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A low glide in Marphali

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1. Introduction

In this paper¹ I will address the question of the relationship of vowels and consonants, in the light of the behaviour, in some Tibeto-Burman languages of Nepal, of those intermediate items which are referred to as approximants, semivowels or “close” vowels. We will see in the course of this paper that the term “close” vowels is somewhat infelicitous in this context. I use it to begin with, in its usual meaning, equivalent to “high” vowels.

The close/high vowels *i*, *u*, *y* are commonly reported in the world’s languages to alternate with their semivocalic counterparts *j*, *w*, *ɥ*, in variation patterns conditioned by the position of the phoneme in the syllable. Thus it is often unnecessary to transcribe, in a phonological rendering, the difference between the vowel and its corresponding semi-vowel. This conditioned alternation also occurs, in a smaller number of languages, for liquids, nasals, and even fricatives.

In many contemporary phonological theories, it is argued that syllable structure can be derived from the sequence of phonemes, and that segments are attached to templates, or to syllabic or moraic nodes, according to a sonority hierarchy which is basically similar for all authors,² at least in its extreme points. Given a sequence of phonemes, syllable peaks and margins are formed in such a way that the sonority curve is as smooth as possible. We can take Vennemann’s model (1988: 9) as typical of such a hierarchy (fig. 1).

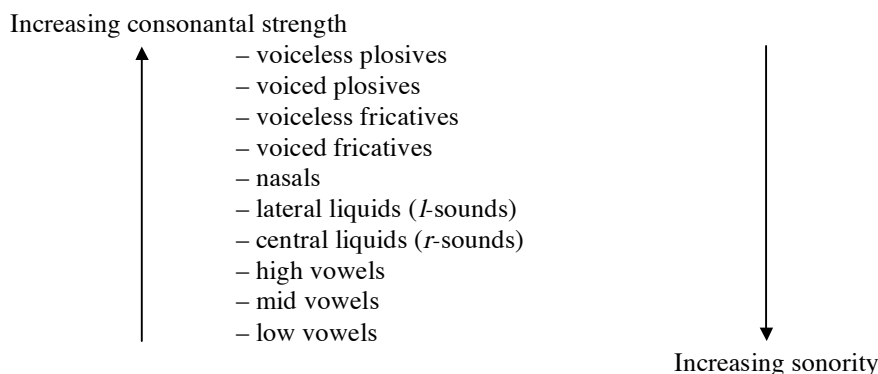


Figure 1. Sonority hierarchy (after Vennemann 1988: 9)

In many languages, when two segments from the middle of the scale, either of which could be syllabic in the appropriate context, come into contact, their function in the syllable structure, as margin or nucleus, is determined either by their relative position on the sonority hierarchy (as in Tamang)³ or, if their position on the scale is more or less the same, by their left to right ordering in the spoken chain (as in Gurung, below). In rare cases the place of the nucleus has to be specified lexically.⁴

With any version of a sonority hierarchy, *a*-type vowels are considered the most vocalic, most sonorous, least consonantic of all speech sounds. Usually, in a syllable where a low vowel co-occurs with another vocalic sound, its presence drives the other vowel to a semivocalic or glide status, while it assumes the role of nucleus peak. In several Tibeto-Burman languages of Nepal, however, a low vowel can leave the role of nucleus peak to a higher, theoretically less sonorous vowel.

The study of Marphali will lead us to recognize the existence of a uvular or pharyngeal approximant partner to a low/open *a*-type vowel. Unfortunately no symbol for this approximant is available in the IPA chart. I will transcribe it as [*ɑ̣*] or [*ʌ̣*], with the subscribed arch which denotes non-syllabicity but which fails to note the approximant status.

This study will also bring us 1) to propose a revision of the sonority hierarchy concerning vowels and approximants, and 2) to suggest that thinking of vowels in terms of place of articulation and stricture type, as is commonly done for consonants, following Catford (1977), would be more enlightening than the usual articulatory definition of vowels which parallels their representation in the acoustic space (see fig. 2).

