THE DEVELOPMENT OF TO'DRAH REGISTER

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0. Introduction

Although the presence of the To'drah 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 systems[1] of two To'drah dialects--Didra and Mo'dra--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 To'drah will be noted in this introduction. Though based only on some brief word lists representing parts of the To'drah 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 *ko'dra, to'draq, po'drá, po'dra, mo'dra, didrá,* and *didrah.*[3] In order to retain these terms to identify its various dialects the authors have chosen the term To'drah to designate the entire language group.

The To'drah language area extends from Kon Ho'nong 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 Mo'dra (M) and Didrá (D) dialects, respectively. See Map 1. This paper is hereafter limited to a discussion of these two dialects, M and D.[4]

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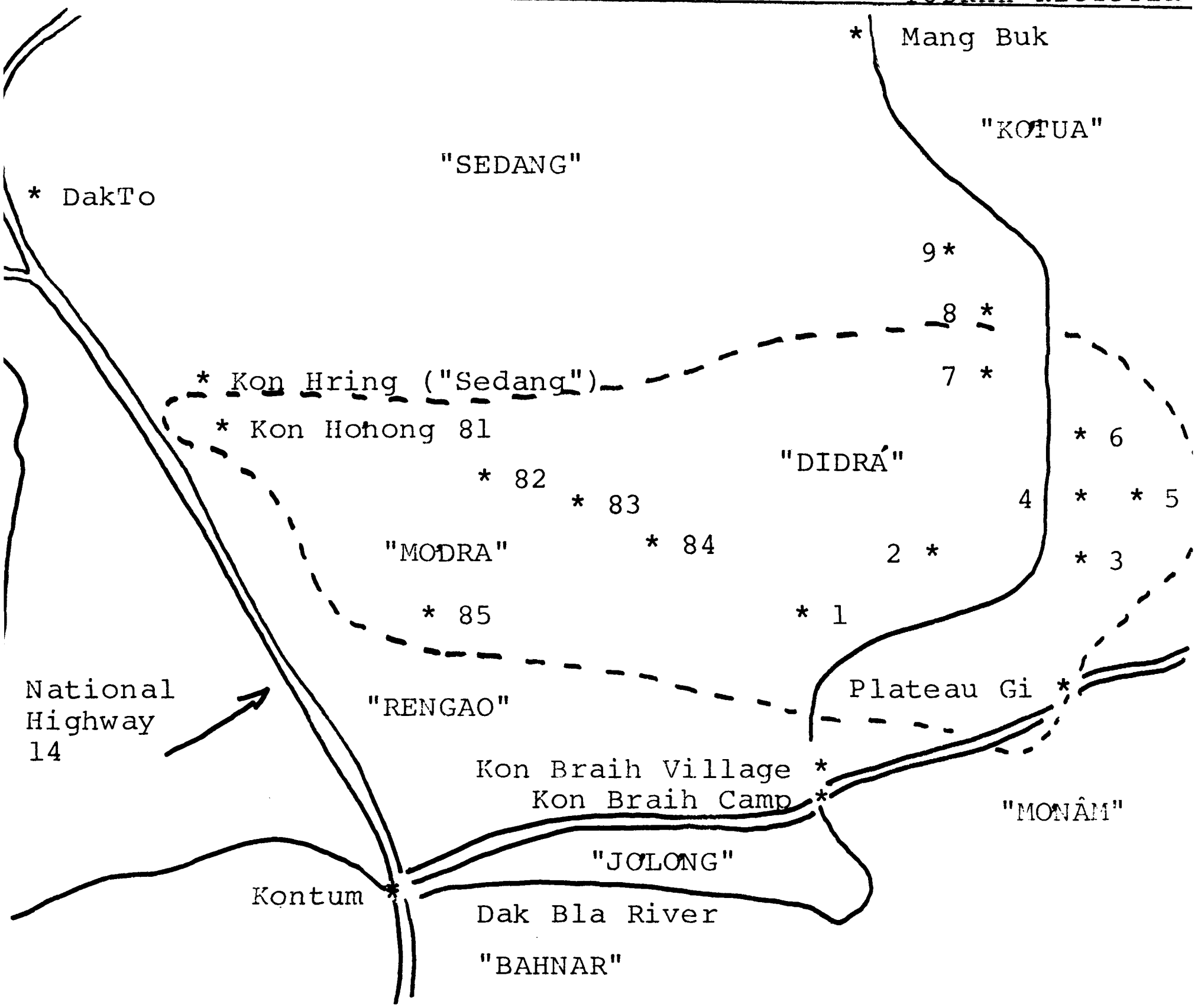

Map 1. Modra-Didrá ethnolinguistic area.

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

(b) Villages along the Dak Bla River north of Plateau Gi (Didrá) include: 1 Sak Peq; 2 Kon Sak Vang; 3 Kon Rolùng; 4 Kon Hnaq; 5 Kon Biu; 6 Kon Rôdn; 7 Kon Kodràng 8 Kon Roma ("mixed"); and 9 Vi Hodring ("Sedang").

(c) Villages included in Smith (1967) are: 81 Kon Hohong ("kodra"); 82 Kon Kotem ("tddraq"); 83 Kon Jori ("Pddra" 84 Kon Sotiu ("podra"); and 85 Kon Kolak ("bar i tang").

The Tơdrah 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 Tơdrah 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 *zy*. 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 Tơdrah 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 Tơdrah vowel system resembles that of Rengao (see Chart 4). The charting of the vowels of the two Tơdrah 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, Kơtua, and Hrê). Prestopped final nasals are found as variants of the plain nasals (cf. Jeh, Halăng). 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 (V́), breathy (V̀) or clear (V). This three-way contrast of vowels is unique among the Vietnam register languages.[7] Rengao, Halăng and Jeh, on the one hand, have only clear and breathy vowels (V, V̀), representing their tense and lax registers, respectively. Sedang, on the other hand, has only laryngealized and clear vowels (V́, V), representing its tense and lax registers, respectively.

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

Chart 1. Tŏdrah presyllable consonants

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

Chart 2. Tŏdrah 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.

	Front		Central		Back	
	Long	Short	Long	Short	Long	Short
Lax Register[6]						
High	ì [i]	ǐ [ĭ]			ù [u]	ŭ [ŭ]
Low	è [e]		à [ə]	ă [ə]	ò [o]	
Tense Register						
High	i [e^{i}]	ĕ [ɛ̆]			u [o^{u}]	ŏ [ɔ̆]
Low	e [ɛ]		a [a]	ă [ă]	o [ɔ]	

Chart 4. Rengao vowels

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

Chart 5. To'drah 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. V́Ø (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. V̀Ø, V̀N, V̀q, V̀P; whereas clear vowels occur in open syllables, with final nasals, glottal stop, *h* and, though only after short vowels, with oral stops, i.e. VØ, VN, Vq, Vh, V̆P.

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:	V́Ø
Clear:	V̌Ø, V̌N, V̌q, V̆P, V̆h
Breathy:	V̀Ø, V̀N, V̀q, V̀P

At first sight this array might seem to imply a three-way register contrast; however, V́Ø 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 VØ and V̀Ø as a register pair parallel to VN and V̀N, and to Vq and V̀q. There remain, however, V̆P and V̀P 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)			Tense Register (laryngealized)	Lax Register (clear)
Spirants			V́Ø	Vh
Stops	Oral	Long		V̀P̄
		Short	V̌P	
	Glottal			V̗q
Continuants	Oral			V̗Ø
	Nasal		VN	V̗N

Chart 6. Didrá Registers

1.2 Mŏdra 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 Mŏdra register discussions (length is contrastive before nasals and *r*, but is not significant to the present discussion):

Laryngealized: V́Ø
Clear: VØ, VN, Vr, Vq, V̆P, Vh
Breathy: V̀Ø, V̀N, V̀r, V̀q, V̆̀p, V̀p

As with D. V́Ø 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 Tŏdrah 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 Tŏdrah 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 D_1).

