'leaf stem'
111	*qyən	qyən	yən	*yən	yən	suən	'get up, stand'
112	*čən	suən	čən	*čən	čən	čuən	'axe'
113	*kən	kuən	gən ?	*kən		kôn	'steps'
114	*tən	tən	tən	*tən	tən	tôn	'carry on pole'
115				*hən	hihən	hôn	'naked'
116	*tamən	tamən	muən	*hmən	hmən	hmon	'rooster'
117	*_tən	tatən	tuən	*atən	atən	ton	'steal'
118	*sadrən	hadrən	idruən	*hadrən		hadron	'worm'
119	*plən	pluən	pluən	*plən		plon	'boat'
120	*xgən	kôn		*gən	gən	kon	'tribal land', 'jungle'; B 'mountain'
121				ngən	gən	gon	'outside'
122	*čächən	tačən	(ka)čən	*tačən		tačén	'think'
123	*klən	klən	klen	*klen		klin	'forehead'
124	*dəən	dən		*dəən		tin	'little finger'
125	*mən	mən	mən	*man	man	mán	'night'
126	*čən	sən	čən	*čən	čən	čán	'sword'
127	*daqbən	taqbən	dabən	*tabən	tabən	tapán	'bamboo sprouts'
128	*rən	rən	rən	*ran		rán	'dry (wood)'
129	*jrən	jrən		*jran	jran	trán	'post'
130	*pahlən	pahlən		*pahlan		pahlán	'French'
131	*qmən	qmən		*qman	qman	mán	'door'
132	*hən	pahən		*han		hán	'pepper'

	PNB	B	PJH	PHrS	Hr	ES	
133	*prǎŋ	prǎŋ		*praŋ	praŋ	prǎŋ	'stop raining'
134	*yǎŋ	yǎŋ		*yaŋ	yaŋ	sǎŋ	'aunt'; Hr '2nd wife'
135	*_mǎŋ	kamǎŋ		*ramaŋ	namaŋ	ramǎŋ	'by night'
136	*_ǎŋ		qñǎŋ ?	*saŋ	saŋ	sǎŋ	'bitter'; H 'salty'
137		hadrǎŋ		*haqdraŋ	hadraŋ	haqrǎŋ	'finger, toe'
<hr/>							
138	*kǒŋ	kǒŋ	kǒŋ	*koŋ	koŋ	kón	'arm'
139	*ǒŋ	ǒŋ	ǒŋ	*coŋ	coŋ	ón	'son-in-law'
140	*haŋlǒŋ	saŋlǒŋ	halǒŋ	*haloŋ	haloŋ	halón	'star'
141	*srǒŋ	hrǒŋ	srǒŋ	*sroŋ	sroŋ	srón	'spike'
142	*qñǒŋ...	qñǒŋ...		*ñioŋ...		ñión...	'relatives' ²⁰
143	*(ka)rǒŋ	rǒŋ	rǒŋ	*(ka)roŋ	kroŋ	rón	'back'
144	*trǒŋ	trǒŋ	trǒŋ	*troŋ		trón	'eggplant'
145	*čǒŋ	sǒŋ	čǒŋ				'eat rice'
146	*tǒŋ		tǒŋ	*toŋ		tón	'please'
147	*ranǒŋ		R ranǒŋ	*ranoŋ	ranon	ranón	'neck'; R 'throat'
<hr/>							
148	*qdriŋ	qdiŋ	triaŋ	*triaŋ	triaŋ	tríaŋ	'drinking straw'
149	*jiŋ	giǎŋ	jiaŋ	*jiaŋ		číaŋ	'friend'
150	*(ra)tiŋ		(ra)tiaŋ	*tiaŋ		tíaŋ	'handle'
<hr/>							
151	*dreŋ	dreŋ	driŋ	*driŋ		trín	'yellow'
<hr/>							
152	*jaŋ	jaŋ	jaŋ	*jeaŋ	jeaŋ	čéaŋ	'work'
153	*raŋ	raŋ	raŋ	*reaŋ	reaŋ	réaŋ	'flower'
154	*kaŋ	kaŋ	kaŋ	*keaŋ	keaŋ	kéaŋ	'chin'
155	*čapaŋ	tapaŋ	kapaŋ	*kapeaŋ	kapeaŋ	kapéaŋ	'palm (hand)'
156	*klaŋ	klaŋ	klaŋ	*kleaŋ	kliŋ	kléaŋ	'eagle'

	PNB	B	PJH	PHrS	Hr	ES	
157	*pagaŋ	pagaŋ	pagaŋ	*pageaŋ		pagéaŋ	'medicine'
158	*pahaŋ	pahaŋ	pahaŋ	*pheaŋ		phéaŋ	'roast'
159	*yaŋ	yaŋ	yaŋ	*yeaŋ		séaŋ	'spirit'
160	*kanlaŋ	klaŋ	kalaŋ	*kaneaŋ		kanéaŋ	'water trough'
161	*braŋ	braŋ	braŋ	*breaŋ		préaŋ	'separate'
162	*taŋ	taŋ	taŋ	*teaŋ		téaŋ	'instead'
163	*qdləŋ	paqdaŋ	-laŋ				'(lie) on back'
164	*qblaŋ	qblaŋ	blaŋ				'thorny tree'
165	*paŋ	paŋ	(t)paŋ				'pound'
166	*čhaŋ	gô čaŋ	čaŋ				'to support (J dying person)'
<hr/>							
167	*qləŋ	qləŋ	qləŋ	*loaŋ	loaŋ	lóaŋ	'tree'
168	*oŋ	oŋ	oŋ	*oaŋ	oaŋ	óaŋ	'wasp'
169	*goŋ	goŋ	goŋ	*koaŋ	kloaŋ ?	kóaŋ	'gong'
170	*koŋ	koŋ	(a)koŋ	*koaŋ	koaŋ		'bracelet'
171	*tadron	tadron	tadron	*tadroaŋ		tadróaŋ	'matter'
172	*boŋ	boŋ	boŋ	*boaŋ		póaŋ	'casket'
173	*toŋ	təŋ	toŋ	*toaŋ		tóaŋ	'tools'
174	*yoŋ	yoŋ	yoŋ	*yoaŋ		sóaŋ	'bed'
175	*loŋ	loŋ	loŋ				'try'
176				*toaŋ	toaŋ	tóaŋ	'beat with stick'
177	*asong			*asoŋ	asoŋ	sóŋ	'divide'

6.1.5 FINAL VOWEL-CONSONANT COMBINATIONS WITH p

*ĩp		ĩp	*ĩp		ip	178
*ǎp	ǎp	ǎp	*ǎp	ǎp	ap	179-182
(*ũp)						
*ĩp	ep	ip	*èp	èp exc	ep exc	183-186
				ĩp/*č_	êp/*j,č_	

PNB	B	PJH	PHrS	Hr	ES
(*êp, *âp)					
*ûp	ôp	up	*ûp	ûp	up <u>exc</u> 187-188 uap/*č_
(*ôp)					
*ěp	ěp	ěp			189
*ăp	ăp	ăp	*ap	ap	a 190-194
(*ôp, *ip, *ep)					
*ap	ap	ap	*ep	êp	ea <u>exc</u> 195-200 a/*q_
*up	ôp		*up		uô 201
*op	op	op	*op	op	oa 202-204

Examples:

178	*(ga)hĩp		(ga)hĩp	*hĩp		hip	'suitcase'
179	*rasăp	hrěp/ srěp	săp	*săp		sap	'wear'
180	*ăp	ěp		*ăp	ăp	ap	'cook'
181	*lăp	lěp		*lăp		lap	'flood'
182	*tăp		tăp	*tăp		tap	'set in'
183	*alĩp	lep	lip	*alêp	lêp	alep	'grass-hopper'
184	*gaqjĩp	kaqep	gajip	*kajêp		kačêp	'centipede'
185				*kačêp	kačĩp	kačêp	'pinch'
186				*jêp	jêp	čêp	'sew'
187	*rûp	rôp	rup	*rûp	rûp	rup	'catch'
188	*kačhùp	kačôp		*kačùp		kačuap	'hoof'
189	*těp	těp	*těp				'pick up'
190	*katăp	katăp	*katăp	katap	katap	kata	'egg'

	PNB	B	PJH	PHrS	Hr	ES	
191	*kăp	kăp	kăp	*kap	kap	ka	'eat'
192	*tăp...	tăp...	tăp	*tap...		rata...	'encircle' ²¹
193	*gajăp	kajăp	gajăp				'sturdy'
194	*lăp	lăp	lăp				'want'
<hr/>							
195	*kačhap	kačap	kačap	*kačep	kačêp	kačea	'fish scales'
196	*kalap	kalap	kalap	*kalep		kalea	'termite'
197	*kaqap	kaqap	kaqap	*kaqep		kaqə	'yawn'
198	*tap	tap	tap	*tep		tea	'slap'
199	*tanap	tanap		*hnep		hnea	'difficult'
200	*sap	sap	sap				'tasteless'
<hr/>							
201	*kaqdup	kaqdôp		*kadup		katuô	'fist'
<hr/>							
202	*kop	kop	kop	*kop	kop	koa	'turtle'
203	*ajop	jop	jop	*ajop		ačoa	'a fly'
204	*sop	sop		*sop		soa	'hair on limb (B), on chest (S)'

6.1.6 FINAL VOWEL-CONSONANT COMBINATIONS WITH t

*ĭt	ĭt		*ĭt	ĭt	et	205-207
*ặt	ĭt	ặt	*ăt	ăt	at	208-211
*ũt	ũt	ũt	*ūt	ūt <u>exc</u>	ot <u>exc</u>	212-213
				ôt/*m_	ut/*r_	
*ĭt	it	iat	*iat	êt	iat	214-215
*êt	et		*êt	êt	êt	216-217
(*ăt)						
*ūt	ut		*ūt	ūt	ot	218-219
*ôt	ot		*ôt		ot	220
<hr/>						
*ět	ět		*et	at	a	221
*ăt	ăt	ăt	*at	at	a	222-226

PNB	B	PJH	PHrS	Hr	ES	
*ōt	ūt	ūt ?	*ut	ut	ua	227
*it	ĩēt	iat	*iat	et	ie	228-230
(*et)						
*at	at		*eat		ea	231
*ut	uāt/āt/āt	uat	*oat	ot	oe	232-234
*ot	ot	ot	*ot	ot	ua	235-237

Examples:

205	*kīt	kāt		*kīt	ket	'frog'
206				*sīt	sīt	set 'scar'
207				*pīt	pīt/pèt	pet 'to plant'
208	*jāt	jīt	jāt	*jāt	hajāt	čat 'ten'
209				*āt	āt	at 'to fast, stop'
210	*kāt		R kāt	*kāt	kāt	kat 'to tie'
211				*manāt	panāt	manat 'wall'
212	*mūt	mūt	mūt	*mūt	mōt	mot 'enter'
213	*drūt	drūt		*drūt		trut 'push'
214	*prīt	prīt	priāt	*prīāt	prēt	priat 'banana'
215				*hīāt	hēt	hiat SR 'forget'
216	*qbèt	qbet		*bèt	bèt	'stab'
217				*_sèt	basèt/ basīt	kasèt 'mushroom'
218	*sūt	sut		*sūt	sūt	sot 'honey bee'
219	*sūt	sut		*sūt	sūt	(suat) 'wipe'
220	*jròt	jrot		*jròt		trot 'push'
221	*qñēt	qñēt		*qñet	qñat	ña 'grass'

	PNB	B	PJH	PHrS	Hr	ES	
222	*măt	măt	măt	*mat	mat	ma	'eye' ²²
223	*haxgăt	hagăt	kăt	*hagat	hagat	haka	'cubit'
224	*păt	păt	păt	*pat		tapa	'put out fire'
225	*băt	băt	băt	*bat		pa	'miss'
226	*săt	săt	săt				'weave mats'
<hr/>							
227	*tamöt	tamüt	-müt ?	*hmut	hmut	hmua	'insert'
<hr/>							
228	*rapit	rapiět	rapiat	*rapiat	pupet	rapie	'tongue'
229	*taŋit	taŋiět		*taŋiat	taŋet	taŋie	'malaria, cold'
230	*hiɿt	hiět	hiat	*hiat		qñie	'wound'
<hr/>							
231	*phat	phat		*pheat		phea	'type of bamboo'
<hr/>							
232	*rut	răt	ruat	*roat	rot	roe	'buy'
233	*put	puăt	paquuat ?	*poat		poe	'half'
234	*qdut	qdět	duat				B 'pull out'; H 'fall apart'
<hr/>							
235	*maqŋot	paŋot	maqŋot	*maŋot	paŋot	maŋua	'hungry'; S 'lack'
236	*gadrot	kadrot	gadrot	*kadrot		kadrua	'bee'
237	*sot		sot	*sot		sua	'harvest rice'

6.1.7 FINAL VOWEL-CONSONANT COMBINATIONS WITH ǣ

*ĩǣ	ĩc	ĩk	*iǣ	iǣ	ek/êk <u>exc</u>	238-240
					eak/*q	
(*ǣǣ, *ǣǣ)						
*iǣ		iak	*ǣǣ	ǣǣ	iak	241
*ǣǣ	ĩk		*iǣ	iǣ	ek	242

PNB	B	PJH	PHrS	Hr	ES	
(*âč)						
*ũč	uč	ut	*ũč		ut	243
(*ôč)						
*ěč	ěč	ěk	*eč	eč	ê <u>exc</u>	244-248
					e/*s_	
*ăč	ăk		*ač	ač	a	249
*oč	oč		*oč	oč <u>exc</u>	oy <u>exc</u>	250-253
				ôč/*r_	ôy/*r,s_	
(*ič)						
*eč	ek	ek	*ič	eč	ie	254
*ač	ač		*eč		ê <u>exc</u>	255-256
					e/*l_	
*uč	ôč	ut	*uč	ôč <u>exc</u>	uy	257-261
				oč/*q,m_		
*oč	uč		*oč	(oč/ôč)	oy	262

Examples:

238	*ĩč	ĩč	ĩk	*ĩč	ĩč	eak	'excrement'
239	*qdĩč	qdĩč		*dĩč	dĩč	tek	'slave'
240	*qbĩč	qbĩč		*bĩč		pêk	B 'lie down'; S 'open blanket'
241	*(q)jĩč		jĩak	*jěč	ječ	čiak	'rice field'
242	*klěč	klĩk		*klĩč	klĩč	klek	'deaf'
243	*hũč	huč	hut	*hũč		hut	'suck'
244	*těč	těč	těk	*teč	teč	tê	'sell'
245	*rěč	rěč		*reč		rê	'sparrow'
246	*katěč	katěč		*kateč		katê	'break (string)'

	PNB	B	PJH	PHrS	Hr	ES
247	*sěč	sěč		*seč		se 'flesh'
248	*wěč	wěč		*weč		wê B 'wring neck'; S 'twist tool'
<hr/>						
249	*...qmač	...qmač		*...qmač	...qmač	...qma 'evil' 23
250	*yöč	yöč		*yoč		sôy 'to sin'
251	*döč	doč		*doč		toy 'suck, draw up'
252				*doč	doč	toy 'pull out'
253				*roč	rôč	rôy 'floor support'
<hr/>						
254	*beč	bek	bek	*bič	beč	pie 'be fat'
255	*hqač	hqač		*hqeč		hqe 'drizzle'
256	*blač	blač		*bleč		ple 'Adam's apple'
<hr/>						
257	*hmuč	hmôč	mut	*hmuč	hmoč	hmuy 'ant'
258	*kuč	kôč		*kuč		kuy 'scratch, rake'
259				*haquč	haqoč	haquy 'pity'
260		(krôyq)		*kruč	krôč	kruy 'citrus'
261				*čapuč	kapôč	tapuy 'speak'
<hr/>						
262	*hadroč	hadruč		*hadroč		hadroy 'youngest in family'

6.1.8 FINAL VOWEL-CONSONANT COMBINATIONS WITH k

*ïk	ïk	ïk				263
*ăk	ăk	ăk	*ăk	ăk	ak	264-266
*ûk	ûk	ûk	*ôk	ôk	ok	267-269
*îk	ik		*îk		êk	270

PNB	B	PJH	PHrS	Hr	ES	
(*ək, *āk)						
*ūk	uk		*ūk		uk	271
*òk		R òk	*òak	òak	òk	272
(*ěk)						
*āk	āk	āk <u>exc</u>	*ak	ak	ea	273-276
		ak/*h_				
*ók	ók	ók	*ok	ok	o	277-285
*ik	iāk	yak	*iak	iak	ia	286
(*ek)						
*ak	ak	ak	*eak	eak	ea	287-289
(*uk)						
*ok	ok	ok	*oak	oak	oa	290-293

Examples:

263	*tīk palīk	tīk palik	(ta)līk				'stub toe'
264	*hāk	hāk	hāk	*hāk		hak	'happy'
265	*glāk	glōk		*glāk	glāk	klak	'drown'
266	*pāk		pāk	*pāk		pak	'stab'
267	*ūk	ūk	ūk	*òk	òk	ok	'pour'
268	*tsūk	tūk	sūk	*yòk	yòk	sok	'cloud'
269	*badūk	padūk	badūk	*padòk	padòk	patok	'stomach'
270	*qñīk	qñik		*qñīk		qnēk	'hoe'
271	*dūk	duk		*dūk		tuk	'ship'
272	*bròk	(bròk)	R bròk	*bròak	bròak	pròk	'go home'
273	*hāk	hāk	hak	*hak	hak	hea	'vomit'
274	*qdāk	qdāk	dāk	*dak		tea	'spear trap'
275	*nāk	nāk	nāk			(nak)	'fish net'

	PNB	B	PJH	PHrS	Hr	ES
276	<u>*arāk</u>	arāk	rāk			'keep'
277	*bōk	bōk	bōk	*bok	bok	po 'to hoe'
278	*qdōk	qdōk	dōk	*dok	dok	to 'monkey'
279	*tōk	tōk	katōk	*tok		to 'get on'
280	*klōk	klōk		*klok	klok	klo 'navel'
281	*kaqōk		kaqōk	*kaqok	kaqok	kaqo 'cough'
282	*ŋōk		ŋōk	*ŋok		ŋo 'mountain'
283	*rōk		rōk	*rok		ro 'cow'
284	*srōk		R srōk	*srok	srok	sro 'body louse'
285	(bōk/qmōk)			*qmbok	qmok	bo 'window'; B 'make opening'
286	<u>*kik</u>	kiāk	kayak	*kiak	kiak	kia 'corpse'
287	*qdak	qdak	ḍak	*deak	deak	tea 'water'
288	*klak	klak	klak	*kleak		klea 'intestines'
289	*tak	tak		*teak		tea 'spear'
290	*rok	rok	rok	*roak		roa 'banana bud'
291	*qbok	qbok	(bōq)	*boak	boak	poa 'grand-father'
292	*qŋok	qŋok		*ŋoak		ŋoa 'brain'
293			(R hmōk)	*kaqmoak	kaqmoak	kamoa 'tree bark'

6.1.9 FINAL VOWEL-CONSONANT COMBINATIONS WITH q

(*īq, *āq, *ūq)

*īq	iq	īq	*īq	īq	ay	294-296
*ēq	eq	ēq	*ēq		ēy	297-298
			*āq	eq	ay	299-303
*āq	əq	òq	*òq		o/*q	304
*ūq	uq	uaq	*òq	òq	ôw	305
*òq	uq <u>exc</u>	òq	*òq	òq <u>exc</u>	ôw	306-307
	oq/*m			oq/*m		

PNB	B	PJH	PHrS	Hr	ES	
(*ěq)						
*ǎq	aq	ǎq	*aq	aq	a	308-315
(*ōq, *iq)						
*eq	eq <u>exc</u>	ěq	*eq	eq	ê	316-318
	êq/*doublet					
*aq	aq	aq	*aq	aq	a	319-320
*uq	oq <u>exc</u>	uq	*uq	ôq	ôw <u>exc</u>	321-325
	uq/*qy_				ô/*t_	
*oq	oq	ōq	*oq	oq	o	326-331

Examples:

294	*jîq	jiq	jîq	*jîq	jîq	čay	'sick'
295	*phîq	phiq	phîq	*phîq		phay	'full (after eating)'
296	*qdîq	qdiq		*dîq	dîq	tay	'finished'
297	*kasèq	kasèq	sèq	*kasèq		kasêy	'afternoon'
298	*taqlèq		taqlèq	*taqlèq		taqlêy	'easy'
299				*klàq(ha)kleq	kiklay		'what?'
300				*lâq leq	lay		'what?'
301				*dlàq dleq	ti lay		'why?'
302		(R la lî)		*lalàq laleq	la lay		'when?'
303				*yinàq yineq	inay		'name'
304	*taqâq	taqèq	taqòq	*taqòq		taqo	'burp'
305	*qjùq	qyuq	juaq	*jòq	jòq	čôw	'sour'
306	*pòq	puq	pòq	*pòq	pòq	pôw	'carry on back'
307	*kamòq	kamoq	qmòq	*kamòq	kamoq	kamôw	'dirty'
308	*krǎq	kraq	krǎq	*kraq	kraq	kra	'old'

	PNB	B	PJH	PHrS	Hr	ES
309	*wǎq	waq	wǎq	*waq	waq	wa 'want'
310	*yǎq	yaq	yǎq	*yaq	yaq	ja ? 'grand-mother'
311	*sakǎq	sakaq/ hakaq	ikǎq			'back basket'
312	*ramǎq ^(w)	ramaq		*ramaq	namaq	rama 'fat'
313	*čǎq ^(w)	čaq		*čaq	čaq	ča 'go and seek'
314	*pǎq ^(w)	paq		*paq		pa 'negative'
315				*kanaq	kanaq	kana 'expensive'
316	*beq	beq	běq	*beq	beq	'imperative'
317	*ajeq	jeq		*ajeq		ačê 'near'
318	*qmeq...	qmêq...		*qmeq...	qmeq...	qmê 'evil' 24
319	*qbaq	qbaq/baq	baq	*baq	baq	pa 'father'
320	*hmaq		hmaq	*hmaq		hma 'acquaintance'
321	*tanuq	tanoq	tanuq	*tanuq	tanôq/ tanoq	tanôw 'brave'
322	*tuq	toq	tuq	*tuq	tôq	tô 'hot'
323	*maqyʷuq	taqyʷuq	ma(q)ñuq			'scare'
324	*kasuq		kasuq	*kasuq		kasôw 'sweat'
325	*uq		R uq	*uq	ôq	ôw 'drink'
326	*joq	joq	jǒq	*joq	joq	čo 'correct'
327	*troq	troq		*troq	troq	tro 'correct'
328	*qloq...	(la-)	qlǒq	*qloq	loq	qlo 'know'; S 'certain-ty' 25
329	*soq	soq		*soq		so 'get'
330				*broq	broq	pro 'do, make'
331				*sroq	sroq	sro 'morning'

PNB B PJH PHrS Hr ES

6.1.10 FINAL VOWEL-CONSONANT COMBINATIONS WITH h

*ĩh	ih	ĩh	*ĩh	ĩh	eh <u>exc</u>	332-337
					êh/*č_	
*ăh	əh	êh	*ăh	êh	ah	338-340
*ũh	uh	ũh	*ũh	ũh	ôh	341-348
*ĩh	ih	ih	*ĩh		eh	349-350
(*êh)			*êh	iah	iah	351
(*ăh)						
*ũh	u. <u>exc</u>	uh	*ũh	ũh	ôh	352-354
	oh/*q_					
*ôh	əh	oh				355
			*ôh	oh	ôh	356

(*ěh, *ăh, *ôh, *ih)

*eh	eh	eh	*ih	êh <u>exc</u>	êy	357-361
				eh/*n_		
		(R eh)	*eh	eh	e	362
*ah	ah	ah	*ah	ah	a	363-371
*uh	oh <u>exc</u>	uh	*uh	ôh <u>exc</u>	ôw	372-378
	ôh/*r_			oh/*r_		
*oh	oh	oh	*oh	oh	o	379-387

Examples:

332	*ĩh	ih	ĩh	*ĩh	ĩh	eh	'you (sg.)'
333	*arĩh	arih		*rĩh	rĩh	reh	'live'
334	*mĩh	mih		*mĩh	mĩh	meh	'father's older sibling'
335	*wĩh	wih		*wĩh	wĩh	weh	'return'
336	*ačĩh	čih		*ačĩh	ačĩh	čêh	'write'
337	*tĩh	tih	tĩh				'big'
338	*tapăh	tapeh	tapêh	*tapâh	tapêh	tapah	'seven'

	PNB	B	PJH	PHrS	Hr	ES	
339				*àh	èh	ah	'soon'
340				*nàh	nèh	nah	'prior time'
341	*qbùh	qbuh	bùh	*bùh	bùh	pôh	'roast'
342	*kùh	kuh	kùh	*kùh	kùh	kôh	'greet'
343	*mùh	muh	mùh	*mùh	mùh	môh	'nose'
344	*trùh	truh	trùh	*trùh	trùh	trôh	'arrive'
345	*hayùh	hayuh	hayùh	*riùh		riôh	'steam'
346	*danùh	danuh	danùh				'poor'
347	*hamlùh	hamluh		*hamlùh		blôh	'type of bamboo'
348	*rùh		R rùh	*rùh	rùh	rôh	'wash clothes'
349	*adrìh	adrìh	(a)drih	*adrìh		dreh	'unripe'
350	*klìh		(ta)klih	*klìh		kleh	'fall'
351				*tèh	tìah	tiah	'the same'
352	*adrùh	adruh	dadruh	*adrùh	adrùh	drôh	'girl'
353	*ùh	ôh		*ùh		ôh	'negative'
354	*rùh	ruh	ruh				'waterfall'
355	*tôh	têh	toh				'bean'
356				*klôh	kloh	klôh	'hole'
357	*peh	peh	peh	*pih	pêh	pêy	'pound rice'
358	*aseh	aseh	(k)aseh	*asih	asêh	sêy	'horse'
359	*reh	reh		*rih	rêh	rêy	'play stringed instrument'
360	*weh	weh	weh				'turn aside'
361	*taqneh		taqneh	*tanih	taneh	tanêy	'dirt'
362			(R meh)	*meh	meh	me	'there'

	PNB	B	PJH	PHrS	Hr	ES	
363	*pah	pah	pah	*pah	pah	pa	'chop, split'
364	*tablah	tablah	tablah	*tablah	blah	tapla	'fight' ²⁶
365	*tah	tah		*tah	tah	ta	'put into'
366	*pah	pah	(paq)	*pah	pah	pa	'side of'; PJH 'place, location'
367	*apah	apah		*apah		pa	'pay wages'
368	*mah	mah	mah			(mêa)	'gold'
369	*blah	blah	blah				'skirt'
370	*kač(h)ah		kačah	*kačah		kača	'charcoal'
371				*sah	sah	sa	'cut up meat'
<hr/>							
372	*tuh	toh	tuh	*tuh	tôh	tôw	'breast'
373	*čuh	soh	čuh	*čuh	čôh	čôw	'set fire'
374	*kačuh	kasoh	kačuh	*kačuh	kačôh	kačôw	'spit'
375	*gaqduh	kaqdoh	gaduh	*kaduh		katôw	'tree bark'
376	*kruh	krôh		*kruh		krôw	'back basket'
377				*suh	sôh	sôw	'lung'
378		(sadrô)		*kadruh	kadroh	drôw	'rice wine'
<hr/>							
379	*qboh	qboh	boh	*boh	boh	po	'salt'
380	*oh	oh	oh	*oh	oh	o	'younger sibling' ²⁷
381	*koh	koh	koh	*koh		ko	'chop'
382	*sasoh	sasoh	sasoh	*soh		so	'only'
383	*katoh	katoh	katoh	*katoh		kato	'drop, drip'
384	*joh	joh	joh				'peck'
385	*ragoh	ragoh	ragoh				'clean'
386	*loh		loh	*loh	loh	lo	'go out'
387				*kandoh	kadoh	kado	'hat'

