REGISTER IN BURMESE

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0. INTRODUCTION[1]

It has been 'traditional' in Tibeto-Burman (TB) linguistics to describe languages in terms of a suprasegmental opposition of **tones** which have been talked about mainly or exclusively in terms of fundamental frequency (or pitch). The literature on the development of these tones refers to reconstructed characteristics of consonant segments in the syllable: initial consonants conditioning pitch height, and certain 'laryngeal' final consonants often conditioning the development of pitch contour.

To be exact, proto-voiced initials have been found to condition the development of a lower pitch, and proto-voiceless initials may condition the development of a higher pitch; there are also cases in which three categories of initials - such as voiceless aspirated, unaspirated, and voiced - may condition the development of three different relative pitches. A final -ʔ may condition the development of a rising contour, and a final -h, a falling contour. These proposals are discussed succinctly in Matisoff (1973); an example of the development of higher versus lower tones conditioned by *voiceless versus *voiced initials which subsequently themselves changed is seen in Matisoff (1972), and an example of a rising tone which developed in the environment of a recently-developed final glottal stop (as well as a difference in initial) is seen in Matisoff (1970). These two examples from Loloish are examples of excellent comparative work which demonstrate that recent developments in the suprasegmental systems of these languages have been conditioned by segmental differences.

In Austroasiatic (AA) linguistics, the focus of descriptive and comparative efforts has instead been on suprasegmentals of voice quality or phonation, which have been termed <u>register</u> by Henderson (1952).

These differences between breathy, 'normal', and creaky voicing have been the main parameter considered in many descriptions, though there are often other characteristics noted as well. The conditioning factor in the development of the register opposition, according to the usual reconstruction, is the voicing characteristic of the initial consonant in the syllable; if the initial was voiced, a breathy phonation might develop for the entire syllable; if voiceless, a creaky phonation might develop. It seems much less typical of AA languages to have more than two contrasting suprasegmentals of register than it is of TB languages to have more than two tones conditioned by initial characteristics. Moreover, it is often the case that Austroasiatic languages with a register contrast have only one 'marked' phonation; i.e. there are systems with breathy versus 'normal' register, or 'normal' versus creaky register, but it is less frequent to find a system with breathy vs. creaky register.

It is interesting to note that the principal conditioning factor adduced in many instances of tonogenesis or tone splitting in TB languages is identical to that for the development of register in AA languages: voiceless versus voiced initial consonants. Perhaps the differences in description are partly due to the fact that TB and AA linguists don't talk to each other enough.

As Henderson has also noted, it is hardly ever the case, in Southeast Asia at least, that a suprasegmental system can be described in terms of one parameter only. Fundamental frequency or pitch is one parameter only; so is phonation. Other parameters of suprasegmentals whose domain is the syllable (syllable prosodies) may include duration, intensity, and characteristics of the segments such as vowel quality. Gregerson (1976) suggests that the position of the tongue root may be a major factor in several of these parameters including especially voice quality overall, and vowel quality. Other articulatory characteristics involved would include larynx adjustments: raising or lowering as well as differences in vocal cord tension and so on; airstream differences (more or less subglottal pressure); pharynx shape differences, partly but not only related to the position of the tongue root; and possibly more. The principal differences in articulation involve the larynx, but the shape of the vocal tract above the larynx can also contribute significantly.

There have been a couple of studies within TB which propose to account for suprasegmental phenomena in terms of register; the earliest that I know of is Bradley (1969), which describes the Loloish TB language Akha in terms of a laryngealised versus 'normal' register which crosscuts the high versus mid versus low pitch tone system; the

laryngealised register occurs mainly with mid and low tones. It is a true syllable prosody in that initials are unaspirated in laryngealised register and aspirated (or slightly breathy if voiced) in 'normal' register; there is also variably a final glottal-stop in laryngealised register syllables. The diachronic sources of this prosidy are final stops: *-p, *-t, or *-k, which had probably merged to a final glottal stop whose characteristics spread into the preceding initial and vowel and produced the laryngealised register. For a further description of Akha register, see Thurgood (1980).