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 D2a).[9] The shift in Rule 3 necessarily occured after that in Rule 2; otherwise PNB short lax register vowels with stops would have become clear (D2a), 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							V́Ø	Tense Register (laryngealized)
Register (clear)	VN	Vr	VØ	Vq	V̆P		Vh	Lax
Lax Register (breathy)	V̀N	V̀r	V̀Ø	V̀q	V̀P̆	V̄P		Register (clear)

Chart 7. Mo'dra 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) $$*\left\{\begin{matrix}\text{-Vh}\\ \\ \end{matrix}\right\}^{\text{TR}}_{\text{LR}} \longrightarrow D \left\{\begin{matrix}\text{-V}\emptyset\\ \\ \text{-Vh}\end{matrix}\right\} \begin{matrix}\acute{}\\ \\ -\ (\grave{})\end{matrix}$$

(D2) $$*\left\{\begin{matrix}\text{-VP}\\ \\ \end{matrix}\right\}^{\text{TR}}_{\text{LR}} \longrightarrow D \left\{\begin{matrix}\text{-Vq}\\ \\ \text{-VP}\end{matrix}\right\} \begin{matrix}-\\ \\ \grave{}\end{matrix}$$

(D2)a $$*\left\{\text{-}\check{\text{V}}\text{P}\right\}\ \grave{} \longrightarrow D \left\{\text{-}\check{\text{V}}\text{P}\right\}\ -$$

(D3) $$*\left\{\text{-VN, -Vq, -V}\emptyset\text{, -Vl, -Vr}\right\}^{\text{TR}}_{\text{LR}}$$

$$\longrightarrow D \left\{\text{-VN, Vq, V}\emptyset\text{, -V}\emptyset\text{, -V}\emptyset\right\}^{-}_{\grave{}}$$

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 VØ and V̀Ø (D3). Though the PNB tense register *VP merged with Vq (D2), its hole in part was filled by PNB *V̀P (D2a). These successive shifts in D are shown in Chart 8.

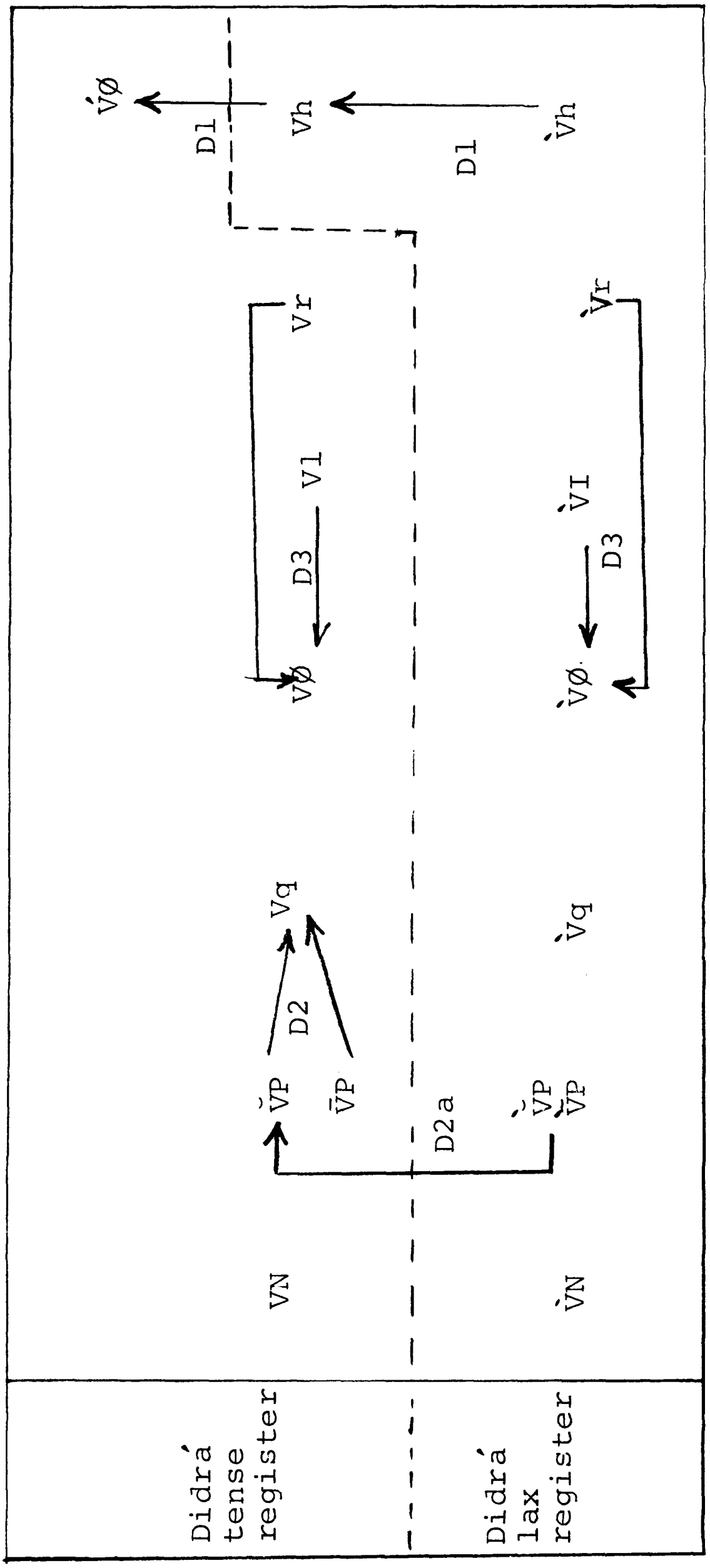

Chart 8. Register and final shifts of Didrá (numbers refer to the Rules given in the text; arrows begin at PNB forms and point to the derived Didrá forms)

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 Halăng, has five short vowels--occasioned in the tense register by the merging of *V̆P 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 *V̀r with VØ. A note is included in each register frame stating the vowel quality in its various environments.

	Short	Long	Glided
Tense Register	(ĭ) (ŭ) ɛ̆ ŏ ă	i u e o a	ia ua ea oa
	with N, Ø, q--clear with h--laryngealized and no [h]		
Lax Register	ì ù ì ì ì (ɛ̀) ă ò	ì ì ì ì ì e a o (è) (ò)	ì ì ia ua
	with N, Ø, q--breathy with h--clear or breathy		
Redundant register/length	with P only: V̆--clear and V̄--breathy (though non-contrastive)		

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

2.2 Mɔ̀dra 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 C_1), 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 V̆P and V̀P, but leave V̄P and V̌P 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 V̀q (M3, M4, M5), would have undergone a subsequent shift to V̀Ø -- 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 V̆P 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) $$* \left\{ \begin{matrix} \text{-Vh} \\ \text{LR} \end{matrix} \right\}^{\text{TR}} \longrightarrow \text{M} \left\{ \begin{matrix} \text{-VØ} \\ \text{-Vh} \end{matrix} \right\} \quad \text{- (`)}$$

(M2) $$* \left\{ \begin{matrix} \text{-Vq} \\ \text{LR} \end{matrix} \right\}^{\text{TR}} \longrightarrow \text{M} \left\{ \text{-VØ} \right\}^{13} \quad \text{`}$$

(M3) $* \left\{ G\bar{V}P \right\}^{TR} \longrightarrow M \left\{ G\bar{V}q \right\}^{14} -$

(M4) $* \left\{ C_1\bar{V}P \right\}^{TR}_{LR} \longrightarrow M \left\{ C_1\bar{V}q \atop C_1\bar{V}P \right\}^{15}$

(M5) $* \left\{ -\check{V}P \right\}^{TR}_{LR} \longrightarrow M \left\{ -\check{V}q,\ -\bar{V}q \atop -\check{V}P \right\}^{16} -$

(M6) $* \left\{ -\bar{V}N,\ \left\{ q \atop N \right\}\check{V}N,\ C_2\check{V}N \right\}^{TR}_{LR}$

$\longrightarrow M \left\{ -\bar{V}N,\ \left\{ q \atop N \right\}\check{V}N,\ C_2\check{V}P \right\}-$

(M6a) $* \left\{ C_{vd}\check{V}P \right\} \longrightarrow M \left\{ C_{vd}\check{V}P \right\} -$

(M7) $* \left\{ -V\emptyset,\ -Vl,\ -Vr \right\}^{TR}_{LR} \longrightarrow M \left\{ -V\emptyset,\ -V\emptyset,\ -Vr \right\}-$

Note: G represents *q* and *h*.
C_1 represents any initial consonant except *q* or *h*.
C_2 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 VØ (M2), its hole was filled by **GVP* (M3) and **$\check{V}$P* (M5). The position thus left by the latter was, in turn, filled by **$\bar{\check{V}}$P* (M5) **$C_2\check{V}N$* (M6) and, later, by **$C_{vd}\check{V}P$* (M6A). Further, the vacancy left by **$\bar{\check{V}}$P* (M5) was filled by **$C_2\check{V}N$* (M6). Also, though **Vq* merged with VØ (M2), its hole was filled by **$C_1\bar{V}P$* (M4). The only vacancy still existing, therefore, is $\bar{V}P$. These successive shifts are shown in Chart 10.