PNB	B	PJH	PHrS	Hr	ES	
6.1.11 FINAL VOWEL-CONSONANT COMBINATIONS WITH <u>l</u>						
*ɿl	ɿl	ɿl	*ɿl	ɿw	i	388
*ǎl	ǎl	ǎl	*ǎl	ǎw	o	389
*ũl		ũl	*ũl	ũ	ôw	390
(*ɿl)						
*ɛl	əl <u>exc</u>	ɛl	*ɛl	ɛ̃w <u>exc</u>	ia	391-393
	ôl/*qC_			ɿw/*h_		
(*ǎl, *ũl, *ôl)						
<hr/>						
*ěl	ěl	il	*el	ew	ɨ/ě	394-395
*ǎl	ǎl		*al	aw	ó	396-398
(*ũl, *il)						
*el	el		*il		êy ?	399
(*al)						
*ul	uǎl	ual	*ol	o	ốw	400-401
(*ol)						

Examples:

388	*jɿl	jɿl	jɿl	*jɿl	jɿw	či	'deer'
389	*xgǎl	kǎl	kǎl	*gǎl	gǎw	ko	'head'
390	*(q)bũl		bũl	*bũl	bũ	pôw	'be drunk'
391	*tɛl	tɛl	tɛl	*tɛl	tɛ̃w	tia	'answer'
392	*kaqnɛl	kaqnôl	kaqnɛl				'heel'
393				*hɛl	hɿw	hia	'light weight'
<hr/>							
394	*prɛl	prɛl	pril	*prel	prew	prí	'hail, ice'
395	*brɛl	brɛl		*brel		pré	'peanut'
<hr/>							
396	*...bǎl	...bǎl		*...bal	...baw	...pó	'each other' 28

	PNB	B	PJH	PHrS	Hr	PS
397	*kāl	kāl		*kal		kó 'chop large trees'
398	*apāl		R hapāl	*apal	apaw	pó 'mortar'
399	*pel	pel		*pil		pēy ?'touch'
400	*kul	kuāl		*kol	ko	ków 'to bark'
401	*(q)bul		bual	*bol	bo	pów 'lizard'

6.1.12 FINAL VOWEL-CONSONANT COMBINATIONS WITH r

(*īr)						
*ār	ər	ār	*ā		a	402
*ūr	ur	ūr	*ū	ua	u	403-404
*īr	ir	īr	*īa	ēa	ia	405-407
*ēr		ēr	*ēr	ēr	ia	408
(*ār, *ūr)						
*òr		R òr	*òa	òa	ua <u>exc</u>	409-410
						oa/*s_
*ēr	ər	ir	*i	ia	í	411
*ār	ār	ār	*ar	ar	á	412-414
(*ōr, *ir, *er)						
*ar	ar	ar	*ea	ea	éa	415-418
*ur		ur	*ur	ua	ú	419-420
*or	or	or	*oa	oa	úa	421-423

Examples:

402	*hagār	hagər	-gār	*hagà		haka 'drum'
403	*jūr	jur	jūr	*jû	jûa	čû 'go down'
404	*č(h)ūr		čūr	*čû	čûa	čû 'pig'
405	*čīr	sir	čīr	*čīa	čēa	čīa 'dig'
406	*jahmīr	jahmir	mīr	*yimīa	yimēa	mīa ?'rib'

	PNB	B	PJH	PHrS	Hr	ES	
407	*qŋir	qŋir		*ŋia	ŋèa	ŋia	'in front'
408	*tèr		tèr	*tèr	tèr	tia	'chicken comb'
409	*kòr		R kòr	*kòa	kòa	kua	'roof'
410				*sòa	sòa	soa	'chest'
411	*qyěr	qyěr	ir	*i	ia	í	'chicken'
412	*păr	păr	păr	*par	par		'to fly'
413	*manăr	panăr	manăr	*manar	panar	maná	'wing' ²⁹
414	*...dăr	...dăr		*...dar		...tá	'encircle' ³⁰
415	*qbar	qbar	bar	*bea	(bayq)	péa	'two' ³¹
416	*baqar	baqar		*maqea		maqéa	'paper, book'
417				*čea	čea	čéa	'wild cat'
418	*akar	akar	R hakar	*akea	akea	kéa	'skin'
419	*sur		sur	*sur	sua	sú	'to smell'
420				*kur	kua	kú	'roll up'
421	*por	por	por	*poa	poa	púa	'cooked rice' ³²
422	*kor	kor	kor	*koa		kúa	'shave'
423	*yor (yua/yo/yor)	yor	yor	*yoa		súa	'because'

6.1.13 FINAL VOWEL-CONSONANT COMBINATIONS WITH w

(*i̯w)

*ăw	ǝw	ăw	*ăw	ăw	aw	424-427
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(*u̯w)

*i̯w	ew	i̯w	*i̯w	èw	iô	428
*èw	u	û	*èw		aw exc	429-430
					iw/*č_	

(*ăw, *u̯w, *òw)

PNB	B	PJH	PHrS	Hr	ES	
(*ěw)						
*ǎw	ǎw <u>exc</u>	ǎw	*aw	aw	áw	431-434
	ǎw/*s,r_					
(*ōw)						
*iw	iěw		*iw	ew	íw	435
*ew	iěw	iw	*ew	ew/*CVq_	eó	436-437
*aw	aw	aw	*ew	êw <u>exc</u>	eó	438-450
				iw/*øq,øh,		
				C _{ns1} -		
(*uw, *ow)						

Examples:

424	*gadǎw	kaděw	gadǎw	*kadǎw	kadǎw	kataw	'run'
425	*pajǎw	pajěw		*pajǎw	pajǎw	pačaw	'sorcerer'
426	*rabǎw	raběw		*rabǎw		rapaw	'thousand'
427	*čatrǎw		katrǎw	*tatrǎw		tatraw	'pigeon'
<hr/>							
428	*phǐw	phew	phǐw	*phǐw	phèw	phiô	'happy'
<hr/>							
429	*blèw	blu	blù	*blèw		plaw	'thigh'
430	*čhèw	ču		*čhèw		čiw	'obey'
<hr/>							
431	*čǎw	sěw	čǎw	*čǎw	saw ?	čǎw	'grand-child'
432	*tadrǎw	tadrěw	tadrǎw	*tadraw	tadrǎw ?	tadrǎw	'six' ³³
433	*patǎw	patǎw		*p: taw		patǎw	'king'
434				*qmbaw	qmaw	bǎw	'field rice'
<hr/>							
435	*haŋiw	haŋiěw		*haŋiw	haŋew	haŋíw	'cold'
<hr/>							
436	*haqew	qŋiěw	iw	*haqew	qŋew	haqeó	'leftside'
437	*palew	paliěw		*palew		paleó	'type of small bird'

	PNB	B	PJH	PHrS	Hr	ES	
438	*əw	aw	aw	*əw	qñiw	eó	'shirt'
439	*qnaw	qnaw	qnaw	*new	niw	neó	'new'
440	*haw	haw	haw	*hew	hiw	heó	'climb'
441	*qñaw	qñaw		*qñew	qñiw	(jñw)	'wash hands'
442	*raŋaw	raŋaw		*raŋew		raŋeó	'Rengao Tribe'
443	*kraw	kraw	kraw	*krew	krêw	kreó	'call'
444	*_raw		raw	*srew		sreó	'wash'
445	*law	law		*lew		leó	'Laotian', ³⁴
446	*yaw	yaw	yaw	*yew		seó	'more (neg.)'
447	*kataw	kataw		*katew	katêw	kateó	'sugarcane'
448	*naw		naw	*new		neó	'more'
449				*klew	klêw	kleó	'testes'
450				*gahew	gahêw	kaheó	'yawn'

6.1.14 FINAL VOWEL-CONSONANT COMBINATIONS WITH γ

(*ïy)

*ăy	ěy <u>exc</u>	ăy	*ây	ây	ê	451-454
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əy/*d_

& i/*p_

*ũy		R wɪ	*ũy	ũy	oy	455-456
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(*ïy)

*ëy	ěy/ăy/əy	ăy	*î	î	ay	457-459
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(*ăy)

*ũy	uy	ũy	*ôy	ôy	ôy	460-461
-----	----	----	-----	----	----	---------

*ôy	oy	ôy	*ôy	(ôy)	ôy	462-463
-----	----	----	-----	------	----	---------

*ěy	ěy	ěy	*ey	ê	é	464-466
-----	----	----	-----	---	---	---------

*ăy	ěy/ay	ăy				467
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*ôy		ũy	*oy	(oy)	ôy	468
-----	--	----	-----	------	----	-----

(*iy, *ey)

*ay	ay	ay	*ay	ay	é	469-477
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PNB	B	PJH	PHrS	Hr	ES	
*uy	uěy	uy	*oy	oy	ôy <u>exc</u>	478-479
					ôy/*q	
*oy	oy <u>exc</u>	oy	*uy	ôy	ôy	480-488
	ôy/*q					

Examples:

451	*palăy	palăy	plăy	*palây	palây	palê	'village'
452	*badăy	padăy	badăy	*padây	padây	patê	'rest'
453	*ragăy	ragăy	ragăy	*ragây		rakê	'skillful'
454	*păy	pi		*pây	pây	pê	'to fan'
455				*kačûy	kačûy	kačoy	'basket'
456	*kûy		R kwî	*kûy	kûy	koy	'lie down'; R 'sleep'
457	*plêy	plăy/ plěy	plăy	*plî	plî	play	'fruit' ³⁵
458	*adrêy	hadrêy	adrăy	*adrî	adrî	dray	'pestle'
459	*hêy		hăy	*hî	hî	hăy/hay	'day, sun'
460	*qñûy	qñuy	qñûy	*ñôy	ñôy	ñôy	'smoke'
461	*plûy	pluy		*plôy		plôy	'gourd'
462	*khôy	khôy	khôy	*khôy		khôy	'customs'
463	*lôy		lôy	*lôy		lôy	'stop'
464	*khěy	khěy	khěy	*khey	khê	khế	'month, moon'
465	*athěy	athěy		*they	thê	thế	'command'
466				*čey	čê	čế	'tea'
467	*hwăy	huay/ huěy	hăy				'enough'
468	*qlôy		qlûy	*loy		lôy	'crippled'

	PNB	B	PJH	PHrS	Hr	ES	
469	*baŋay	baŋay	(m)ŋay	*maŋay	maŋay	maŋé	'people'
470	*may	mamay	may	*may	may	mé	'older sis- ter'; S 'sister- in-law'
471	*bray	bray	bray	*bray	bray	pré	'thread'
472	*pay	pay	pay	*pay		pé	'cook'
473	*way	way		*way		wé	'spider web'
474	*hay	hay		*hay		hé	'saliva'
475	*lay	lay		*lay		lé	'mound of dirt from rat (B) or ant (S)'
476	*saday	hadav	iday				'together'
477	*saŋay		iŋay	*haŋay	haŋay	haŋé	'far'
478	*juy	juěy	juv	*joy	joy	čóy	'deer'
479	*uy	quěy		*oy	oy	óy	'to be at, stay'
480	*roy	roy	roy	*ruy		róy	'a fly' ³⁶
481	*hloy	hloy	loy	*hluy		hlóy	'immediate- ly'; J 'very'; H 'always, completely'
482	*oy	ôy		*uy		óy	'guava'
483	*soy	soy		*suy		sóy	'sacrifice'
484	*tamoy	tamoy		*tamuy		tumóy	? 'guest'
485	*_oy	qmoy		*_uy		qbóy	'imitate'
486	*č(h)oy		čoy	*čuy	čôy	čóy	'plant rice'
487		(adrol)		*hadruy	hadrôy	hadróy	'first'
488				*duy	dôy	tóy	'tell'

6.1.15 FINAL VOWEL-CONSONANT COMBINATIONS WITH yq

(*îyq, *ăyq, *ũyq, *îyq, *êyq, *âyq)

*ũyq uyq *ũyq ũy oy 489

PNB	B	PJH	PHrS	Hr	ES	
*ðyq	əyq <u>exc</u> iq/*s_	èq	*ðyq	ðyq	ôy	490-491
<hr/>						
(*ěyq, *ăyq, *ðyq, *iyq, *eyq)						
*ayq	ayq		*ayq		ay	492
*uyq		uyq	*uyq		uy	493
(*oyq)						
<hr/>						

Examples:

489	*lũyq	luyq/luy		*lũyq	lũy	loy	'believe'
490	*qmðyq	qməyq		*qmðyq	mðyq	môy	'one'; B 'do first'
491	*sðyq	siq	sèq	*sðyq		sôy	'err'
492	*glayq	glayq		*glayq		klay	B 'mis- taken'; S 'good-for- nothing'
493	*kuyq		kuyq	*kuyq		kukuy	'back of head'

6.1.16 FINAL VOWEL-CONSONANT COMBINATIONS WITH yh

(*ĩyh)						
*ăyh	ih	ăyh	*ěyh	ĩh	ah	494
(*ũyh, *ĩyh, *ěyh)						
*ăyh	eyh		*ăyh	ăyh	ah	495
*ũyh	uyh	uyh	*ũyh	ũyh	uyh	496-497
*ðyh	uyh	èq ?	*ðyh	òh	oh	498
*ěyh	eh	ăyh	*ih	êh	êy	499-500
(*ăyh, *ðyh, *iyh)						
*eyh	iah/*qñ_	iayh	*eyh	iah	êy	501-503
	& əh/*r_					
	& əh/*jr_					

PNB	B	PJH	PHrS	Hr	ES	
*ayh	ayh	ayh	*ayh	ayh	êy	504-508
*uyh		uyh	*uyh	uyh	uy	509
*oyh	ôyh	uayh	*oyh	oyh	uy	510-512

Examples:

494	*qbăyh	qbih	băyh	*bêyh	bîh	pah	'snake'
495	*răyh	reyh		*râyh	râyh	rah	'choose'
496	*mûyh	muyh	muyh	*mũyh	mũyh	muyh	'slash field'
497	*_pũyh	hapuyh		*_pũyh		kapuyh	'sweep'
498	*_qjòyh	haqyuyh	gajêq ?	*_jòyh	hajòh	kačoh	'wet'
499	*kačěyh	kaseh	kačăyh	*kačih	kačêh	kačêy	'sneeze'
500	*děyh	deh	dăyh				'sound'
501	*čaqneyh	taqñiah	kaqniayh	*kaneyh	kaniah	kanêy	'fingernail'
502	*reyh	rêh	riayh	*reyh	riah	rêy	'root' ³⁷
503	*ajreyh	jrah	adriayh	*ajreyh		trêy	'floor'
504	*katayh	katayh	katayh	*katayh	katayh	katêy	'hip'
505	*klayh	klayh		*klayh		klêy	'after, finish'
506	*kapayh	kapayh		*kapayh		kapêy	'cotton'
507	*payh	payh		*payh		pêy	B 'dry (leaves)'; S 'leafy jungle floor'
508	*playh	playh		*playh		plêy	'armspan'
509	*luyh		luyh	*luyh	luyh	luy	'pluck feathers'
510	*poyh	pôyh	puayh	*poyh	poyh	puy	'calf of leg'

	PNB	B	PJH	PHrS	Hr	ES
511	*royh	rôyh	ruayh	*royh	royh	ruy 'elephant'
512	*akoyh	akôyh		*akoyh		kuy B 'shave'; S 'scratch'

6.1.17 FINAL VOWEL-CONSONANT COMBINATIONS WITH Ø

*î	i	î	*î	î	ay	513-520
*ê	i	îa	*ê	è	êy	521
(*â)			(*â)		(a)	402
(*û)			(*û)	(ûa)	(u)	403-404
*ò	ô	ò	*ò	ò	ôu	522-524
			(*îa)	(êa)	(ia)	405-407
			(*òa)	(òa)	(ua <u>exc</u>	409-410
					oa/*s_)	
<hr/>						
*i	ia		*ia		ía	525
			(*i)	(ia)	í	411
*e	e	e	*e	i	áy	526-538
*a	a	a	*a	a	á	539-557
*u		R u	*u	ô	ó	558-559
*o	o	o	*o	o	ó <u>exc</u>	560-570
					ów/*m,n,p_	
			(*ea)	(ea)	(éa)	415-418
			(*oa)	oa	úa	421-423, 571

Examples:

513	*tî	ti	tî	*tî	tî	tay(SR) 'hand' ³⁸
514	*mî	mi	mî	*mî		may 'brother-in-law'
515	*tî	ti		*tî	tî	tay 'up there'
516	*čî	si		*čî	čî	čay 'head louse'
517	*brî	bri		*brî	brî	pray 'wild'; B 'woods'

	PNB	B	PJH	PHrS	Hr	ES	
518	*wî		R wî	*wî	wî	way	'they-pl.'
519		(anayq)		*qñî	qñî	qnay	'know'; B 'think'
520	*kadri̯		R kadri̯	*kadri̯	kadri̯	kadray	'female'
521	*qmè	qmi	qmîa	*mè	mè	mêy	'rain'
522	*ñò	ñò	ñò				'uncle'
523	*kapò	kapô	R kapò	*kapò	kapò	kapôw	'buffalo'
524	*krò		R krò	*krò	krò	krôw	'cry'
525	*pi	pia		*pia		pía	'melon'
526	*phe	phe	phe	*phe	phi	pháy	'husked rice'
527	*kane	kane	kane	*kane	kani	kanáy	'rat'
528	*hare	hre	re	*are	ri	aráy	'rattan'
529	*babe	babe	ba(q)be	*bube	bubi	pupáy	'goat'
530	*hwe	hue		*hwe	hwi-hwo	hwáy	'look over shoulder'
531	*ake	ake		*ake	aki	káy	'horn'
532	*sake	hake		*hake	haki	hakáy	'wild pig, boar'
533	*pale	pale		*pale		paláy	'small bamboo'
534	*ñe	ñe	ñe	(*ñe)		(ñé)	'people'; B 'baby'
535	*(q)re	re	(q)re				'pan gold'
536	*e		e	*e	i	áy	'have'
537	*pe	(pêñ)	pe	*pe	piq	páy	'three' ³⁹
538	*kase		kase	*kase	kasi	kasáy	'vine'
539	*hla	hla	la	*hla	hla	hlá	'leaf'
540	*ka	ka	ka	*ka	ka	ká	'fish'
541	*pla	pla	pla	*pla	pla	plá	'blade'

	PNB	B	PJH	PHrS	Hr	ES	
542	*qma	qma	qma	*qma	qma	haqwǎ	'right side', ⁴⁰
543	*saqda	saqda	ida	*hada	hada	hatá	'handspan'
544	*pha	pha	pha	*pha		phá	'different'
545	*adra	adra	-dra	*adra		drá	'drying rack'
546	*kla	kla		*kla		klá	B 'panther'; S 'tiger'
547	*ha	ha		*ha		há	'open mouth'
548	*hwa	h _u a		*hwa		hwá	'gibbon'
549	*jala	jala		*yila	yila	ilá	'thornbush'
550	*jama	jama		*yima		imá	'porcupine'
551	*ba	ba		*ba	ba	pá	'we two-incl.'
552	*ča	sa	ča				'eat'
553	*ma	ma	ma				B 'uncle'; PJH 'aunt'
554	*kha		kha	*kha		khá	'expensive'
555		(to)		*ta	ta	tá	'over there'
556	*ma		R ma	*ma	ma	má	'we two-excl.'
557				*kala	kala	kalá	'bamboo'
558	*ku		R ku	*ku	kô	kó	'this'
559		(bu)		*kambu	kabô	kabó	'who?'
560	*tamo	tamo	(ta)mo	*hmo	hmo	hmów	'stone'
561	*čano	tano	tano	*kano		kanów	'male'; S also 'husband'
562	*apo	apo		*apo		pów	'to dream'
563	*klo	klo	klo	*klo	kalô ?		'husband'
564	*madro	padro		*madro	padro	madró	'trade'
565	*paqo	paqo		*paqo		paqó	'large, tall bamboo'

	PNB	B	PJH	PHrS	Hr	ES	
566	*haŋo	haŋo		*haŋo		haŋó	'pine'
567	*(q)blo		blo	*blo		pló	'ferment'
568	*ro	(rew)	ro	*ro	ro	ró	'basket'
569	*(q)do		R do	*do	do	tó	'laugh'
570				*blo	blo	pló	'hearth'
<hr/>							
571		(pahŋol)		*mahoa ? mahoa		mahúa	'soul'

6.2 INITIAL CONSONANT AND CONSONANT CLUSTER RECONSTRUCTIONS

PNB	B	PJH	PHrS	Hr	ES	
*p	p	p	*p	p	p	(35)
*ph (*ø_)	ph	ph	*ph	ph	ph	(6)
*pl (*ø_)	pl	pl	*pl	pl	pl	(8)
*pr (*ø_)	pr	pr	*pr	pr	pr	#133, 214, 394
*t	t	t	*t	t	t	(39)
*th	th	--	*th	th	th	#465
*tr (*ø_)	tr	tr	*tr	tr	tr	(6)
*č	s	č	*č	č	č	(12)
*čh	č	č	*č	č	č	(9)
*č(h)	--	č	*č	č	č	(8)
*k	k	k exc ka-/ *ia	*k	k	k	(32)
*kh (*ø_)	kh	kh	*kh	kh	kh	(6)
*kl (*ø_)	kl	kl	*kl	kl	kl	(13)
*kr (*ø_)	kr	kr	*kr	kr	kr	(9)
*khl (*ø_)	hl	khl	*hl	(hl)	hl	#46
*b	b	b	*b	b	p	(9)
*qb	qb	b	*b	b	p	(11)
*(q)b	--	b	*b	b	p	(4)
*bl (*ø_)	bl	bl	*bl	bl	pl	(4)

PNB	B	PJH	PHrS	Hr	ES	
*qb1 (*Ø_)	qb1	b1	(*b1)	(b1)	(pl)	#164
*(q)b1	--	b1	*b1	b1	pl	#567, 570
*br (*Ø_)	br	br	*br	br	pr	(6)
--	--	--	*mb	b	b	#559
--	--	--	*qmb	qm	b	#285, 434
*d	d	d	*d	d	t	(10)
*qd	qd	d	*d	d	t	(15)
--	--	--	*d	d	t	(3)
*qdl (*Ø_)	qd	-l	--	--	--	#163
--	--	--	*dl	dl	ti l	#301
*dr	dr	dr	*dr	dr	dr exc	(15)
					tr/*Ø_	
*qdr (*Ø_)	qd	tr	*tr	tr	tr	#148
--	--	--	*nd	d	d	#387
--	--	--	*qdr	dr	qr	#137
*j	j exc	j	*j	j	ç	(13)
	g/*ia					
*qj	qy/*u	j	*j	j	ç	#184, 305, 498
	& q/*i					
*(q)j	--	j	*j	j	ç	(3)
*jr	jr	dr	*jr	jr	tr	#129, 220, 503

PNB	B	PJH	PHS	Hr	ES	
*g	g	g	*g	g	k	(7)
*xg ⁴¹	k/_*V _{hi}	k	*g	g	k	#120, 223, 389
& g/_*V _{lo}						
--	--	--	*g	g	k	#22
*g _l (*ø ₋)	g _l	--	*g _l	g _l	k _l	#265, 492
--	--	--	*ŋg	g	g	#121
*m	m	m	*m	m	m	(21)
*qm (*ø ₋)	qm	qm	{ *m/_*V̂ & *qm/_*V	m	m	#490, 521
				qm	m exc	#61, 131, 249, 293, 318, 542
					qm/*doublet	
*kam	kam	qm	*kam	kam	kam	#307
*kaqm	haqm	(ka)qm	*haqm	--	haqm	#77
*tam	tam	(ta)m	*hm/*V _b k	hm	hm	#116, 227, 560
			{ & *tam/*V _{ft} -ct & *hm/*ø ₋ & *m/*CV ₋	--	tam	#43, 104
*hm	hm	hm/*ø ₋ & m/*CV ₋	*hm/*ø ₋ & *m/*CV ₋	hm	hm	#257, 320
				(m)	m	#406
*ham	hab	ham	*hm	(hm)	hm	#54
*haml	haml	--	*haml	--	bl	
*n	n	n	*n	n	n exc	(9)
					qn/*a ₋	

PNB	B	PJH	PHrS	Hr	ES	
*qn	qn exc q0/*ča_	qn	*n	n	n	#361, 392, 439, 501
--	--	--	*n	n	n	(6)
--	--	--	*qn	qn	qn	#519
*tan	tan	tan	*hn/*Vct { & *tan/*Vbk }	--	hn	#199
*kanl	kl	k(a)l	*kan	tan	tan	#321
*ñ (*ø_)	ñ	ñ	--	--	kan	#160
*qñ	qñ	qñ	*qñ/*Vft-ct { & *ñ/*Vbk }	qñ	--	#57, 522
?	--	qñ	*s	s	qñ/*Vbk	#18
*ŋ	ŋ	ŋ	*ŋ	ŋ	& qn/*Vft-hi	#270
*q0	ŋ/*CV_ & q0/*ø_	q0	*ŋ	ñ	& ñ/*Vft-lo	#221, 441
--	--	--	*ŋ	s	ñ	#142, 460
*ŋ (*ø_)	hŋ	--	*ŋ	ŋ	s	#136
*tahŋ	tahŋ	tah	*tah	nah	ŋ	(8)
*ŋl	ŋl	l	*l	l	ŋ	#39, 235, 292, 407, 477
*l	l	l	*l	l	ŋ	#67
					hŋ	#27, 255
					tah	#38
					l	#140
					l	(18)

PNB	B	PJH	PHrS	Hr	ES	
*q1 (*ø_)	q1	q1	{ *l/*ø_ & *q1/*CV_,doublets	l	l	#167, 468
--	--	--	*l	l	q1	#298, 329
*pal	pal	pl	*pal	pal	l	(7)
*hl	hl	l	*hl	hl	pal	#451
					hl	#130, 481, 539
*r	r	r	*r	r	r	(21)
*(q)r (*ø_)	r	(q)r	--	--	--	#535
*hr	hr	r	*hr	hr	hr	#90
*har	hr	r	*ar	r	ar	#528
*jar	jr	jar	*jr	jr	tr	#8
*(ka)r	r	r	*(ka)r	kr	r	#143
*s	s	s	*s	s	s	(12)
*ras	hr/sr	s	*s	s	s	#179
--	--	s	*s	s	s	(12)
*ts	t	s	{ *s/*CV_ & *y/*ø_	s	s	#13, 83, 95
				y	s	#268
*sr (*ø_)	hr	sr	*sr	sr	sr	#141, 284, 331
*h	h	h exc	*h	h	h exc	(22)
		o/*ëy			qñ/*iä	
*pah	pah	pah	*ph	(ph)	ph	#158

PNE	B	PJH	PHrS	Hr	ES	
*mah	ph	ph/mah	*mah	mah	mah	#37, 571
w (<u>ɸ</u>)	w	w	*w	w	w	(6)
hw (<u>ɸ</u>)	hu	h	*hw	hw	hw	(4)
y (<u>ɸ</u>)	y	y	*y	y	s	(8)
qy (<u>ɸ</u>)	qi	y <u>exc</u> ø/_*V _{ft}	$\begin{cases} *y \text{ exc} \\ *ø/_*V_{ft} \end{cases}$	y ø	s ø	#111, 323, 411
		& (q)ñ/_*v				
*hay	hay	hay	*ri	--	ri	#345
ø (= q/ <u>ɸ</u>)	ø	ø	*ø	ø	ø	(18)
*q (*CV ₋)	q <u>exc</u> qñ/_*V _{ft}	q	*q	q <u>exc</u> qñ/_*V _{ft}	q	(7)
*raq	raq	r	*r	(r)	r	#62
Irregular consonant correspondences not included above:						
?	ɪm	--	?	--	qb	#485
?	qn	--	*nd	--	d	#4
?	w	l	--	--	--	#71
*r	--	r	*sr	--	sr	#444

