

THE DEVELOPMENT OF TŌDRAH REGISTER

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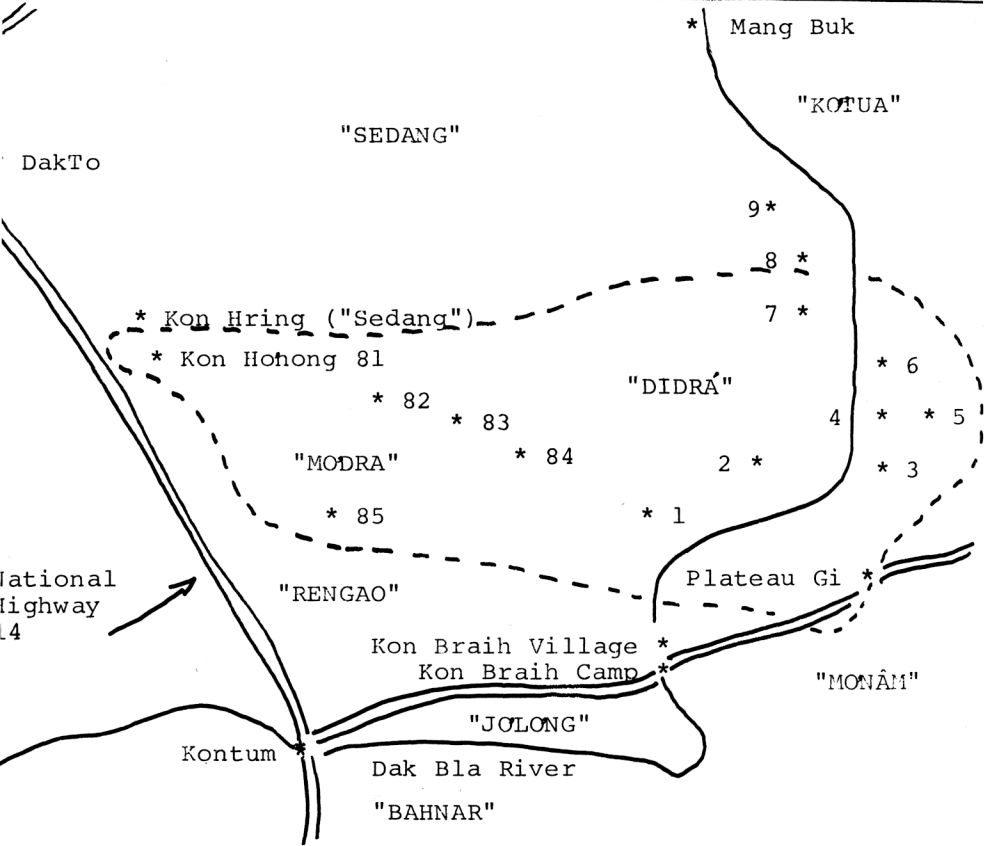
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0. Introduction

Although the presence of the Tōdrah language in Kontum Province has for some time been reported by both official and linguistic sources, little linguistic material has been published concerning it to date (Maspero, 1929:65; Pinnow, 1959:3; Smith, 1967; Thomas, 1969). In this paper the authors present their analysis of the register systems¹ of two Tōdrah dialects--Didra and Mōdra--and an explanation of the derivation of these two register systems as well as that of Sedang from Proto-North-Bahnaric. Other phonological aspects of Tōdrah will be noted in this introduction. Though based only on some brief word lists representing parts of the Tōdrah language area, the general pattern seems evident and is consistent in most respects with the phonological systems of neighboring languages.²

This language group has been variously identified by its speakers as *kōdra*, *tōdraq*, *pōdra*, *pōdra*, *mōdra*, *didra*, and *didrah*.³ In order to retain these terms to identify its various dialects the authors have chosen the term Tōdrah to designate the entire language group.

The Tōdrah language area extends from Kon Hōng Village on National Highway 14 northwest of Kontum City to Kon Braih and Plateau Gi to the northeast. These western and eastern extremities of the language area are represented by the Mōdra (M) and Didra (D) dialects, respectively. See Map 1. This paper is hereafter limited to a discussion of these two dialects, M and D.⁴



Map 1. Modra-Didra ethnolinguistic area.

Note: (a) Villages in area of Kon Hôngong (Modra) include: Kon Mong Khoq, Kon Hôngang, Kon Mong Cho Brang, Kon Hring (to be distinguished from the Sedang Kon Hring), Kon Jori ("dra"), Kon Kolok, Kon Tai, and Kon Monhal.

(b) Villages along the Dak Bla River north of Plateau Gi (Didra) include: 1 Sak Peq; 2 Kon Sak Vang; 3 Kon Rông; 4 Kon Hnaq; 5 Kon Biu; 6 Kon Rôn; 7 Kon Kôdrang; 8 Kon Roma ("mixed"); and 9 Vi Hôngring ("Sedang").

(c) Villages included in Smith (1967) are: 81 Kon Hôngong ("kôdra"); 82 Kon Kotem ("tôdraq"); 83 Kon Jori ("pôdra"); 84 Kon Sôtiu ("pôdra"); and 85 Kon Kôlak ("bar i tang").

The Tódráh word pattern resembles that of the neighboring North Bahnaric languages having optionally an unstressed open presyllable with a schwa vowel and a stressed main syllable consisting of an initial consonant or consonant cluster, vowel and an optional final consonant. D has a fuller set of presyllable consonants than M. The former with its voiced stop presyllable consonants resembles Bahnar and Rengao, whereas the latter resembles Sedang. See Chart 1. Before voiceless stops D sometimes has an *x* without presyllable vowel.⁵

The Tódráh main syllable initial consonants are similar to those of the neighboring languages. See Chart 2. The data does not include the probable M *nh*. The voiced stops are sometimes prenasalized (cf. Sedang prenasalized stops). M has an affricated *ts* whereas D has only *s*. D also includes *ʒy*. For comparison note the Rengao consonants of Chart 3.

Both dialects have the usual North Bahnaric consonant cluster sets: *-l* (*pl*, *bl*, ...); *-r* (*pr*, *br*, D *mr*, ...); post aspiration (*ph*, *kh*); preaspiration (D *hm*, *hr*, *hw*, ...); and preglottalization (*qb*, *qm*, ...). Both dialects have instances of consonantal labialization (M *dw*, M *pw*, M *lw*, D *kw*); cf. Bahnar and Rengao semi-vowels.

The Tódráh main syllable vowels have contrastive length. With apparently 5 to 7 long and 3 to 5 short vowels in each of the two registers (plus vowel glides) the Tódráh vowel system resembles that of Rengao (see Chart 4). The charting of the vowels of the two Tódráh dialects will be given in Sections 2.1 and 2.2 below. Marginal vowel nasalization is found in both dialects.

The final consonants are typical of the area except that neither dialect has final *l* (cf. Sedang, Kótua, and Hré). Prestopped final nasals are found as variants of the plain nasals (cf. Jeh, Haläng). The complex final clusters *yh* and *yq* are considered complex phonological units as in the neighboring languages. Only M has final *r*. Only D has final *nh*; an expected final *ch*, however, was not recorded. See Chart 5.

1. Synchronic aspects

1.1 Didrá register

In the D word list of Section 3 it will be noted that D vowels are variously laryngealized (*Ṽ*), breathy (*Ṽ*) or clear (*V*). This three-way contrast of vowels is unique among the Vietnam register languages.⁷ Rengao, Haläng and Jeh, on the one hand, have only clear and breathy vowels (*V*, *Ṽ*), representing their tense and lax registers, respectively. Sedang, on the other hand, has only laryngealized and clear vowels (*Ṽ*, *V*), representing its tense and lax registers, respectively.

Modra	Didrá
p t k q	p t k q
	d g
m	m n
r	r
h	s h

Chart 1. Tódráh presyllable consonants

p	t	ch	k	q
b	d	j	g	
m	n	D nh	ng	
w	l r	y		
M ts	D zy		h	
D s				

Chart 2. Tódráh main syllable initial consonants
(M and D indicate the occurrence of a
consonant in only one dialect)

		Labial	Apical	Palatal	Dorsal	Glottal
Stop	vl	p	t	ch	k	q
	vd	b	d	j	g	
Continuant	nasal	m	n	nh	ng	
	vd	w	l,r	y		
	vl		s			h

Chart 3. Rengao main syllable initial consonants
(the symbol *x* in Rengao represents the
aspirated variety of *ch*, i.e. /chh/.
Accordingly it is not listed here among
the simple consonants.)

Lax Register ⁶						
	Front		Central		Back	
	Long	Short	Long	Short	Long	Short
High	i [i]	ĩ [ĩ]			u [u]	ũ [ũ]
Low	e [e]		a [ə]	ã [ã]	o [o]	

Tense Register						
High	i [e ⁱ]				u [o ^u]	ø [ɔ]
Low	e [ɛ]	ẽ [ẽ]	a [a]	ã [ã]	o [ɔ]	

Chart 4. Rengao vowels

p	t			k
m	n	D	nh	ng
w	y			
	yh			h
	yq			q
	M r			

Chart 5. Tôdrah final consonants

Further inspection of the data, however, shows that the vowels have differing environments in terms of the final consonant. Laryngealized vowels occur only in open syllables, i.e. $\check{V}\emptyset$ (including those with final y); breathy vowels occur in open syllables (including those with final w and y), with final nasals, glottal stop and, though only after long vowels, with oral stops, i.e. $\check{V}\emptyset$, $\check{V}N$, $\check{V}q$, $\check{V}P$; whereas clear vowels occur in open syllables, with final nasals, glottal stop, h and, though only after short vowels, with oral stops, i.e. $V\emptyset$, VN , Vq , Vh , VP .

