

'Rhinoglottophilia' re-visited:
observations on
'the mysterious connection between nasality and glottality'

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In a characteristically challenging article Matisoff has claimed 'an affinity between the feature of nasality and the articulatory involvement of the glottis'; 'at first glance', he writes, 'there does not seem to be any particular relationship between the lowering of the velum and the articulation of such laryngeal sounds as [h] or [ʔ]. Yet we can document this connection with evidence from a variety of genetically unrelated languages - - -' (1975, 265). Despite this evidence from 'a variety of unrelated languages' it is Matisoff's 'first glance' that I wish to support against his second, mainly on articulatory grounds; but first I must recognize that Matisoff's revised view, 'the mysterious connection', has commended itself to both Michailovsky and Bradley: the former has used it in his 'A case of Rhinoglottophilia in Hayu' (1975); and the latter refers to it in an aside on the Arakanese lexical item [ɕi]/[ɕi]/[hi]/[hʔ]: 'more common in informal spoken Arakanese is [hi] or most frequently [hʔ], with voiceless cavity friction and nasalization; rhinoglottophilia strikes again' (1985, 186).

1. Laryngeal v. vocalic

Matisoff's second view depends on classing [h] as laryngeal, and grouping [h] with [ʔ]. I have, of course, no objection to classifying [ʔ] as laryngeal: since the glottis is within the larynx, a glottal stop (or glottal plosive) must also be laryngeal; but Pike has taught me that [h] is not laryngeal but a symbol summarizing numerous types of voiceless vowel: 'The letters [h] and [ʔ] would simply be convenient symbols representing any vocalic mouth position with the requisite inner modifications' (1943, 71-2); one can go further, and describe [h] as symbolizing a voiceless breathed vowel as opposed to a voiceless whispered ([w] in Pike's symbolization; cf. Sprigg 1978a, 5-6, 10-11, 13-14, 16); e.g. (specifying the tongue position)

[i- ɔ-],

as in he and hard in British English (in American English, on the other hand, I understand from Bradley that [ʔ] is used by some speakers, including himself, even in word-initial position).¹ The import of Pike's observations is that 'timbres of [h] (i.e. voiceless vocoids)' should be classed not with the consonant [ʔ] but with 'voiced vocoids', ['V'], through 'cavity friction' (1943, 142).

2. Cavity friction v. local friction

Pike's identifying [h] with the category of voiceless

non-whispered vowel arises out of the important distinction that he draws between 'two types of friction which function very differently and have different origins. - - - The first type results from stricture at a single local point; the second is due to cavity friction, that is, voiceless resonance of a chamber as a whole caused by air going through it as through an open tube. - - - By working with these two degrees of friction - - - one can arrive at a significant statement concerning the patterning of [h], in relation to voiceless vowels, and whispers, and "voiced [h]". Both voiceless and voiced vowels have cavity friction, - - - the first tend to be audible and the second inaudible' (1943, 71).

[h], then, comprising [ɨ], [q], etc., symbolizes the voiceless resonance of an oral cum pharyngeal cum pulmonic chamber. The larynx, as part of the pharynx, necessarily has a share in the total resonance function of this large chamber, just as it has for [V] (symbolizing any voiced vowel); but its role in such a large air chamber is comparatively minor, too minor to justify the use of the term laryngeal for [h] or, for that matter, [V] and corresponding voiced non-syllabic vowels such as [j], [w], or [ɹ] (cf. Pike 1943, 143).² The role of the larynx is bound to be even more minor in the case of [h] and of [V], in which the resonance chamber comprises not three but four cavities, the nasal in addition to the pharyngeal (including the larynx), the oral, and the pulmonic.

3. Vowels v. consonants

With Pike's phonetic classification of [h] as a type of voiceless vowel, voiceless breathed vowel, in mind I welcome Matisoff's associating [h] with vowels in Lahu: '- - - nasal consonants do not have any noticeable nasalizing effect on the following vowel. On the other hand, many speakers have strong nasalization in syllables beginning with a vowel (i.e. zero consonantal onset) or with h-' (267), though I should not wish to describe [V-] as 'zero consonantal onset' (symbolized phonetically by Matisoff as '[zero consonant]', 267): it is important to my argument not to obscure the relationship of [h-] (or [ɣ-]) to [V-] as fellow members of a class of vocalic articulations, voiceless and voiced.³ Matisoff makes it clear that when an oral consonant is initial in the syllable (and, in Lahu, even a nasal initial consonant), a following vowel is not nasalized or is not commonly nasalized (266-9); so it is important to keep vowels ([V h]) distinct from consonants (and to group [h] not with [ʔ] but with [V]) if a propensity to nasalize vowels in syllable-initial position is to be accounted for.

4. Nasalization in [h-] syllables

Matisoff describes the degree to which vowels are nasalized in what I regard as vowel-initial ([h- V-]) syllables as varying considerably in the South East Asia languages Thai and Lao, Lahu, and Lisu from one language to another. In Lahu he

shows an alternation of orality with nasalization according to the individual speaker; e.g.

"four" /s/ [s̃] - [s̃] (I.P.A. [ʰs̃])

"elephant" /hə/ [hə] - [hə̃] (I.P.A. [h̃]) (267);

since the voiced vowel is shown as nasalized ([h̃]), for some speakers, in the word /s̃/, in which it is syllable-initial, I naturally wonder whether the non-syllabic breathed vowel in '[hə̃]', which is also syllable-initial, might not share in the nasalization of the following syllabic vowel, and thereby justify a phonetic transcription [h̃s̃] (I.P.A. [h̃s̃]), and, similarly, whether Matisoff's Bangkok Thai form '[h̃s̃s̃]' "parade" might not be heard as [h̃s̃s̃], with nasalization occurring throughout the word, from beginning to end.