6.3 PRESYLLABLES

PNB	B	PJH	PHrS	Hr	ES	
*∅	∅	∅	*∅	∅	∅	(386)
*CV-	*...	(23; see Section 6.2)
*pa-	pa-	pa-	*pa-	pa-	pa-	(7)
*ta-	ta-	ta-	*ta-	ta-	ya-	(12)
*ča-	ta-	ka-/_*C _{st}	{ *ka- <u>exc</u> ta-/_*t,č	ka-	ka-	#155, 501, 561
--	--	& ta-/_*C _{ns1}		(ta-)	ta-	122, 427
*ka-	ka-	--	*ča-	ka-	ta-	#261
*ba-	pa-/_*C _{st}	ba-	*ka-	ka-	ka-	(26)
	& ba-/_*b,qV,C _{ns1}		{ *pa- <u>exc</u> *bu-/_*b & *ma-/_*q, C _{ns1}	pa-	pa-	#23, 269, 452
--		--		bu-	pu-	#529
--		--		ma-	ma-	#416, 469
*da-	ta-/_*C _{st}	da-		pa-	pa-	#17
	& da-/_*C _{ns1}			ba-	pa-	#13
*ja-	ja-	∅	*yi-	ta-	ta-	#7, 127, 346
*ga-	ka-	ga-		yi-	i-	#14, 303, 406, 549, 550
			*ka-	ka-	ka-	(7)

PNB	B	PJH	PHrs	Hr	ES	
--	--	--	*ka-	ka-	ka-	(9)
--	--	--	*ga-	ga-	ka-	#450
*ma-	pa-	ma-	*ma-	pa-	ma-	(6)
*ra-	ra-	ra-	*ra-	ra- <u>exc</u>	ra-	(12)
				ha-/_*Cst		
				& na-/_*m		
*ha-	sa- & ha-/_*Cnsl & a-/_*dr & ha-/_g,xg	ha-/_*Cvd & ø/_*Cv1	*ha-	ha-	ha-	(7)
*sa-	sa-/_*Cnsl & ha-/_*dr & sa- & ha-/_*d,k	i- <u>exc</u> sa-/_*s	{*ha- <u>exc</u> *ø/_*s *ha-	ha- (ø) ha-	ha- ø ha-	(8) #382 #31, 137, 259
*a-	a- <u>exc</u> ø/_*č,j,l	a- <u>exc</u> ø/_*j,l,r	{*a- <u>exc</u> *ø/_*r,th *la-	a- <u>exc</u> ø/_*l ø la-	ø <u>exc</u> a-/_*jv,l ø la	(19) #333, 465 #302
--	--	--	--	--	--	--
Irregular presyllable correspondences not included above:						
?	ha-	ga-	?	ha-	ka-	#497, 498
--	--	--	?	ba-	ka-	#217

Words in which only one language has a presyllable, the presyllable usually left unreconstructed:

#115, 117, 132, 150, 163, 165, 170, 178, 224, 233, 263, 279, 378, 436, 470, 542.

APPENDIX 1.

REGISTER CORRESPONDENCES IN MON-KHMER LANGUAGES

As shown in Section 1.3 above Bahnar is a non-register language whereas each of the other languages included are register languages. Bahnar vowel height, however, is shown above to correspond to the registers of the other languages. Bahnar low vowels correspond to the Tense Register (TR); Bahnar high vowels correspond to the Lax Register (LR).

In the ancestor language, therefore, it is plausible either (Choice 1) to reconstruct a vowel system without vowel registers but following the Bahnar vowel height and then derive the two vowel registers in the descendent languages from vowel height; or (Choice 2) to reconstruct a vowel system with two vowel registers and then derive the Bahnar vowel height from the two registers.

Of the two possibilities Choice 1 (i.e. reconstruction without vowel registers) seems more reasonable from an internal point-of-view: (a) it would permit a smaller vowel inventory in the ancestor language; and (b) it avoids reconstructing a slightly skewed vowel system (the TR vowels tend to be lower as a system than the LR vowels which tend to be higher as a system).

But the wide-spread feature of vowel register systems in the Mon-Khmer family beyond North Bahnaric raises the question whether vowel register in the latter languages constitutes a core of superficial typological similarity with independent historical origins (in which case Choice 1 would be valid) or whether such vowel registers are indeed related as reflexes of a common ancestor register system (in which case Choice 2 would be necessary).⁴²

Thus a comparison of the respective registers of North Bahnaric words with the registers of cognate words in other Mon-Khmer languages is necessary. Because of the accessibility and form of the data the following four languages were chosen: Kuy, Brū, Khmer, and Mon. Kuy is spoken in eastern Thailand, northern Cambodia and southern Laos and belongs to the Katuic Branch of Mon-Khmer; Brū is spoken in QuảngTrị Province of South VietNam and in nearby Laos and also belongs to the Katuic Branch of Mon-Khmer; Khmer is the language of Cambodia and Mon is spoken in Burma and Thailand (cf. Thomas and Headley, 1969).

In List A below are cited 105 words whose registers correspond without exception in the various languages; in List B are cited 52 other words whose registers do not correspond fully in the various languages. These lists include all the words found to be cognate in the sources used by criteria other than register.

The numbers refer to the PNB reconstructions of Section 6.1 above; for lack of PNB forms, some Sedang (S), Sedang Rengao (SR) and Rengao (R) forms are cited.⁴³ The Kuy words are taken from a Swadesh 200-word basic vocabulary list by Johnston and Thomas (1966)⁴⁴; in Kuy ~ indicates a breathy vowel and thus the LR; its absence the TR. The Brū words are taken from an English-Brū Familiarization Manual by Miller and Miller (n.d.) with others added personally by John Miller; in Brū neither short vowels (marked with ˆ except for â) nor low vowels (e, a, o) are distinguished for register (words with such vowels are included below with square brackets) but with the remaining vowels ~ is used to indicate TR, its absence LR. The Khmer words are taken from the Vocabulary of Part VI of Jacob's Introduction to Cambodian (1968)⁴⁵; in this vocabulary ~ is used to indicate "Second Register" (LR) and its absence "First Register" (TR). The Mon words are taken from Shorto's A Dictionary of Modern Spoken Mon (1962)⁴⁶; in this dictionary ~ is used to indicate "Chest Register" (LR) and its absence the "Head Register" (TR).

A. REGISTER CORRESPONDENCES

1. TENSE REGISTER CORRESPONDENCES

PNB No.	PNB	Kuy	Brū	Khmer	Mon	Gloss
23	*baqdẵm			pram		'five'
24	*hanẵm			chnam	hnam	'year'
25	*krẵm			kraom		'to sink'; 'under'
27	*hŋẵm	ngAng	[ntâng]			'heavy'
35	*gadim				kəsam	'onion'
37	*maham	ngħaam	[aham]			'blood'
38	*tahŋam				həcam	'eight'
42	*pam				pam	'fish trap'; 'to catch in a net'
72	*pun	qapoon	pō̃n	bɯ:ən	pō̃n	'four'
75	*kon	kAAn	[con]	ko:n	kon	'child'
76	*mon		[ramon]		həmot	'nephew'; 'child'
	S puán				bō̃n	'braid'
	R klăn				klō̃n	'python'

PNB No.	PNB	Kuy	Brũ	Khmer	Mon	Gloss
85	*saněñ	kaneeng	caněng			'tooth'
86	*pěñ		[pân]		pon	'shoot'
88	*maněñ		tamĩang		neŋ	'crossbow', 'crosspiece'
93	*keñ		kěng	kiən		'edge'
94	*tañ		[tan]		tot	'weave'
122	*čáčhěŋ		[chachôm]		theaŋ	'think'
127	*daqbăŋ		[abáng]		beŋ	'bamboo sprouts'
133	*prăŋ			praŋ		'rainless'
137	*haqdraŋ				heraŋ	'finger', 'claw'
140	*haŋlǒŋ				hnoŋ	'star'
144	*trǒŋ				hedoŋ	'eggplant'
156	*klaŋ		[calang]		klaŋ	'eagle', 'hornbill'
	S klóaŋ	klAAng				'seed'
	SR ǝŋ			qañ		'I'
	S kroáŋ		crǒng		kr3ŋ	'river'
	S peáŋ				paik	'side'
191	*kăp	kap	[cáp]	kham		'eat', 'bite'
	R gip				kep	'pinch'
221	*qñět	qaat				'grass'
229	*taŋit		sangět			'cold'
237	*sot		[sot]	cro:t		'harvest', 'cut down with scythe'
273	*hăk				haoq	'vomit'
277	*bők				həbək	'hoe'
322	*tuq		[cutâu]	kđau	ketao	'hot'
324	*kasuq				ketau	'sweat'
327	*troq			tro:u		'correct'

PNB No.	PNB	Kuy	Brū	Khmer	Mon	Gloss
358	*aseh		[aséh]	seh	chēh	'horse'
361	*taqneh	kateeq	cutēq			'dirt'
363	*pah	pah	p̄h [páh]		pha	'split', 'to break something slender'
370	*kač(h)ah		[cucháh]		chah	'charcoal'
372	*tuh		[tôh]		toh	'breast'
374	*kačuh	kacoh	[cachôh]		choh	'spit'
	R klah		[ploah]	konlah		'half'
398	*apāl		[tapal]	tbal		'mortar'
	R kayal	kayaal	[cuyal]	khyol		'wind'
	R che dāl		[toau]	dol		'until'
412	*pār	paal	[pār]		po	'to fly'
416	*baqar			kba:l		'book'
	R kar			ka:l	kalaq	'when', 'time'
431	*čăw		[châu]	cau	cao	'grand- child'
432	*tadrăw				kerao	'six'
438	*aw		[au]	qa:u		'shirt'
	S meố		mếu			'cat'
	R qdaw		[dau]	da:u		'sword'
	SR aw				oa	'I'
464	*khěy		[casâi]	khæ		'month, moon'
477	*saqnay	nghaay				'far'
484	*tamoy		[tamoi]		moe	'guest'
	S taděy		tadĩ			'middle', 'half'
511	*royh			domriy		'elephant'
512	*akoyh		cūah	kies	kah	'scratch'
527	*kane		[cunái]		noeq	'rat'

PNB No.	PNB	Kuy	Brū	Khmer	Mon	Gloss
530	*hwe				hi	'to look out of the corner of one's eye'
537	*pe	qapay	[pái]	biy	p _{oe} q	'three'
538	*kase	kasay	[cansái]	khsae		'vine'
539	*hla	hlaa	[sala]		hlaq	'leaf'
540	*ka	qakaa			kaq	'fish'
541	*pla	plaa	[pla]			'blade', 'sharp'
543	*saqda				daq	'handspan'
546	*kla		[cula]	khla:	klaq	'tiger'
547	*ha		[caha]		ha	'open mouth', 'open wide'
548	*hwa		[sava]	sva:		'monkey', 'gibbon'
552	*ča		[cha]		ceq	'eat'
557	*kala				kəloeq	'bamboo'
560	*tamo	kamaw	[tamáu]	thmo:	moq	'stone'
571	*mahqa				p3ŋ həmao	'soul'
	S chố		[acho]	co:		'dog'

2. LAX REGISTER CORRESPONDENCES

12	*klâm	lŭām	luam			'liver'
15	*qdũm			tũm		'ripe, red'
	R jũm dar			cũm		'round'
118	*sadrõŋ		saduong			'worm'
119	*plõŋ				k13ŋ	'boat'
	R trũŋ			trũŋ		'cage'
205	*kĩt		cuat	cũ:t		'frog'
210	*kăt				kõt	'to tie'

PNB No.	PNB	Kuy	Brũ	Khmer	Mon	Gloss
212	*mũt		mut			'enter'
214	*prĩt		priat		prāt	'banana'
219	*sūt	ñcũt	chut		cèt	'wipe'
271	*dũk		tuoc	tù:k		'ship'
	R prĩk prĩk			prēc-prēc		'drip, drip'
294	*jĩq			chũ:		'sick'
	R jĩq		[cheq]	cũt		'near'
333	*arĩh			rũas		'live'
335	*wĩh	wĩāh				'return'
343	*mũh	mũh	[mũh]		mũh	'nose'
402	*hagār		sacār	skò:(r)		'drum'
490	*qmōyq	mũũy	muoi	mũ:øy	mòā	'one'
494	*qbāyh			pũas		'snake'
495	*rāyh		rũoh	rĩ:s	rũi	'choose'
517	*brĩ			prēy		'wild'
521	*qmē	mĩā	mia			'rain'
	R gē			kē		'he'

B. REGISTER NON-CORRESPONDENCES (PARENTHESES ENCLOSE LAX REGISTER FORMS)

1. TENSE REGISTER MAJORITY

10	(*čĩm)	ceem	[chõm]		hēcem	'bird'
11	(*plām)		plõm		klõm	'leech'
	R (čĩn)		chĩn		cĩn	'cooked'
169	*gõŋ			(rəkēəŋ)	kēŋ	'gong'
178	(* (ga)hĩp)		hĩp	hĩp		'suitcase'; B 'box'
287	*qđak	điaq	đõq	(tũk)	đaik	'water'
	S (sak)	soq	[sóc]		sok	'hair'; K 'feather'
	S (plek)		pliāŋ		pēlek	'open eye'; M 'blind'

PNB No.	PNB	Kuy	Brū	Khmer	Mon	Gloss
379	*qboh	(pAAh)	[boi]		b3	'salt'
415	*qbar	qabia	[bar]	(pī:(r))	ba	'two'
444	*_raw	riaw	(ariau)			'wash'
457	(*plēy)	play	[palái]	phlae		'fruit'
513	(*tī)	têê	atī	day	(tī)	'arm'; M 'thigh'
516	(*čī)		chī		coa	'louse'

2. LAX REGISTER MAJORITY

73	*yun		(yuan)	(yũ:ən)	(yòn)	'Vietnamese'
80	(*qbĩñ)		[poân]	(pěñ)	poiŋ	'full'
	S (čeaŋ)	juŋg	ayũg	(cĩ:ŋ)	(cãŋ)	'leg'
	S (pek pēŋ)		(apiang)		pheaŋ/ phaŋ/ paŋ	'spider'
222	*măt	(măăt)	[moat]		(mòt)	'eye'
305	(*qjũq)			(cũ:)	hēcāh	'sour'; Kh 'bitter'
	R (jrũq)		yarũ	(crĩu)		'deep'
341	(*qbũh)	buh	[bõh]	(pũh)		'roast'; Kh 'boil'
445	*law		(liau)		(lěa)	'Laotian'
480	*roy	(qarũũy)	(ruai)		(rũi)	'a fly'
502	*reyh	(rēh)	(rēh)		(r3h)	'root'