The basis for register identification is contrast; i.e. with all other factors remaining generally constant the tongue-root articulator has contrastive retracted versus advanced positions (herein identified with the tense and lax registers, respectively) (Gregerson, 1970). In the D data this two-way contrast is noted clearly in syllables having final glottal stops or nasals. In open syllables, however, an apparent three-way contrast occurs while those with final h yield no contrast. Syllables with final oral stops exhibit redundancies since the features tense register and short vowel converge as do lax register and long vowel. Thus the ten final vowel-consonant combinations in terms of laryngeal-pharyngeal articulations are as follows (note however that length is contrastive before nasals but is not significant to the present discussion):

Laryngealized:	$\check{V}\emptyset$
Clear:	$V\emptyset$, VN , Vq , $\check{V}P$, $\check{V}h$
Breathy:	$\check{V}\emptyset$, VN , Vq , VP

At first sight this array might seem to imply a three-way register contrast; however, $\check{V}\emptyset$ and Vh may very plausibly be interpreted as terms in an opposition of laryngeal constrictives (spirants). And, indeed, this precisely reflects their historical relationship (see Section 2.1). The initial three-way register contrast, then, is actually two-way, though the manifesting features are skewed "up", i.e. there is an escalation of tension for the laryngeal spirants --phonetically identifiable with inward tongue-root retraction and accompanying laryngealization.⁸

This would leave $V\emptyset$ and $\check{V}\emptyset$ as a register pair parallel to VN and $\check{V}N$, and to Vq and $\check{V}q$. There remain, however, $\check{V}P$ and VP which contrast along two parameters--vowel length and articulatory quality. Breathiness and length are thus redundant; similarly, clearness and shortness are redundant. In implicational terms these features are reciprocal in the environment VP ; breathiness entails a long vowel and vice versa while clearness implies shortness and vice versa. Chart 6 shows the resultant D registers.

Register (Vowel articulation)	Continuants		Glottal	Stops		Spirants	Register (Vowel articulation)
	Nasal	Oral		Short	Long		
Tense						v̥∅	Tense Register (laryngealized)
Register (clear)	VN	v∅	vq	v̥P		vh	Lax
Lax Register (breathy)	v̥VN	v̥∅	v̥q		v̥P		Register (clear)

Chart 6. Didrá Registers

1.2 Mòdra register

M, like D, has *prima facie* three-way register contrast in open-syllables. A general two-way contrast exists with final nasals, *r*, glottal stops and with final oral stops (but only after short vowels in the latter case). With final oral stops after long vowels and with final *h* no contrast exists. Thus there are thirteen vowel-consonant combinations involved in Mòdra register discussions (length is contrastive before nasals and *r*, but is not significant to the present discussion):

Laryngealized: $\hat{V}\emptyset$ Clear: $V\emptyset, VN, Vr, Vq, \check{V}p, Vh$ Breathy: $\hat{V}\emptyset, \hat{V}N, \hat{V}r, \hat{V}q, \hat{V}p, \hat{V}p$

As with D. $\hat{V}\emptyset$ and Vh are interpreted as counterparts manifesting contrastive register. Oral stop finals again provide the context for redundancy between the features of register and length. This time, however, the configuration is different and the rules are not reciprocal. That is, length implies breathiness, but not vice versa; while clearness implies shortness, but not vice versa. Chart 7 shows the resultant M registers.

2.0 Diachronic aspects

The modern Tódrah register systems are a result of significant historical changes. Similar to developments in Sedang, these processes involve the loss or alternation of final consonants, as well as pharyngeal and laryngeal modifications. The register derivations of each of the two dialects are discussed separately below using a series of numbered rules. Examples of each rule are given in Section 2.5. The reconstructed starred (*) forms of Proto-North-Bahnaric (PNB), of which Tódrah is a descendent, are the basis of these derivations (Smith, 1970). There are no important developments noted in the main syllable initial consonants. PNB long vowels are frequently glided in D.

2.1 Didrá register derivations

The PNB tense register final **h* became a laryngealized open syllable vowel in D. The PNB lax register final **h* is retained, though usually with clear articulation (see Rule D₁).

The PNB tense register final oral stops became glottal stops in D, but the PNB lax register final stops are retained (see Rule D₂) with breathy vowel articulation. Then all short vowels with final stops became associated with clear voice quality (Rule D_{2a}).⁹ The shift in Rule 3 necessarily occurred after that in Rule 2; otherwise PNB short lax register vowels with stops would have become clear (D_{2a}), thereby merging with the tense register, and then the final stops (including the formerly lax register stops) would have become glottal stops (D₂) --but they didn't.

Register (Vowel articulation)	Continuants				Stops			Spirants	Register (Vowel articulation)
	Nasal	Oral		Glottal	Oral				
		Flap	Open		Short	Long			
Tense								v̆ø	Tense Register (laryngealized)
Register (clear)	VN	Vr	VØ	Vq	V̆P			Vh	Lax
Lax Register (breathy)	V̆N	V̆r	V̆Ø	V̆q	V̆P				Register (clear)

Chart 7. Mòdra Registers

PNB final $*l$ and $*r$ have both been lost in D. No other shifts have occurred in open-syllables, or with final nasals or $*q$ (Rule D3).¹⁰ In the following rules tense register is TR and lax register is LR:

$$(D1) \quad * \begin{Bmatrix} -Vh \\ \text{LR} \end{Bmatrix}^{\text{TR}} \longrightarrow D \begin{Bmatrix} -V\emptyset \\ -Vh \end{Bmatrix} - (\cdot) :$$

$$(D2) \quad * \begin{Bmatrix} -VP \\ \text{LR} \end{Bmatrix}^{\text{TR}} \longrightarrow D \begin{Bmatrix} -Vq \\ -VP \end{Bmatrix} -$$

$$(D2) a \quad * \begin{Bmatrix} -\check{V}P \\ \text{LR} \end{Bmatrix} \longrightarrow D \begin{Bmatrix} -\check{V}P \\ \text{LR} \end{Bmatrix} -$$

$$(D3) \quad * \begin{Bmatrix} -VN, -Vq, -V\emptyset, -Vl, -Vr \\ \text{LR} \end{Bmatrix}^{\text{TR}} \longrightarrow D \begin{Bmatrix} -VN, Vq, V\emptyset, -V\emptyset, -V\emptyset \\ \text{LR} \end{Bmatrix} -$$

From the above rules it can be seen how there has been a general reduction from PNB to the ten D combinations discussed in Section 1.1 above. The final h shift (D1) did not create or lose any contrasts. Four PNB combinations were lost as D final l and r of both registers merged with $V\emptyset$ and $\check{V}\emptyset$ (D3). Though the PNB tense register $*VP$ merged with Vq (D2), its hole in part was filled by PNB $*\check{V}P$ (D2a). These successive shifts in D are shown in Chart 8.

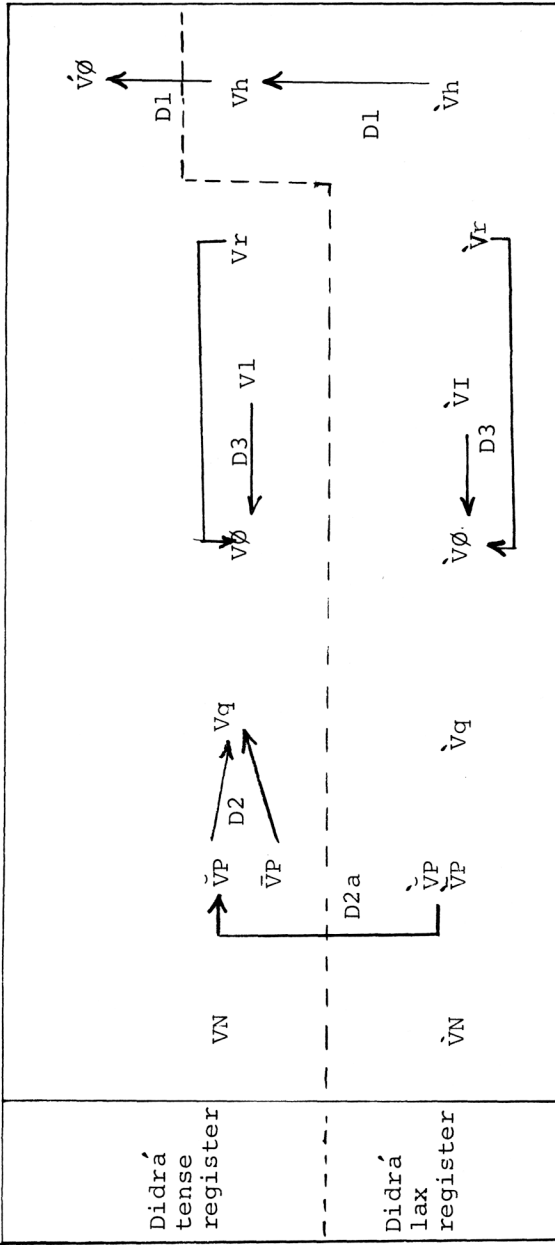


Chart 8. Register and final shifts of Didrá (numbers refer to the Rules given in the text; arrows begin at PNB forms and point to the derived Didrá forms)

The D vowel phonemes, as analyzed in preliminary fashion here, are shown in Chart 9. These are displayed in a framework of the dual prosodic register system. It appears that D, like Jeh and Halāŋ, has five short vowels-- occasioned in the tense register by the merging of *V̄P with Vq -- in contrast with Rengao which has only three short vowels. Like Sedang and Hrê, there are possibly seven lax register vowel positions, occasioned by the merging of *Vl and *Vr with VØ. A note is included in each register frame stating the vowel quality in its various environments.