Another proposal of register in TB is Glover (1971), who accounts for the suprasegmental systems of three related languages in Nepal (Gurung, Tamang, and Thakali) in terms of two crosscutting parameters: phonation, clear versus breathy; and effort, more versus less intense. The register contrast is related by Glover to a preliminary version of Gregerson's (1976) advanced tongue root hypothesis; Glover reports that vowels are sometimes higher in 'normal' than in breathy register in Gurung; and that pitch is affected by both suprasegmentals, with higher fundamental frequency in the more intense syllables, and lower in the less intense syllables; and relatively lower fundamental frequency overall in the breathy syllables. The three languages differ somewhat in the exact details of pitch characteristics, but there is an exact correspondence between them. This correspondence pattern has important implications for the reconstruction of Proto-TB suprasegmentals, as the three languages are genetically quite close to Tibetan. Shafer's argument against the reconstruction of tones is based on the secondary nature of Tibetan tones, but if the Gurung/Tamang/Thakali system shows regular correspondences to Benedict's Tones *A and *B, then it must be the case that Tibetan has **lost** the Proto-TB suprasegmental opposition relatively recently. Mazaudon (1977) discusses this and other factors in the history of Tamang and other TB languages.

Weidert (1979) proposes to reconstruct final laryngeal segments rather than tones for Proto-TB based on data from Kuki-Chin, Naga, Baris (Bodo-Garo), and Jinghpaw. What he is suggesting amounts to a claim that Tone *A was unmarked, Tone *B had a final glottal-stop, and that other secondary tones that developed within these subgroups of TB arose from finals *-h, *-s, and *-p/ *-t/ *-k. There is some evidence of -? in the tone which is the reflex of *B in Garo, Bodo, Lotha Naga, Mikir, Nocte, and Tangsa, especially in forms which occur in isolation; in fact this could also be related to a register difference. Unfortunately for those who would like to reconstruct register for Proto-TB, it is precisely the opposite phonation, **breathy**, which occurs in the Burmese reflex of TB Tone *B.

In an extremely important paper, Egerod (1971) proposes a similar segment-derived register origin for the tone system of Chinese; Chinese is of course the other major group within Sino-Tibetan (ST), along with TB. The even (ping) tone is reconstructed as 'normal' register, the rising (shang) tone is reconstructed as creaky in phonation, with a final *-ʔ which, in accord with the usual TB tonogenesis principles, had also a rising contour. Similarly the going (qu) tone is postulated as having had breathy phonation, developed from a final *-h which also conditioned a falling contour. The entering (ru) tone with final *-p/ *-t/ *-k was not opposed to the first three in earlier stages of Chinese when it was the only possibility in stop-final syllables; the ping, shang, and qu do not occur in stop-final syllables.

ST, and **a fortiori** TB, thus includes several subgroups which have, or have been reconstructed as formerly having, register-type systems. Sinitic, Bodic, Burmic, and Baric, all four of Shafer's major subgroups, include such cases. Within TB, it seems certain that one must reconstruct two suprasegmentals, *A and *B, based on widespread correspondence patterns; it is less clear what the possible realisations of the two may have been.

1. PROSODIES IN BURMESE

Burmese has been analysed as having up to five opposed suprasegmentals, realised as follows (data from personal observations; also Thein Tun (1982)):

name	pitch	contour	intensity	phonation	duration	vowel quality
'even'	low	level	low	normal	fairly long	intermediate
'creaky'	high	slight fall	very high	creaky	less long	higher,more fronted
'heavy'	fairly high	sharp fall	high	breathy	very long	lower,more backed
'killed'	very high	slight fall	high	normal	short	(different system)
(reduced)	variable	variable	very low	normal	very short	[ə] only

The 'reduced' possibility occurs with the so-called 'minor syllable' which is found in various Southeast Asian languages; it occurs only with the vowel [ə], which does not occur with the other suprasegmentals; so it is not opposed to the others and has been excluded from most analyses of Burmese 'tone'. For some details of the origins of this syllable type in Burmese, see Bradley (1980).