3. ONE-TO-ONE NON-CORRESPONDENCES

6	(*hũm)				hum	'bathe'
39	*qŋam		(ngiam)			'sweet'
	R (tũm)		tũm			'lake'
50	(*tačĩn)				hēcīt	'nine'
61	(*qmõn)				kəmon	'pimple'
	S (suan)		suān			'also'

PNB No.	PNB	Kuy	Brū	Khmer	Mon	Gloss
96	(*čhĩŋ)				chain	'small gongs'
111	(*qyũŋ)	kayong	[tayũŋ]			'stand'
159	*yaŋ		(yiang)			'spirit'
	R (pẽŋ)		põŋ			'above'
	S (kaŋ)				khraŋ	'to fence'
216	(*qbət)			kambit		'stab'; 'knife'
232	*rut				(ràn)	'buy'
	S (pahlut)				plut	'tempt'; 'slander'
	R (pasit)				pətah	'mushroom'; 'fungus'
238	(*ĩč)				oik	'excrement'
244	*tēc		[chéq]	(tẽn)		'sell'; 'buy'
	R (dĩk)				doik	'slave'
295	(*phĩq)				phoa	'to be sated'
338	(*tapǎh)				həpoh	'seven'
	R (dõh)			doh		'free'
389	(*xgǎl)			kba:l		'head'
520	(*kadri)			sriy		'woman'

4. TWO-TO-TWO NON-CORRESPONDENCES

{	13	(*basiam)			(y3m)	}	'begin'
	13	(*tsam)			tom		'beginning'
	14	(*yihiam)		phdaem			'heart'; 'to breathe'
529	*babe		(cupê)	(mēmē)	həbeq		'goat'

Chart 20 summarizes the above lists by indicating both the number of cognates with corresponding and with non-corresponding register between each pair of languages. An arbitrary or random assignment of register or a non-genetic relationship would result in approximately as many non-correspondences as correspondences; further it would be

PNB				
29 / 11	KUY			
24 / 19	13 / 1	BRŪ		
51 / 14	10 / 4	12 / 3	KHMER	
63 / 27	19 / 3	18 / 4	15 / 7	MON

Chart 20. Number of cognates between the listed languages having corresponding register (number preceding the slash) and non-corresponding register (number following the slash)

expected that in some instances there might be a greater number of non-correspondences than correspondences. Instead we note that here there are always more correspondences than non-correspondences and that with only one exception (PNB:Brū) there is always at least a 2:1 ratio of correspondences to non-correspondences. The highest ratio (13:1) is between Kuy and Brū—both members of the Katuic Branch of Mon-Khmer. Another high ratio (19:3) exists between Kuy and Mon.

Question arises, however, upon inspection of the Mon list of cognates (and, to a lesser degree, of the Kuy cognates). North Bahnaric LR seems to correspond more with Mon TR (21 words) than with Mon LR (10 words). But, however, many more cognates were found among the Mon TR (75 words) than among the Mon LR (16 words). This, in part, is a function of the Mon register distribution. Of the approximately 4700 words listed in Shorto's Mon dictionary, over 3000, or 65%, are TR words.⁴⁷ Likewise, of the 571 PNB forms above 64% are TR. The North Bahnaric languages taken separately similarly reflect this higher proportion of TR over LR. (Sedang alone has more LR than TR words; see below.) Therefore a skewing of the figures in favor of the TR would be expected.

The overall pattern in these data, however, is taken to indicate that there exists a broadly consistent pattern of register correspondence all across the Mon-Khmer area represented by the languages sampled here. Further, with respect to the problem posed above, the vowel system of Proto-North-Bahnaric should be reconstructed with contrastive vowel registers.

The problem posed by the skewing of the vowels of the two registers (i.e. TR low vowels versus LR high vowels) has been resolved by Gregerson (1970) as a natural function of the two registers. The retracted tongue root with TR is shown to produce a relatively lower set of vowels, while the advanced tongue root with LR is shown to produce a relatively higher set of vowels.

The correspondence sets which reflect opposite registers clearly constitute the principal problem to be resolved. The following four possibilities may, upon further investigation and analysis, prove to be the explanation.

(1) What have been identified here as cognates may in the end turn out not to be cognates at all. Gregerson⁴⁸, for example, has suggested that the pair Khmer *kba:l* (TR) : North Bahnaric **xgāl* (LR) 'head' are not cognates. He notes the following factors: the Khmer form is apparently of Sanskrit origin (*kapala*) and that for a body part a wide-spread borrowing of such words seems unlikely; the vowel is long in Khmer and short in North Bahnaric; and that a South Bahnaric **mkōl* 'top' points to a more probable source (Blood, 1968).

(2) Register contrast frequently bears a semantic function such that the TR means "diminution" and the LR "augmentation" (Gregerson's terms). Consider the following:

S <i>khěy</i>	(TR) 'red—but very tiny' (small)	
S <i>khēy</i>	(LR) 'red'	(large)
R <i>taŋlăp</i>	(TR) 'utensil lid'	(small)
R <i>taŋlăp</i>	(LR) 'coffin lid'	(large)

Consequently the wrong member of a pair may inadvertently have been selected for comparison. Or one of a register pair may have taken over in a given language to the exclusion of the true cognate.⁴⁹

(3) Without an acquaintance with the phonological development of a language, decision concerning corresponding registers is at best educated guesswork. For example, one examining a Sedang dictionary would find: *kā* 'fish', *ka* 'eat', and *haka* 'drum'. For comparative purposes an investigator would classify only the first word as TR (because of the presence of S ₁, laryngealization) and the other two words as LR. Only if the phonological development of Sedang were known would one not venture a guess concerning historical register from Sedang non-laryngealized (LR) open-syllable words. It has been shown above that of the three words, the first two were TR, only the last LR; thus: **ka* 'fish', **kăp* 'eat', and **hagăr* 'drum'. Note also the several register shifts in Tódrah (Gregerson and Smith, 1970). Thus the author's assignment of registers in the non-Bahnaric languages above is speculative.

(4) Of the Proto-North-Bahnaric short vowels, the author has tentatively reconstructed three LR vowels (*ɪ, *ä, *ü) and three TR vowels (*ɛ, *ɔ, *ɔ̃). Thus the high vowels *ɪ and *ü do not contrast with any high vowels of the TR. These short high vowels, having been assigned to the LR more on a phonetic basis than a phonemic one, may be related to high vowels of the TR in other languages. In List B above one-quarter of the PNB words are of this category.

APPENDIX 2.

PROBLEMS OF RECONSTRUCTION ARISING FROM THE STUDY OF REGISTER IN TÓDRAH (Gregerson and Smith, 1970)

Accompanying the Tódrah word lists in Gregerson and Smith (1970) are footnotes identifying certain PNB reconstructions which are brought into question by the Tódrah and Rengao data presented there. The assignment of vowel length and register are the principal phonological aspects at issue. In most of these instances it will be noted that conflicting pressures within the North Bahnaric languages preclude a resolution of the problem. As was necessary in the problem discussed in Appendix 1, the answers are probably only to be found in the consideration of data from a wider Mon-Khmer perspective—which has not yet been attempted.

The PNB forms thus questioned are listed below with the Rengao (R) and Tódrah (M for the Módra dialect, D for the Didrá dialect) forms. Numbers heading each line refer to the PNB reconstructions of Section 6.1 above; numbers in parentheses at the end of each entry are the word numbers in the Tódrah word lists.

- 10 *čēm 'bird': R čīm; M čīp; D čīm (43).
- 36 *lēm 'good': R lēm; M lēp; D lēm (255).
- 96 *čhīŋ 'small gong': M čik; D čēŋ (200).
- 118 *sadròŋ 'worm': R hadrũŋ; M hadrũk (67).
- 120 *xgòŋ 'jungle, forest': R gũŋ; M gũk; D gòŋ (29).
- 184 *gaqjĩp 'centipede': R kajĩp; M kêčēp; D gajēp (68).
- 216 *qbèt 'stab': M bēt (M Tense Register short vowel is derived from the Lax Register short vowel) (151).
- 228 *rapit 'tongue': R rapēt; M tũŋ piq; D xpiq (79).
- 229 *taŋit 'malaria, cold': R taŋyēt; M taŋēq; D taŋēq (251).
- 232 *rut 'buy': R rōt; M rōq; D rōq (201).
- 273 *hāk 'vomit': R hak; M haq; D hiaq (118).
- 329 *soq 'get' (a question of final q or k): R yōk; M yoq (derivable only from *k); D zyōq (142).

APPENDIX 3.

ENGLISH INDEX TO RECONSTRUCTIONS

The following index lists each reconstruction of Section 6.1 and each word cited in Appendices 1 and 2 by the English gloss(es). (v) distinguishes verbs where the English gloss is otherwise ambiguous. Starred forms are PNB unless identified as PHrS. The numbers cited are the word numbers of Section 6.1. References to Appendices 1 and 2 are then cited by roman numerals I and II, respectively. Further, the section of Appendix 1 is cited by the outline letter and number, e.g. IA1, IA2, IB1, etc. Therefore

buy *rut 232 IB3 II

indicates that 'buy' is reconstructed in PNB as *rut and is listed as word number 232 in Section 6.1 above; it is cited in Appendix 1 in Section B(3) as well as in Appendix 2.

above R pèŋ IB3
 acquaintance *hmaq 320
 Adam's apple *blač 256
 after *klayh 505
 afternoon *kasèq 297
 all *tom 45
 also S suan IB3
 always *hloy 481
 animals; raise animals
 *(q)băn 66
 answer *tèl 391
 ant *hmuč 257
 apart; fall apart *qdut 234
 arm *kõŋ 138; see hand
 armspan *playh 508
 arrive *trũh 344
 aside; turn aside *weh 360
 aunt *yăŋ 134; *ma 553
 axe *čũŋ 112

baby *ŋe 534
 back *(ka)rõŋ 143
 back basket *sakăq 311;
 *kruh 376; PHrS *kačũy 455
 back of head *kuyq 493
 back; carry on back *pòq 306;
 lie on back qdlaŋ 163
 bamboo types: *phat 231;
 *hamlũh 347; PHrS *kala 557
 IA1; *pale 533; *paqo 565
 bamboo pipe *qdĩŋ 97
 bamboo sprouts *daqbăŋ 127 IA1
 banana *prĩt 214 IA2
 banana bud *rok 290
 bark (v) *kul 400
 bark, tree PHrS *kaqmoak 293;
 *gaqduh 375
 basket, back *sakăq 311; *kruh
 376; *ro 568; PHrS *kačũy 455
 bathe hũm 6 IB3
 be at *uy 479
 bean *tòh 355
 beat cotton *pěŋ 86

beat with stick PHrS *toaŋ 176
 because *yor 423
 bed *yoŋ 174
 bee *gadrot 236; honey bee
 *sùt 218
 begin *_tsàm 13 IB4
 believe *lùŋq 489
 below PHrS *čàm 5
 big *kǎn 55; *tǐn 337
 bird *čèm 10 IB1 II; bird
 type *palew 437
 bite (v) *raqǎn 62
 bitter *_ǎŋ 136
 blade *pla 541 IAL
 blanket *khǎn 65; open blanket
 *qbič 240
 blind, see open eye
 blood *maham 37 IAL
 blow *khlom 46
 boar *sake 532
 boat *plòŋ 119 IA2
 body louse *sròk 284
 bone *katsèŋ 83
 book *baqar 416 IAL
 box, see suitcase
 bracelet *koŋ 170
 braid (v) S puán IAL
 brain *qŋok 292
 brave *tanuq 321
 break string *katěč 246
 breast *tuh 372 IAL
 brother, see younger sibling
 brother-in-law *mì 514
 bud, banana *rok 290

buffalo, water *kapò 523
 bun, hair PHrS *qñũm 18
 burp *taqǎq 304
 buy *rut 232 IB3 II
 by night *_mǎŋ 135

 cage R trũng IA2
 calf of leg *poyh 510
 call *kraw 443
 carry on back *pòq 306; carry
 on pole *tũŋ 114
 casket *boŋ 172
 cat S meó IAL; wild cat PHrS
 *čea 417
 catch *rũp 187
 centipede *gaqjĩp 184 II
 certainty *qloq... 328
 charcoal *kač(h)ah 370 IAL
 chest PHrS *sà 410; hair on
 chest *sop 204
 chicken *qyě 411; chicken
 comb *tèr 408
 child *kon 75 IAL
 chin *kaŋ 154
 choose *ràyh 495 IA2
 chop *pah 363; *koh 381;
 *kǎl 397
 citrus PHrS *kruč 260
 clean *ragoh 385
 clearly *ñĩn 57
 climb *haw 440
 clothes; wash clothes *rũh
 348; see shirt
 cloud *tsũk 268
 cold *taŋit 229 IAL II;
 *haŋiw 435

comb, chicken *tèr 408
 command *athěy 465
 completely *hloy 481
 cook (v) *ăp 180; *pay 472
 cooked R čîn IB1
 cooked rice *por 421
 corpse *kik 286
 correct *joq 326; *troq 327 IA1
 cotton *kapayh 506; beat cotton *pěñ 86
 cough *kaqők 281
 cow *rők 283
 crab *katam 41
 crave *hēñ 82
 crippled *qlöy 468
 crossbow *maněñ 88 IA1
 crowded *krăm 3
 cry *krò 524
 cubit *haxgăt 223
 customs *khöy 462
 cut up meat PHrS *sah 371

 dare PHrS *khîn 52
 day *hěy 459
 deaf *klěč 242
 deep R jrùq IB2
 deer *jîl 388; *jui 478
 different *pha 544
 difficult *tanap 199
 dig *čîr 405
 dirt *kamòq 307; *taqneh 361 IA1; mound of dirt *lay 475
 divide PHrS *asoan 177
 do PHrS *broq 330

dog S chố IA1
 door *qmăñ 131
 down; go down *jūr 403; lie down *qbĩč 240; *kũy 456
 draw up *doč 251
 dream (v) *apo 562
 drink *uq 325
 drinking straw *qđriñ 148
 drip *katoñ 383
 drip drip R prîk prîk IA2
 drizzle *hjač 255
 drop *katoñ 383
 drown *glăk 265
 drum *hagăr 402 IA2
 drunk *(q)bũl 390
 dry (v) *təñ 109
 dry leaves *payn 507; dry wood *răñ 128
 drying rack *adra 545

 each other *...băl 396
 eagle *klañ 156 IA1
 ear *qdon 78
 earth, see dirt
 easy *taqlèq 298
 eat *kăp 191 IA1; *ča 552 IA1; eat rice *čõñ 145
 edge *keñ 93 IA1
 egg *katăp 190
 eggplant *trõñ 144 IA1
 eight *tahnam 38 IA1
 elbow PHrS *kiañ 91
 elephant *royh 511 IA1
 encircle *tăp dăñ 192, 414
 enough *hwăy 467