2. Fricatives, approximants and resonants

Along one scale, fricatives (typically [*f*, *v*]), approximants⁵ (typically “close” vowels like [*i*] or [*u*], semivowels like [*j*] or the “liquid” [*l*] sound) and resonants (typically [*ɛ*, *a*]) are characterized by the progressive widening of the articulatory channel, from fricatives through approximants to resonants,⁶ resulting in different turbulence characteristics.

Along a different scale, that of duration, and “contrasting with essentially maintainable or prolongable sounds”,⁷ “semivowels” (and “flaps”, which do not concern us here) are “momentary articulations” which cannot be maintained (Catford 1977: 128). “Most commonly, what are called semivowels are obligatorily momentary movements towards and/or away from an [*i*]- or [*e*]-type stricture (symbolized by [*j*]) or an [*u*]- or [*o*]-type stricture (symbolized by [*w*])” (Catford 1977: 131).

According to this second point of view, [*w*] is the vowel [*u*] whose duration is reduced “virtually to zero when it becomes the semivowel [*w*]”. Semivowels being defined as a movement towards a point, some distinctions which exist between vowels are not maintained when they are reduced to the “ultra-brief, non-syllabic” status.⁸

We see that the same term, semivowel, and the same symbols [*j*, *w*] (or also [*ɥ*, *ʉ*] for the labio-palatal and velar glides) are used for extra-short vowels, e.g. [*ɨ*], [*ʉ*], defined along a time scale, and for non-syllabic vowels, e.g. [*j*], [*ɥ*], considered as “approximants”, along a degree of stricture scale. This double characterization leads to no difficulty concerning the high vowels, as it corresponds to different features of the same phonological elements. Concerning open resonants the situation is different.

We should note, at this point in our discussion, that the degree of stricture referred to here is measured at the highest point of the tongue, the same point of reference which leads us to speak of “close” [*i*, *u*] versus “open” [*a*]. If we are to understand the behaviour of the low approximant of Marphali, we need to consider another point of stricture, the point of maximal constriction, whether this happens to coincide with the highest point of the tongue or not. For this we will go to another chapter of Catford’s book, which re-evaluates the traditional way of classifying vowels.⁹

First, let us consider the time parameter in more detail. Catford mentions that “although semivowels have normally higher, or closer tongue positions, that is, a narrower articulatory channel, than contiguous vowels, it is theoretically possible to have semivowels that are more open than con-

tiguous vowels.” Something like [i:æi:] can be produced as an exercise. “In practice, such open semivowels are rare in languages, although there is a variety of ‘defective *r*’, not uncommon in England, which is essentially a [ə] semivowel, [ɻ] ... Thus, *Mary* may be pronounced [mɛ:ɻi]” (1977: 131).

Thus, for a non-syllabic realization of a “central” “low” semivowel, only a timing interpretation is traditionally open to us. Indeed if we consider the highest point of the tongue as the place where the degree of stricture should be measured, there is no way such a vowel could become an approximant: if the degree of stricture of an *a*-vowel (from [æ] to [a], rounded or not) is increased at the highest point of the tongue, it must end up as [j] or [w], or [ɟ] or [ɥ] (the symbols that the IPA does provide), just as if the starting point had been [e] or [o]. As long as we use the standard vocalic chart (fig. 2) as a mental representation of the articulatory vowel space there is no way out.

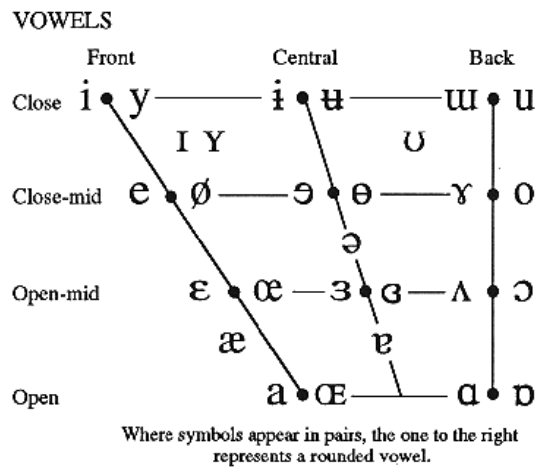


Figure 2. The IPA vowel chart

If we consider a more precise representation of the position of the tongue for the different vocalic articulations (fig. 3) we can observe that the low back vowels have their maximal point of constriction around the pharyngeal area, and that the degree of constriction at this point is quite comparable to that of the high vowels.