The 'killed' type occurs only with a final stop; glottal in isolation, and homorganic to the initial consonant of the following syllable in close juncture. Also, the following consonant is not voiced -

unlike the initial of a syllable in close juncture after the 'even', 'heavy', or 'creaky' types. Like the Chinese ru tone, it is historically derived from syllables with a final stop; the Burmese orthography still represents the positions of these stops, but in modern spoken dialects the features of the stops have been 'shuffled' into the vocalic nuclei. As a result, the vowel system in 'killed' syllables (and in nasalised syllables, which occur 'even', 'heavy', or 'creaky'; and likewise reflect final nasals, etymologically and in spelling) is radically different from that of open syllables that are 'even', 'heavy', or 'creaky'. Because of the differences of juncture, it is possible to regard the 'killed' syllable type as non-contrastive: it is the **only** possibility in syllables with a final stop.

Thus we are down to three 'tones'; the parameters involved in their realisation, as set out in the above table, would in fact enable us to regard **any** of the six parameters as the contrastive one, if one had to choose only one.

Sprigg's analysis (1964) suggests instead a two-tone analysis, high versus low pitch, with a crosscutting register difference on the high tone: glottal (creaky) versus non-glottal. That is, 'even' is the low tone; 'heavy' and 'creaky' are the high tone, 'heavy' being non-creaky and 'creaky' being creaky.

The Indic-derived Burmese orthography treats 'even', 'heavy', and 'creaky', as opposed to each other, and so speakers usually regard these three as the contrasting suprasegmentals in the language. With two oral and all nasalised vowels, 'even' is unmarked; 'heavy' is marked by Indic visarga; and 'creaky' is marked by a subscript dot which originated as a final -? in early inscriptions. With three vowels, 'creaky' is represented by an Indic short vowel; 'even' and 'heavy' are represented by an Indic long vowel, and 'heavy' has the visarga. With the remaining two oral vowels, there is a separate representation for the 'even' version; the separate 'heavy' version therefore does not require the visarga; and the 'creaky' version has the subscript dot added to the 'heavy' version of the vowel. It is interesting that the visarga, which represents a final (breathy) -h in the Indic orthographies, is used to represent 'heavy' which is also breathy. Similarly, the use of a dot derived from a final glottal-stop for 'creaky' may reflect the phonation of this suprasegmental which is of course creaky.

The Burmese orthography was almost certainly devised by Mon monks, speakers of an AA language, about 1100AD. The Indic-derived Mon orthography uses voiced and voiceless initial consonants in cases where modern spoken Mon has breathy and 'normal' register syllables,

but whether register was present in Mon about 1100AD is not clear. In any case the Burmese orthography could be reflecting the fact that phonation differences were the most salient features of the suprasegmentals to the Mon monks; or they could have simply been inventing combinations using Indic orthographic resources. It seems likely at least that the invented combinations would have some relation to the parameters of the Burmese suprasegmentals at the time.

In fact the earliest inscriptions are somewhat inconsistent; the use of a short vowel or of a final -? for 'creaky' was very early, but the visarga for 'heavy' came much later, and did not become entirely regular for quite some time. It thus seems likely that the relatively shorter duration and creaky phonation of 'creaky' were both characteristic of Burmese about 1100. The early ambiguity between 'even' and 'heavy' certainly does not represent an absence of contrast, given the regular correspondences between modern Burmese and closely related languages. It is less certain that 'heavy' was already (or still) breathy in 1100, but it certainly is now.

