Proto-Mon Registers: Two, Three, Four…?
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PROTO-MON REGISTERS: TWO, THREE, FOUR . . . ?

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Historical linguistics has lost, perhaps permanently, the central position it used to occupy in the study of language. Nowadays, it tends to receive new insights from other branches of linguistics, more often than it gives. But there is nothing irreversible about this situation: watching an organism like language change through time still remains one of the best ways of understanding its inner composition.

In the field of phonetics, for instance, historical information can play a crucial role in framing precise questions. The experimentalist, faced with large and undetermined numbers of parameters, may want to know that the dice are actually loaded, and if so, how. What follows is an example.

The Southeast Asian linguistic area has become one of the best regions for the study of registers (i.e. phonation types), among other things. Several of its languages have contrastive phonation types, usually clear voice vs. breathy voice, accompanied or not by pitch contrasts. Several more languages used to have such register contrasts in the past, which have now given way to tone or aspiration contrasts, as in standard Thai, or to vowel distortions, as in the case of Khmer. Some others, like Javanese, are just now in the process of acquiring registers.

The Mon language has long been known to possess a two-way register contrast: clear voice vs. breathy voice, affecting all vowels. Mon can be considered the archetypal register language. And yet, we still know very little about Mon phonetics. Early descriptions referred to breathy voice as being "une qualité plutôt gutturale, tenant de la cavité postérieure de la bouche" (Blagden, 1910), and more recent studies suggest that pitch distinctions may be associated with the two phonation types to create a "quasi-tonal system (Shorto, 1962). From my own observations, impressionistic but repeated, it seems that the register distinction is fundamental though implemented somewhat differently by different individuals. The pitch correlates which may accompany the two registers appear to be a typical feature of word-by-word elicitation. In the normal flow of speech, intonation appears to completely take over, and eliminate whatever pitch differences might have been present; but the two phonation types are still clearly audible.

Historically, the origin of Mon registers is simple. As in numerous other cases in Southeast Asia, Mon has lost a voice distinction in its initial stops. Before disappearing in the stops, the voice vs. voiceless distinction gave rise to a difference in the phonation type of the following vowel: *voiceless initials conditioned a clear voice in the vowel, while *voiced ones conditioned a breathy voice. Nothing surprising so far.

We should note, however, that Proto-Monic possessed not two but three series of stops: in addition to voiceless *p, t, c, k and voiced *b, d, ɟ, g, there was an implosive series: *ɓ, ɗ,

which has remained unchanged to this day, with only slight differences in the amount of implosion among various individuals. This implosive series has, in most dialects, the same effect on the phonation type of the following vowel as the *voiceless stop series: it conditions a clear voice, except in a handful of words. This again is not too surprising, at least in the Southeast Asian context: Khmer, and the Tai family, offer parallel examples.

But from a phonetic point of view, there is a problem which has not received the attention it deserves: after all, implosives are phonetically voiced, not voiceless, and, in Khmer and most Tai languages, they have remained voiced to the present day, just as in Mon, even after the ordinary voiced stops have become voiceless: why should implosives form a natural class with voiceless stops at all?

An explanation which has been proposed (Li, 1943, 1977), and generally accepted (e.g. Haudricourt, 1961), consists in saying that these articulatorily complex sounds, i.e. implosives, are "preglottalized" and form, therefore, a natural class with the initial glottal stops commonly found in Southeast Asia. The initial glottal stop of Mon does indeed condition clear voice in the following vowel, even though it is neither voiced nor voiceless, but constitutes by itself a distinct phonation type. And it is true that implosives require, in the initial stages of their articulation, a double closure, one at the glottis and the other in the oral cavity. But there are two difficulties with this explanation: a historical one and a phonetic one.

The historical difficulty, which I have suggested elsewhere (Diffloth, 1980), is that the tones and registers of vowels which immediately follow stops are not influenced by phonetic material which precedes the release of these stops. Certain Mon-Khmer languages, notably in the Palaungic branch, show that *kb- and *gb- initial-types condition the same registers and tones as do simple *b- initial-types. There is no reason why *ʔb- cluster-types should be any different in this respect. In this respect, stops differ from liquids and nasals, which are actually permeable to voice features of preceding segments, so that *kl- and *kn- initial-types behave like *k- initial-types, while *gl- and *gn- behave like *g-. Historically, stops are not permeable.