5. Signification of the tilde symbol

If [h̃-] were found to be justified for the initial sound of that Bangkok Thai form, giving [h̃s̃s̃] as a revised phonetic transcription, should one not also expect [ʔ-] rather than [ʔ-] for Matisoff's Bangkok Thai form '[ʔs̃s̃k]' "leave" (266)? Such a question leads to a further question: how is it possible for a glottal stop to be nasalized; for, clearly, the air-stream that that stop is acting on is confined to the cavity below the glottis, in the lower part of the laryngo-pharynx and in the lungs, quite far removed from any action on the part of the velum?

6. Nasalization v: lowering the velum

In answering this question it is instructive to compare the role of the tilde symbol as part of the consonant symbol [ʔ-] with its very different role in such consonantal and vocalic symbols as [s̃] and [l̃] and [h̃] and [Ṽ]. In these last the function of the tilde is to symbolize nasalization, i.e. the passage of air through the nasal cavity concurrently with its passage through the oral cavity, symbolized by the lower part of those symbols, below the tilde; but in [ʔ̃] the only role that could be assigned to the tilde would be that of lowered velum. The lowered velum in [ʔ̃] would act on whatever static air remained in the oral and the nasal cavities from an immediately preceding articulation; but it could not affect the air-stream capped by the closed glottis.

This latter function of the tilde symbol, lowered velum, would presumably also apply to the post-velic fricatives [h̃] and [ʔ̃] just as for [s̃];⁴ [h̃] and [ʔ̃], and [h̃] and [ʔ̃], symbolize an egressive air-stream exciting local friction in the pharynx on its way to the point of junction of the nasal cavity with the oral cavity, and therefore not yet in a position to be affected by the raised or lowered velum. In other words, a pharyngeal fricative cannot be nasalized: in the sequence of events it is both prenasal and pre-oral.

7. Chala and post-velar consonants

These observations of mine on the very different function symbolized by the tilde in such pre-pharyngeal sounds as [ʕ] and [ɿ] and the pre-pharyngeal cum pharyngeal sounds [ɿ̠], [a̠], [ɛ̠] and [ɔ̠], for example, as opposed to the pharyngeal sounds [ħ] and [ʕ̠], a fortiori, the pharyngeal (and glottal) sound [ʕ̠], are in accordance, in my view, with passages that Matisoff quotes from Ohala, especially Ohala 1974, though he understands them as supporting his second view while I understand them as supporting his first view:⁵

'Unlike the oral obstruents glottal (and probably pharyngeal) consonants do not require soft palate elevation since they involve air pressure build-up further back in the oral tract than the point where the nasal and oral cavities join' (364; Matisoff 1975, 271).

Ohala is referring here to 'soft palate elevation'; but it appears to me that he could equally well have phrased his statement to read that these consonants do not require soft-palate depression, or lowering; in other words, the action of the velum in either direction, raising or lowering, is without relevance to the articulation of strictures in the pharynx and glottis. Such a statement seems to me to support Matisoff's 'first glance' against his second.

8. Open glottis and nasalization

With regard to [h], though, Matisoff cites a further passage from Ohala (1975, 6) on the basis of which he claims that '[h], by virtue of the open position of the glottis during its articulation, may actually produce acoustic effects on the adjacent vowel similar to an open velo-pharyngeal port' (271); and 'in the case of [h] the open glottis exerts a positive acoustic effect on the vowel similar to that exerted by the lowered velum' (272); but, if a nasalizing effect is to be attributed to the open glottis in [h], then the same nasalizing effect would be expected from the open glottis in all other types of open-glottis sounds as well;⁶ so one might expect a nasalizing power, or tendency, to affect any vowel following any such oral consonant as [p s ʃ]. I have not observed any such tendency; on the contrary, (i) oral occlusive initial consonants such as [p b tʃ] require velic closure, and can be considered as somewhat opposed to the nasalization of a following vowel; (ii) fricative, lateral, and rolled consonants such as [s θ l r] do not require velic closure, and can be regarded as neutral with regard to nasalization; while (iii) nasal consonants require lowering of the velum, and are, therefore, somewhat predisposed towards nasalization of an immediately following sound. The oral component of the cavity friction of [h], like the oral fricatives [s] and [θ], is also neutral, while its pharyngeal component, like the pharyngeal fricatives [ħ] and [ʕ̠], and the glottal (hence laryngeal) friction of [ʔ] (and

the glottal plosive, [ʔ]) is post-velar, and, therefore, non-relevant to either the orality or the nasalization of a following vowel.

9. Nasalization and individual or dialectal variation

On the assumption, then, that the cavity-friction sounds [h] and [V] are neutral as regards the lowering or the raising of the velum (section (8) above) a tendency to nasalize, on the part of some speakers, vowel units that are oral in the mouths of other speakers seems to me to be merely fortuitous, and either an individual characteristic or a feature of particular dialects. The evidence that Matisoff adduces for the nasalization of syllabic vowels in [V]-initial and in [h]-initial words in Lahu (267; cf. also section (4) above) is based on the articulation of 'many speakers'; other Lahu-speakers, the remainder, in fact, clearly do not share with these individuals this propensity to nasalize. Nasalization 'is rampant', Matisoff states, in 'certain upper-class dialects of British English'; but this feature of their class dialect is remarkable, I suspect, only because they happen to be socially conspicuous and because they are a tiny minority. Indeed, many speakers of British English attribute nasalization to American-English speakers in general; they are said to have a 'nasal twang'. Heffner, however, attributes a nasal twang not to spoken American English but to Vermont and New Hampshire dialects in particular: 'the entire stream of speech sounds appears to be marked by a nasal twang. This then becomes part of the basis of articulation' (1952, 113).