In terms of the comparative picture, Burmese 'even' corresponds to Proto TB Tone *A; and 'breathy' corresponds to Proto TB Tone *B. For details of the system of closely-related Loloish, see Bradley (1977, 1979). Those sources also include some speculations about the phonetic parameters of the suprasegmentals at an earlier stage; in general, phonation differences are rarely found within Loloish in Tone *1 (from *A) nor in Tone *2 (from *B). Within the Burmese-Lolo (BL) family (which includes Burmish and Loloish languages) a third suprasegmental category, reconstructed as Tone *3, has developed; this has as its Burmese reflex the 'creaky', and often has creaky phonation elsewhere. Bradley (1971), relying on TB data in a preliminary version of Benedict (1972), proposes that this Tone *3 developed from certain *s- and *?-prefixed etyma, mainly in Proto-TB Tone *B, via spreading of the prefix characteristic into a creaky phonation of the syllable which further conditioned a difference in pitch as well. The development of BL Tone *3 separates this family from quite closely related TB languages such as Naxi (Bradley (1975), Hsihsia, and Tosu.

2. BURMESE AS A REGISTER LANGUAGE

There are various reasons for regarding register, rather than tone, as the contrastive suprasegmental in Burmese. In terms of the orthographic and terminological tradition, it seems best; almost all of the acoustic parameters involved show characteristics that fit as secondary results of a register contrast, but not of a pitch-based tone system. Changes in several dialects, such as Arakanese, give even more evidence.

Thus it seems that there has been a re-analysis of the Proto-BL pitch-based tone system into the modern Burmese phonation-based register system; this may in part have been triggered by the development of the creaky Proto-BL Tone *3, and was certainly furthered by the assimilation into the population of Burmese speakers of very large numbers of Mons, speakers of an AA language with a register contrast.

The traditional orthography, as noted above, uses -h for the breathy register; leaves the 'normal' register unmarked; and uses a dot derived from -? or a short vowel for the creaky register. This clearly supports the register analysis, as do the linguistic terms for the categories: 'creaky' for the creaky register, 'even' for the 'normal' register, and 'heavy' for the breathy register. Finally, the orthography-based order of citation of the three registers is hierarchically arranged in terms of degree of vocal cord structure: most to least, viz. 'creaky', 'even', 'heavy'.

Perhaps the most telling factor in favour of the register analysis is the fact that vowel height and position, as measured by Formant 1 and Formant 2, correlate quite strongly with the suprasegmentals of Burmese. It has often been stated that tones, i.e. pitch differences, do not have any effect on vowel quality; exceptions are explained in Thurgood (1980) as due to phonation as a concomitant parameter included in the 'tone'. The pervasive, systematic differences in vowel quality measured by Thein Tun (1982) in the Burmese of four speakers, two male and two female, force the conclusion that register must be involved.

Nearly all oral non-stop-final and nasalised vowels of Burmese are highest and most backed in 'creaky', lowest and most fronted in 'heavy' i.e. breathy register, and intermediate in 'even' i.e. normal register. This difference is particularly great for /a/, which is far more fronted in the breathy register, but is significant for all except /u/ which has a slightly lower (14Hz difference) F1 in 'even' than in 'creaky' and may thus be slightly higher.

In the Arakanese dialect spoken in western Burma, the vowel quality difference seems impressionistically to be even greater; there are very large differences, especially of vowel height. On the whole, both of the 'marked' phonations, creaky and breathy, tend to condition higher vowel allophones; while 'normal' phonation tends to condition lower vowel allophones. Thus Arakanese differs from Burmese in that breathy register, like creaky register, seems to be 'advanced tongue root' [+ATR], while in Burmese only the creaky register is [+ATR], and there seems rather to be a continuum of degrees of [ATR] from creaky [+ATR] to normal [0 ATR] to breathy [-ATR].