The phonetic difficulty is that the glottal closure which is needed in implosives in order to lower the air-pressure in the oral cavity is not maintained beyond the first few milliseconds of the stop: at some point before the release of the second (oral) closure, some pulmonic air is let into the oral cavity through a tight but gradually loosening glottis. It is this movement of air which causes some glottal vibrations and gives the auditory impression that implosives have the same phonation type as voiced stops. However, even without experimental evidence, it is easy to imagine that the vocal cords probably do not vibrate in the same way during an implosive and during a normal voiced stop: the air-pressure configurations are different, and so are the successive states of the glottis itself. In all likelihood, then, implosives have a unique phonation type (or succession of phonation types), which has no technical name to my knowledge, but should be distinguished

from normal voice. This phonation type, not the initial glottal closure, is what we should look at in order to explain why implosives form a natural class with voiceless stops and glottal stop itself.

From these considerations, one should be able to foresee that initial implosives might give rise in some languages to a register of their own, a third register, distinct from the clear and the breathy registers found, for example, in Mon today.

The study of history and dialects reveals that there is indeed evidence for a third register in Mon. But the evidence is indirect and requires us to examine the Mon vowel system, more precisely, the correlation between vowel qualities and registers in the history of Mon, a history noted for its complexity.

Since the Monic branch is only distantly related to other branches of the Mon-Khmer family, the only historical guidelines we had, until recently, were the orthography of the modern language ("Literary Mon") and the various Middle and Old Mon inscriptions, going back to the 6th century AD (Shorto, 1971). These, though precious, are not always systematic or exhaustive in their notations. Recently, I have recorded and compared the few remaining dialects of Nyah Kur, the only language in the Monic branch other than Mon. With this information, I have reconstructed the phonology of Proto-Monic, including that of the vowel system (Diffloth, in press). I have also conducted, at the same time, a dialect survey of Modern Spoken Mon, in both Thailand and Burma. In what follows, the ancestral language common to both Mon and Nyah Kur will be called Proto-Monic, and the ancestral language common to all dialects of Modern Mon whill be called Proto-Mon.

Proto-Monic had a vowel system consisting of at least fifteen units, not a very impressive one by Mon-Khmer standards, but certainly rich by comparison with later stages of the language. By Proto-Mon times, the system had lost vowel-length contrasts and merged some vowel qualities; but register had become established and the relatively poor vowel system began acquiring many new phonetic values, conditioned by both registers and final consonants Exactly how many contrastive vocalic nuclei there were in Proto-Mon is not a simple matter to decide upon; several analyses are possible, as is often the case in languages of this type (Shorto, 1966; Phillips and Miller, 1976). Matching these two very differe vowel systems, those of Proto-Monic and Proto-Mon, is not a simple matter. In order to do this, we need to consider an intermediate stage between Proto-Monic and Proto-Mon, a time in the history of the language which would predate the appearance of registers and subsequent distortions of vowel qualities, but postdate the loss of Proto-Monic vowel length. We shall call this stage: Pre-Mon. The vowel system at this Pre-Mon stage was simple:

	i		u
iə	e	ə	o
		a	ɔ

Except for the iə/e contrast, it is this vocalic system which the orthography of Modern Mon represents fairly consistently, even today. In what follows, we shall be concerned with the evolution of three of these vowels, from Pre-Mon to Proto-Mon and to several Modern Mon dialects, namely: Pre-Mon *i, *ə, and *u.

The evolution of Pre-Mon *ə is a good illustration of what happens in the classical case where only two registers interact with vowel qualities. With the breathy register,[1] *ə remains unchanged with all finals, including zero:

"forest"	Pre-Mon *grəp;	Proto-Mon *krə̤p;	Mod. Mon: krə̤p
"to step on"	" " *lən;	" " *lə̤n;	" " lə̤n
"tree stump"	" " *təgə;	" " *həkə̤;	" " həkə̤

except for final velars:

"to lift"	Pre-Mon *yək;	Proto-Mon *yə̤̌k;	Mod. Mon: yə̤ək
"foot"	" " *jəŋ;	" " *cə̤̌ŋ;	" " cə̤əŋ

With the clear register, *ə is split into two subsegments: the first is more open and more prominent (louder and longer) than the second; before final velars, h, and zero, the outcome is *-ɒ̤̌-, before alveolars: *-ɒ̲ə̲-, before labials: *-ə̲ə̲-.