Matisoff uses human lethargy, 'velic lassitude', to account for the tendency to nasalize: 'raising the velum requires a certain amount of muscular effort, and human beings are notorious for operating according to the "principle of least effort"' (269). Heffner, on the other hand, takes the opposite view. He stresses the effort required to lower the velum: 'these nasal vowels [of French, etc.] are produced by adding the vigorous lowering of the velum, accompanied by some constriction of the palatopharyngeal arch, to the usual movements of the articulation peculiar to the analogous vowel. The mere lowering of the velum is not enough to produce the nasality characteristic of these French vowels. The passage of a part of the breath stream through the nose as the result of an inert, or laxly lowered velum may cause the low component frequencies characteristic of the nasal cavities to be selectively passed and hence to be more clearly audible than when the velum is raised and these partials are not thus favored, but the quality difference produced by this lax lowering of the velum is not a change to nasality but a "richening" or "mellowing" of the vowel sound. Nasality is produced by a more vigorous lowering of the velum plus the constriction of the posterior pillars of the fauces. There are degrees of this vigor, to be sure, and the French nasal vowels are much more vigorously nasalized than are the nasal vowels of Danish, German, or Portuguese dialects' (1952, 113).

Since nasal breathing is normal breathing, one might have expected that, other things being equal, nasalization would predominate over orality as a feature of syllabic vowels. That, on the contrary, orality predominates over nasalization I take to be due to the muffling effect of the nasal cavity; oral vowels are clearer than nasalized vowels:

'The ear is less able to distinguish a nasalized vowel from its near neighbour than it is to distinguish an oral vowel from its neighbour. It is harder to hear the difference between [ẽ] and [ɛ̃] than between [e] and [ɛ]. Hence the acoustic confusion arising from the existence of a number of nasalized vowel phonemes [in the earliest French] was considerable, and after a period of hesitation there emerged the four nasalized phonemes of the present language. Even now the process of reduction seems to be proceeding. There is a notable tendency to minimize the distinction between e.g. [bɔ̃] [bon] and [bɑ̃] [banc], and a possibly less notable tendency to confusion between e.g. [brɛ̃] [brin] and [brɑ̃] [brun]. From this it is to be presumed that the tendency to reduce the number of nasalized vowel phonemes is still operative in modern French' (James 1929, 120-1).

10. 'Why low vowels?' (272)

The vowel symbols i and u in brin and brun quoted from James 1929 in the previous paragraph might lead one to expect close (high) vowels in these words: *[ɪ] and *[y]; but the vowels appropriate to these words are in fact between half-open and open ([ɛ̃ ɔ̃]), while the vowels of bon and banc are, as one would expect, between half-close and half-open ([ɔ̞] and open (low) ([ɑ̃]) respectively. French no longer has close nasalized vowels; and its only half-close nasalized vowel ([ɔ̞]) is particularly open, approaching the half-open degree of openness.

Matisoff repeatedly draws attention to the tendency for 'low vowels' (open vowels) to be more readily nasalized than 'high vowels' (close vowels); e.g. 'if vowel nasalization invades a language, it is the low vowels that are affected first; conversely, even if distinctive nasalization is losing its contrastive oomph in a language, it will be the low vowels on which it survives the longest. - - - In fact, not only is a lowered velum "tolerated" most easily on low vowels, but there is electromyographic and nasographic evidence that for many American ENGLISH speakers the velum is actively and consistently pulled down during low "oral" vowels even in non-nasal environments, in words like bad, bod, bawd (Ohala 1974c, p. 6)' (272). Matisoff gives an acoustic reason for this tendency:

'- - - the main effect of nasalization on sonorants is a downward shift in the region of the first formant. Thus the lower the first formant of a vowel is to begin with, the less willing it will be to suffer the further degradation of a downward shift. Since the low vowels have higher F₁'s than high vowels, they are less uptight about being nasalized (Ohala 1974c, p. 5)' (272).

After studying Ladefoged's drawings (based on X-rays) of the position for the back of the tongue in pronouncing the words head, hid, had, hod, hawed, hood, and who'd a physiological reason suggested itself to me: the low position of the back of the tongue in articulating the vowels in hod, hawed, and had ([hɔ- hɔ:- hɔ-]), and, to a lesser extent, head ([hɛ-]; hard is, unfortunately, not shown) makes it possible for the velum to be lowered more, without making contact with the tongue, for these vowels than for the close (high) or closish vowels in heed, hid, hood, and who'd ([hi:- hɪ- hɔ- hu:-]); consequently, the entrance to the nasal cavity is relatively wide, and gives access to the nasal cavity for a greater volume of air from the pharynx, for the vowels in hod, hawed, and had than for the closer vowels in heed, hid, hood, who'd, and, to some extent, head (cf. also Sprigg to appear, note 9).

11. Nasalization and the Tibetan symbol ར

Matisoff's thesis that, at second glance, nasalization is linked to [h] and [ʔ] is a preliminary to a study of 'Rhino-glottal coexistence: the case of the mysterious letter "h-" in Written TIBETAN': 'there is an important orthographic symbol in Written TIBETAN (WT), ར, whose precise phonetic value has always been something of a puzzle. The name of the letter is "a-chung" (i.e. "little a"), which implies that it represents some sort of attenuated vowel sound. It has been transcribed in various ways by Tibetanists - - - we shall use the symbol now most widely accepted, "h-" (273).⁷

At first sight 'little a' seems a satisfactory rendering; but a closer translation of a-chung (better regarded as two words, a and chung, the junction between them being interverbal, [-a tɕh-]) would be not 'little a' (273) but 'little ཨ', i.e. an abbreviated version of ཨ, the thirtieth, and last, member of the gsal-byed sum-cu syllabary, the value of which, in the reading-style pronunciation of Tibetan, is not an 'attenuated vowel' but both (i) the initial consonant [ʔ], voiceless glottal plosive, and (ii) the upper of the two distinctive pitch registers ([-]).⁸ The symbol ཨ - combines with the four vowel symbols (dbyangs) as follows:

ཨ(-) ཨ(-) ཨ(-) ཨ(-); e.g.