The extreme differences of vowel quality in Arakanese have had

several repercussions. One is that the vowel corresponding to Burmese /e/ has split and merged with /i/ in breathy and creaky register, and with /ɛ/ in 'normal' register; this process is confused by the continuing contact with, and prestige of, 'standard' Burmese in Arakan. Further, the new /i/ of Arakanese which corresponds to Burmese /e/ is nasalised after a nasal initial, as is the original /i/ which corresponds to Burmese /i/. Another example is that the extremely back /a/ in breathy register has fused with a preceding /w/ into a new vowel nucleus, Arakanese /ɒ/, which occurs almost exclusively in breathy register, but in all three registers when nasalised. These kinds of vowel differences conditioned by tone are unheard of; hence Arakanese and Burmese seem to have the phonation difference as the primary one; the secondary Arakanese developments suggest that this has been the case for a long time.

Another parameter which supports register as the contrastive suprasegmental is intensity. If the system were tonal, one might expect a linear relationship between pitch and loudness, such that the 'creaky', which is the highest in pitch, would be the loudest; the 'even', which is the lowest in pitch, would be the softest. If the system is a register one, then the loudest would be the 'heavy' which has greater airflow because of the nature of the phonation; the least loud would be the 'creaky' again due to the phonation characteristics. In fact the 'heavy' is the loudest, not the 'creaky', supporting the register theory. However, the 'even' is the lowest in peak

Order of Intensity if		Actual Intensity	
register → intensity	tone → intensity	(peak)	(total)
'heavy'	'creaky'	'heavy'	'heavy'
'even'	'heavy'	'creaky'	'even'
'creaky'	'even'	'even'	'creaky'

intensity, perhaps due to the fact that inherently less effort is involved in 'normal' phonation, so the two registers with 'marked' phonation both have greater peak intensity. Of course, because of its shorter duration the 'creaky' has less **total** intensity than the 'even'. Thein Tun (1982) does not measure intensity, as his data were nearly all two-syllable words in isolation and the result was unnatural variation in intensity which he feels not to be characteristic of natural speech. The intensities considered here are based on my measurements of two speakers from Mandalay, one male and one female, using a Frokjaer-Jensen Intensity Meter and recording the output with an Elema mingograph.

Duration is a parameter which is often independent of tone and/or

register: there are tone languages and register languages with contrastive length as well. Burmese has no contrastive length; the diphthongal nasalised vowels are somewhat longer than the monophthongal nasalised vowels in non-stop-final syllables; and syllables with a /w/ onglide may be longer still, especially if the vowel nucleus is a nasalised diphthong.

oral		nasalised		stop-final	
i	u	(w)ĩ	õ	ɪ	o
(w)ẹ	ọ	ẹ̃ɪ	ọ̃o	ẹɪ	ọo
(w)ɛ	ɔ	ãɪ	ão	(w)ɛ	
(w)a		ã		aɪ	ao
				a	

In Thein Tun (1982) there are various interesting findings concerning the vowel durations; the relative durations are summarised in the parameters chart above. Overall, 'heavy' syllables are the longest, 21 centiseconds on average; 'even' syllables average 18.5 csec; and 'creaky' syllables average only 15.4 csec in duration. The stop-final syllables, by contrast, average about 10.3 csec in duration; this figure is raised by the fact that half of them are diphthongs, while only four of the fourteen syllables with the three-way suprasegmental opposition are.

Interesting comparisons can also be made between oral non-stop-final vowels and other monophthongs: in 'even' syllables, for example, the oral vowels average 20.5 csec; the three nasalised monophthongs average just under 14 csec; and the four stop-final monophthongs average 9.9 csec in duration; a factor of more than 2:1 length difference between the extremes. Another intriguing finding is that the duration of vowels is also related to their height: opener (lower) vowels have longer durations, other things being equal. In summary, it seems there are various factors involved in duration which may simply occur together with the other parameters. It could perhaps be argued that the shorter duration of 'creaky' relates to its tighter muscle constriction in the vocal cords; and conversely that 'heavy' is longer because of slacker vocal cord constriction, so duration too could be used as evidence in favour of register than tone in Burmese.

One might think that fundamental frequency *per se* is unlikely to provide evidence for a register analysis, but even here some useful parallels can be drawn. For example, the fact that the 'heavy' has a sharply falling contour could be related to its breathy nature; after all, -h often conditions a falling contour. Similarly, the relative absence of contour in the 'even' argues for its unmarked quality. The

slight fall of the 'creaky' is harder to fit into this picture.