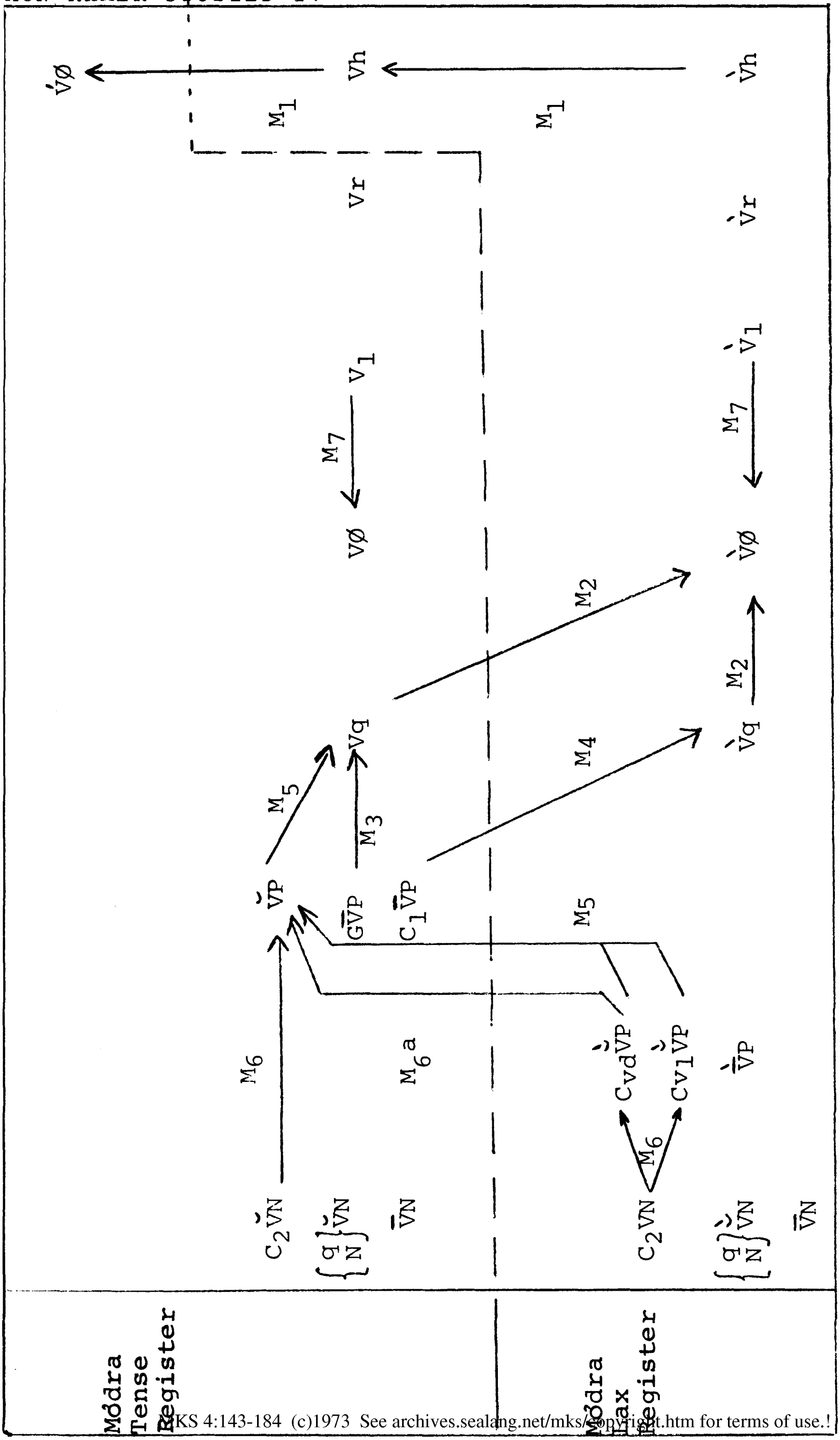

Chart 10. Register and final shifts of Mədra (arrows indicate M forms resulting from PNB shifts; back of arrows mark PNB forms retained in M.)

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.

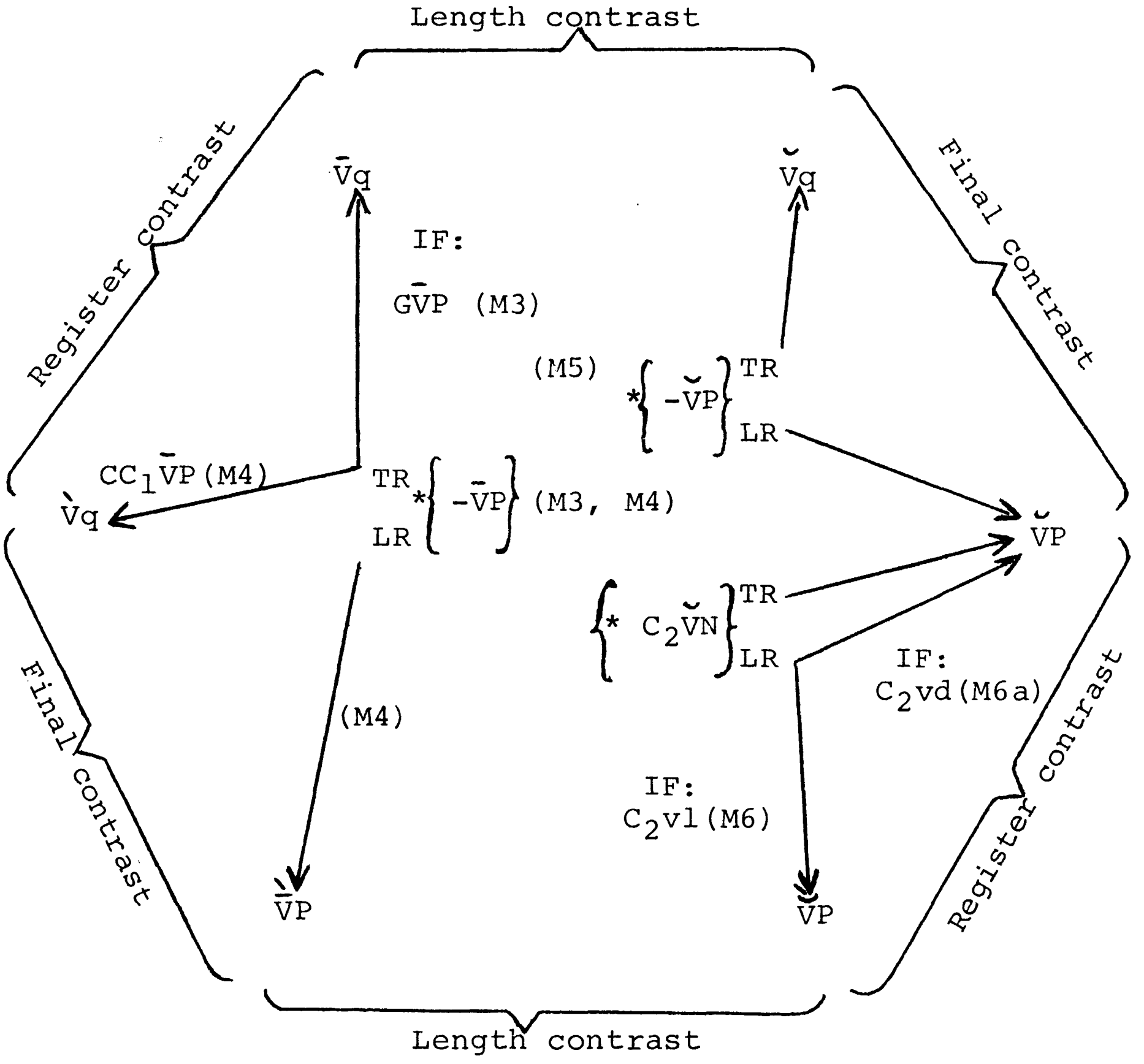

Chart 11. Contrast shifts of Mödra (PNB forms are cited in the center; Mödra forms are cited on the periphery).

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, *V̀q and *V̀l with V̀Ø.