ཨ་ཁུང་ [-ʔɪɣuŋ] 'hole', ཨ་ཁུང་ [-ʔɪɣuŋ] 'Ugen' [personal name], ཨ་ཁུང་ [-ʔɪɣuŋ] 'novice (monk)', ཨ་ཁུང་ [-ʔɪɣuŋ] 'Om', while the syllabic symbol ཨ also symbolizes the consonant [ʔ] and the upper distinctive pitch register ([-]), and, additionally, the vowel [a] (or [ʌ], according to vowel harmony), e.g. ཨ་མ་ [-ʔamə] 'mother', ཨ་མ་ [-ʔamɪ] 'aunt, nun', and so does the partially syllabic symbol ཨ-, e.g. ཨ་མ་ཚེ་ [-ʔamɪtɕi] 'doctor', ཨ་མ་ཚེ་ [-ʔamɪtɕi] 'number' (cf. also Sprigg 1978b, 185).⁹

To return, now, to the function, or functions, of a chung Matisoff distinguishes two structural positions in which "h"

occurs in WT syllables: '(a) initially before vowels - - and (b) prefixially, before voiceless aspirated and voiced root-initial obstruents' (273); but there is also a third position, suffixially: the symbol h (to which I prefer 'h') is also one of the ten rjes-'jug, or set of syllable-final letters, -g, -ng, -d, -n, -b, -m, -l, -r, -l, -s. In this position 'h' indicates that the vowel a is final in the syllable, e.g. ṣṣa' ṣṣa', ṣṣa' ṣṣa'; in consequence, -ṣ sometimes serves to distinguish open syllables in a from closed syllables in a; e.g. ṣṣa' ṣṣa' and ṣṣa' ṣṣa' from ṣṣa' ṣṣa' and ṣṣa' ṣṣa' respectively, a useful orthographic function, though -ṣ has no such function in ṣṣa' and ṣṣa': since ṣ and ṣ cannot be other than initial, *ṣṣa' and *ṣṣa' would be just as unambiguously a-final as ṣṣa' and ṣṣa'.

I suspect that much of the mystery with which Matisoff regards the symbol ṣ is due to his having collapsed its other two functions into a single function; it is better, in my opinion, to keep the two separate; and this is in accordance with Tibetan orthographic analysis, in terms of the two categories gsal-byed sum-cu and sngon-'jug.

12. a chung 'initially before vowels' (273)

There is not much mystery about the syllable-initial function of ṣ as a member of the thirtyfold set termed gsal-byed sum-cu: Jäschke, writing more than a hundred years ago, may indeed, as Matisoff suggests (273), have found its pronunciation a little exotic; but he had no difficulty in accounting for the phonetic features symbolized by a chung in this position as: 'the vowel absolute, the pure vocalic note, freed altogether from any presence of a consonant' (1881/1934, xiv); and Matisoff quotes this passage (273).¹⁰ Jäschke continues: 'this is a case in which the true pronunciation has been preserved in the Central Provinces, perhaps because it almost necessarily implies the effort connected with the low Tone' (xiv). In other words, Jäschke correctly attributed two functions to this symbol, firstly that of syllable-initial vowel, and secondly that of the lower of the two distinctive pitch levels, [-V-].¹¹

Jäschke's comment that this pronunciation is also that of 'the Central Provinces' (U and Tsang) comes as a useful reminder that a chung is, after all, a symbol used in the writing system of Classical Tibetan (Written Tibetan); the dialects of the Central Provinces, like those of Kham, Western Tibet, and all other colloquial forms of Tibetan, are unwritten.¹² This is not to deny that it is instructive to compare the pronunciation of those dialects with that of the letters of Written Tibetan, whenever they have lexical items in common with Written Tibetan; and Jäschke himself has done this with the corresponding Ladak, Lahoul, Spiti, Tsang and U, and Khams phonetic forms of 142 Written Tibetan words, leaving blank spaces in his columns whenever he knew of no corresponding form in the dialect in question; e.g. for 'o-ma and 'od:

'Ladak Lahoul Sviti Tsang, U Khams

o-ma 'a-ma [sic] 'o-ma xo-ma } in C.
 od 'od 'od o^ood' yod } deep-toned' (xvi)

(I have myself observed a voiced uvular fricative, [ʁ-], from a Golok-speaker, from Amdo, to the north of Kham, for these two words: [ʁma], [ʁot], 'milk', 'light'). From a comparison of these phonetic forms I found myself in agreement with Matisoff rather than Jäschke that 'This evidence from the modern dialects leads us to suspect strongly that a-chung represents something else than pure zero' (274), except that I should not wish to apply the term 'pure zero' to the vowel category in word-initial position in combination with the low-tone category. It is reasonable to suspect that a chung's low-tone function in the reading-style pronunciation of Written Tibetan as [-V-], as well as in the corresponding Lhasa-dialect pronunciation might be a development from the voice feature of an earlier [ʁ-] and [ʁ-], which survive in the dialects of the east and north east, the Golok dialect being non-tonal; but this explanation cannot serve for the corresponding voiceless pronunciation [ʔ-] in Western Tibetan; e.g. [ʔot] 'od, [ʔoɣa] (Skardu dialect), [ʔoma] (Khapalu dialect) 'o-ma, in the Balti dialect, which is also non-tonal or only slightly tonal (cf. Sprigg 1966, 199-201).