To a similar degree, relative pitch of the suprasegmentals could be adduced in support of the register hypothesis. Of the three, 'creaky' is the highest; this is exactly what one would expect of a creaky register. However, for most speakers, 'heavy' is higher than 'even'; though it may **end** lower. This is not what one would expect **a priori**; the breathy register might be expected to have lower pitch. For most speakers, it ends lower at least; I have found a few speakers, such as one lady from Mandalay, whose 'heavy' **was** in fact lower in pitch even at the beginning than her 'even' - in accord with the predictions concerning pitch if register is contrastive.

There are often segmental differences associated with suprasegmentals, such as a syllable-final glottal-stop. In Burmese, the 'creaky' sometimes in isolation ends in a weakly-articulated glottal-stop, while keeping its longer duration and different vowel quality from the 'killed' syllable type. This kind of segmental manifestation of a prosody is however more widespread in languages other than Burmese.

The obvious manifestation of register, apart from all the above parameters reflecting it, is in phonation or voice quality. I have measured this in two ways: indirectly in the acoustic output, and directly by measuring resistance across the glottis. Narrow band spectrograms show the phonation difference in an obvious but difficult to quantify mode: irregular, striated harmonics for 'creaky', solid harmonics for 'even', and blurry harmonics for 'heavy' types; the difference is less obvious in wide band spectrograms.

The only really direct observation of phonation is by laryngoscopy, either via a mirror or with fiberoptics and high-speed photography. Since this was unavailable, I instead used a Frokjaer-Jensen electroglottograph to measure resistance across the vocal cords, and hence degree and area of contact between the vocal cords. The output as displayed with a mingograph showed distinctly different characteristics for the three suprasegmentals in the speech of the one male informant I convinced to chance the electrodes; though again the differences are difficult to quantify. In a forthcoming article I will provide details of this and other methods such as photoglottography and FFT analysis to describe the register phenomena of Burmese.

In summary, orthography, vowel quality, and intensity support the analysis of Burmese as having register. Duration, contour, pitch, and segmental factors partly support the analysis, or at least provide no contradictions that would instead require a tonal analysis. Phonation factors themselves are also present, though more difficult than some other parameters to measure and quantify.

3. BURMESE AND AUSTROASIATIC

In lower Burma, there are millions of Mon speakers; there are many more who are aware of their Mon family background, but speak little or no Mon. Further, there are certainly very many Burmans who are descendants of Mon speakers but are unaware of it. These facts are a consequence of the gradual conquest (or rather repeated conquests) of the Mons by a series of Burmese kingdoms. Because of its location in the area of several former Mon kingdoms, Burma's current capital Rangoon is probably populated to a large extent by ex-Mons.

Therefore, it would hardly be surprising if there were some effect on the development of the Burmese language from this pervasive and long-lasting contact; especially since such important areas of Burmese culture as Theravada Buddhism and the writing system were directly received from the Mons.

In a short article (Bradley (1980)) I have shown several areas in which Burmese phonology appears to have diverged from a typical TB pattern in the direction of a more AA-like pattern. These include the very fundamental shift from a tone to a register system discussed above; vowel system developments to an eight vowel system lacking only /ɨ/ from a typical AA vowel system; adjustment of TB phonotactic patterns towards AA ones, such as the presence, in the orthography at least, of final palatals -c and -ɲ; and the development by non-final syllable reduction and other processes of non-monosyllabic words with a 'minor syllable' in non-final position. All are rather basic changes, and in many cases have no parallels within TB.