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	ĭ ŭ ĕ ŏ ă	i u e o a	ia ua
	with N, r, Ø, q, p (V̆ only)_clear with h___laryngealized and no [h]		
Lax Register	ì ù â è ò è à ò	ì u ê ô è à ò	ìa ùa
	with h___ clear with N, r, Ø, q, p (V̆ only)___breathy		
Non-contrastive register	with P(V only) ___breathy (though non-contrastive)		

Chart 12. Mɔ̀dra 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 Tŏdrah 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	-V́N	-V́Ø	-VP	-Vh
Lax Register	-VN	-VØ		

Chart 13. Sedang registers

As in D, PNB final **l* 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 *l* and *r* became laryngealized despite the loss of the final consonant; similarly the PNB lax register vowels in syllables with *l* 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 sto;s 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:

FN 18)

$$(S_1)\ * \left\{ -Vl, -Vr \right\}^{TR}_{LR} \longrightarrow S \left\{ -V\emptyset \right\} - \begin{pmatrix} TR \\ LR \end{pmatrix}^{18}$$

$$(S_2)\ * \left\{ -VN,\ -V\emptyset \right\}^{TR}_{LR} \longrightarrow S \left\{ -VN,\ -V\emptyset \right\}-$$

$$(S_3)\ * \left\{ -VP,\ Vh \right\}^{TR}_{LR} \longrightarrow S \left\{ \begin{matrix} -V\emptyset,\ -V\emptyset \\ -VP,\ -Vh \end{matrix} \right\}-$$

$$(S_4)\ * \left\{ -Vq \right\}^{TR}_{LR} \longrightarrow S \left\{ -V\emptyset \right\} -$$

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 VØ resulting in a neutralization of register. These successive shifts are shown in Chart 14.

The only point at which Tɔdrah 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 ⟶ VØ 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 Tɔdrah dialects to the exclusion of the other. But the indication of apparent genetic relationship of Tɔdrah and Sedang at the point where *l was lost is contradicted by the consideration of Hrê, a language also closely related to Sedang. Neither Hrê nor Sedang have contrastive vowel length or final l. But because the Sedang and Hrê reflexes of the latter seem to go in different directions, Proto-Hrê-Sedang has been reconstructed without vowel length but with final *l. Now it seems that Tɔdrah could have shared the simple vowel and centrally-glided vowel reflexes for lost *l with Sedang but not with Hrê which has a final w (except before back vowels). Two possible relationships may be envisioned. If Hrê broke away and independently lost vowel length and final l, then Tɔdrah and Sedang could have shared their loss of l and Sedang