13. 'Prefixially, before voiceless aspirated and voiced root-initial obstruents' (273)¹³

The ʁ symbol is underemployed in its syllable-initial use (section 12 above) compared with almost all the other members of the (30) gsal-byed sum-cu set; Jäschke 1881/1934, for example, has only 67 entries for '— as against 140 for k—, to which may be added 61 for ky—, kr—, and kl—, and 233 for k— prefixed by d—, b—, r—, and s—, making a total of 434. Only w— has fewer entries than '—, with a mere 10. The symbol '—, therefore, is well placed to double in some other function, such as homorganic nasality, to which the nasal-consonant symbols ng—, ny—, n—, and m— are ill-suited because each is associated with a single place of articulation, velar, palatal, dental/alveolar, and bilabial. Indeed, the m— member of the fivefold sngon-jug set corresponds to non-homorganic labial nasality in a number of modern spoken dialects, even in the Lhasa dialect; e.g. [khamd̪y:] kha-mthun 'unanimity', [kjamd̪ə] skya-mda 'dawn', though rarely; for presumed original labial nasality seems to have developed into homorganic nasality in many words in this dialect; e.g. [mend̪ə] me-mda 'gun', [kond̪y:] sku-maron 'guest', [ɟangd̪ə] ra-mgo 'superscript "r"', as well as in the reading style of pronunciation; e.g. [nda:] mda 'arrow', [ndzeʔ] mdzes 'beautiful'.

I agree, therefore, with Matisoff when he protests:
 'yet surely there is no question of a-chung's having been an

ordinary nasal consonant' (275); the under-used a chung has, in my view, been pressed into service for the additional, and linguistically sophisticated, task of symbolizing homorganic nasality of five different locations, [ŋ - ɲ - n - ɳ - m], not on phonetic grounds but on grounds of economy in symbolization. I see no need to search for a phonetic link between this prefix use of ' and its initial and suffix uses considered at (11) and (12) above; the link is orthographic, following the principle of economy in symbolization.

A phonetic link would be hard to justify, because the suffix use, to symbolize Written Tibetan syllable-final [a] or [ʌ] and word-final [ə] or [a:] according to context (11), and the initial use, to symbolize [-V] (or [-h]), not to mention the corresponding Kham and Golok pronunciations [ɣ] and [ʁ] (12), have little in common with the 'nasal homorganic to the following root-initial obstruent' cited by Matisoff (274). This homorganic-nasal pronunciation occurs both in word-initial position and medially as a regular feature of the styles of pronunciation used in reading and in spelling out words in Written Tibetan by speakers of all dialects; e.g. [ndək] 'dug, [n(d)zɪn] 'dzin 'seize'.

In addition to this stylistic use the homorganic nasality is also to be heard, as Matisoff points out, from Lhasa-dialect speakers, but only 'in the second syllable of disyllabic compounds' (274). Matisoff gives dge-hdun 'priesthood' as an example of this, with a Lhasa pronunciation 'gen-dun' (my own phonetic transcription for this word is [gɛndyː], in which the vowel in [gɛɪ-] is due to close vowel harmony; cf., for open vowel harmony, [ɛɪɫɔː] dge-long 'a monk of superior rank'). As far as this example is concerned, Matisoff is correct in claiming that 'as our syllabification shows, the nasal reflex of prefixial a-chung now behaves phonetically like the final consonant of the previous syllable': the pronunciation [gɛɪn-] symbolized by dge- when combined with the initial a chung of the following syllable 'dun (-e+ ' -)' is indeed identical with a potential syllable *dgyin in pronunciation, or with a potential syllable *dg(y)en in close vowel harmony. This identity in pronunciation between (i) -in and -en, and also by -an, on the one hand, and (ii) -i or -e followed by a chung within the word, on the other, can be exemplified by dge-'dun and such other words from the Lhasa dialect as:

	[-ɪn-	-ɪn-	-ɛn-	-ɛɲ-]
i.	[jɪndyː	thɪndyː	thɛndɛː	mɛndɛɲɔː]
	<u>yin-dus</u>	<u>'then-dus</u>	<u>'then-stangs</u>	<u>sman-bcos</u>
ii.	<u>mi-'dug</u>	<u>dge-'dun</u>	<u>khri-'don</u>	<u>bde-'jags</u>
	[mɪnduː	gɛndyː	tɛndɛɲː	dɛndɛɲa]

i. 'when (it) is, when (he) pulls, manner of pulling, medical

treatment; ii. (it) is not, priesthood/monk, installation, peace; but Matisoff's observation about this phonetic overlap between the [-N+C-] type of junction and [-V+NC-] junction does not extend to words spelt with -on and -un, on the one hand, and words in which -a, -o, or -u is followed by a chung. The vowel sound corresponding, in the Lhasa dialect, to the symbols o and u in the orthographic syllable finals -on and -un is front ([- ϕ n-yn-]); but the corresponding vowel sound to -o, -u, or -a when followed by a chung is either back ([- ϕ n- ϕ n- ϕ n-]) or front but distinguished from [i] and [e] by openness ([-an-]); cf., for example:

i.	[- ɸ n-	-yn-	-yn-]	
	[th ɸ nda	thyndɔp	phynzo:]	
	<u>don-dag</u>	<u>don-drub</u>	<u>phun-tshogs</u>	
ii.	<u>mgɔ-'dren</u>	<u>sku-'dra</u>	<u>bka-'dri</u>	<u>kha-'don</u>
	[<u>ɣwɔndɔ̃:/ĩ:</u>	kɔndɔ	kɔndɔ	khandʒ:]
	[-ɹn-	-ɔn-	-ɔn-	-an-]¹⁴

i. purpose, [personal name], [personal name]; ii. help, image, question, reciting a prayer.

The examples given at (ii) above all contain short vowels; but the corresponding long back vowels also occur, in [-V+NC-] junction; e.g. [-o·n- ϕ ·n-]; in that case the second syllable is spelt with initial a chung, as before, and the first syllable is spelt with -r (-r+'); e.g.

[-o·n-	- ϕ ·n-]
[no·nzĩ:	ph ϕ ·nd ϕ m]
<u>nor-'dzin</u>	<u>bar-'dum</u> ([personal name], 'compromise').