	Short		Long		Glided	
Tense	(i̇)	(u̇)	i	u	ia	ua
	ě	ö	e	o	ea	oa
Register	ä		a			
	with N, Ø, q--clear with h--laryngealized and no [h]					
Lax	i̇	u̇	i	u	ia	ua
	(è) ə	o	è	ə	ò	
Register			(è)	(ò)		
	with N, Ø, q--breathy with h--clear or breathy					
Redundant register/length	with P only: V̄--clear and V̄--breathy (though non-contrastive)					

Chart 9. Didrâ vowel phonemes (parentheses indicate vowels of questionable status; circumflex marks higher vowel than its plain counterpart).

2.2 Mōdra register derivations

The M derivations contrast to those of D in several respects and require more complex rules. As in D, the PNB tense register final *h became a laryngealized open syllable vowel in M, and the PNB lax register final *h was retained (see Rule M1).¹¹

Unlike D, PNB final glottal stops have been lost in M, and the PNB tense register articulation merged with the lax register breathy articulation (Rule M2).

As in D, the PNB tense register final stops became q in M, but the PNB lax register final stops were retained (M3, M4, M5). The derived register articulation with these

PNB stops, however, is a function of the preceding consonant and/or vowel length: (a) with long vowels and a preceding *q* or *h* (together symbolized G), there is no change in register articulation (M3); (b) with long vowels and any other preceding consonant (symbolized C₁), the tense register shifts to a breathy articulation (M4); (c) with short vowels the lax register shifts to a clear articulation (M5).

Rules M3, M4, and M5 account for both $\check{V}P$ and $\bar{V}P$, but leave $\bar{V}P$ and $\check{V}P$ as holes in the system of final stops; of these two holes the latter is filled by a subsequent M shift, while the former remains unfilled.

These stop shifts necessarily occurred after the glottal stop shift described above (M2); otherwise PNB tense register final stops, after having become final glottals Vq or $\check{V}q$ (M3, M4, M5), would have undergone a subsequent shift to $V\emptyset$ -- but they didn't.

A unique nasal shift then occurred in M. PNB final nasals following long vowels or syllable-initial **q* or nasal are retained. All other final nasals (i.e. those following short vowels without a preceding **q* or nasal) have become stops. There is no register shift, however, involved with this nasal shift (see Rule M6). This shift necessarily follows the stop shifts with short vowels (M5); otherwise some of the nasals having become stops (M6) would, in turn, have become glottal stops and, in the case of the lax register, switched register (M5) but they didn't.¹²

Some of the words affected by the nasal to stop shift (M6) were affected by a subsequent register shift. Lax register short vowels with final stops preceded by a voiced consonant shifted to a clear articulation (see Rule M6a). This register shift necessarily occurred after that of Rule M6 inasmuch as it operates only on the forms resulting from (M6). Prior to (M6) all $\bar{V}P$ had merged to a clear vowel articulation (M5).

Lastly it is noted that there is no register shift involving open-syllables, final **l* or **r*. Only final **l* is lost in M (see Rule M7). (D lost both **l* and **r*.)

Rules:

$$(M1) \quad * \left\{ \begin{array}{l} -Vh \\ -Vh \end{array} \right\} \begin{array}{l} \text{TR} \\ \text{LR} \end{array} \longrightarrow M \left\{ \begin{array}{l} -V\emptyset \\ -Vh \end{array} \right\} \begin{array}{l} ' \\ - (') \end{array}$$

$$(M2) \quad * \left\{ \begin{array}{l} -Vq \\ -Vq \end{array} \right\} \begin{array}{l} \text{TR} \\ \text{LR} \end{array} \longrightarrow M \left\{ \begin{array}{l} -V\emptyset \\ -V\emptyset \end{array} \right\} \begin{array}{l} ' \\ ' \end{array} \quad ^{13}$$

- (M3) $* \left\{ \begin{array}{l} G\bar{V}P \\ \end{array} \right\} \begin{array}{l} \text{TR} \\ \longrightarrow \\ \text{M} \end{array} \left\{ G\bar{V}q \right\}^{14} -$
- (M4) $* \left\{ \begin{array}{l} C_1\bar{V}P \\ \text{LR} \end{array} \right\} \begin{array}{l} \text{TR} \\ \longrightarrow \\ \text{M} \end{array} \left\{ \begin{array}{l} C_1\bar{V}q \\ C_1\bar{V}P \end{array} \right\}^{15}$
- (M5) $* \left\{ \begin{array}{l} -\check{V}P \\ \text{LR} \end{array} \right\} \begin{array}{l} \text{TR} \\ \longrightarrow \\ \text{M} \end{array} \left\{ \begin{array}{l} -\check{V}q, -\bar{V}q \\ -\check{V}P \end{array} \right\}^{16}$
- (M6) $* \left\{ \begin{array}{l} -\bar{V}N, \left\{ \begin{array}{l} q \\ N \end{array} \right\} \check{V}N, C_2\check{V}N \\ \text{LR} \end{array} \right\} \begin{array}{l} \text{TR} \\ \longrightarrow \\ \text{M} \end{array} \left\{ \begin{array}{l} -\bar{V}N, \left\{ \begin{array}{l} q \\ N \end{array} \right\} \check{V}N, C_2\check{V}P \end{array} \right\}^-$
- (M6a) $* \left\{ \begin{array}{l} C_{vd}\check{V}P \\ \end{array} \right\} \begin{array}{l} \text{TR} \\ \longrightarrow \\ \text{M} \end{array} \left\{ C_{vd}\check{V}P \right\} -$
- (M7) $* \left\{ \begin{array}{l} -V\emptyset, -Vl, -Vr \\ \text{LR} \end{array} \right\} \begin{array}{l} \text{TR} \\ \longrightarrow \\ \text{M} \end{array} \left\{ \begin{array}{l} -V\emptyset, -V\emptyset, -Vr \end{array} \right\}^-$

Note: G represents *q* and *h*.
 C₁ represents any initial consonant except *q* or *h*.
 C₂ represents any initial consonant except *q* or *N*.
 C_{vd} represents voiced consonants including clusters like *pl*; the voiceless consonants excluded here include clusters like *kr* and *hw*.

The above rules indicate how there has been a reduction from PNB to the 13 M combinations discussed in Section 1.2 above. The final *h* shift (M1) did not create or lose any contrasts. PNB forms with final **l* were lost by merger (M7) and not filled again. Though **Vq* merged with *V∅* (M2), its hole was filled by **GVP* (M3) and **V̇P* (M5). The position thus left by the latter was, in turn, filled by **V̇P* (M5) **C₂V̇N* (M6) and, later, by **C_{vd}V̇P* (M6A). Further, the vacancy left by **V̇P* (M5) was filled by **C₂V̇N* (M6). Also, though **Vq* merged with *V∅* (M2), its hole was filled by **C₁V̇P* (M4). The only vacancy still existing, therefore, is *V̇P*. These successive shifts are shown in Chart 10.

The register and final shifts of nasals and stops have created new bases for the contrasts in M. The M length contrast before *q*, if it is maintained, has derived from the PNB length contrast before final stops (M3, M5). The oral stop versus glottal stop contrast with short vowels (tense register) has derived from PNB final stops with an assist from the PNB nasals (M5, M6, M6a). The register contrast with short vowels and final stops has derived from the PNB register contrast of nasals (M6, M6a). The length contrast with lax register stops has derived from PNB short vowels with nasals (M6) and PNB long vowels with stops (M4). The register contrast with long vowels and final glottal stop has derived from the PNB tense register with oral stops, based only on the differing initial consonants (M3, M4). These related contrast shifts are pictured in Chart 11.

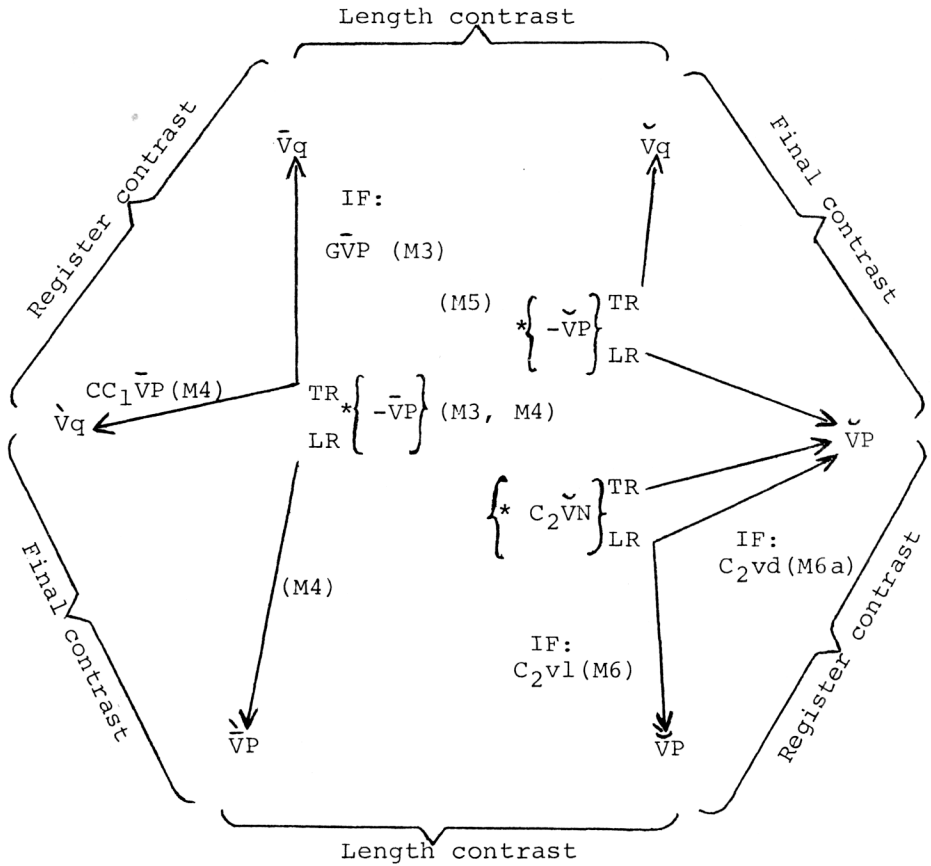


Chart 11. Contrast shifts of Mōdra (PNB forms are cited in the center; Mōdra forms are cited on the periphery).