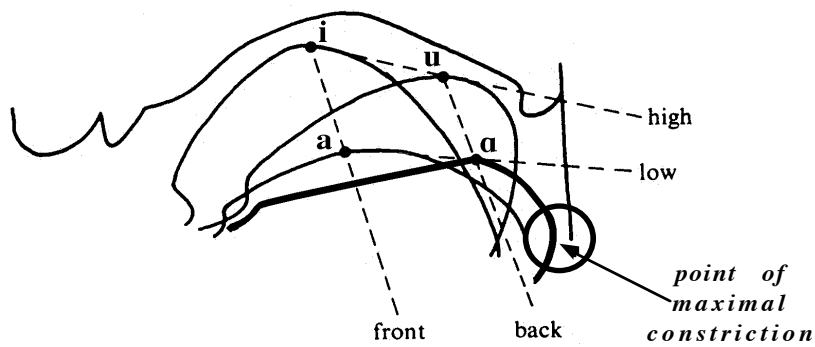


Figure 3. The “highest point of the tongue” in traditional vowel classification (after Catford 1977: 173) (the labels for the vowels and the indication of the point of closest approximation for [a] are added)

We are now in a position to consider two different possible non-syllabic partners to *a*-type vowels: one is a semivowel, based only on reduced duration, where the tongue position can be front or back, the other is a narrow approximant, with the place of articulation of a back vowel [ɔ] or [ʌ]. Such is the low glide of Marphali.

The IPA in its *Principles* comments: “Cardinal [a] is the openest of the back vowels; if the tongue were retracted further, a fricative consonant of the [ɣ] type would result” (1949: 4), but it does not offer an approximant symbol along that path.¹⁰ In the same manner as we find [j] between [i] and [j], [w] between [u] and [ɯ], or [ɥ] between [u] and [y], a symbol for an “*a*-approximant” between [a] and [ɣ] would be welcome. This would be convenient; but not only convenient: the absence of a word or symbol usually reflects the absence of a concept, which itself hampers observation, or at least accurate transmission of observation.

3. Phonetic and phonological evidence for a low approximant in other languages

One of the characteristics of the low approximant is to be evanescent. It is often manifested in languages not phonetically, but only phonologically, by a zero in alternation patterns or in pronunciation variants (Spanish [Bowen and Stockwell 1955]), or as a segment that needs to be posited in a living language for morpho-phonological reasons (Gurage [Prunet 1996]) or in a

reconstructed language (Middle Chinese [Pulleyblank 1984, 1994, 1998], and Proto-Indo-European h_2 , if we may read in this manner the latest very attractive proposal by Reynolds, West, and Coleman [2000]).

A comparable sound, phonetically present, could be recognized in the description of the “velar approximant” in Axininca Campa, analysed with the features [+high +back] (Payne 1981: 61), which is interpreted as a pharyngeal glide by Yip (1983) and as the velar glide [w] by Ladefoged and Maddieson (1996: 322). If it is confirmed that the feature [+high] is indeed a phonetic feature rather than a phonological interpretation, this high back unrounded approximant would be close to, but different from, the low back unrounded (uvulo-pharyngeal) approximant of Marphali [q] or [ʌ].

The patterning of Aghem *gh*, described as a “voiced velar fricative” (Hyman 1979: 11), suggests that it too could be an *a*-type approximant.¹¹

Similarly Carrier, an Athapaskan language, presents an epenthetic segment [h/χ] before a word-initial [ʌ] (Prunet 1990). Bessel (1992: 322–324) discusses a few more examples.

A number of segments transcribed as [ɣ] in Tibeto-Burman languages could also be re-evaluated.