The above type of [-V+NC-] example is easily distinguished from the [-VN+C-] type through backness of vowel ([o· ϕ]); but there is also a type of [-V+NC-] junction in which the initial syllable has frontness ([-e·n- ϕ ·n- ϕ ·n- ϕ ·n-]), and in this case shortness of vowel is the crucial factor in distinguishing (i) the [-VN+C-] type from (ii) the [-V+NC-] type; e.g.

i.	[-en-	- ϕ n-	-yn-]	
	[thendā:	j ϕ ndē:	phynzo:]	
	<u>'then-stangs</u>	<u>yon-tan</u>	<u>phun-tshogs</u>	
ii.	<u>zhal-don</u>	<u>drod-'jam</u>	<u>spus-'bring</u>	<u>zhal-'dzum</u>
	[ϕ e·nd ϕ :	t ϕ · ϕ ·nd ϕ am	py·nd ϕ ĩ:	ϕ e·nz ϕ m]
	[-e·n-	- ϕ ·n-	-y·n-	- ϕ ·n-]

i. manner of pulling, knowledge, [personal name]; ii. recitation of a prayer, lukewarm, medium quality, smile.

Examples such as zhal-'dzin and rjes-'jug ([-e·nz- ϕ ·nd ϕ -]) have further distinguishing features, in addition to length, in

the half-closeness + frontness of the vowel in the first syllable ([e·]), or its closeness + frontness ([i·]).

Matisoff's statement, then, that the nasalization symbolized by a chung has been 'metanalysed and re-interpreted as the final consonant of the first syllable' (277) can apply only to a sub-category, to -i/e+/-, not to the majority of such a chung words: -a/u/o+/- and -d/ʔ/r/l/s+/-.

14. The a chung symbol 'drops without trace' (274)

In section (13) above I have given sixteen examples in which initial homorganic nasality in the Lhasa dialect corresponds to a chung in a corresponding Written Tibetan lexical item. Matisoff also gives four examples of this correspondence, with two more examples in which he states that 'when the first syllable in the compound ended with a consonant in W[ritten] T[ibetan] the prefixial h- in the second syllable usually drops without trace:

	Written TIBETAN	Lhasa	
"agony"	t'ugs-ḥk'ral	> thu-thre	(Bell, p. 12)
"prostrate oneself"	p'yag-ḥts'al-ba	> chha-tshe-wa	(Bell, p. 381)
			(274).

Strictly speaking, since a chung is a symbol in the Tibetan writing system, it cannot be said to 'drop': Tibetan orthography requires its presence in every lexical item to which it is appropriate, as 'kh-, 'g-, 'ch-, 'j-, 'th-, 'd-, 'ph-, 'b-, 'tsh-, 'dz-. What one can say is that certain W.T. lexical items are common to certain of the modern spoken Tibetan dialects, such as the Lhasa, Kham(s), and Balti; and wherever this happens to be so, it is certainly legitimate to compare the symbols of the one (and their pronunciation in the style in which W.T. lexical items are read) with the sounds and phonological units of the other, and establish correspondences between the symbol a chung in the one and a phonetic feature such as nasality in the other, or, where necessary, between a chung and features other than nasality. For Matisoff's example t'ugs-ḥk'ral, then, one could say that the a chung in combination with k'r correspond, in the Lhasa dialect, not to [-ɣdɹ-], as one might have expected, but to [-tɹ-] ([-dɹ-] in my material); but it would first be necessary to make sure that the spelling with a chung was justified in this word: there is the possibility of confusion between 'khral and khral (cf. Jäschke 1881/1934: khral 'punishment, chastisement, visitation' (50) and the 'khral of 'khral-'khrul 'confusion, disorder' (61).

In Matisoff's second example, p'yag-ḥts'al-ba, he has been misled by Bell's use of a hyphen into treating it as a trisyllabic compound word containing ḥts'al as its second syllable. In fact, phyag and 'tshal belong to separate words (and phrases), a noun ('hand') and a verb; consequently, 'tshal has here the features voicelessness, aspiration, and affrication ([tsh-]) appropriate to 'tsh- in word-initial position, not the [-ndz-] that would

have been appropriate to junction in medial position. In the following entry, for the corresponding honorific form, Bell has, correctly, spaced off the disyllabic noun sku-phyag from the verb 'tshal:

'ku-chha tshe-ra nang-wa' (381).

Matisoff goes on to state: 'when the first syllable of the compound ends in a vowel, the nasalization seems more likely to be present. - - - Yet here too there are abundant counter-examples, where the a-chung in the second WT syllable simply drops in Lhasa with no nasalizing effect on the previous syllable:

Written TIBETAN	Lhasa
"proximity" ñe-ḥk'or	nye-khor (p. 382) ¹⁵
"puddle" č'u-ḥk'yil	chu-khyil (p. 382)' (275).

No doubt consistency as between the spelling of WT and contemporary Lhasa Tibetan would be welcome; but it must not be forgotten that Tibetan orthography was developed to symbolize the spoken Tibetan of twelve or thirteen hundred years ago, perhaps for speakers of a dialect, or dialects, in the area of Samye, Tibet's first monastic foundation (779 A.D.).¹⁶ To require the phonology of modern spoken Tibetan dialects to agree, lexical item for lexical item, with the phonology of the 8th-century spoken Tibetan dialect for which Written Tibetan orthography was designed is rather like requiring the phonology of a contemporary English dialect such as Received Pronunciation (RP), based on south-eastern English, to conform to the spelling of West Saxon in King Alfred's time, centred on Winchester. An attempt to interpret WT orthography in the light of contemporary pronunciation cannot be done on the basis of one dialect alone, especially one as highly evolved as the Lhasa. Indeed Matisoff has given examples from the Khams-dialect material of Jäschke 1881/1934 to show that as regards homorganic nasality corresponding to the prefixial a chung symbol in word-initial position it is the Khams dialect that performs well; e.g.

'Written TIBETAN:	ḥč'am-pa	ḥp'ur-ba	ḥgul-ba ¹⁷
Khams:	ñč'am-pa	mp'ur-wa	ṅgul-wa
	"to agree"	"to fly"	"to move, shake"

(274; Matisoff's romanization and phonetic symbols).