- enter *mūt 212 IA2
 err *səyq 491
 every *rīm 1
 evil *qmeq qmāč 249, 318
 excrement *ič 238 IB3
 expensive PHrS *kanaq 315;
 *kha 554
 eye *māt 222 IB2; open eye
 S plek IB1

 fall (v) *klīh 350
 fall apart *qdut 234
 fall, water *rūh 354
 fan (v) *pāy 454
 far *saqṇay 477 IA1
 fast PHrS *reñ 89
 fast (v) PhrS *āt 209
 fat ^(v) *ramaq 312
 fat (v) *beč 254
 father *qbaq 319
 father's older sibling *mīh
 334
 feather; pluck feathers *luyh
 509
 female *kadri 520 IB3
 fence (v) S kaṇ IB3
 ferment *(q)blo 567
 fern *katsoñ 95
 field rice PHrS *qmbaw 434
 field; rice field *(q)jič 241;
 slash field *mūyh 496
 fight *tablah 364
 finger PHrS *haqdraṇ 137 IA1;
 little finger *dēṇ 124
 fingernail *čaqneyh 501

 finish *klayh 505; finished
 *qdiq 296
 fire *ūñ 81; put out fire
 *pāt 224; set fire *čuh 373
 first PHrS *hadruy 487;
 *qmöyq 490
 fish *ka 540 IA1
 fish net *nāk 275
 fish scales *kačhap 195
 fish trap *pam 42 IA1
 fish, salt *mām 26
 fist *kaqdup 201
 five *baqdām 23 IA1
 flesh *sēc 247
 flood PHrS *lān 56; *lāp 181
 floor *ajreyh 503; floor
 support PHrS *roč 253
 flower *raṇ 153
 fly *ajop 203; *roy 480 IB2
 fly (v) *pār 412 IA1
 foot, see leg
 forehead *klēṇ 123
 forest *xgòṇ 120 II
 forget PHrS *hiāt 215
 four *pun 72 IA1
 free R dōh IB3
 French *pahlāṇ 130
 friend *jiṇ 149
 frog *kīt 205 IA2
 front; in front *qñir 407
 fruit *plēy 457 IB1
 full *qbīñ 80 IB2; sated
 *phīq 295 IB3

 gas; pass gas *phom 48

get *soq 329 II
 get on *tōk 279
 get up *qyũŋ 111
 gibbon *hwa 548 IAl
 girl *adrũh 352
 give *ãm 30
 go *lãm 32; go down *jũr 403;
 go home *brōk 272; go out
 *loh 386; go seek *čhaq 313
 goat *babe 529 IB4
 gold *mah 368; pan gold
 *(q)re 535
 gong *goŋ 169 IB1; small gong
 *čhĩŋ 96 IB3 II
 good *lem 36 II
 good-for-nothing *qlayq 492
 goose *nũŋ 107
 gourd *plũy 461
 grandchild *čăw 431 IAl
 grandfather *qbok 291
 grandmother *yăq 310
 grass *qñět 221 IAl
 grasshopper *alip 183
 greet *kũh 342
 group of villages *tarĩŋ 108
 guava *qy 482
 guest *tamoy 484 IAl
 gums PHrS *lĩn 51

 hail *prěl 394
 hair S sak IB1; hair bun
 *qñũm 18; hair on limbs and
 chest *sop 204
 half *put 233; R klah IAl
 hand *tĩ 513 IB1; palm of hand
 *čapaŋ 155; wash hands *qñaw 441

handle *(ra)tiŋ 150
 handspan *saqda 543 IAl
 happy *hăk 264; *phĩw 428
 harvest rice *sot 237 IAl
 hat PHrS *kandoh 387
 have *e 536
 he R gè IA2
 head *xgăl 389 IB3; head louse
 *čhĩ 516; back of head *kuyq
 493
 heal with pepper *həŋ 101
 hear *tăŋ 102
 heart PHrS *yihĩam 14 IB4
 hearth PHrS *blo 570
 heavy *hŋăm 27 IAl
 heel *kaqnèl 392
 help (v) *dagũm 7
 hip *katayh 504
 hoe *qñĩk 270
 hoe (v) *bōk 277 IAl
 hole *trōm 33; PHrS *klòh 356
 home; go home *brōk 272
 honey bee *sùt 218
 hoof *kačhũp 188
 horn, animal *ake 531
 horse *aseh 358 IAl
 hot *tuq 322 IAl
 house, rice PHrS *hapam 31
 hundred *hriñ 90
 hungry *maqnot 235
 husband *čano 561; *klo 563
 husked rice *phe 526

I SR ẽŋ IAl; SR aw IAl

- ice *prəl 394
 if *tǎŋ 100
 imitate *_oy 485
 immediately *hloy 481
 imperative *beq 316
 in *lām 28
 insert *tamōt 227
 instead *taŋ 162
 instrument; play stringed instrument *reh 359
 intestines *klak 288
 into *lām 28
 into; put into *tah 365
 jungle *xgōŋ 120 II
 keep *arāk 276
 king *patāw 433
 kiss (v) *tačhūm 9
 knee *krǎŋ 103
 know *qloq... 328; PHrS *qni 519
 lack *maqnot 235
 lake R tūm IB3
 land, tribal *xgōŋ
 Laotian *law 445 IB2
 laugh *(q)do 569
 leaf *hla 539 IAl: leaf stem
 *akāŋ 110; leafy jungle floor
 *payh 507
 leech *plām 11 IB1
 leftside *haqew 436
 leg S čeaŋ IB2; calf of leg
 *poyh 510
 legend *kaqmon 77
 lie down *qbīč 240; *kūy 456;
 lie on PHrS *akēn 59; lie on
 back *qdlāŋ 163
 light weight PHrS *hēl 393
 limb; hair on limb *sop 204
 lips PHrS *līn 51
 listen PHrS *tamāŋ 104
 live *arih 333 IAl
 liver *klām 12 IAl
 lizard *kasōm 20; *(q)bul 401
 location *pah 366
 loincloth *kapēn 63
 long time *qdūm 84
 look over shoulder *hwe 530 IAl
 louse, body *srōk 284; head
 louse *čhi 516 IB1
 lung PHrS *suh 377
 make PHrS *broq 330
 malaria *taŋit 229 II
 male *čano 561
 many *h₂n 53
 mats; weave mats *sāt 226
 matter *tadroŋ 171
 meat; cut up meat PHrS *sah 371
 medicine *pagaŋ 157
 melon *pi 525
 metal PHrS *mim 44
 middle S tadēy IAl
 miss *bāt 225
 mistaken *qlayq 492
 money *lin 68
 monkey *qdōk 278
 month *khēy 464 IAl
 moon *khēy 464 IAl

more *naw 448; no more *yaw 446
 morning PHrS *sroq 331
 mortar *apāl 398 IAl
 mound of dirt *lay 475
 mouth; open mouth *ha 547 IAl
 mountain *xgōŋ 120 II; *ŋōk 282
 mushroom PHrS *_sēt 217;
 R pasit IB3
 mustache, see whiskers

naked PHrS *hōaŋ 115
 name PHrS *yināq 303
 navel *klōk 280
 near *ajeq 317 IAl
 neck *ranōŋ 147; wring neck
 *wēc 248
 needle *jarūm 8
 negative *pāq 314; *ūh 353;
 no more *yaw 446
 nephew *mon 76 IAl
 new *qnaw 439
 niece, see nephew
 night *māŋ 125; by night
 *_māŋ 135
 nine *tačīn 50 IB3
 nose *mūh 343 IAl
 not yet *tam 40

obey *čhēw 430
 okay PHrS *hōm 21
 old *krāq 308
 older sister *may 470
 on; get on *tōk 279
 one *qmōyq 490 IAl
 onion *gaqdim 35 IAl

only *sasoh 382
 open blanket *qbīč 240; open eye
 S plek IB1; open mouth *ha 547
 IAl; make opening PHrS
 *qmbok 285
 other; each other *...bāl 396
 out; pull out *qdut 234; PHrS
 *doč 252; go out *loh 386
 outside PHrS *ŋgōŋ 121
 over there PHrS *ta 555
 palm of hand *čapaŋ 155
 pan gold *(q)re 535
 panther *kla 546 IAl
 pants *hamān 54
 papaya *rahūŋ 106
 paper *baqar 416 IAl
 pass gas *phom 48
 past time, see prior time
 pay wages *apah 367
 peanut *brēl 395
 peck *joh 384
 people *baŋay 469; *ŋe 534
 pepper *hāŋ 132; heal with
 pepper *hāŋ 101
 peppery *hāŋ 101
 pestle *adrēy 458
 pick up *tēp 189
 pig *č(h)ūr 404; wild pig *sake
 532
 pigeon *čatrāw 427
 pillow PHrS *akēn 59
 pimple PHrS *qmōn 61 IB3
 pinch PHrS *kačēp 185; R gip IAl
 pine *haŋo 566

- pipe, bamboo *qdĩŋ 97
 pity PHrS *haquẽ 259
 place *pah 366
 plant (v) PHrS *pĩt 207; plant
 rice *č(h)oy 486
 play (v) *ra_an 71
 play stringed instrument *reh
 359
 please *tõŋ 146
 pluck feathers *luyh 509
 pocket *gadũŋ 105
 pole, spirit *gãŋ 98; carry on
 pole *tũŋ 114
 poor *danũh 346
 porcupine *jama 550
 post *jrãŋ 129
 potato, see tubers
 pound (v) *pãŋ 99; *paŋ 165;
 pound rice *peh 357
 pour *ũk 267
 prior time PHrS *nãh 340
 pull out *qduť 234;
 PHrS *doč 252
 push *drũť 213; *jrõt 220
 put into *tah 365
 put out fire *pãť 224
 python R klãn IAl

 rack, drying *adra 545
 rain *ĩmẽ 521 IA2; see drizzle;
 stop raining *prãŋ 133 IAl
 raise animals *(q)bãn 66
 rake *kuč 258
 rat *kane 527 IAl
 rattan *hare 528
 red *qdũm 15 IA2
 relatives *qũõŋ oh 142, 380
 Rengao Tribe *raŋaw 442
 rest *badãŋ 452
 return *wĩh 335 IA2
 rib *jahmĩr 406
 rice field *(q)jĩč 241; rice
 house PHrS *hapam 31; rice
 wine PHrS *kadruh 378; cooked
 rice *por 421; eat rice *čõŋ
 145; field rice PHrS *qmbaw 434;
 harvest rice *sot 237; husked
 rice *phe 526; plant rice
 *č(h)oy 486; pound rice *peh 357
 rightside *qma 542
 ripe *qdũm 15 IA2
 river S krõaŋ IAl
 roast *pahaŋ 158; *qbũh 341 IB2
 roof *kõr 409
 roof (v) PHrS *lẽm 2
 roll up PHrS *kur 420
 rooster *tamõŋ 116
 root *reyh 502 IB2
 rope, twisted *kasẽŋ 87
 round R jũm dar IA2
 run *gadãw 424

 sacrifice *soy 483
 saliva *hay 474
 salt *qboh 379 IB1; salt fish
 *mãm 26; salty *_ãŋ 136
 same PHrS *tẽh 351
 sated *phĩq 295 IB3
 say *khan 69
 scales, fish *kačhap 195
 scar PHrS *sĩť 206
 scare *maquyũq 323

- scratch *kuč 258; *akoyh 512 IAL
 seed S klóaŋ IAL
 seek *čhāq^(w) 313
 sell *tēč 244 IB3
 separate (v) *braŋ 161
 set fire *čuh 373
 set in *tǎp 182
 seven *tapāh 338 IB3
 sew PHrS *jèp 186
 sharp *han 70
 shave *kor 422; *akoyh 512
 shin, see calf
 ship *dùk 271 IA2
 shirt *aw 438 IAL
 shoot *pěñ 86 IAL
 sibling, younger *oh 380
 sick *jìq 294 IA2
 side S péaŋ IAL; side of *pah 366
 sin (v) *yōč 250
 sink (v) *krām 25 IAL
 sister, older *may 470; sister-in-law *may 470; see younger sibling
 six *tadrāw 432 IAL
 skillful *ragǎy 453
 skin *akar 418
 skirt *blah 369
 sky *plīñ 79
 slap *tap 198
 slash field *mūyh 496
 slave *qdīč 239; R dīk IB3
 sleep *kūy 456
 smell (v) *sur 419
 smoke *qñūy 460
 snake *qbāyh 494 IA2
 sneeze *kačēyh 499
 soak *trām 29
 soft *ramum 74
 son-in-law *ōŋ 139
 soon PHrS *āh 339
 sorcerer *pajǎw 425
 soul PHrS *mahə 571 IAL
 sound *dēyh 500
 sour *qjūq 305 IB2
 sparrow *rēč 245
 speak PHrS *čapuč 261
 spear *tak 289; spear trap *qdāk 274
 spider S pek peŋ IB2; spider web *wey 473
 spike *srōŋ 141
 spirit *yaŋ 159 IB3; spirit pole *gǎŋ 98
 spit *kačuh 374 IAL
 split *pah 363 IAL
 sprouts, bamboo *daqbǎŋ 127 IAL
 stab *qbēt 216 IB3 II; *pāk 266
 stand *qyùŋ 111 IB3
 star *haŋlōŋ 140 IAL
 stay *uy 479
 steal *_tōŋ 117
 steam *hayūh 345
 stem, leaf *akāŋ 110
 steps *kūŋ 113
 stick; beat with stick *toaŋ 176
 stomach *badūk 269
 stone *tamo 560 IAL