The M vowel phonemes, as tentatively analyzed in this study, are shown in Chart 12. The five short tense register vowels are occasioned by the normally high lax register short vowels with stops becoming tense, supplementing the normally low tense register short short vowels. The seven long lax register vowels are occasioned by the mergers of *Vq, *Ṽq and *Vl with Ṽ∅.

A display of vowels as in Charts 9 and 12 becomes increasingly inadequate as it is noted how each final consonant type has its own unique vowel system. A more complete presentation would detail the constraints on vowel cooccurrence with each final consonant or consonant type. This must, however, await more extensive investigation than has been possible to date.

	Short	Long	Glided
Tense Register	ĩ ũ ē õ ă	i u e o a	ia ua
	with N, r, ∅, q, p (Ṽ only) — clear with h__laryngealized and no [h]		
Lax Register	ĩ̃ ũ̃ ẵ	ĩ̃̃ ũ̃ ē̃ õ̃ ẵ	ĩ̃a ũ̃a
	with h__ clear with N, r, ∅, q, p (Ṽ only) __breathy		
Non-contrastive register	with P(V only) __breathy (though non-contrastive)		

Chart 12. M̃dra vowel phonemes (gave diacritic marks laxness; circumflex indicates raised tongue height).

2.3 Comparison with Sedang

Of the four D and eight M rules only those dealing with PNB *Vh (D1 and M1) and *Vl (D3d and M7b) could possibly have occurred before these two dialects of Tódrah split apart from each other. Although the oral stop shifts (D2-2a and M3-4-5) are almost identical they necessarily occurred after the dialects had separated inasmuch as the glottal stop shifts (D3b and M2), ordered before the oral stop shift in M, differ from each other. Clearly the nasal shifts (D3a and M6) and the *r* shifts (D3e and M7c) are also independent in the two dialects.

In Sedang (S) there are only six contrastive final vowel-consonant combinations which include two contrastive register sets and two non-contrastive syllables (final P and *h*). See Chart 13. These are the result of a unique set of register and final shifts.

	Contrastive register		Neutralized register	
Tense Register	-V̇N	-V̇∅	-VP	-Vh
Lax Register	-VN	-V∅		

Chart 13. Sedang registers

As in D, PNB final **ʔ* and *r* have been lost in S (See Rule S1).

The register manifestation of open-syllables or those with final nasals then shifted to laryngealized vowels for the tense register and clear vowels for the lax register (See Rule S2). The shift of Rule S2 necessarily followed that of Rule S1, inasmuch as the PNB tense register vowels in syllables with *ʔ* and *r* became laryngealized despite the loss of the final consonant; similarly the PNB lax register vowels in syllables with *ʔ* and *r* became clear despite the loss of the final consonant. Then PNB stops and *h* of the tense register were lost while those of the lax register were retained and their vowels became clear (See Rule S3). All final glottal stops were lost and the lax register breathy vowels merged with the clear vowels (See Rule S4). The open syllable shift (S2b) necessarily occurred before that of either (S3) or (S4); otherwise the PNB tense register final P, *h* and *q* would have laryngealized vowels--but they don't.

Rules:

$$\begin{array}{l}
 \text{FN 18) } (S_1) \\
 * \left\{ \begin{array}{l} -Vl, -Vr \\ \text{LR} \end{array} \right\}^{\text{TR}} \longrightarrow S \left\{ \begin{array}{l} -V\emptyset \\ \text{LR} \end{array} \right\} \begin{array}{l} -(\text{TR}) \\ \text{18} \\ \text{LR} \end{array} \\
 (S_2) \\
 * \left\{ \begin{array}{l} -VN, -V\emptyset \\ \text{LR} \end{array} \right\}^{\text{TR}} \longrightarrow S \left\{ \begin{array}{l} -VN, -V\emptyset \\ \text{LR} \end{array} \right\} \\
 (S_3) \\
 * \left\{ \begin{array}{l} -VP, Vh \\ \text{LR} \end{array} \right\}^{\text{TR}} \longrightarrow S \left\{ \begin{array}{l} -V\emptyset, -V\emptyset \\ -VP, -Vh \end{array} \right\} \\
 (S_4) \\
 * \left\{ \begin{array}{l} -Vq \\ \text{LR} \end{array} \right\}^{\text{TR}} \longrightarrow S \left\{ \begin{array}{l} -V\emptyset \\ \text{LR} \end{array} \right\}
 \end{array}$$

The above register shifts in S account for the abundance of open syllable words in S. The massive reduction of PNB forms in S is all associated with the loss of finals. Finals *l, *r, and *q of both registers are lost; the PNB tense register *VP and *Vh merge with V \emptyset resulting in a neutralization of register. These successive shifts are shown in Chart 14.

The only point at which T \ddot{o} drah and Sedang shifts could have occurred prior to the splitting apart of these language groups is the shift involving the loss of final *l (D3d, M7b, and S1a).

Sedang could have shared the *VP and *Vr shifts with D-but not with M; or Sedang could have shared the *Vq and *VP shifts (ordered) with M (necessitating another Vq \rightarrow V \emptyset shift later in Sedang)--but not with D. The shared M and D *Vh shift appear to overrule the possibility of relating Sedang with one of the T \ddot{o} drah dialects to the exclusion of the other. But the indication of apparent genetic relationship of T \ddot{o} drah and Sedang at the point where *l was lost is contradicted by the consideration of Hr \hat{e} , a language also closely related to Sedang. Neither Hr \hat{e} nor Sedang have contrastive vowel length or final l. But because the Sedang and Hr \hat{e} reflexes of the latter seem to go in different directions, Proto-Hr \hat{e} -Sedang has been reconstructed without vowel length but with final *l. Now it seems that T \ddot{o} drah could have shared the simple vowel and centrally-glided vowel reflexes for lost *l with Sedang but not with Hr \hat{e} which has a final w (except before back vowels). Two possible relationships may be envisioned. If Hr \hat{e} broke away and independently lost vowel length and final l, then T \ddot{o} drah and Sedang could have shared their loss of l and Sedang

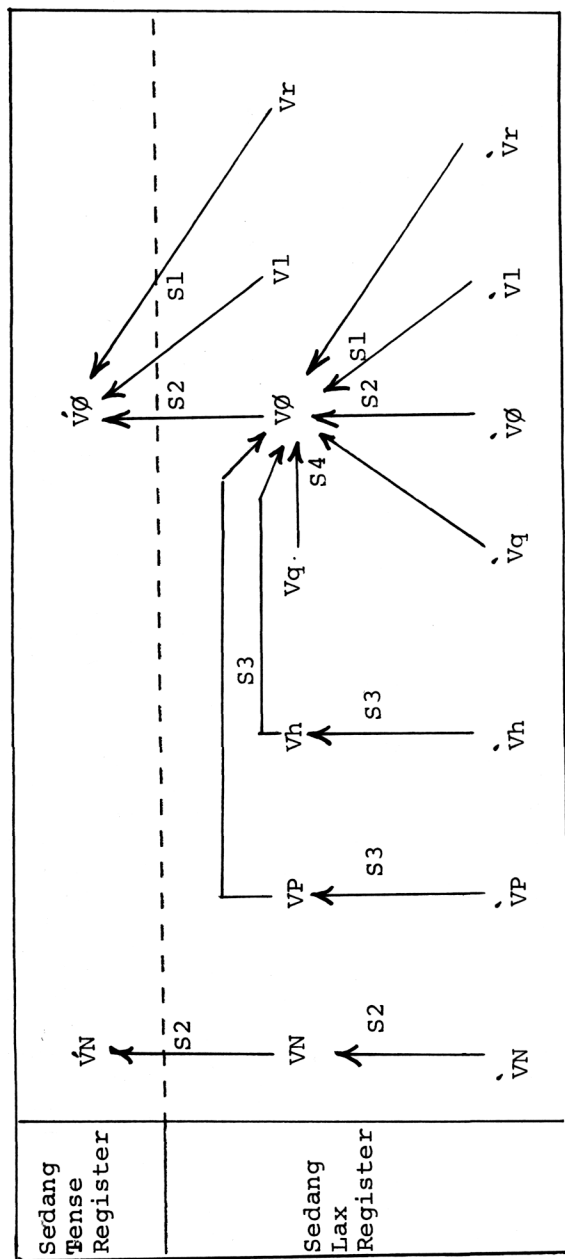


Chart 14. Register and final shifts of Sedang

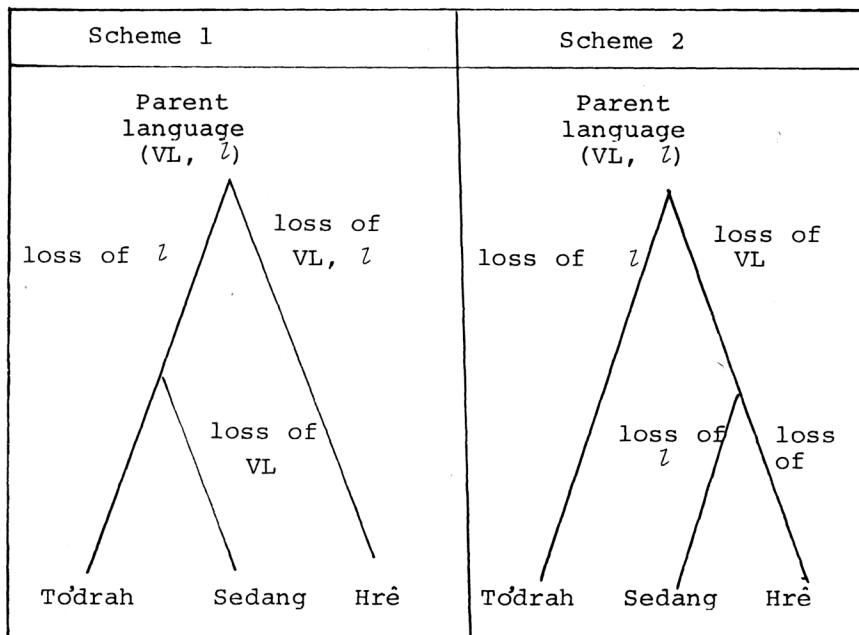


Chart 15. Alternate possible genetic relationships based on shared and independent loss of vowel length contrast (VL) and final ʔ (ʔ).