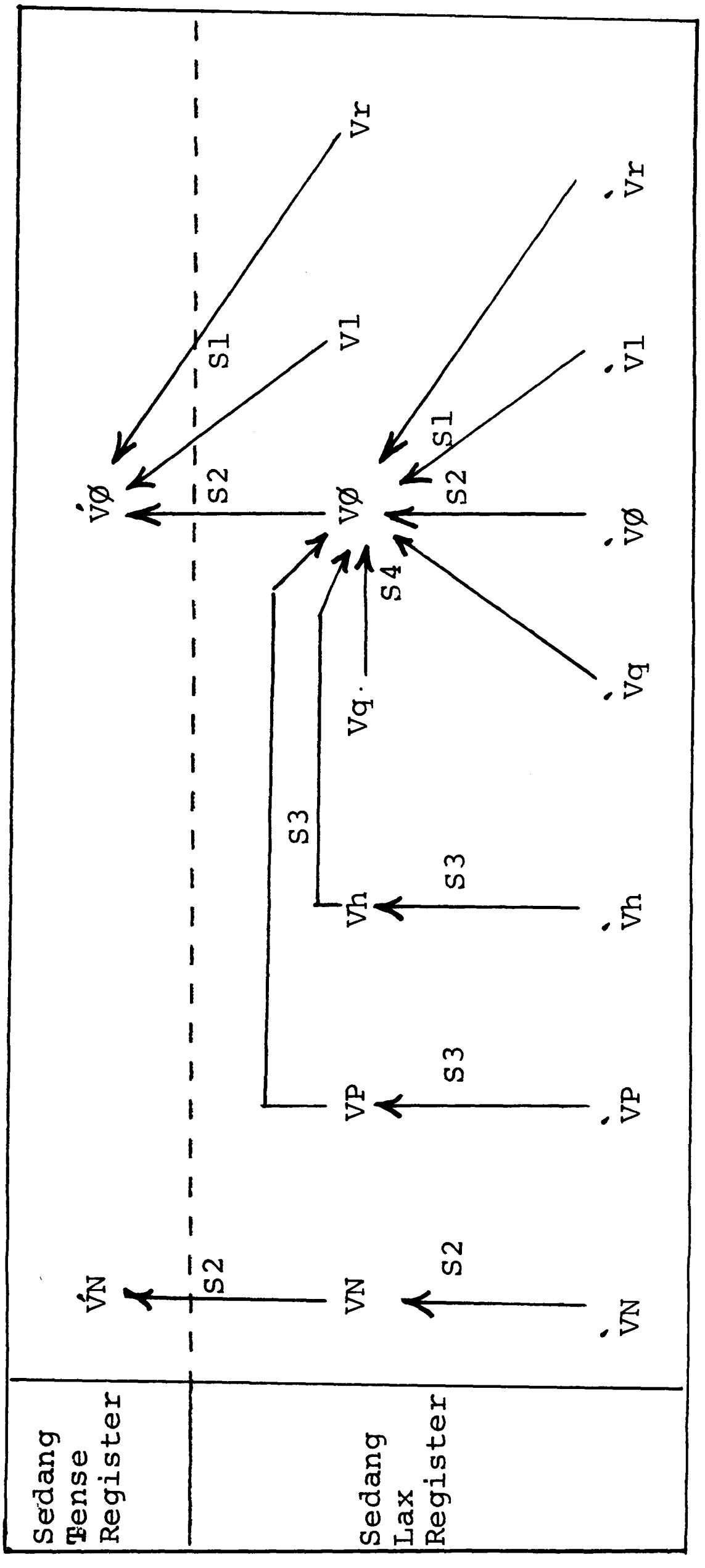

Chart 14. Register and final shifts of Sedang

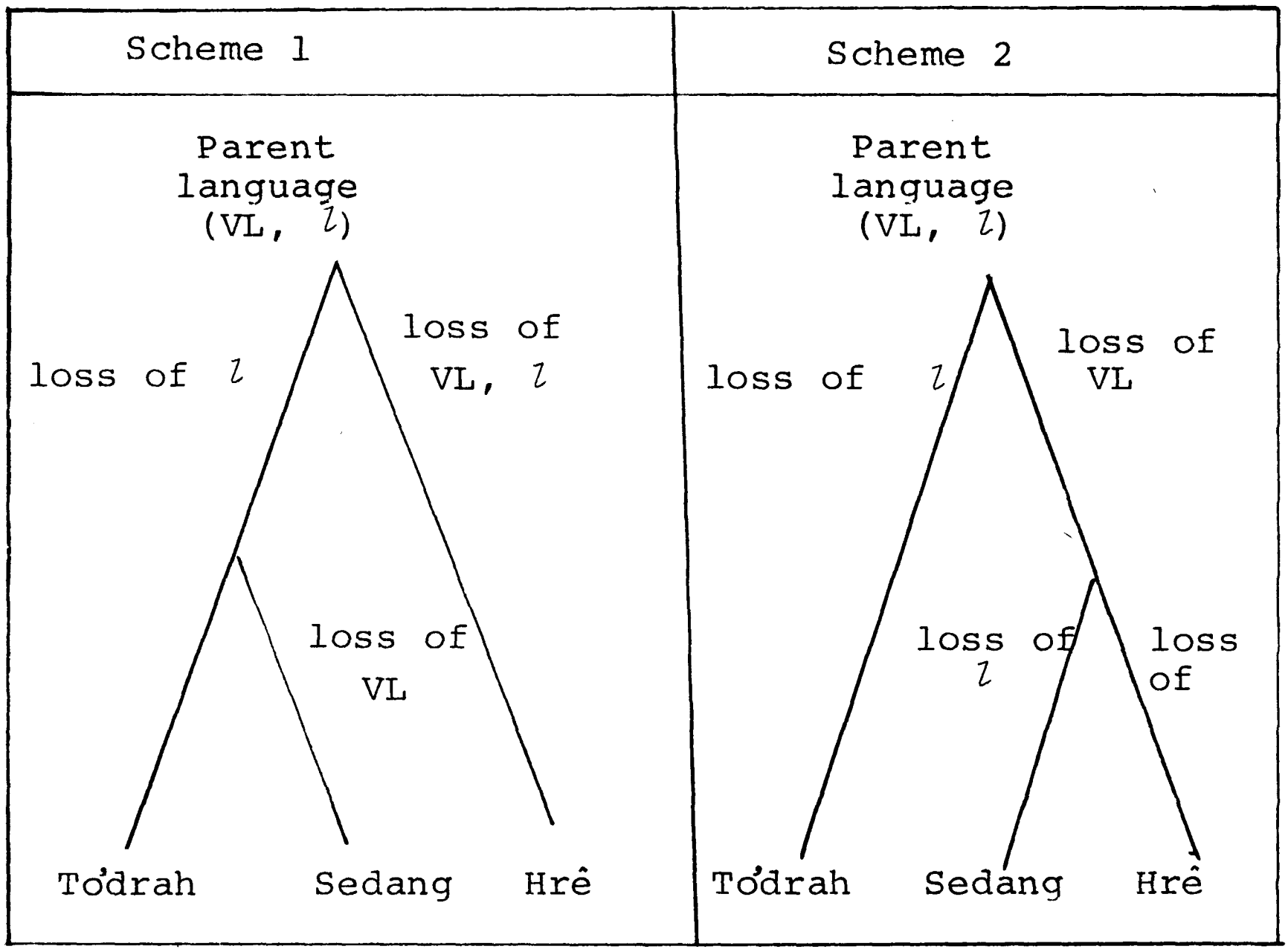

Chart 15. Alternate possible genetic relationships based on shared and independent loss of vowel length contrast (VL) and final ʔ (ʔ).

subsequently could have lost vowel length (Scheme 1 of Chart 15). Or if Tŏdrah 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*; Kŏtua, Hrê, Sedang, Mŏdra 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.

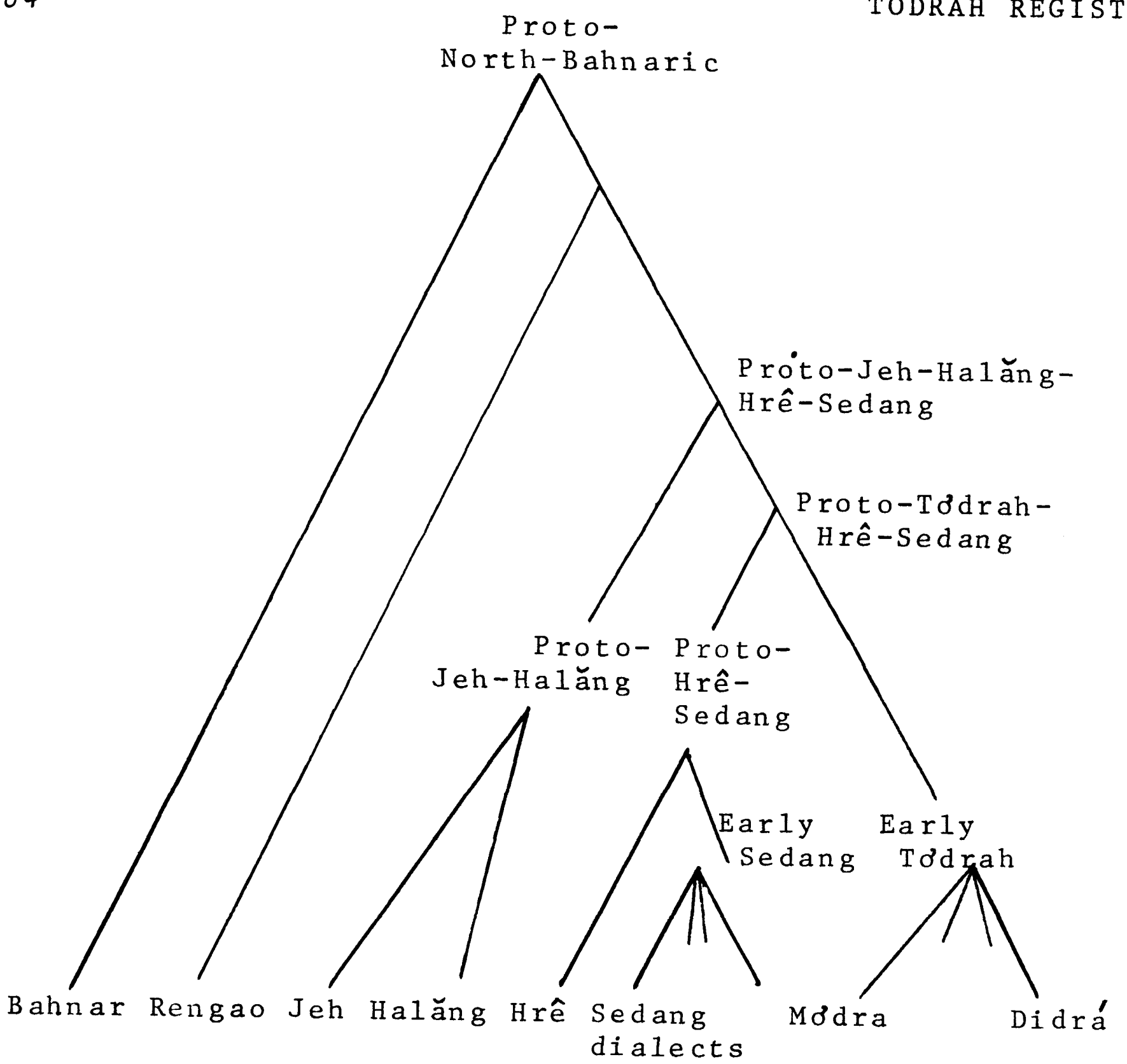

Chart 16. Genetic relationship of some North Bahnaric languages

With respect to the classification of Tɔdrah among the North Bahnaric languages, therefore, (1) it shares the register feature of the entire group excepting only Bahnar, Cua and Kɔtua; it shares the vowel glides of the register languages excepting only Rengao; and (3) it is closely related to Hrê and Sedang apparently sharing not a genetic but a local typological or areal tendency toward the loss of various final consonants. Therefore we posit the inclusion of Tɔdrah in a Proto-Tɔdrah-Hrê-Sedang group and the subsequent breaking away first of Early Tɔdrah leaving Proto-Hrê-Sedang which ultimately also separated into Hrê and Early Sedang. These branching relationships are shown Chart 16.

	No register shifts occur	Register shifts occur
No final consonant loss or change	Ø (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, Mȍdra, and Sedang--the final continuants (N, l, r, Ø) 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{N, Ø} (*ngang*)			V{q, P} (*sắc*)			Vh (*hỏi*)
		Second series	V̀{N, Ø} (*huyền*)			V{q, P} (*nặng*)			Vh (*ngã*)
B.	Didrá	Tense register	VN	VØ		Vq		V̆P	V́Ø / Vh
		Lax register	V̀N	V̀Ø		V̀q	V̄P		
	Mơdra	Tense register	VN	VØ	Vr	Vq		V̆P	V́Ø / Vh
		Lax register	V̀N	V̀Ø	V̀r	V̀q	V̄P	V̀P	
	Sedang	Tense register	V́N	V́Ø		VP			Vh
		Lax register	VN	VØ					

Chart 18. Comparison of Vietnamese tone and Bahnaric register systems

the Tɔ̌drah 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). Se also "Mnong vowel variations with initial stops" by Phillips (in this volume).

Spirants. The laryngealization of tense register *Vh in Tɔ̌drah and the tensing of lax register *Vh in Tɔ̌drah 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 *hỏi*, and *ngã* (Haudricourt, 1954).

Stops. In Didrá, before final stops, given either length or register the other is predictable. In Mɔ̌dra 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 -V́ (*sắc* tone), and the loss of final *h* yields -V̉ (*hỏi* tone) and -Ṽ (*ngã* tone). Tɔ̌drah has had a fair amount of such reduction, in some cases leaving no trace, in others only the telltale laryngealization (VØ < *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-Halăng data; R indicates Rengao as closely resembling PNB).