"thick"	Pre-Mon *təm;	Proto-Mon *tə̲ə̲m;	Mod. Mon: tɒ̲m
"to climb"	" " *tən;	" " *tɒ̲ə̲n;	" " tɒ̲n
"to get up"	" " *tə;	" " *tɒ̤̌;	" " tɒ̲
"to pluck"	" " *pək;	" " *pɒ̤̌k;	" " pə̲ə̲k
"to build"	" " *srəŋ;	" " *sɒ̤̌ŋ;	" " sə̲əŋ
"pus"	" " *pətəh;	" " *pətɒ̤̌h;	" " pətɒ̲h

Throughout Mon-Khmer, one can find examples of similar evolutions: a bi-partition of the vowel system where high vowels remain intact in the breathy register, but are diphthongized, or distorted by lowering the initial part of the vowel, in the clear register: Khmer is a well-known example.

The evolution of Pre-Monic *i and *u appears at first to follow the same general pattern; they remain unchanged in breathy register:

"delicious, happy"	Pre-Mon *mip;	Proto-Mon *mi̤p;	Mod. Mon: mǐ̤p
"bed-bug"	" " *sgit;	" " *həki̤t;	" " həkǐ̤t
"centipede"	" " *gəgi;	" " *həki̤;	" " həkə̲i̤
"turtle"	" " *gwi?;	" " *kwi̤?;	" " kwi̤?
"snake"	Pre-Mon *jrum;	Proto-Mon *sṳm;	Mod. Mon: sə̲ṳm
"termite"	" " *grun;	" " *krṳn;	" " krṳn
"(rain) to fall"	" " *gu;	" " *kṳ;	" " kə̲ṳ
"eldest child"	" " *glu?;	" " *klṳ?;	" " klə̲ṳ?

except before final velars:

"to sew"	Pre-Mon *jiŋ;	Proto-Mon *cɤ̤iɲ;	Mod. Mon: co̤iɲ
"to steam (rice)"	" " *jruŋ;	" " *sə̤ɨŋ;	" " sə̤ɤŋ

In the clear register, Pre-Mon *i and *u are generally distorted but here we have to sort out the influences of various initials and various finals, and pay attention to the great variety of Modern Mon dialects.

The northern part of the Mon-speaking area of Burma comprises a few dialects which are historically distinct from all other forms of Modern Mon, including those spoken today in Thailand. Mons themselves refer to these Northern dialects as "Mon Ro," and to others as "Mon Rao." Geographic and linguistic information on Modern Mon dialects is given elsewhere (Diffloth, in print).

In Mon Ro dialects, clear register *i and *u are distorted before -ʔ finals:

"earth"	Pre-Mon *tiʔ;	Proto-Mon *tɒiʔ;	Mon Ro: taiʔ
"moon"	" " *gətuʔ;	" " *hətɒuʔ;	" " hətaoʔ

Before zero finals (Proto-Monic *-r, *-l, or *-w), only *u is distorted in clear register, while *i remains little changed:

"sand"	Pre-Mon *bəti;	Proto-Mon *həti;	Mon Ro: hətei
"be burning"	" " *tu;	" " *tɒu;	" " tao

Before other finals, clear register *i and *u are undistorted in Mon Ro dialects; *i is simply lowered to /e/ but not diphthongized:

"stairs"	Pre-Mon *kənin;	Proto-Mon *kənin;	Mon Ro: ʔənen
"a bear"	" " *khmim;	" " *hmim;	" " hmem, hmen
"to know"	" " *tim;	" " *tim;	" " tem (also: taɛm[2])