subsequently could have lost vowel length (Scheme 1 of Chart 15). Or if Tódrah first broke away and independently lost final ʔ, then Hrê and Sedang could have shared their loss of vowel length and each subsequently could have independently lost ʔ (Scheme 2, Chart 15).

Areal phonology suggest that the vowel length contrast is stable (only Hrê and Sedang do not have it) but finals ʔ and r are unstable (Jeh, Cua, Sedang, Hrê, Didrá lack r; Kótua, Hrê, Sedang, Módra lack ʔ). For this reason Scheme 2 seems to be the more likely inasmuch as it calls for only one instance of loss of vowel length contrast.

	No register shifts occur	Register shifts occur
No final consonant loss or change	\emptyset (D, M, S) N (D, S) r (M only) q (D only)	
Final consonant loss or change	N (M only) r (D and S) l (D, M, S)	h (S; D and M tensing) q (M and S) P (D, M, S)

Chart 17. Relation of final consonant types to register and final shift stability

This study points up the importance of viewing register in Mon-Khmer languages as a prosodic factor whose effects are evidenced not only in the initial consonants and the vowels (as if well known), but also in the final consonants as well.

In these three cases--Didrá', Mōdra, and Sedang--the final continuants (N, l, r, \emptyset) are most stable, not entering into any register shifts, but only being dropped or changed (e.g. N to P). Final h is less stable, causing tensing in D and M, and being partly lost in all three cases. The stops, P and q are least stable, changing register and changing or losing the final in all cases (see Chart 17).

			Unchecked		Checked				
					Stop	Spirant			
A.	Vietnamese	First Series	$v \left\{ \begin{matrix} N \\ \emptyset \end{matrix} \right\}$ (<i>ngang</i>)	$v \left\{ \begin{matrix} q \\ p \end{matrix} \right\}$ (<i>sắc</i>)	Vh (<i>hỏi</i>)				
		Second series	$\grave{v} \left\{ \begin{matrix} N \\ \emptyset \end{matrix} \right\}$ (<i>huyền</i>)	$v \left\{ \begin{matrix} q \\ p \end{matrix} \right\}$ (<i>nặng</i>)	Vh (<i>ngã</i>)				
B.	Didra	Tense register	VN	vø	vq	VP		vø Vh	
		Lax register	$\grave{v}N$	$\grave{v}\emptyset$	$\grave{v}q$	$\grave{v}P$			
	Modra	Tense register	VN	vø	Vr	vq	VP		vø Vh
		Lax register	$\grave{v}N$	$\grave{v}\emptyset$	$\grave{v}r$	$\grave{v}q$	$\grave{v}P$	$\grave{v}P$	
	Sedang	Tense register	$\acute{v}N$	$\acute{v}\emptyset$					
		Lax register	VN	vø				VP	Vh

Chart 18. Comparison of Vietnamese tone and Bahnaric register systems

the Tódrah and Sedang register systems. The syllable types are grouped in a parallel way, divided first between unchecked and checked, then the latter divided into stops and spirants.

The bifurcation of tones into two classes has long been observed in Chinese, Tai and Vietnamese (see Maspero 1912:88ff), where they are regularly associated with the voicing of the initial consonants. The Mon-Khmer register systems, not unlike the series in "tone" languages, also associate one prosodic set with voiced initials and one with voiceless initials (cf. Haudricourt, 1965). The tense and lax registers of North Bahnaric have been shown to correlate with register in Mon and Khmer (Smith, 1970). See also "Mnong vowel variations with initial stops" by Phillips (in this volume).

Spirants. The laryngealization of tense register *Vh in Tódrah and the tensing of lax register *Vh in Tódrah and Sedang, added to the evidence in Jeh (Gradin, 1965) of a rising tone pronunciation for *Vh words parallels further the historical development of Vietnamese laryngeal constructive (or rising tones *hoi*, and *nga* (Haudricourt, 1954).

Stops. In Didrá, before final stops, given either length or register the other is predictable. In Módra the conditions are narrower; i.e. if the vowel is long, lax register is predictable (but not vice versa), and if the register is tense, a short vowel is predictable (but again, not vice versa). In Sedang register is redundant for -VP syllable types. That stopped syllables have fewer prosodic contrasts has an interesting parallel in the tone systems of Tai, Vietnamese and Chinese (cf. the "entering tone").

Unchecked syllables. These are the more stable syllables, in that etyma of this historical type less often assume another shape. It may, however, become a melting pot for other reduced types. Similarly in Vietnamese, certain high set -Vq become -V̄ (*sác* tone), and the loss of final *h* yields -V̄ (*hoi* tone) and -V̄ (*nga* tone). Tódrah has had a fair amount of such reduction, in some cases leaving no trace, in others only the telltale laryngealization (V̄ < *Vh). Sedang, on the other hand, has had massive reduction (see Chart 13) becoming the "Pekinese" of the Bahnaric languages.

2.5. Comparative examples

The above 12 D and M rules are cited below with examples. On the left is given the PNB syllable type and reconstruction. The order of the examples follows

that of the M numbered rules M1 to M7 (PHrS indicates Proto-Hrê-Sedang reconstruction in lieu of PNB because of the lack of Bahnar or Proto-Jeh-Halång data; R indicates Rengao as closely resembling PNB).

	PNB		Didra'		Modra	Gloss
*-Vh (TR)	*pah	D1	pá	M1	pá	'chop wood'
	*oh		ó		ó	'younger sibling'
	PHrS *meh		mé		mé	'there'
*-Vh (LR)	*trüh		tröh		tröh	'arrive'
	*arÿn		rëh		rëh	'live'
	R nÿyh		nöyh		nuâyh	'heart'
	PHrS *rüh		röh		röh	'wash clothes'
*-Vq (TR)	*kräq	D3b	kraq	M2	kra	'old'
	R kãq		kaq		ka	'eat'
*-Vq. (LR)	*jiq		jiq		ji	'sick'
	*qdiq		diq		di	'all'
*GVP (TR)	*qdaq	D2	deaq	M3	daq	'water'
	*hak ¹⁹		hiaq		haq	'vomit'
*C1VP (TR)	*klak		kleaq	M4	klaq	'intestines'
	*tak		tëaq		taq	'spear'
*C1VP (LR)	*bip		bip		bip	'duck'
	*brok		brök		brök	'go'
*VP (TR)	*kãp	D2	kaq	M5	kaq	'bite'
	*mãt		mãq		maq	'eye'
	*ngök		ngöq		ngoq	'mountain'
*-VP (LR)	*kãt	D2	kãt		kãt	'tie'
		2a				
	*müt		mãt/möt		mot	'enter'
	R kɔ̄jip		gɔ̄jöp		kéchöp	'centipede'
*-VN (TR)	*maham	D3a	mahiam	M6a	maham	'blood'
	*pun		pudn		pun	'four'
	*rang		riang		aragng	'flower'
*-VN (LR)	(q) bën		bính		biën	'we-incl.'
	R jëng		jëng		jëngng	'leg'
	*kãtsëñ		k(σ) sëng		kotsëng	'bone'
*{q}VN (TR)	R ãm		ãm	M6b	ãm	'give'
	*hanãm		sonãm		hanãm	'year'
	*manëñ		manëng		manëng	'crossbow'
*{q}VN (LR)	*ũñ		ũdn		üt(n?)	'fire'
*C2VN (TR)	*baqdãm		padabm	M6c	patãp	'five'
	PHrS *lam		lãm		lãp	'go'
	R nãm					
	*pëñ		pëng		pëk	'shoot'

	PNB		Didrá		Mǝdra	
*C _{v1} VN (LR)	*tǎn *kaçin *krǎn *kǎn *qbin *plin		tǎng toçhidn krǎng kǎn bǝngng plǝng		tǎwk taçhit krǎwk kǎt bik plik	'hear' 'nine' 'knee' 'big' 'full' 'sky'
*C _{vđ} VN (LR)				M6c 6a		
	R gũng R hǝdrũng R dǎng		gǝng -- dǎngng		gũk hǝdrũk mondǝk	'forest' 'worm' 'stand'
*-V∅ (TR)	*pe *pay *tadrǎw	D3c	pi pe todrue	M7a	pi pǎy todru	'three' 'cook' 'six'
*-V∅ (LR)	*çhi *blew PHrS *wi		çhi blũ vi		çhi blũ vi	'head louse' 'thigh' 'they-plural'
*-V1 (TR)	PHrS *apal	D3đ	apo	M7b	apo	'mortar'
*-V1 (LR)	*bũl *xgǎl		bũu gǝ		bũu gǝ	'drunk' 'head'
*Vr (TR)	*qbar *par *qyǝr *akar	D3e	bia pa iew akia	M7c	bar par ier akar	'two' 'to fly' 'chicken' 'skin'
*-Vr (LR)	*çir *hagǎr		çie hogǎ		çie hokǎr	'dig' 'drum'

3. Word lists

The M and D word lists used as a basis for this paper are given below with PNB (starred *), Rengao (R) and/or Sedang (S) cognates. These lists were taken during a brief survey of the Todrah area, so may contain minor inaccuracies. M and D forms that are irregular with respect to the corresponding PNB form are noted in the footnotes. These irregularities may be the result of faulty recording of the word lists; in other instances the Todrah form sheds additional light on the etymology of the words, providing a basis for a revision of some PNB forms. The "Vietnam word list" of the Summer Institute of Linguistics--Vietnam Branch is the basis of these lists.