The Balti dialect, at the other extreme, provides no examples of homorganic nasality in word-initial position, and none of homorganic nasality in the second lexical item of a compound either apart from [-ŋg-] and [-nd-] in the second two lexical items of the following two compound words:

[mingga] mi-'ga 'people'

[minda] mi-'da " (with numerals) (Sprigg 1968, 311).

In this respect the Lhasa dialect lies between the Kham and the

Balti: it provides no examples of word-initial homorganic nasality but numerous examples of nasality in compounds, where it is to be associated with the initial of the second lexical item. In some words the relationship with a chung appears not as a nasal sound but as the two features nasality and voice in combination with the place-of-articulation feature of the preceding lexical item. Matisoff gives 'WT t'ugs-hdod, Lhasa thung-dö (Bell, p. 426)' as an example ([thɔŋdy:, thɔndɔ:] in my material), to which I might add: [-mC-], as in [gɣɔmdɔi] rgyabs-dre 'quarrel'.

Matisoff's choice of Jäschke as a source for data on the phonetic equivalents, in a number of dialects, of the a chung symbol was, as I see it, fully justified, except, perhaps, for a chung when prefixed to the orthographic aspirated initials kh, ch, th, tsh, etc., where support for Jäschke's ñk'ol, nɔ'am, etc. comes not from 'Khams' but from the Golok of Amdo (a-mdo), unless Jäschke intended 'Khams' ('eastern part of Tibet', xxi) to include Amdo. In my opinion Jäschke has given an accurate survey of the dialectal position in relation to W.T. orthography as it was a hundred years ago, and, probably, as it still is today with due allowance for the Diaspora following the Chinese conquest. The place of a chung, in its three different functions, does not, therefore, strike me as being mysterious.

In its orthographic function as a prefix (sngon-'jug), the most prominent of its three roles, the a chung has a pedigree of at least twelve hundred years; and I can find no reason to suppose that its phonetic function in that position in the past was other than that of symbolizing nasality homorganic with the place of articulation of a following plosive or affricate, as in the reading-style pronunciation of W.T. to this day for the voiced initials [ɣɣ- ɣdʒ- nd- mb- n(d)z-], and also, in currently spoken Golok, for the voiceless initials [ɣkh- ɣtʃh- nth- mph-] (Sprigg 1968, 310). In that position it contrasts, especially, with the prefix m, except in (i) the context of ph- and b-, where the choice of symbol has gone against m- in favour of '-; e.g. (reading-style pronunciation)

'bab [mb-], 'byor [ɣdʒ-], 'bras [nd-],

and in (ii) the context of ng-, ny-, and n-, where homorganic nasality could only give rise to a long nasal, *[ɣɣ- ɣɣ- nn-]; and mng-, mny-, and mn- (but not *mm-) occur without contrast with a chung.

Currently, the prefix m- is not distinguished from '- in the reading-style pronunciation in initial position; both m- and '- symbolize nasality homorganic with the following consonant when combined with g-, j-, d-, and dʒ-; e.g.

<u>mgul</u>	<u>mjal</u>	<u>mda'</u>	<u>mdzad</u>
[ɣɣ-]	[ɣdʒ-]	[nd-]	[n(d)z-]
<u>'zag</u>	<u>'jam</u>	<u>'dag</u>	<u>'dzol</u>

and share in symbolizing an aspirated plosive or affricate when

conjoined with kh-, ch-, th-, and tsh-; e.g.

<u>mkhan</u>		<u>mchod</u>		<u>mtha'</u>		<u>mtshan</u>
	[kh-]		[tʂh-]		[th-]	
<u>'khal</u>		<u>'chang</u>		<u>'thab</u>		<u>'tshab</u>

15. The a chung symbol and time depth

Matisoff proposes treating the nasality that is symbolized by prefixial a chung in W.T. and corresponds to nasality, to a greater or lesser degree, in the spoken dialects of the present time, as 'diachronically secondary': 'the real distinctive feature of the proto-prefix was glottality (Matisoff 1970, 1972)' (275); but the a chung prefix has been symbolizing the initial sound of a cluster in Tibetan lexical items for twelve or more centuries of Tibetan orthographic history, and there is nothing to suggest that the sound that it symbolized was other than a nasal homorganic to the following consonant. It is because of his work in the field of Lolo comparison and reconstruction that he proposes an originally glottal role for the a chung's proto-prefix predecessor in order to accommodate it to the syllable-initial glottality that he has reconstructed for pre-Lahu in an attempt to account for a tonal distinction in present-day Lahu. The a chung, though, is not a reconstruction; it is historically attested, with a time depth of well over a thousand years. Matisoff's pre-Lahu and proto-Lolo-Burmese *ʔ-, on the other hand, is speculative, a linguistic contrivance of the 20th century, with no time depth. If only Matisoff, or a pre-incarnation of Matisoff, had been active in phonological research in the Lolo land of the 8th century A.D., we might have had an orthographically comparable situation (cf. also Sprigg 1974, 262).

On general-phonetic grounds, then, with some support from Tibetan orthography and dialectology, my preference is for Matisoff's original view; I should be happy to see him re-visit his pre-rhinoglottophiliac period.

Notes

1. Cf. Allen 1953 for an early discussion of this classification in ancient India: 'the close relationship of both h [ʁ] and -h [h] to their vocalic context is mentioned by the T[aittiriya] P[rātisākhya]: "For h and -h the glottis is the place of articulation; but in the opinion of some authorities h is homorganic with the beginning of the following vowel, and -h is homorganic with the end of the preceding vowel."¹

1' - - - As the Tribhāṣyaratna expresses it, they have no articulator of their own - - -. Cf Sweet N[ew] E[n-glish] G[ramma]r I, §237; D. Jones Outline of English phonetics, §§777 ff.' (49).

It is the TP's latter alternative, that of 'some authorities', that I accept.