Whether phonologically posited (and inaudible) or phonetically present, the uvular/pharyngeal approximant has a limited distribution: only initial (Chinese, Gurage, Carrier), or only final (some varieties of English), or only intervocalic (Aghem, Axininca Campa). Moreover it is mostly posited in contact with a syllabic /a/ vowel, as an onset or transition to it. In Marphali it occurs before vowels other than /a/, but its phonotactic distribution is limited to medial position, between an initial consonant and a vowel.

From a historical comparative point of view, the low approximant is a “transient” element, short lived, and corresponding diversely, inside a group of closely related languages like the TGTm group in Nepal,¹² to zero, /r/, /w/, or, where the syllable dynamics has been reversed from glide + vowel to vowel + glide between two dialects, it can also correspond to a syllabic /a/ as the first element of a diphthong (see correspondence tables in appendix 1).

4. Marphali evidence

As I have suggested, the Marphali low approximant [q/ʌ] has a double interest: 1) you can hear it; 2) it occurs in a syllabic position not yet reported or hypothesized for such a phoneme.

4.1. The phonetics of the uvulo-pharyngeal (low) approximant in Marphali and neighbouring languages

4.1.1. Marphali

When I say the Marphali low approximant is audible, I do not mean that it is loud as a drum. It was not reported in Georg (1996), who worked in the village 20 years after me. This could reflect a variation inside the Marpha linguistic community, or possibly evolution. As I already mentioned, it is a transient element, easily lost in neighbouring dialects.

In my own field transcription, which I will quote “as is” in the comparative tables (without unifying the transcriptions to the phonemic interpretation given in the table headings) I heard it diversely, e.g. with a following /i/, as /q̣i/ = [q̣i, ʌi, ʁi, i, ʔi], or as backing of a preceding velar stop [k] to a uvular [q] (ex. ‘one’ /⁴ḳʌi/ = [⁴ḳʌi, ⁴ki, ⁴qi]) (see appendix 1).

Less variation was heard before /e/, but the /e/ itself varied from [e] to [ɛ] and the glide was sometimes not heard (ex. ‘bamboo strap’ [ʰtshʌɛ/tshɛ]). The absence of an (optional) palatal glide [j], preceding a front vowel, is another clue to the (underlying) presence of /ʌ/. Some quasi minimal contrasts are presented in table 1.

Table 1. Contrasts for ʌ in Marphali

labiovelar glide	pharyngeal – uvular glide	no glide
¹ ḳʌi ‘shade’	⁴ ḳʌi [~ ki ~ qi] ‘one’	³ ki [~ kʲi] ‘you’
⁴ ḳʌe ‘song’	⁴ ḳʌe ‘plank’	⁴ ke [~ kʲe] ‘work’
² p̣ʌe ‘incense’	² p̣ʌe ‘wool’	³ pe [~ pʲe] ‘wife’

In order to establish the reality of this evanescent phoneme, some tracings¹³ are provided in appendix 3, contrasting /ʌ/ with its absence, and with the medials /w/ and /r/.

As will be seen in the comparative tables, I also noted a similar sound in the dialect of Syang, another dialect of the Thakali group. I have much less data on Syang. But from what I have, it can be seen that /ʌe/, which does not occur after dental initials in Marpha, has been retained in this position in Syang (see ‘load’ and ‘pilgrimage’ in appendix 1).

4.1.2. *The Gurung low approximant*

The first person to report a similar phenomenon in a language of the area was Glover (1969: 21) in Gurung.

Glover's description of the phoneme inventory of Gurung includes the following: "Liquids and semi-vowels: Gurung has an alveolar flap, a lateral, and three semi-vowels – palatal, bilabial and central" (Glover 1969: 21). He transcribes these phonemes in text orthography as follows: /t/, /l/, /j/, /w/ and /a/ (underlined a).

Phonetically Glover describes /a/ as "a voiced low close central unrounded vocoid" transcribed [ə] (1969: 25). The timing is the same, he says, in *kāē* 'rice', *sje* 'meat', and *kwē* 'grandson/clothes' (1969: 27). The phonetic description fits well with what I heard in Marpha.¹⁴ Some quasi-minimal contrasts are presented below.