	Mǝdra	Didrá	PNB/R/S
1. 'sky'	plik	plǝng	*plĩn
2. 'cloud'	yǝk	yǝk, ilũq	*tsũk
3. 'sun'		hĩ	*hẽy
4. 'moon'		khǎe	*khẽy
5. 'star'	honǝng	holǝng	*hanlǝn
6. 'wind'		koyia	R kǝyǎl
7. 'rain'	mẽ	gũng mẽ	*qmẽ
8. 'rainbow'		hǝdrũng o diaq podring yǝng	R qmrǎt

	Moăra	Didrá	PNB/R/S
9.	'mist'	ilũq	
10.	'night'	di mǎng	*mǎñ
11.	'day'	di hì	*hëy
12.	'year'	hohǎm	*hanǎm
13.	'hail'	priw	*prël
14.	'snow'		
15.	'freeze'		
16.	'water'	daq	*qđak
17.	'river'	krôngng	R krông
18.	'lake'	deaq tống	S tống
19.	'sea'	deaq pusiq	R sỏsiq; S tosiq
20.	'earth'	nné	*taqneh
21.	'stone'	hmô	*tamo
22.	'sand'	bray	R chuyh; S prëi
23.	'mud'		R tráp
24.	'dust'	tráp	S kotak
25.	'gold'	gỏđǎk	S mǎa rẻi
	'brass'	mare	*mah
26.	'silver'	mǎ	
27.	'mountain'	qbak	
28.	'tree'	ngỏq	*ñok
29.	'forest'	long	*qlỏñ
30.	'leaf'	gủk gǎy	*xgỏñ
31.	'bark'	hủa	*hủa
		hnỏ; kỏmuq	R hmỏk, kỏđuh; PHrS *kaqmoak
32.	'flower'	rạng	*rañ
33.	'root'	rẻ	*reyh
34.	'fruit'		*pley
35.	'seed'	plỉ	S kỏlỏang
36.	'grass'	kluông	*qñẻt
37.	'stick'	nhaq	
38.	'banana'	luông a pỏ	
39.	'rattan'	prẻt	*prẻt
40.	'areca'	ri	*hare
41.	'papaya'		*rahủñ
42.	'coconut'	plỉ qlủ	
43.	'bird'	chủp	*cẻm
44.	'wing'	mỏnar	*manǎr
45.	'feather'	sỏk	R sỏk
46.	'to fly'	pa	*pǎr
47.	'egg'	xtaq	*katǎp
48.	'tail'	ting	*teñ
49.	'claw'	kỏné	*cỏaqneyh; R kỏñih ~ kỏqñih

	Mōdra	Didra'	PNB/R/S
50. 'horn'	ki	aki	*ake
51. 'animal'		kwan kiaq	R khong kyāk S kuān kia
52. 'dog'	cho	chō	R cho
53. 'pig'	ùq	chù	*č(h)ūr; DakSut Sedang uq
'wild pig'	h̄ki	xki	*sake
54. 'chicken'	ier	iew	*qyēr
55. 'duck'	bip	bip	S pēap
56. 'fish'	ka	ka	*ka
57. 'snake'	bāyh	bēh	*qbāyh
58. 'rat'	kini	koni	kane
59. 'rabbit'	topāy	kopay	R topay
60. 'monkey'	doq	doq	*qdōk
61. 'deer'	jōy	juey	*juy
	jāp d̄um	jiew gōh	
62. 'tiger'	boq kla	kla	*kla
63. 'water buffalo'	kopō	xpō	kapō
64. 'cow'	roq	rōq; romo	*rōk; R romo
65. 'elephant'	ruy	rūy	*royh
66. 'tusk'	pala	kōnum; kōla	R bōla
67. 'worm'	ōq; hōdrūk	ūq	*sadrōŋ ^{2 2} R ūk. beetle
68. 'scorpion'	kēchēp	gōjēp	*gaqjip ^{2 3}
69. 'spider'	tung pēng	mōhua	R tōng pēng S pek pēng
70. 'head louse'	chì	chì	*chì
'body louse'	sroq	hrōq	*srōk
71. 'mosquito'	ì jrō	ji jrō	R hmēng; S tritrōu
72. ' a fly'	ì r(u)way	rōey	*roy
73. 'nose'	mōh	mōh	*mūh
74. 'eye'	maq	māq	*māt
75. 'ear'	dwan	doan	*qdon
76. 'head'	gō	gō	*xgāl
77. 'mouth'	hū kùk	xkūng	R kūng
	t(i)lie		S rokong
78. 'tooth'	hēnēng	honēng	*sanēñ
79. 'tongue'	tung piq	xpiq	*rapit ^{2 4} R ropēt
80. 'hair'	sāk	sāk	R sāk
81. 'neck'	nōng	tonong	*ranōŋ
82. 'shoulder'	kotsāyh	kōsēh	R kōsāyh S kosah
83. 'breasts'	tó	tó	tuh
84. 'back'	rōk	kōrōng	*(karōŋ
85. 'heart'	nuāyh	nōyh	
86. 'abdomen'	podōk ^{2 5}	podōk	*badūk
'navel'	kloq	klōq	*klōk

TÓDRAH REGISTER

	Módra	Didrá	PNB/R/S
87. 'intestines'	klàq	kleaq	*klak
88. 'liver'	kliebm ^{2 6}	klëbm	*klàm
89. 'hand'	hiting	hodìng	R hodìng 'finger'
90. 'palm'	topang	konìa	
91. 'nail'		hodìng	*čapan
92. 'leg'	jèng	kone	*čagneyh
93. 'foot'		jèng	R jèng
		xpiang	*čapan 'palm, sole
94. 'knee'	kràwk	jèng	
95. 'thigh'	blù	kràng	*kràñ
96. 'calf'	puý	blù	R blù
97. 'blood'	moham	puý	*poyh
98. 'bone'	kotsèng	moham	*maham
99. 'skin'	akar	k(đ) sèng	*katsèñ
100. 'flesh'	tseiç	akar	*akar
101. 'fat'	toma ^{2 7}	seq	S se
102. 'live'	rèh	nomaq	*ramaq
103. 'die'	hlāq	rèh	*arih
104. 'sick'	tomó; jì	hlāq	R hlat
		jìq	*jìq; S ta mo 'not well'
105. 'breathe'	dũy kihiem ^{2 8}	koheh	R duy chohem; cf. PHrS *yihiam 'heart'
106. 'hear'	tāwk	tang	*tañ
107. 'see'	ngān	hloq	R hloq; S ngān 'look at', hlo 'see'
108. 'speak'	tupuayq	topôyq/ spôyq	R poyq
109. 'laugh'	do	dô	*(q) do
110. 'weep'	krāw	krô	krô
111. 'suck'	pūqū	ùq; pōqūq	R ùq
112. 'spit'	kochó	xchó	*kaçuh
113. 'blow'	hlubm	hlubm	*khloom
114. 'bite'	kap	kāp	*kāp
115. 'eat rice'	kā pua	kaq	
115. 'eat meat'	kā jǎp		R kaq qnham; S ka chām
116. 'drink'	uq ^{2 9}	ôq	*uq
117. 'drunk'	bô	bô	*(q) bûl
118. 'vomit'	haq	hiaq	*hāk ^{3 0}
119. 'smell'	tsur	su ^{3 1}	*sur
120. 'think'	toçhèk	xchèng	čächèñ; S
		tomèt	tomiat
121. 'know'	qnì	qnì	PHrS *qnì
122. 'count'	rien ^{3 2} yaw	rìn	R rèn; S sêô