PNB			Didrá		Modra	
*-Vh	(TR)	*pah	D1	pá	M1	pá	'chop wood'
		*oh		ó		ó	'younger sibling'
	PHrS	*meh		mé		mé	'there
*-V̀h	(LR)	*trùh		trŏh		trôh	'arrive'
		*arìn		rĕh		rèh	'live'
	R	nùyh		nŏyh		nuâyh	'heart'
	PHrS	*rùh		rŏh		rôh	'wash clothes'
*-Vq	(TR)	*krăq	D3b	kraq	M2	krà	'old'
	R	kăq		kaq		kà	'eat'
*-V̀q	(LR)	*jìq		jìq		jì	'sick'
		*qdìq		dìq		dì	'all'
*GV̄P	(TR)	*qdak	D2	deaq	M3	daq	'water'
		*hak[19]		hiaq		haq	'vomit'
*C1V̄P	(TR)	*klak		kleaq	M4	klaq	'intestines'
		*tak		têaq		taq	'spear'
*C1V̀P	(LR)	*bìp		bìp		bìp	'duck'
		*brok		brôk		brôk	'go'
*V̆P	(TR)	*kăp	D2	kaq	M5	kaq	'bite'
		*măt		măq		maq	'eye'
		*ngŏk		ngŏq		ngoq	'mountain'
*-V̆P	(LR)	*kăt	D2 2a	kăt		kăt	'tie'
		*mŭt		măt/mŏt		mot	'enter'
	R	kơjĭp		gơjĕp		kêchĕp	'centipede'
*-VN	(TR)	*maham	D3a	mahiam	M6a	maham	'blood'
		*pun		pudn		pun	'four'
		*rang		riang		aragng	'flower'
*-V̆N	(LR)	(q)bèn		bĭnh		bien	'we-incl.'
	R	jèng		jeng		jêgng	'leg'
		*katsèñ		k(ơ)sèng		kơtsêng	'bone'
*{q N}V̆N	(TR)	R ăm		ăm	M6b	ăm	'give'
		*hanăm		sơnăm		hanăm	'year'
		*manĕñ		manĕng		manĕng	'crossbow'
*{q N}V̆N	(LR)	*ŭñ		ŭdn		ŭt(n?)	'fire'
*C2V̆N	(TR)	*baqdăm		padabm	M6c	patăp	'five'
	PHrS	*lam		lăm		lăp	'go'
		R năm					
		*pĕñ		pĕng		pĕk	'shoot'

		PNB		Didrá		Mɔ̀dra	
*C_{vl}VN	(LR)	*tăn		tăng		tăwk	'hear'
		*kacĭn		tɔchĭdn		tachĭt	'nine'
		*krăn		krăng		krăwk	'knee'
		*kăn		kăn		kăt	'big'
		*qbĭñ		bĕgng		bĭk	'full'
*C_{vd}VN	(LR)	*plĭñ		plĭng	M6c	plĭk	'sky'
					6a		
		R gŭng		gŏng		gŭk	'forest'
		R hɔdrŭng		--		hɔdrŭk	'worm'
		R dăng		dăgng		mɔndŏk	'stand'
*-VØ	(TR)	*pe	D3c	pi	M7a	pi	'three'
		*pay		pe		păy	'cook'
		*tadrăw		tɔdrue		tɔdru	'six'
*-VØ	(LR)	*čhi		chi		chi	'head louse'
		*blew		blu		blu	'thigh'
	PHrS	*wi		vi		vi	'they-plural'
*-Vl	(TR) PHrS	*apal	D3d	apo	M7b	apo	'mortar'
*-Vl	(LR)	*bŭl		bɔu		bɔu	'drunk'
		*xgal		gɔ		gɔ	'head'
*Vr	(TR)	*qbar	D3e	bia	M7c	bar	'two'
		*par		pa		par	'to fly '
		*qyĕr		iew		ier	'chicken'
		*akar		akia		akar	'skin'
*-Vr	(LR)	*čir		chie		chier	'dig'
		*hagăr		hɔgă		hɔkăr	'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.

	Mɔ̀dra	Didrá	PNB/R/S
1. 'sky'	plĭk	plĭng	*plĭñ
2. 'cloud'	yŏk	yŏk, ilŭq	*tsŭk
3. 'sun'		hì	*hèy
4. 'moon'		khăe	*khĕy
5. 'star'	hɔnŏng	hɔlŏng	*haŋlŏŋ
6. 'wind'		kɔyia	R kɔyal
7. 'rain'	mè	gŭng mè	* qmè
8. 'rainbow'		hɔdrŭng o diaq podring yòng	R qmrăt

		Mơdra	Didrá	PNB/R/S
9.	'mist'		ilŭq	
10.	'night	măng	di măng	*măŋ
11.	'day'		di hì	*hèy
12.	'year'	hơnăm	sônăm	*hanăm
13.	'hail'		priw	*prĕl
14.	'snow'			
15.	'freeze'			
16.	'water'	daq	deaq	*qdak
17.	'river'	krôgng	deaq kruâng	R krong
18.	'lake'		deaq tŏng	S tóng
19.	'sea'		deaq pusìq	R sơsìq; S tosiq
20.	'earth'	nné	tơné	*taqneh
21.	'stone'		hmô	*tamo
22.	'sand'	bray	bré	R chuyh; S prêi
23.	'mud'		trăp	R trăp
24.	'dust'		gơdăk	S kotak
25.	'gold'		mare	S mêa rêi
	'brass'		má	*mah
26.	'silver'		qbak	
27.	'mountain'	ngoq	ngọq	*ŋok
28.	'tree'	long	luong	*qloŋ
29.	'forest'	gŭk găy	gŏng 2D	*xgòŋ
30.	'leaf'		hla	*hla
31.	'bark'		hnó; kơmuq	R hmŏk, kơduh; PHrS *kaqmoak
32.	'flower'	rang	riang	*raŋ
33.	'root'	rê	ré	*reyh
34.	'fruit'		plì	*pley
35.	'seed'		kluông	S klŏang
36.	'grass'		nhaq	*qnĕt
37.	'stick'		luông a pôq	
38.	'banana'		prèt	*prìt
39.	'rattan'		ri	*hare
40.	'areca'			
41.	'papaya'			*rahŭŋ
42.	'coconut'		plì qlù	
43.	'bird'	chĭp	chìbm	*čèm
44.	'wing'	mơnar	mơna	*manăr
45.	'feather'		sâk	R săk
46.	'to fly'	par	pa	*păr
47.	'egg'		xtaq	*kaṭăp
48.	'tail'	ting	tigng	*teñ
49.	'claw'		kơné	*čaqneyh; R kơnih ~ kơqnih

		Mɔdra	Didrá	PNB/R/S
50.	'horn'	ki	aki	*ake
51.	'animal'		kwan kiaq	R khong kyăk S kuán kia
52.	'dog'	cho	chô	R cho
53.	'pig'	ùq	chù	*č(h)ŭr;DakSut Sedang ụq
	'wild pig'	hɨki	xki	*sake
54.	'chicken'	ier	iew	*qyĕr
55.	'duck'	bìp	bìp	S pêap
56.	'fish'	ka	ka	*ka
57.	'snake'	bằyh	bĕh	*qbằyh
58.	'rat'	kini	koni	kane
59.	'rabbit'	tɔpăy	kɔbay	R tɔpay
60.	'monkey'	doq	doq	*qdŏk
61.	'deer'	jŏy jằp dùm	juey jiew gŏh	*juy
62.	'tiger'	bòq kla	kla	*kla
63.	'water buffalo	kɔpò	xpô	kapò
64.	'cow'	roq	rŏq; rɔmo	*rŏk; R rɔmo
65.	'elephant'	ruy	rúy	*royh
66.	'tusk'	pala	kɔnùm;kɔla	R bɔla
67.	'worm'	òq;hɔdrŭk	ŭq	*sadrɔ̀ŋ[22] R ŭk· beetle
68.	'scorpion'	kèchĕp	gɔjĕp	*gaqjìp[23]
69.	'spider'	tùng pèng	mɔhua	R tɔng pèng S pek pêng
70.	'head louse'	chì	chì	*čhì
	'body louse'	sroq	hrŏq	*srŏk
71.	'mosquito'	ì jrò ì hmĕng	ji jrò	R hmĕng; S tritrôu
72.	' a fly'	ì r(u)way	rôey	*roy
73.	'nose'	mŏh	mŏh	*mŭh
74.	'eye'	maq	mă̆q	*măt
75.	'ear'	dwan	doan	*qdon
76.	'head'	gò	gò	*xgằl
77.	'mouth'	hù kŭk t(i)lie	xkŭng	R kŭng S rokɔng
78.	'tooth'	hɛnĕng	hɔnĕng	*sanĕñ
79.	'tongue'	tung piq	xpiq	*rapit[24] R rɔpĕt
80.	'hair'	să̆k	să̆k	R sà̆k
81.	'neck'	nŏng	tɔnong	*ranŏŋ
82.	'shoulder'	kɔtsă̆yh	kɔsĕh	R kɔsă̆yh S kosah
83.	'breasts'	tó	tó	tuh
84.	'back'	rŏk	kɔrŏng	*(ka)rŏŋ
85.	'heart'	nuâyh	nòyh	
86.	'abdomen'	pɔdŏk[25]	pɔdŏk	*badŭk
	'navel'	kloq	klŏq	*klŏk