"to sprout"	Pre-Mon *klut;	Proto-Mon *klut;	Mon Ro: klut
"macaque"	" " *khnuy;	" " *hnuy;	" " hnuy
"five"	" " *pəsun;	" " *pəsun;	" " pəsun

Final velars, as usual, create patterns of their own:

"pig"	Pre-Mon *klik;	Proto-Mon *klɤic;	Mon Ro: klot
"elephant"	" " *ciŋ;	" " *cɤiɲ;	" " con
"mango"	" " *kruk;	" " *krɤɨk;	" " krəɤk
"high"	" " *sluŋ;	" " *hlʌɨŋ;	" " hləɤŋ

However, there are a number of words where the expected vowel distortions do not take place:

"intoxicated"	Pre-Mon *bəɓu;	Proto-Mon *həɓu;	Mon Ro: həɓu
"wood"	" " *chuʔ;	" " *chuʔ;	" " chuʔ

We shall return to these in a moment.

In the various Mon Rao dialects, vowel distortion is more thorough: clear register *i and *u with final -ʔ have the same distortion patterns as in Mon Ro (unless otherwise specified, the Mon Rao forms quoted here are from the vicinity of Mudon):

"earth"	Pre-Mon *tiʔ;	Proto-Mon *tɒ̱iʔ;	Mon Rao: tɔɛʔ
"moon"	" " *gətuʔ;	" " *hətɒ̱ʷʔ;	" " hətauʔ

But we also find distortion before all other finals, except velars:

"sand"	Pre-Mon *bəti;	Proto-Mon *həti;	Mon Rao: hətɔɛ
"be burning"	" " *tu;	" " *tɒ̱ʷ;	" " tao
"to know"	Pre-Mon *tim;	Proto-Mon *tim;	Mon Rao: taɛm
"a bear"	" " *khmim;	" " *hmim;	" " maɛm
"stairs"	" " *kənin;	" " *kənin;	" " kənɛn
"to sprout"	Pre-Mon *klut;	Proto-Mon *klut;	Mon Rao: klɒt
"five"	" " *pəsun;	" " *pəsun;	" " pəsɒn
"macaque"	" " *khnuy;	" " *hnuy;	" " nɔɛ
"pig"	Pre-Mon *klik;	Proto-Mon *klɤ̱ic;	Mon Rao: kloic
"elephant"	" " *ciŋ;	" " *cɤ̱ɪ̱ɲ;	" " coiɲ
"mango"	" " *kruk;	" " *krɤ̱ɨ̱k;	" " krəɤk
"high"	" " *sluŋ;	" " *hlʌ̱ɨ̱ŋ;	" " hləɤŋ

Some of the Mon Rao reflexes of *i and *u have become monophthongs, in kənɛn and pəsɒn, for example, but it is clear that they are the result of a simplification of what used to be complex, "distorted" vowel nuclei, probably *kənaᵉɨn and *pəsɒᵘn respectively. The evidence for this comes from other Mon dialects, one of which is presented below. In addition, since the reflexes of Proto-Mon *-en and *-on are -ɛn and -ɔn in Mon Rao, the evolution of *-in to -ɛn and of *un to -ɒn, jumping, so to speak, over -ɛn and -ɔn, implies diphthongization; a simple lowering process would have caused mergers. In what follows this implied diphthongization, or distortion, will be taken for granted.

From the above evidence, it appears that the Mon Ro and Mon Rao groups of dialects separated from each other at a time when the process of vowel distortion had not yet been extended to all finals (except velars). Only Mon Rao dialects proceeded with the distortion process.

But, as we briefly noticed in Mon Ro, there are many words in Mon Rao dialects where the expected innovation does not occur:

"blood"	Pre-Mon *chim;	Proto-Mon *chim;	Mon Rao: chim
"mortar"	" " *gəʔi;	" " *həʔi;	" " həʔɨ̱i
"sea"	" " *ɓi;	" " *ɓi;	" " ɓɨ̱i
"to drift"	" " *hi;	" " *hi;	" " hɨ̱i
"to bathe"	Pre-Mon *hum;	Proto-Mon *hum;	Mon Rao: hum
"knife"	" " *ɓun;	" " *ɓun;	" " ɓun
"to simmer"	" " *ɗun;	" " *ɗun;	" " ɗun
"intoxicated"	" " *bəɓu;	" " *həɓu;	" " həɓu
"medicine"	" " *gəʔuy;	" " *həʔuy;	" " həʔəuy