	Modra	Didrá	PNB/R/S
123. 'fear'	yù	zyuq	R yùq
124. 'want'	wà	vaq	*wāq
125. 'sleep'	kùy	kuy	*kūy
126. 'lie'	kondūk		R konūk 'pile heap'
127. 'stand'	mondòk	dǎngg hnhhông	R dǎng, S tang
128. 'sit'	qway qnǐ	qway	R qwǎy; S ói, aqnai
129. 'walk, go'	bròk. lǎp	haqnǐq bròk lǎm	*bròk; lǎm
130. 'come'	tròh	tròh	trùh
131. 'enter'	mòt	mât/mốt	*müt
132. 'return'	wèh	wèh	*wǐh
133. 'turn'	júk	wèh; gu ging	*wih
134. 'swim'	glây	glè	R glây
135. 'float'	dông		R dong
136. 'flow'	hwayq	hièw. hoeq ^{3 3}	
137. 'push'	jròt	štót; njrot	*drüt
138. 'pull'	duy	duj	R duy
139. 'throw'	hwok	hwǎng	S hwang
140. 'fall'	klèh	klèh	*klìh
141. 'give'	ǎm	ǎm	*ǎm
142. 'take'	yoq	zyoq	*soq ^{3 4}
143. 'wash'	qnjaw	qnhièw	*gnaw
144. 'launder'	ròh	ròh	*rùh
145. 'split'	pá	pá	*pah
146. 'tie'	kát	kát	*kát
147. 'wipe'	tsòt ^{3 5}		*süt
148. 'rub'			R jròt
149. 'hit'	tòq, choq	tuàng (stick)	R, S chok, 'punch'
150. 'cut'	poq	tòk (fist) pòq	S tok, tóang R pòt
151. 'stab'	bèt	pāk	*qbèt ^{3 6} *pāk
152. 'dig'	chièr	chie	*cìr
153. 'scratch'	kuwǎy	kowaq	R kəkayq
154. 'squeeze'	koniq	diq	R dit
155. 'man'	kondrāk	koqneq kwan kōdrǎng	R kodrang
156. 'woman'	kodri	kodri	*kadri
157. 'person'	mangǎy	kwan	
158. 'father'	ngáy	mongei	*ŋe 'people'
159. 'mother'	mǎh	baq	*qbaq
160. 'child'	mòy	meq	R miq
161. 'husband'	kuan	kwan nǎng	*kon
	konu	kōdrǎng	*čano 'male'

	Módra	Didrá	PNB/R/S
			R kódräng
	'male animal' kónu	kólô	*cáno; *klo
162.	'wife, female' kondri	kodri	'husband' *kadri
163.	'brother-older' dah kóndrāk	daq kódräng	R daq kódräng
164.	'sister-older' dah kóndri	daq kódrì	R daq kódrì
165.	'younger sibling' ó	ó	*oh
166.	'name' iní	iniq	PHrS *yinaq
167.	'I' aw	a	R āw; S ā
168.	'thou' (to inferiors) no	no	R nu
	'thou' (honorific)	ěh	R ih; S eh
169.	'he' gāh	gāh	R ge, ga; S gá
170.	'we-incl.pl.' bien	binh	*(q)ben
	'we-encl.pl.' ngien	nhinh	R nhen; S ngian
171.	'ye-pl.' chūq ³⁷	chōq	R chōp
172.	'they-pl.' vi	vi	*wi
	'we two-incl.' ba	ba	*ba
	'we two-excl.' ma	ma	*ma
	'you two' chūq	bre	R bri; R chōp 'ye-pl.'
	'they two' bre	bre	R bri; S préi
173.	'field rice' qmbaw	qma	PHrS *qmbaw
174.	'pounded rice' phi	phi	*phe
175.	'cooked rice' pwa ³⁸	pōa	*por
176.	'corn' anduy	iluy	S alai
177.	'salt' bó	mbo	*qboh
178.	'red pepper' hāk	imre	*hān
179.	'betel chew' pōlāw		R bōlāw
180.	'pestle' long ndrì	luāng ndrì	*qlon adrèy
181.	'mortar' apo	apo	*apāl
182.	'cook' pāy	pe	*pay
183.	'firewood' hōndra	luāng ūdn	R hōdrāl; *ūn 'fire'
184.	'fire' ūt ³⁹	ūdn	*ūn
185.	'burn' chaw ⁴⁰	chōqō	*chūh
186.	'smoke' nhuây ⁴¹	nhuây	*qnuy
187.	'ashes' blo	blo ūdn	PHrS *blo 'hearth'
188.	'road' trogng	trông	R trong
189.	'house' hie	hnhè	R hnhè; S hngéi
190.	'roof' kuār	kua	*kòr
191.	'cord' kōsi	ksi	*kase
192.	'sew' jēp	jēp ew	PHrS *jèp
193.	'clothing' aw	ew	*āw

	Modra	Didra'	PNB/R/S
194. 'loincloth'	kopēt	xpēn	*kapēn
195. 'work'	bē jāng ^{4 2}	bēq jiang	R bēq jāng S pei chéang
196. 'play'	lăp òm	lăm ngøy hewq	R ngøy
197. 'sing'	rongè, hăt chiew	achiw, hōqnhôn	R hat, homhong S rongei
198. 'dance'	gu suangng	asuang	R roxwang; S soang
199. 'drum'	hōkār ^{4 3}	hogā	*hagār
200. 'gong'	gogng, chik	guōng, chéng	*gōn, *chīn
201. 'buy'	rōq	rōq	*rut ^{4 5}
202. 'crossbow'	monēng	monēng	*manēñ
203. 'arrow'	rāk	rāng	R rāng
204. 'spear'	taq	tēaq	*tak
205. 'shoot'	pēik	pēng	*pēñ
206. 'hunt'	lwa, qmōt cho	lăm lua qmāt chō	R lwa; S qmot chó
207. 'kill'	hōqnāq	hōqnāq	R bōhlăt
208. 'fight'	tì yāy	di yāyq di bo	
209. 'battle'	tōblā	tōblā	*tablah
210. 'one'	muāy	mueyq	*moyq
211. 'two'	bar	bia	*qbar
212. 'three'	pi	pi	*pe
213. 'four'	pudn	pudn	*pun
214. 'five'	pōdāp	pōdabm	*baqdām
215. 'six'	tōndru	dōdruē	*tadraw
216. 'seven'	tōpēih	tōpēih	*tapāh
217. 'eight'	tōham	nihiām	*tahyam
218. 'nine'	tōchit	tōchīdn	*tačīn
219. 'ten'	muāy jāt	mueyq jāt ⁶	*qmōyq jāt
219. 'twenty'	bar jāt	bia jāt	*qbar jāt
220. 'hundred'	muāy hriḡng	mueyq hriḡng	*qmōyq hriñ
221. 'all'	dì dōk ^{4 7}	dìq dāngng	R dìq dāng; S taj tang
222. 'many'	hīt	hīdn	R hmān, hān; S hen
223. 'some'			
224. 'few'	ia	ia	R yaq; S ia
225. 'big'	kāt	kān	*kān
226. 'small'	kuan	kit	*koñ
227. 'long'	yōt	yōdn	S sōn
228. 'tall'	yōt	kojōngng	S sōn
229. 'short'	qniq	qniq	R qniq
230. 'round'			
231. 'smooth'	jie	jīw	
231. 'coarse'	hōnat	dīngrān	
232. 'thick'		hōbō	hōbāl
233. 'thin'		xtāng	

	Modra	Didra	
234. 'wide'	j̄ar	j̄a	
235. 'narrow'	t̄ang baq	kit	
236. 'black'	brāk	brāng	R brāng
237. 'red'	d̄um	ḡoh	*gd̄um
238. 'white'	kloq	mōng, d̄obōq	R t̄obok; S bōng
239. 'green'	andreh	inḡet, dr̄eh	*ad̄rih, 'unripe'
240. 'yellow'	dr̄ing	dr̄ing	*dreŋ
241. 'dry'	khāk, tsring	hr̄ing	R sring
242. 'wet'	k̄ochoh	h̄oj̄oh	*ḡj̄oyh
243. 'rotten'	um	su q̄me	R om
244. 'swell'	ats̄uk	p̄oḡe, āsōng	R b̄oqayh
245. 'full'	b̄ik	b̄eng	*qb̄iñ
246. 'dirty'	haq̄ja, q̄me	qm̄e	*qm̄e
247. 'sharp'	hadn	hian, m̄oneaq	*han; S mon̄ea
248. 'dull'	oh i hadn	di i m̄oneaq	R biq han
249. 'new'	naw	n̄ew	*qnaw
250. 'hot'	h̄ot̄u ⁴⁸	t̄oq	*tuq
251. 'cold'	yu t̄onḡe	t̄onḡe	*tañit ⁴⁹
	h̄onḡiew ⁵⁰	h̄onḡiw	*han̄iw
252. 'heavy'	h̄nḡam	h̄nḡam	*h̄nḡam
253. 'straight'	h̄ondrāk	h̄odrāng	R t̄odrāng
254. 'right'	t̄ro, j̄o	joq	*troq, joq
255. 'good'	l̄ep	l̄ep̄m	*lep̄ ⁵¹
256. 'bad'	qm̄e	qm̄e	R qm̄e
257. 'old aged'	kra	kraq, d̄on son̄am	*kraq, *qd̄uñ han̄am
258. 'far'	hanḡay	h̄oq̄nḡey	*saq̄nay
259. 'near'	h̄ajeiq ⁵²	aj̄eiq	*ajeq
260. 'rightside'	h̄uq̄wa	q̄wa	*q̄ma
261. 'leftside'	h̄iq̄iew	īw	*haq̄ew
262. 'same'	mūay t̄ieh	mūayq t̄iah	*qm̄oyq (PHrS) teh
263. 'different'	pha, teq̄e	pha, kr̄e	*pha; R toq̄ēt
264. 'here'	k̄o	a k̄o	*ku; S ak̄o
265. 'there'	m̄e, taw	m̄e, ta	R meh; PHrS *ta R t̄aw
266. 'this'	same as 264	'here'	
267. 'that'	same as 265	'there'	
268. 'when'	la li, gar li	la li kya li	R la li, R kar li
269. 'where'	u li	u li	R paq li; S u lai
270. 'who'	q̄bay	kaq̄w̄ey	PHrS *kambu
271. 'what'	kli	kikli	S koklai
272. 'and'	p̄ang, q̄m̄ang	p̄ang, qm̄ang	R p̄ang, ; S qb̄ang