		Mŏdra	Didra	PNB/R/S
87.	'intestines'	klàq	kleaq	*klak
88.	'liver'	kliebm[26]	klèbm	*klàm
89.	'hand'	hiting	hodĭgng	R hodìng 'finger'
90.	'palm'	topang	konià hodĭng	*čapaŋ
91.	'nail'		koné	*čaqneyh
92.	'leg'	jègng	jèng	R jèng
93.	'foot'		xpiang jeng	*čapan 'palm, sole
94.	'knee'	krăwk	krăng	*krăŋ
95.	'thigh'	blù	blù	R blù
96.	'calf'	puý	púy	*poyh
97.	'blood'	mŏham	mŏhiam	*maham
98.	'bone'	kŏtsèng	k(ŏ)sèng	*katsèñ
99.	'skin'	akar	akia	*akar
100.	'flesh'	tsĕiq	seq	S se
101.	'fat'	tŏma[27]	nŏmaq	*ramaq
102.	'live'	rèh	rĕh	*arĭh
103.	'die'	hlăq	hlăq	R hlat
104.	'sick'	tŏmó; jì	jìq	*jìq; S ta mo 'not well'
105.	'breathe'	dŭy kihiem[28]	kŏhem	R dùy chŏhem; cf. PHrS *yihiàm 'heart'
106.	'hear'	tâwk	tàng	*taŋ
107.	'see'	ngăn	hloq	R hloq; S ngán 'look at', hlo 'see'
108.	'speak'	tupuayq	tŏpôyq/ spôyq	R poyq
109.	'laugh'	do	dô	*(q)do
110.	'weep'	krầw	krò	kro
111.	'suck'	pụqụ	ùq; pŏqùq	R ŭq
112.	'spit'	kŏchó	xchó	*kačuh
113.	'blow'	hlubm	hlubm	*khlom
114.	'bite'	kap	kăp	*kăp
115.	'eat rice'	kà pùa	kaq	
	'eat meat'	kà jăp		R kaq qnham; S ka chám
116.	'drink'	uq[29]	ôq	*uq
117.	'drunk'	bŏ	bŏ	*(q)bŭl
118.	'vomit'	haq	hiaq	*hăk[30]
119.	'smell'	tsur	sù[31]	*sur
120.	'think'	tŏchĕk	xchĕng tŏmet	čačhĕŋ; S tomiat
121.	'know'	qnì	qnì	PHrS * qnì
122.	'count'	rien[3,2] yaw	rìn	R rèn; S sêô

		Mơdra	Didrá	PNB/R/S
123	'fear'	yù	zyùq	R yŭq
124	'want	wà	vaq	*wăq
125.	'sleep'	kùy	kùy	*kŭy
126.	'lie'	kơndŭk		R konŭk 'pile heap'
127.	'stand'	mơndôk	dăgng hơnhŏng	R dăng, S tang
128.	'sit'	qway qnĭ	qway haqnĭq	R qwăy; S ŏi, aqnai
129.	'walk, go'	brŏk. lăp	brŏk lăm	*brŏk; lăm
130.	'come'	trŏh	trŏh	trŭh
131.	'enter'	mŏt	mât/mŏt	*mŭt
132.	'return'	wĕh	wĕh	*wĭh
133.	'turn'	jŭk	wĕh; gu ging	*wĭh
134.	'swim'	glày	glè	R glày
135.	'float'	dòng		R dòng
136.	'flow'	hwayq	hièw. hoeq[33]	
137.	'push'	jrŏt	štŏt; njrot	*drŭt
138.	'pull'	duy	dui	R duy
139.	'throw'	hwok	hwăng	S hwang
140.	'fall'	klêh	klĕh	*klih
141.	'give'	ăm	ăm	*ăm
142.	'take'	yoq	zyoq	*soq[34]
143.	'wash'	qnjaw	qnhiĕw	*gnaw
144.	'launder	rŏh	rơh	*rŭh
145.	'split'	pá	pá	*pah
146.	'tie'	kăt	kăt	*kăt
147.	'wipe'	tsôt[35]		*sùt
148.	'rub'			R jrŏt
149.	'hit'	tôq, choq	tuàng (stick) tôk(fist)	R,S chok,'punch' S tok, tŏang
150.	'cut'	poq	pôq	R pŏt
151.	'stab'	bĕt	păk	*qbèt[36]*păk
152.	'dig'	chièr	chie	*cir
153.	'scratch'	kuwáy	kowaq	R kơkayq
154.	'squeeze'	koniq	diq kơqneq	R dit
155.	'man	kondrăk	kwan kơdrăng	R kodrang
156.	'woman'	kơdrì	kơdrì	*kadrì
157.	'person'	mangăy ngaỹ	kwan mơngei	*ŋe 'people'
158.	'father'	mah	baq	*qbaq
159.	'mother'	mơy	meq	R miq
160.	'child'	kuan	kwan nĕng	*kon
161.	'husband'	kơnu	kơdrăng	*čano 'male'

		Mơdra	Didrá	PNB/R/S
				R kơdrăng
	'male animal'	kơnu	kơlô	*čano;*klo 'husband'
162.	'wife, female'	kơndrì	kơdrì	*kadrì
163.	'brother-older'	dàh kơndrăk		
			daq kơdrăng	R daq kơdrăng
164.	'sister-older'	dàh kơndrì		
			daq kơdrì	R daq kơdrì
165.	'younger sibling'	ó	ó	*oh
166.	'name'	iní	iniq	PHrS *yinàq
167.	'I'	aw	a	R ăw; S á
168.	'thou' (to inferiors)	no	no	R nu
	'thou' (honorific)	ĕh	ĕh	R ìh; S eh
169.	'he'	găh	gĭh	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.'	chùq[37]	chŏq	R chŏp
172.	'they-pl.'	vì	vì	*wì
	'we two-incl.'	ba	ba	*ba
	'we two-excl.'	ma	ma	*ma
	'you two'	chùq	bre	R bri; R chŏp '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]	pôa	*por
176.	'corn'	anduy	ilùy	S alai
177.	'salt'	bó	mbó	*qboh
178.	'red pepper'	hăk	imrè	*hăn
179.	'betel chew'	pơlăw		R bơlaw
180.	'pestle'	long ndrì	luâng ndrì	*qlon adrèy
181.	'mortar'	apo	apo	*apăl
182.	'cook'	păy	pe	*pay
183.	'firewood'	hơndra	luâng ùdn	R hơdral;*ùñ 'fire'
184.	'fire'	ùt[39]	ùdn	*ùñ
185.	'burn'	chaw[40]	chốqố	*čuh
186.	'smoke'	nhuây[41]	nhuầy	*qñuy
187.	'ashes'	blo	lùq ùdn	PHrS *blo
			blo ùdn	'hearth'
188.	'road'	trogng	truông	R trong
189.	'house'	hìe	hnhẹ	R hnhè; S hngêi
190.	'roof'	kuâr	kùa	*kòr
191.	'cord'	kơsi	ksi	*kase
192.	'sew	jĕp	jĕp ew	PHrS *jèp
193.	'clothing'	aw	ew	*aw