These exceptions, in both Mon Ro and Mon Rao, have a common environment[3]: the initial consonants are: ɓ-, ɗ-, ʔ-, h- (and perhaps k- in a few cases). Some phonetic aspect of these initials appears to have prevented the distortion of vowel qualities, whereas *voiceless initials encouraged it, while both groups of consonants conditioned a clear register. Since the phonetic element common to all four, but absent from the rest, is laryngeal activity, the question of a possible third register naturally arises at this point: the clear voice register of present-day Mon could represent a merger of two formerly distinct phonation types, both opposed to the breathy voice register.

It might be possible, by examining the numerous country-side dialects of Mon spoken in Burma today, to find some phonetic trace of such a three-way distinction. What I have found is not exactly a third register, but something very close to it phonetically: in several Mon villages around Kamawet ([kəma̲ wa̲k]), about 12 kms. south of Mudon,[4] a variety of Mon Rao is spoken where all words having what I have called distorted vowels in Mon Rao are pharyngealized with various degrees of strength.

This pharyngealization affects vowel nuclei in such a way as to separate the two subsegments of a distorted vowel by a voiced pharyngeal approximant; the vocalic subsegments themselves have what sounds like a clear, ordinary phonation type, as in other Mon dialects:

"earth"	Pre-Mon *ti?;	Proto-Mon *tɒ̤?;	Kam.: tɒ̲ʃic
"moon"	" " *gətu?;	" " *hətɒ̤?;	" hətɒ̲ʃu?
"sand"	" " *bəti;	" " *həti̲;	" hətɒ̲ʃi
"be burning"	" " *tu;	" " *tɒ̲;	" tɒ̲ʃu
"to know"	Pre-Mon *tim;	Proto-Mon *ti̲m;	Kam.: tɒ̲ʃəɲ
"a bear"	" " *khmim;	" " *hmi̲m;	" mɨ̲im, ~ hmɒ̲ʃiɲ
"stairs"	" " *kənin;	" " *kəni̲n;	" ʔənɒ̲ʃən
"to sprout"	Pre-Mon *klut;	Proto-Mon *klu̲t;	Kam.: klɒ̲ʃut
"five"	" " *pəsun;	" " *pəsu̲n;	" ʔəsɒ̲ʃun
"macaque"	" " *khnuy;	" " *hnu̲y;	" nɒ̲ʃuy

In this dialect, the first part of the vowel nucleus of pharyngealized vowels is always [ɒ̤], which leads directly to the pharyngeal; the second part is high, shorter and unstressed, but may have a drastic effect upon the final consonant (e.g. "earth").

Clear register vowels which are not distorted, i.e. those preceded by ɓ-, ɗ-, h-, ʔ- (and sometimes k-) are not pharyngealized and have about the same quality and register as in other Mon dialects, Rao or Ro:

"blood"	Pre-Mon *chim;	Proto-Mon *chi̲m;	Kam.: chɨ̲im
"mortar"	" " *gəʔi;	" " *həʔi̲;	" həʔəi̲
"sea"	" " *ɓi;	" " *ɓi̲;	" ɓəi̲
"to drift"	" " *hi;	" " *hi̲;	" həi̲

"to bathe"	Pre-Mon *hum;	Proto-Mon *hum̄;	Kam.: hum̄
"knife"	" " *ɓun;	" " *ɓun̄;	" ɓun̄
"intoxicated"	" " *bəɓu;	" " *həɓu̱;	" həɓu̱
"medicine"	" " *gəʔuy;	" " *həʔu̱y;	" həʔəu̱y

Laryngeal initials have apparently prevented pharyngealization (and vowel distortion) of the following vowel.