Though usually non-syllabic, [h] appears to be sometimes syllabic; e.g. Sawashima's fiberoptic photographs of [k_{te}:]

(1971, 11), an interpretation that Sawashima himself accepted at the 8th International Conference of Phonetic Sciences, Leeds, 1975.

2. The role of the pharynx in determining the resonance of various types of vowel, especially close front vowels versus open back vowels, depending on the degree to which the root of the tongue is remote from (as in [i]), or approaches (as in [ɤ] and [u]), the pharynx wall, is well illustrated from drawings based on x-ray photographs in Ladefoged 1962, 96-7 (reproduced in Catford 1977, 58).

3. The articulatory, auditory, and acoustic basis of the phonetic level of analysis and its symbolization systems, especially the International Phonetic Alphabet, does not lend itself to the 'zero' concept, hence Matisoff's having to resort to the words 'zero consonant', enclosed in the square brackets of the phonetic level, instead of a phonetic symbol. In phonetic transcription there is no possibility of distinguishing any such category as 'zero consonant'; for every symbol in the I.P.A. or other phonetic symbolization system symbolizes articulatory or auditory features, or both. 'Zero consonant' has not, therefore, and cannot have, a phonetic symbol.

4. The terms post-velic and post-velar apply here, in accordance with western usage, to articulations made on the inward side of the velum, towards the lungs, while pre-pharyngeal applies to an articulation made on the outward side of the pharynx, towards the lips; i.e. these terms are viewed from the standpoint of the lips, the most outward, and conspicuous, vocal organ, at the point of egress; but I feel, intuitively, that the ancient Indian view, in which the point of reference is the lungs, as initiator of the airstream, is the more logical (cf. also Allen 1953, 48); I could happily have reversed the qualifiers post- and pre- in these terms.

5. For the role of the pharynx in the articulation of vowels cf. note 2.

6. Cf. Catford 1977: 'Breathing through the open glottis - - - is the phonation type known as voiceless -- the phonation of sounds like [p, t, k, f, s, ʃ, h], and so on' (95).

7. The earliest romanization of འ, that of de Kőrös (1834), uses ha; Jäschke (1881/1934) uses the three symbols <, o, and a according to position in the syllable; and ha was introduced by Das (1902/1960), probably under the influence of -h as the romanization of visarga. My impression is that 'a' is perhaps the commonest romanization these days (cf. also Wylie 1959); I have therefore preferred it to ha, which is, in any case, difficult to type and print.

8. Probably the first recognition of the reading style of pronunciation is to be found in Yu and Jaw 1930: 'The pronunciation recorded in this book [Love-songs of the Sixth Dalai

Lama] does not represent the pronunciation used by Mr. blo-bzang-sang-rgyas in his ordinary speech. It is the habit of Tibetans - - - to pronounce a word in one way when used in ordinary speech, and in another way when the word is read from a book. - - - in the following table, I give the transcription of those words as they are pronounced in ordinary speech' (198). Cf. also Bell 1905: 'Where the pronunciation of the literary and spoken form of a word is the same, the literary form alone is given, since the sole object of entering the spoken form is to show the exact pronunciation of the word' (vii).

9. For the vowel-harmony alternatives [ɔ:/o: v/ə ɔ:/y: ɔ:/y e/ɪ e:/i: ε:/e: a/ʌ a:/ʌ:], in 'open words' and 'close words', see Sprigg 1954b, 325-7 and 340-2, and Sprigg 1954c, 569-71.
10. It is interesting to note that Jäschke has romanized Ṛ differently in each of its functions, prefixially by a small subscript circle, and initially by a subscript arrow head, while suffixially it has no symbol, being sufficiently indicated by the symbol -a in combination with one of the five prefixes; e.g. 'མདའ་ ṛmda, བཀའ་ ṛbka' (272, 12); for my own part I have romanized Ṛ consistently as ' in all three functions, hence mda', bka', in accordance with normal practice in transliteration; but Jäschke's practice seems to me, in this instance, to have much to commend it.
11. In the reading style of pronunciation Ṛ- is commonly pronounced [h-] (together with the lower of the distinctive pitch levels) rather than as [-V-]; e.g. རྩ་མཉམ་ [-hʌŋgɔ/-ʌŋgɔ] 'pigeon'; and this seems to be the pronunciation that de Kórós is referring to (1834, 5); Jaw (Y.R. Chao), however, heard this initial as [ʀ-] (Yu and Jaw 1930), with voiced glottal (arytenoidal) friction.
12. Cf. Sprigg 1954a: 'In practice L[hasa] T[ibetan] is to all intents and purposes an unwritten language; utterances in LT are, when written down, regularly translated into the vocabulary, morphology, syntax, and style of "written Tibetan" - - - As a result the Tibetan spelling in more than a few examples appears at variance with the phonological analysis' (135, n.).
13. In this function Ṛ- is named [-ʌɔ] 'baby Ṛ'.
14. Bell's 'kūn-dar' (387), quoted by Matisoff (275), appears to be a misprint for 'kun-dar' (442), implying [kɔnda].
15. In my material, however, I have noted medial nasality in [ɲɛŋgɔ:] nye-khor, but with the gloss 'neighbour, attendant', as in Gould and Richardson 1943, 146.
16. On the founding of the monastery at Samyé cf. Richardson 1962, 31, 39; Miller, however, puts the origin of writing in Tibet as early as Srong-btsan sgam-po (?569 - ?649) (Miller 1976, 103).

The symbol a chung in the role of prefix (sngon-'jug) appears in the Samyé inscription (?763 - 787 A.D.): 'da's, 'jig

(Richardson 1949, 57).

17. Ray 1965. however. shows homorganic nasality only in association with voiced initials. '/mb/, /ɲg/, /nɟ/, /nd/, /ndz/, /ndr/' (7-10), for a northern dialect (Kanze) and a southern dialect (Batang); for homorganic nasality in association with voiceless initials. [ɲkh ntɟ ɲtɕh nth mɸ], in Golok, of Amdo, see Sprigg 1968, 310.

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