		Mơdra	Didrá	PNB/R/S
194.	'loincloth'	kopĕt	xpĕn	*kapĕn
195.	'work'	bè jàgng[42]	bèq jiang	R beq jang S pei cheang
196.	'play'	lăp òm	lăm ngòy hewq	R ngòy
197.	'sing'	rongè,hặt chiew	achĭw hơqnhôn	R hat, honhong S rongei
198.	'dance'	gu suagng	asuang	R xoxwang;S soang
199.	'drum'	hơkâr[43]	hogà	*hagăr
200.	'gong'	gogng,chik	guŏng, chĕng	*gon, *chĭn
201.	'buy'	rŏq	rôq	*rut[45]
202.	'crossbow'	mơnĕng	mơnĕng	*manĕñ
203.	'arrow'	răk	răng	R răng
204.	'spear'	tàq	têaq	*tak
205.	'shoot'	pêik	pĕng	*pĕñ
206.	'hunt'	lwa, qmŏt cho	lăm lua qmât chô	R lwa; S qmot chó
207.	'kill'	hơqnăq	hơqnaq	R bơhlăt
208.	'fight'	tì yày	di yăyq di bo	
	'battle'	tơblá	tơblá	*tablah
209.	'one'	muày	mueyq	*mòyq
210.	'two'	bar	bia	*qbar
211.	'three'	pi	pi	*pe
212.	'four'	pudn	pudn	*pun
213.	'five'	pơdăp	pơdabm	*baqdăm
214.	'six'	tơndru	dodrue	*tadraw
215.	'seven'	tơpĕih	tơpĕih	*tapăh
216.	'eight'	tơham	nihiam	*tahnam
217.	'nine'	tơchit	tơchĭdn	*tačĭn
218.	'ten'	muày jăt	mueyq jât[46]	*qmòyq jăt
219.	'twenty'	bar jăt	bia jăt	*qbar jăt
220.	'hundred'	muày hrigng	mueyq hring	*qmòyq hriñ
221.	'all'	dì dŏk[47]	diq dăgng	R diq dang; S tai tang
222.	'many'	hìt	hĭdn	R hmăn, hăn; S hen
223.	'some'			
224.	'few'	ía	iá	R yaq; S ia
225.	'big'	kăt	kăn	*kăn
226.	'small'	kuan	kit	*kon
227.	'long'	yŏt	yodn	S son
228.	'tall'	yŏt	kojŏgng	S son
229.	'short'	qniq	qniq	R qniq
230.	'round'			
231.	'smooth'	jie	jĭw	
	'coarse'	hơhat	dinqrăn	
232.	'thick'		hơbò	hơbăl
233.	'thin'		xtang	

		Modra	Didra	TODRAH REGISTER PNB/R/S
234.	'wide'	jàr	jà	
235.	*'narrow'*	*tăng bàq*	*kĭt*	
236.	'black'	brăk	brăng	R brăng
237.	'red'	dụm	gŏh	*qdùm
238.	'white'	kloq	mòng, dơbŏq	R tơbok; S bông
239.	'green'	andreih	ingèt, drèh	*adrìh,'unripe'
240.	'yellow'	drigng	dring	*dreŋ
241.	'dry'	khăk, tsrigng	hring	R sring
242.	'wet'	kơchŏh	hơjŏh	*qjòyh
243.	'rotten	um	su qme	R ŏm
244.	'swell'	atsùk	pơqe, asogng	R bơqayh
245.	'full'	bĭk	bègng	*qbìñ
246.	'dirty'	haqja,qmè	qmèq	*qmeq
247.	'sharp'	hadn	hian, mơneaq	*han; S monêa
248.	'dull'	ôh i hadn	di i mơneaq	R bìq han
249.	'new'	naw	nĕw	*qnaw
250.	'hot'	hơtú[48]	tôq	*tuq
251.	'cold'	yu tơngĕq	tơngĕq	*taŋit[49]
		hơngièw[50]	hơngĭw	*haŋiw
252.	'heavy'	hngăm	hngam	*hŋăm
253.	'straight'	hơndrăk	hơdrăng	R tơdrăng
254.	'right'	trò, jò	joq	*troq, joq
255.	'good'	lĕp	lĕbm	*lem[51]
256.	'bad'	qmè	qmèq	R qmèq
257.	'old aged'	kra	kraq,dôn sơnăm	*kraq, *qdùñ hanăm
258	'far'	hangăy	hơqngey	*saqŋay
259.	'near'	hajeiq[52]	ajĕiq	*ajeq
260.	'rightside'	huqwa	qwa	*qma
261.	'leftside'	hiqiew	iw	*haqew
262.	'same'	muăy tièh	muăyq tiăh	*qmòyq (PHrS) tèh
263.	'different'	pha,teqeq	pha,krè	*pha; R toqĕt
264.	' here'	kô	a kô	*ku; S akố
265.	'there'	mé, taw	mé, ta	R meh; PHrS *ta R tăw
266.	'this'	same as 264 'here'		
267.	'that'	same as 265 'there'		
268.	'when'	là lì, gar lì	la lì kya lì	R la lì, R kar lì
269.	'where'	u lì	u lì	R paq lì; S u lai
270.	'who'	qbay	kaqwĕy	PHrS *kambu
271.	'what'	klì	kiklì	S koklai
272.	'and'	păng,qmăng	păng, qmang	R păng, ; S qbáng

273.	'with'	same as 272	'and'	R ing
274.	'at	nie	u	S u
275.	'because'	kolih ko		R kolih ko
		yuar ko	yôa	R ywa ko; S sua
276.	'how'		tiah li	R thoy li, S ti lai
277.	'if'	tawk	d/tang	*tang
278.	'in'	tugng, lăm	tung tolăm	R tur, lăm; S tung
279.	'not'	oh	di...oh	R biq (...oh); S ôh ta
280.	'not yet'	tabm	tiam..oh di..hiq	*tam
281.	'already'	boyh, yoh	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: ̀ is used for breathy vowels and ́ for laryngealized vowels, but clear vowels are unmarked. - (hyphen) indicates Tödrah clear vowels in contexts contrasting breathiness or laryngealization. ̄ is used for short vowels, long vowels normally being left unmarked; V is used for long vowel only in formulas. Nasalization is marked by a lowered dot (.), and glottal stop by *q*.

4. The M data was obtained from Bring of Kon Hönong Village. The D data was obtained from Briang of Kon Ködrăng Village, more recently known as Dak Dăm 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. Tödrah 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-Halăng. 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 *Ø; *yq under *q; and *yh under *h. Finals *l and *r are indicated separately.

11. Inasmuch as Tơdrah *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 *dơdrah* 'grasslands' is possibly related to the name of these inhabitants of Plateau Gi.

12. A speaker from Kon Hơgagng Village (3 kilometers east of Kon Hơnong Village from which the M data was obtained) had the same phonological features as the Kon Hơnong speaker, except that he retained all final nasals, though he would accept the final voiceless stops as acceptable substitutes.

In both Cua and Kơtua, 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 **plì* 'fruit' where other Mon-Khmer languages have tensé 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 Tơdrah. 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 Rơlùng 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.

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

$$* \left\{ \begin{matrix} -V1, \\ -Vr \end{matrix} \right\}_{LR}^{TR} \longrightarrow S \left\{ -V\emptyset \right\}$$

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

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

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

22. PNB long vowel reconstructed on basis of Bahnar *hadrông* and Proto-Jeh-Halăng *idrung* long vowels, though M tense register final *k* supports Rengao *hơdrŭng* as evidence for a short vowel reconstruction.

23. The D and M tense register (cf. D2a and M5) support Rengao *kơjĭp* 'centipede; as evidence for a short vowel reconstruction; PNB long vowel is based on Bahnar *kaqep* and Proto-Jeh-Halăng *gajip*.

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

25. M lax register is unexplained ; cf. M 5.

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

27. 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 Tŏdrah as well as the lax register for Rengao.

33. Cf. Rengao *hwăch* 'diminish in quantity' and *phŏphach* 'gushing of water'.

34. M *q* supports Rengao *yŏk* 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 *bĭt* (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 Ø 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 *rŏt* and Bahnar *răt* for evidence of short vowel (cf. M5); PNB long vowel is reconstructed on the basis of vowel glides in Proto-Jeh-Halăng *ruat* and Sedang *rôe*.

46. D lax register is unexplained ; cf. D2a.

47. By Rule M6a Mŏdra 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 *tŏngyĕt* as evidence for a short vowel (cf. M5); PNB long vowel is reconstructed on basis of Bahnar semi-vowel in *tangi̯ĕt* and a vowel glide in Sedang *tongie*.

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

51. M *p* supports Rengao *lĕm* as evidence of a short vowel (cf. M6); PNB long vowel reconstructed on basis of Bahnar semi-vowel in *li̯ĕm* and Proto-Jeh-Halăng 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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