273. 'with'	same as 272	'and'	R ð̃ng
274. 'at'	nie	u	S u
275. 'because'	koĩh ko	yôa	R koĩh ko R ywa ko; S suá
276. 'how'		tìah lì	R thoy lì, S ti lai
277. 'if'	tawk	d/tâng	*tâng
278. 'in'	túngg, lăm	túng tólăm	R tur, lăm; S tung
279. 'not'	oh	dì...òh	R biq. (...òh); S òh ta
280. 'not yet'	tàbm	tiam...òh	*tam
281. 'already'	boyh, yoh	dì...hiq hiang	R boyh; sang S hiang

FOOTNOTES

1. In Mon-Khmer the term register, first used in this regard by Henderson (1952), refers to a typically binary prosodic opposition involving consonantal, vocalic, voice quality and often pitch effects. Further papers in preparation on the general topic are Gregerson and Smith (1970) latter note especially Appendix 1 "Register correspondences in Mon-Khmer languages."
2. The authors' specialties include two of the neighboring languages: Rengao contiguous on the south (Gregerson); and Sedang contiguous on the north (Smith). For phonological statements of some of the neighboring languages see Banker, 1961; Cooper and Cooper, 1965; Gradin, 1965; Smith, 1968.
3. Orthography used in this paper is approximately equivalent to the Vietnamese *quốc-ngữ* except as follows: $\underset{\sim}{}$ is used for breathy vowels and $\overset{\sim}{}$ for laryngealized vowels, but clear vowels are unmarked. - (hyphen) indicates Tỏđrah clear vowels in contexts contrasting breathiness or laryngealization. $\underset{\sim}{}$ is used for short vowels, long vowels normally being $\bar{\quad}$ left unmarked; $\bar{\quad}$ is used for long vowel only in formulas. Nasalization is marked by a lowered dot ($\underset{\cdot}{}$), and glottal stop by q .
4. The M data was obtained from Bring of Kon Hông Village. The D data was obtained from Briang of Kon Kỏđrảng Village, more recently known as Dak Dảm Village. Both were interviewed in Kontum City in June, 1969.
5. The symbol x in these basically unwritten languages is to be read with a phonetic value of [x], while x in Rengao has an established pronunciation as a palatal affricate (or fortis spirant).
6. The grave diacritic represents tongue-root advanced articulation producing a pharyngeal resonance ("deepness" or "breathiness"). The unmarked vowels occur in tongue-root retracted words, which are characterized by a pharyngeal constricted articulation impressionistically heard as "bright" or "clear".
7. Note, however, that three degrees of register contrast in two intermediate states are posited by Smith (1970) in the vowel register development of Sedang.
8. Tỏđrah consonantal laryngealization interpreted as final h parallels the consonantal tone in Jeh, also

interpreted as final *h* (Gradin, 1965).

9. An opposite shift has occurred in Proto-Jeh-Halǎng. PNB lax register final **h* and **p*, and less regularly, other final consonants, have switched to the tense register after long vowels, but after short vowels there has been no register shift. Cf. Thomas and Smith, 1967; Smith, 1970.
10. Though PNB has 17 finals, in this paper they are symbolically reduced to seven types. The four stops (**p, *t, *č, *k*) and four nasals (**m, *n, *ñ, *k*) are each subsumed under P and N, respectively; **w* and **y* are subsumed under **∅*; **yq* under **q*; and **yh* under **h*. Finals **l* and **r* are indicated separately.
11. Inasmuch as Tǒdrah *á* is derived from **ah*, and noting that Sedang *a* is also derived from **ah*, the derivation of the various names for this language group (see Introduction) can, with respect to the final vowel and consonant, be understood. Rengao *dǒdrah* 'grasslands' is possibly related to the name of these inhabitants of Plateau Gi.
12. A speaker from Kon Hǒgagng Village (3 kilometers east of Kon Hǒng Village from which the M data was obtained) had the same phonological features as the Kon Hǒng speaker, except that he retained all final nasals, though he would accept the final voiceless stops as acceptable substitutes.
In both Cua and Kǒtua, non-register North Bahnaric languages of Quảng Ngãi Province, final nasals change to final stops after both long and short vowels. Nasals are retained only after syllable initial nasals, *h* and *q*.
13. A rule of this nature in North Bahnaric may well explain the mismatch of register for forms like **tì* 'hand' or **pì* 'fruit' where other Mon-Khmer languages have tense register reflexes (see Smith, 1970, Appendix 1).
14. There are no lax register instances of the rule in the data.
15. This association of long vowels on stopped syllables with the lax register perhaps sheds light on the similar association of length and low tone in Srê (Smalley, 1954).
16. PNB vowels before **q* appear to lose their length distinction in Tǒdrah. Note that Rengao and Jeh possess a marginal length contrast before glottal stop (Thomas and Smith, 1967:158).
17. Speakers interviewed from Kon Braih ("Sedang Didrah") and Kon Rǒlǒng Village of the Plateau Gi area had phonological features of both the above M and D dialects. They

retained all final nasals and glottal stops (like D) and retained final *r (like M). Furthermore, the tense register final *h has a reflex in their dialect alternating between an open syllable laryngealized vowel and a laryngealized vowel distinctly cut off by glottal stop, whereas the lax register final *h has a reflex in their dialect of a breathy (not clear) vowel followed by h.

8. Rule S1, if not ordered with respect to S2b, could be written:

$$* \left\{ \begin{array}{l} -V1, \\ -Vr \end{array} \right\} \begin{array}{l} \text{TR} \\ \text{LR} \end{array} \longrightarrow S \left\{ -V\emptyset \right\}$$

9. In Smith (1970) this is reconstructed with a short vowel *hāk on the basis of Bahnar short vowel; other evidence suggests that the vowel was long (cf. Rengao and Proto-Jeh-Halāng long vowels (R *hak*; PJH *hak*) and Sedang glided vowel (*hêa*), as well as the D glided vowel here).

10. PNB long vowel is reconstructed on basis of Bahnar *ông* though M final *k* supports Rengao *gũng* as evidence for a short vowel reconstruction (cf. M 6, 6A).

11. Irregular M_{tense} register (cf. M 6) supports PJH tense register *çim* and the low vowel of Bahnar *sem* for a tense register reconstruction; PNB lax register is based on Irê *chìm* and Sedang *chêm*. PNB long vowel is based on Bahnar, though M final *p* supports Rengao *chìm* as evidence for a short vowel reconstruction.

12. PNB long vowel reconstructed on basis of Bahnar *adrông* and Proto-Jeh-Halāng *idrung* long vowels, though M tense register final *k* supports Rengao *hódrũng* as evidence for a short vowel reconstruction.

13. The D_{tense} and M tense register (cf. D2a and M5) support Rengao *kojíp* 'centipede'; as evidence for a short vowel reconstruction; PNB long vowel is based on Bahnar *kaqep* and Proto-Jeh-Halāng *gajip*.

14. M tense register (cf. M4, 5,) supports Rengao as evidence for a short vowel reconstruction; PNB is based on Bahnar semi-vowel in *rapijêt* and the glided vowels of Proto-Jeh-Halang *rapiat* and Sedang *rapie*.

15. M lax register is unexplained ; cf. M 6.

16. M tense register is unexplained ; cf. M 6.

17. M tense register is unexplained ; cf. M 2.

28. M tense register is unexplained ; cf. M 6.
29. M *q* is unexplained ; cf. M 2.
30. See Footnote 20.
31. D lax register is unexplained ; cf. D 3.
32. Smith (1967) also reports tense register in certain fringe Sedang dialects and Tōdrah as well as the lax register for Rengao.
33. Cf. Rengao *hwäch* 'diminish in quantity' and *phóphach* 'gushing of water'.
34. M *q* supports Rengao *yōk* as evidence for a final *k (cf. M 2, 5); PNB *q reconstructed here on the basis of Bahnar *soq*.
35. M tense register is unexplained; cf. M 4.
36. M tense register confirms the short vowel of M and Rengao *bít*. (cf. M 5); PNB long vowel is reconstructed on basis of Bahnar *qbet*.
37. M lax register and Rengao short vowel are mutually inconsistent; cf. M 4.
38. M final \emptyset is unexplained ; cf. M 7.
39. M final *t* is unexplained ; cf. M 6.
40. M clear vowel is unexplained ; cf. M 1.
41. M tense register is unexplained ; cf. M 7.
42. M lax register is unexplained ; cf. M 6.
43. M tense register is unexplained ; cf. M 7.
44. The tense register of both M and D is unexplained (cf. D3a and M16c); PNB lax register is reconstructed on the basis of Bahnar high vowel in *ching* and the lax register of Sedang *chêng*.
45. M tense register supports Rengao *rōt* and Bahnar *rāt* for evidence of short vowel (cf. M5); PNB long vowel is reconstructed on the basis of vowel glides in Proto-Jeh-Halāng *ruat* and Sedang *rōe*.
46. D lax register is unexplained ; cf. D2a.

47. By Rule M6a Mǝdra should have the tense register except that in this doublet the register of the first member of the pair governs, apparently, the register of the second member as well.

48. Perhaps M is noncognate since both the presyllable and laryngealized vowel are inconsistent.

49. M tense register supports Rengao *tongyět* as evidence for a short vowel (cf. M5); PNB long vowel is reconstructed on basis of Bahnar semi-vowel in *tangiět* and a vowel glide in Sedang *tongie*.

50. M lax register is unexplained; cf. M6a.

51. M *p* supports Rengao *lēm* as evidence of a short vowel (cf. M6); PNB long vowel reconstructed on basis of Bahnar semi-vowel in *liēm* and Proto-Jeh-Halāng vowel glide in *liam*.

52. M tense register and *q* are unexplained; cf. M.2.

53. M lax register is unexplained; cf. M 6.

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