- stop PHrS *ât 209; *lôy 463
 stop raining *prăŋ 133 IAl
 straw, drinking *qdrin 148
 string; break string *katěč 246
 stub toe *tîk palîk 263
 sturdy *gajăp 193
 suck *hũč 243; *dôč 251
 sugar cane *kataw 447
 suitcase *(ga)hîp 178 IB1
 sun *hêy 459
 support (v) *čhaŋ 166; floor
 support *roč 253
 sweat *kasuq 324 IAl
 sweep *_pûyh 497
 sweet *qŋam 39 IB3
 sword *čăŋ 126; R qdaw IAl

 tadpole PHrS *plôn 60
 tail *teñ 92
 tall *kăŋ 55
 tasteless *sap 200
 tea PHrS *čey 466
 tell PHrS *duy 488
 tempt S pahlut IB3
 ten *jăt 208
 tendon PHrS *hwen 64
 termite *kalap 196
 testes PHrS *klew 449
 there PHrS *meh 362; over
 there PHrS *ta 555; up
 there *tî 515
 they *wî 518
 thigh *blêw 429
 things *tamam 43

 think *čachňŋ 122 IAl;
 PHrS *qnî 519
 this *ku 558
 thorn bush *jala 549; thorny
 tree *qblon 164
 thousand *rabăw 426
 thread *bray 471
 three *pe 537 IAl
 throat *rančŋ 147
 tie (v) *kăt 210 IA2
 tiger *kla 546 IAl
 time; long time *qdũñ 84;
 on time *tam 40; prior time
 PHrS *năh 340
 tobacco, see medicine
 toe PHrS *haqdraŋ 137
 together PHrS *pajũm 17;
 *saday 476
 tongue *rapit 228 II
 too PHrS *hôm 21
 tools *ton 173; twist tool
 *wěč 248
 tooth *saněñ 85 IAl
 touch *pel 399
 trade *madro 564
 trap, fish *pam 42 IAl; spear
 trap *qdăk 274
 tree *qlon 167; tree bark
 PHrS *kaqmoak 293; *gaqduh 375;
 thorny tree *qblan 164
 tribal land *xgòŋ 120 II
 trough, water *kanlan 160
 try *lon 175
 tubers *qbôm 19
 turn aside *weh 360
 turtle *kop 202
 twist tool *wěč 248

twisted rope *kasẽn 87

two *qbar 415 IB1

uncle *nẽ 522; *ma 553;
see father's older sibling

under *ka_ã kram 4, 49

unripe *adrĩh 349

until R che dāl IAL

up there *tĩ 515; get up
*qyũ 111

urinate PHrS *nom 34

very *hloy 481

Vietnamese *yun 73 IB2

village *palã 451; group
of villages *tarĩ 108

vine *kase 538 IAL

vomit *hãk 273 IAL II

wages; pay wages *apah 367

wait for PHrS *gõm 22

wall PHrS *manãt 211

want *lãp 194; *wãq 309

wash *_raw 444 IB1; wash
clothes *rũh 348; wash hands
*qñaw 441

wasp *on 168

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work (v) *jañ 152

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wring neck *wẽč 248

write *ačhĩh 336

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year *hanãm 24 IAL

yellow *dreñ 151

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you (sg.) *ĩh 332

younger sibling *oh 380; youngest
in family *hadroč 262

NOTES

1. The usual orthography of these languages is essentially the Vietnamese quốc-ngữ, with slight and sometimes confusing variations in each language. For the convenience of readers of this paper, however, the different orthographies have been standardized and more familiar symbols used. The Vietnamese ch, nh, and ng are herein written č, ñ, and ŋ. Finals u, uh, and uq are written w, wh, and wq. Finals i, ih, and iq are written y, yh, and yq. Final glottal stop ʔ is written q. B and Hr final o is written w. S and Hr initial v is written w. Hr c is written k. B main syllable vowels ɔ̃ and ɛ̃ are written ə and ɛ̃. Presyllable vowels B ɔ̃ and S o are written a.

Short vowels are marked by a breve (˘) above the vowel; long vowels are unmarked. Breathy or "deep" vowels are marked with a grave accent (̀); laryngealized vowels with an acute accent (́); nasalized vowels with a lowered dot (̣). B semi-vowels are indicated with a lowered circumflex (̣̂).

2. Vowel register contrast has been described in Khmer (Cambodian), Mon, Kuy, Brū, Halāng, Jeh, Hrê, Sedang, and, nonphonemically, in several other Mon-Khmer languages of VietNam. The naming of the two contrasting vowel registers, however, has not been uniform. The phonetic manifestations of each register varies from language to language. The one opposition which relates register contrasts among the various languages is tenseness versus laxness. Thus "Tense Register" and "Lax Register" are used in this paper for their general applicability to each language. Gregerson (1970) relates the Tense Register to a retracted "tongue-root position" and the Lax Register to an "advanced tongue-root position" thereby relating these registers to a more universal phenomenon (cf. Pike, 1967). Corresponding terminology has been:

	Henderson 1952:151 Phillips (1962) Smith 1967b:43-50	Jenner 1966:37	Henderson (1952)	Gregerson (1970)
Tense Register	First Register	Low Series	Head Register	Retracted tongue-root position
Lax Register	Second Register	High Series	Chest Register	Advanced tongue-root position

3. Vowel height-register correspondence may account for what seemed an unusual recitation of vowel letters by a Hal'ang speaker, Din, Cooper's teacher. Rather than saying a-e-i-o-u with all clear vowels, he unconsciously pronounced the two high vowels with breathiness (the Hal'ang Lax Register): a-e-ĩ-o-ũ.

4. In other North Bahnaric languages, however, these final nasals are not invariable. In Kotua (Smith, 1970b) and Cua (Burton and Maier, 1966) they have all become voiceless stops except in syllables with initial nasals, h or q. In Mòdra, a western dialect of Tòdrah, final nasals are retained after initial nasals and q, and after long vowels; i.e. after short vowels without initial nasals they become voiceless stops (Gregerson and Smith, 1970).

5. In Tòdrah final voiceless stops have merged to glottal stop in PNB Tense Register syllables; the various stops have been retained, however, in PNB Lax Register syllables. Tòdrah retains final h only after PNB Lax Register vowels; after Tense Register vowels Tòdrah has an open syllable with a laryngealized vowel—the only occurrence of laryngealized vowels in Tòdrah. Final h does not occur in Southern Jeh but is manifested by a final rising tone (Gradin, 1966).

6. In Mòdra, a western dialect of Tòdrah, final glottal stops of both registers are lost, whereas in Didrá, an eastern dialect of Tòdrah, they are all retained.

7. Neither Tòdrah nor Kotua, a language to the east of S, retain any final l.

8. Didrá does not retain any final r, whereas Mòdra retains final r in both registers. Final r merges with l in Cua.

9. PNB final *yh becomes a final voiceless lh in Cua, a unique final consonant in VietNam. Cf.: Cua vâlh 'snake' (word no. 494 below), sâlh 'sneeze' (499), wâlh 'armspan' (508).

10. Unique as a three (phonetic) register system seems, Tòdrah—a language group contiguous to the Sedang—has been reported to have three contrastive vowel qualities (breathy, clear, and laryngealized) in open syllables. Historically, however, the laryngealized vowels correspond to a Tense Register final h which they have lost. Cf. Gregerson and Smith, 1970.

11. Banker's analysis of Bahnar initial consonants (1961) results in 33 consonants: the above 19 plus qb, qd, qj, hm, hn, hñ, hn̥, qm, qn, qn̥, qn̥̥, qw, ql, qy. Reanalyzing these complex unit phonemes using the cluster center and cluster modifier approach (Smith, 1968), Bahnar cluster centers and cluster modifiers are identical to the other languages.

12. Banker agrees that B kadrəm 'crowded' probably has an infix: krəm + -an-.

13. Doublet: words 4 & 49. PNB *ka_əm krom, B kaqnəm rôm, PJH krum, S kadam 'underneath'.

14. Doublet: see word 4, Note 13.

15. Though B does not have a short vowel here, the reconstructed short vowel is confirmed by Mōdra kópēt, where final nasals become voiceless stops only after short vowels.

16. Though *yun is consistently Tense Register in these languages it occurs as Lax Register in Brū yuan, Khmer yù:ən, and Mon yōn (Miller and Miller, n.d.; Jacob, 1968; Shorto, 1962).

17. Note the nominalization infix *-an- which is reconstructed here for PNB. *pěñ 'to shoot' + *-an- → *maněñ 'crossbow'.

18. Hr ku- is a frequent presyllable with body parts.

19. See Note 18.

20. Doublet: words 142 and 380. PNB *qñǝŋ ǝh, B qñǝŋ oh, S ñǝŋ o 'relatives'.

21. Doublet: words 192 and 414. PNB *tǎp dǎr, PJH tǎp, S rata tǎ 'to encircle'.

22. Though *mǎt is consistently Tense Register in these languages it occurs as Lax Register in Kuy mǎt and Mon mōt (Johnson and Thomas, 1966).

23. Doublet: words 318 and 249. PNB *qmeq qmǎč, B qmêq qmǎk, Hr qmeq qmač, S qmê qma 'evil'.

24. Doublet: see word 249 and Note 23.

25. Doublet: PNB *qloq qlěq, B lalěq, PJH qlǝq, S qlo 'to know, certainty'.

26. ta- is a reciprocal action prefix in these words.

27. See word 142 and Note 20 for the use of this word in a doublet.

28. Doublet: PNB *_bǎl, B dih bǎl, Hr da baw, S dēy pó 'each other'.

29. Note the nominalization infix *-an- which is here reconstructed for PNB. *pǎr 'to fly' + *-an- → *manǎr 'wing'.

30. Doublet: see word 192 and Note 21.

31. Hr bayq 'two' has final q consistent with Hr numbers one through three: Hr mōyq, bayq, piq; PHrS *qmōyq, *bea, *pe (words 490, 415, 537).

32. Rengao puā, por, DakSut Sedang pda 'cooked rice'; Central Sedang hme 'cooked rice'.

33. ES tadrāw 'six' is from Kotua Sedang, Kon Hring Sedang, Rengao, and DakSut Sedang; tadrōw is from Central Sedang and Greater Sedang.

34. Though *law is consistently Tense Register in these languages it occurs as Lax Register in Brū liau and Mon lëa.

35. Though *plëy is consistently Lax Register in these languages, it occurs as Tense Register in Kuy play and Khmer phlae.

36. Though *roy is consistently Tense Register in these languages, it occurs as Lax Register in Kuy quṛuay, Brū ruai, and Mon rūi.

37. Though *reyh is consistently Tense Register in these languages it occurs as Lax Register in Kuy rēh, Brū rēh, and Mon r3h.

38. Though *tī is consistently Lax Register in these languages and in Mon tī, it occurs as Tense Register in Kuy tēē, Brū atī, and Khmer day.

39. Hr piq 'three' has final q consistent with Hr numbers one through three; see Footnote 31. Also note that B pēṇ is not cognate with the other languages; and that 'one' is only indirectly related to B, word 490. This raises questions concerning the theory that number words are the words most apt to be cognate between languages.

40. S haqwā 'rightside' has presyllable ha- and vowel nasalization paralleling haqō 'leftside', word 436.

41. PNB *xg is written to indicate the presence of a consonant cluster, the exact nature of which is not yet clear. Note, however, for word 389 *xgāl 'head' that Blood (1968) has reconstructed Proto-Mnong *kmōl 'top' from such other South Bahnaric forms as Chil ngkōl and Kōho Srē kōpōl.

42. I am especially indebted to Kenneth Gregerson for encouraging me to follow this question to the conclusion reached herein, contrary to that of previous versions of this paper.

43. Kenneth Gregerson kindly supplied the Rengao (R) and Sedang Rengao (SR) data.

44. In the Kuy list the symbols have basically the Vietnamese quốc-ngũ values except A is a back vowel lower than Vietnamese o; q is glottal stop.

45. The following orthographic changes are made in this paper: o is used for ɔ; i for ɪ; e for ɛ; u for ʊ; ɲ for ɳ; and q for ʔ.

46. The following orthographic changes are made in this paper: q for ʔ; ɲ for ɳ; o for ɔ; e for ɛ; a for ə; 3 for ə.

47. This, in turn, is a function of the distribution or frequency of the environment from which such registers have been derived. That register has developed from the conditioning environment of the initial consonants has already been shown for both Mon and Khmer. In the Mon dictionary, for example, words with initial nasals (ɲ, ɲ, n or m) or oral consonants (y, r, l, or w) are more frequently of the Lax Register than the Tense Register. Words with any of the more numerous and functionally more important initial consonants, including voiced and voiceless stops, aspirated stops, voiceless nasals, and s, are more frequently of the Tense Register than the Lax Register. As the conditioning environment for register development has a greater or lesser frequency in, say, Proto-Austroasiatic, so have the resulting registers in the descendant languages a larger or smaller inventory of words.

48. In personal communication.

49. In Bahnar and Chrau (which have no active register system) this phenomenon is manifested by vowel position alone as the telltale sign of original register opposition. Note the following two examples:

B kalɔŋ 'small puff of smoke'

B kalɔŋ 'large cloud of smoke'

C krɔc 'to swallow a little'

C krɔc 'to swallow a lot'

In each of these examples the low vowel corresponds to the Tense Register "diminution" and the high vowel to the Lax Register "augmentation". These examples are from, respectively, Banker (1965) and David D. Thomas by personal correspondence.

Kenneth D. Smith
KonTum, VietNam
April 21, 1970

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Errata:

page 4	line 2	fond	read	found
page 6	line 10	single	read	simple
page 54	lines 7,8,9	column 1		
		*ēl	read	*ēl
		*āl		*āl
		*ūl		*ūl

page 96 column 2 line 2 snake, add word no. 494