There are also less basic and/or less unparalleled changes, such as the diphthongisation of various stop- and nasal-final *rhymes and the addition of [aɪ] to the nasalised and stop-final rhyme inventory in Mon and other loans. Burmese has merged Proto-Bl affricates and fricatives reconstructed as *ts, *tš; *dz, *dž; *s, *š and so on; this opposition is typical of TB languages, but usually absent in non-northern AA languages. Subsequent changes in Burmese have led to the re-development of alveopalatal affricates and fricatives, however. Many other phonological changes could be cited. In addition to these fundamental phonological changes, there has also been substantial lexical borrowing; first from Mon into Burmese, and lately from Burmese into Mon.

Is it unreasonable to connect these instances of structural convergence with the historical facts noted above? I think not.

The Burmese suprasegmental system involves a three-way distinction whose primary parameter is phonation, with a variety of secondary parameters synchronically relatable to the phonation differences.

Historically it seems more likely that pitch was the primary parameter at an earlier stage (though Mazaudon (1977) and Weidert (1979) have argued otherwise). Thus it seems that an earlier tone system has become a register system in Burmese; that is in striking contrast to the developments in the tone systems of very closely related Burmish languages such as Atsi and Maru, which have remained 'tonal'. It is even more different from the further developments in several Loloish BL languages such as Lisu and Lahu, in which tones have proliferated (Bradley 1977, 1979).

In Burmese, the other parameters involved in the realisations of the registers include fundamental frequency; this may represent a persistence of the former primary parameter of Tones *A and *B. It would be very interesting to conduct a synthetic speech experiment with speakers of Burmese, to compare the relative weight of the parameters involved in the suprasegmental system. The danger of such a procedure would be the assumption that register, which is represented by a variety of factors, is decomposable into those separate factors rather than being an overall phonatory-articulatory set. Gregerson has suggested the position of the tongue root as the primary characteristic of this phonatory-articulatory set, while others concentrate on the action of the vocal cords. Again, the articulatory questions involved could be observed with studies of muscle activity using electromyography, or directly in terms of laryngoscopic or other articulatory observations, or indirectly by other methods.

It is to be noted that the Burmese register system makes a three way contrast between breathy, 'normal', and creaky phonation; so it is dissimilar to the frequent AA two way contrast within any one language. If one looks at AA languages more generally, one finds all three phonation types; though typically comparative evidence shows that contrastive use of register is a secondary phenomenon. Thus, Burmese has not developed an AA-like two-term register system; rather, it has become typologically more AA-like without completely converging.

Mon, which has a breathy versus 'normal' phonation opposition - with of course many other parameters involved, as ably described by Shorto and others - was the AA language in the most intimate contact with Burmese. The Pre-Burmese Tone *3 probably had creaky phonation; it developed in Proto-Tb etyma with *s or *? prefix or suffix (Bradley 1971). Thus, both the internal factor of creaky phonation in one tone and the contact factor of Mons, with a breathy versus 'normal' phonation opposition, becoming speakers of Burmese would have favoured the development of register in Burmese.

The conclusion from these facts about Burmese is that one should not

assume phonological similarity between genetically related languages. Rather, one should describe all the phenomena in a language, and see how the system of that language functions. If it differs from the systems of closely related languages, as Burmese does, one possible explanation is areal convergence between unrelated languages in contact, such as Burmese and Mon.

TB and ST linguists should not presuppose that the prosodic systems of all TB or ST languages will be tonal; nor should AA linguists presuppose that AA languages will tend to develop register systems. These are general tendencies within the respective families, and may reflect characteristics of the prosidic systems of the respective proto-languages; but they have exceptions. For example, Vietnamese has developed a fairly complex tonal system, along lines more typical of ST languages. However, these developments do not mean that Vietnamese is not genetically related to the rest of AA; they simply make it typologically less AA-like in terms of its prosodies. Likewise, though Burmese has acquired some AA-like characteristics, it remains genetically TB and ST.

NOTES

1. I am glad to acknowledge very useful comments by Gregerson and by Benedict on a preliminary version of this paper, given at the Austro-Asiatic Symposium, Helsingør 1979; and later comments from Matisoff, Haas, Diffloth, Thurgood, and Okell - which is not to blame them for any errors I have made.

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