Considering the phonetic conditioning, it is probable that pharyngealization in the Kamawet dialect is the present-day realization of a Proto-Mon laryngeal feature, a distinct phonation type. The fact that pharyngealization agrees in all cases with Rao distortion indicates that it is possible to reconstruct it back to Proto-Mon-Rao times. Whether it appeared earlier, e.g. at the same time as the clear/breathy distinction between Pre-Mon and Proto-Mon, or actually very recently, only in the Kamawet sub-dialect, cannot be decided upon in the present state of our knowledge.

There is an additional piece of patterning in the pharyngealization of distorted vowels which actually confuses this issue and does not help us in dating the innovation: the evolution of *ə. Before final velars, as we saw above, reflexes of *ə are distorted in both Mon-Ro and Mon-Rao (see "build," "to pluck"); as expected, these are pharyngealized in Kamawet:

"to pluck"	Pre-Mon *pək;	Proto-Mon *pɒ̱̈k;	Kam.: pɒ̱ʕək
"hole"	" " *-srəŋ;	" " *-sɒ̱̈ŋ;	" ʔəsɒ̱ɓŋ

But they are also distorted, in Mon Ro and Mon Rao, after laryngeal initials:

"completed"	Pre-Mon *ɗək;	Mon Ro: ɗaək;	Mon Rao: ɗaək
"sambhar deer"	" " *ɓəŋ;	" " ɓa̱əŋ;	" " ɓa̱əŋ
"hornet"	" " *həŋ;	" " ha̱əŋ;	" " haəŋ

And these are also pharyngealized in Kamawet:

"completed"	Pre-Mon *ɗək;	Proto-Mon *ɗɒ̱̈k;	Kam.: ɗɒʕək
"sambhar deer"	" " *ɓəŋ;	" " *ɓɒ̱̈ŋ;	" ɓɒʕəŋ
"hornet"	" " *həŋ;	" " *hɒ̱̈ŋ;	" hɒʕəŋ

This only shows that the influence of laryngeals in preventing pharyngealization is not deterministic but simply a phonetic option: in the case of *-k, *-ŋ it simply did not occur. It seems that pharyngealization may have spread to those vowels which were already distorted. In any case the history of vowels before velars in Mon is not completely congruent with the development of vowels in other environments.

This question aside, the phonetic options encouraging or discouraging pharyngealization and vowel distortion present the phonetician with precise questions: what kind of phonation type, distinct from clear or breathy, could be the ancestor of pharyngealization and also be prevented by initial ɓ-, ɗ-, ʔ-, and h- ? Can clear voice be subdivided into two subtypes?

Note, in addition, that breathy voice itself is not without resources: there are a few examples in Mon of *voiced stops plus h initials, mostly borrowings, which become voiceless aspirated stops, but are followed by breathy vowels:

"Dharma" Pre-Mon *dhɔ; Proto-Mon *thɔ̤; Mod. Mon: thɔ̤

There is even the mysterious case of five Mon words with an implosive ɓ- initial followed by breathy, not clear, vowels:

"female (animal)" Mod. Mon: ɓa̤ʔ (see Shorto, 1962)

I have so far been unable to trace their history, but they are certainly old enough to have required the invention of a distinct letter in the Mon alphabet, a letter which graphically resembles a combination of m and ordinary, unimploded b. A fourth register in Proto-Mon?

Footnotes

[1] Breathy voice will be noted here with a subscript: /a̤/; by contrast, a special symbol was created to indicate clear voice: /a_/; phonation types are indicated only on stressed (ultimate syllable) vowels, and only on the syllabic portion of diphthongs or distorted vowels.

[2] This is apparently a borrowing from a Mon Rao dialect nearby.

[3] Y. Mitani, Kyoto University, is to be credited for discovering this configuration, having presented it at a public lecture on the Mon Writing System at the American University Alumni association in Bangkok, around January 1982.

[4] I was not able to visit the area myself, but met several Mons from Kamawet, Kalawthut and Hnipadau, in Rangoon and in Thailand. They all had spent most of their life there. I wish to express my special gratitude to Nai Pan Hla, Ministry of Culture, Rangoon, and to Theraphan L. Thongkum, Chulalongkorn University, Bangkok, for their whole-hearted help in this research. Many other acknowledgments are given in Diffloth (in press). My research project was funded by NSF grant BNS-7926808 "A Mon-Khmer etymological lexicon."

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