Table 2. Contrasts for a in Gurung

² <i>swē</i> 'bird food', ² <i>sāe</i> 'price', ¹ <i>sāe</i> 'thing', ¹ <i>sāē</i> 'mind', ¹ <i>swiba</i> 'to clean vegetables'
² <i>mwi</i> 'body hair', ³ <i>mwe^h</i> 'footprint', ³ <i>mre^h</i> 'pumpkin seeds', ¹ <i>māeba</i> 'to break down soil', ¹ <i>māē</i> ~ <i>mwē</i> 'medicine'
¹ <i>kāe</i> 'voice', ¹ <i>kāē</i> 'rice', ³ <i>kāe^hba</i> 'to be late', ³ <i>kwē</i> 'grandson', ⁴ <i>kwe</i> 'bee, song'

The contrast between the five medials is well established, although alternations exist. "The semi-vowels /w/ and /a/ fluctuate in a number of words in the environment /C..e/ where C is /m/ or /p/. D. [the informant] is quite conscious of and articulate regarding the fact that these words have alternative pronunciations. In general /w/ seems more frequent except for 'medicine'" (Glover 1969: 22).

4.2. Phonological interpretation

4.2.1. *Gurung*

The following glide + vowel sequences are found in Gurung.

Table 3. Gurung glide + vowel sequences

palatal glide + vowel	<i>ju</i>	<i>jo</i>	<i>ja</i>
labial glide + vowel	<i>wi</i>	<i>we</i>	<i>wa</i>
palatal glide + labial glide + vowel	<i>jwi</i>	<i>jwe</i>	–
“central” glide + vowel	–	<i>ae</i>	<i>au</i> ¹⁵

Since *a* has not been observed with a following *i*,¹⁶ a phonological interpretation of [*ae*] as the better known closing diphthong */aj/* could be proposed. No contrast would be missed.

Glover interprets */a/* as a semivowel, because of the features mentioned above: identical distribution with */j r l w/* as a medial between C and V; identical timing of these sequences; existence of doublets where */w/* replaces */a/* (Glover 1969: 27). We may add that Gurung has no closed syllables, and no diphthongs. Its syllabic canon is (C)(L, G)V. So the general phonotactic structure of the language imposes the semivocalic interpretation proposed by Glover, and the following statement of the syllabation rule (whatever the relative position on the sonority hierarchy of the vocoids in contact):

Rule: When two potentially vocalic segments are in contact, the first one becomes a glide.

4.2.2. Marphali

In Marphali the approximant [*ʌ*] can be followed not by only one vocoid, as in Gurung, but by one of a set of two front vocoids, */i/* or */e/*, standing in opposition: ex. ⁴*kʌi* ‘one’ vs. ⁴*kʌe* ‘plank’. The inelegant, but possible, solution for Gurung of considering [*ae*] as the phonetic rendering of phonological */aj/*, is impossible for Marphali since the natural semivocalic partner of both *[e]* and *[i]* is the same, i.e. *[j]* (Catford 1977: 131, quoted in § 2 above).

So there is no alternative to positing the same phonotactic rule as in Gurung. This means that either first position in the sequence overrides a higher consonantal value in the sonority hierarchy for the determination of margin – nucleus structure, or that [*ʌ*] has to be specified phonologically as semivocalic (and not as a simple positional variant of */ʌ/*).

Table 4. Marphali glide + vowel sequences

tongue height in nucleus	high	mid	low	
palatal glide	<i>ju</i>	<i>jɔ</i>	<i>jʌ</i>	<i>ja</i>
labio-velar glide ([+rounding])	<i>ɥi</i>	<i>ɥe</i>	–	<i>ɥa</i> ¹⁷
uvular/pharyngeal glide ([-rounding])	<i>ʌi</i>	<i>ʌe</i>		

The transcription presented in table 4 is phonological. I mentioned above in § 4.1.1 that the range of variation for the sequence /ʌe/ was large. The same is true of /ɥe/ which can be heard as [we, oi, oe, ɔe, ɔɛ]. What features should we retain?

The sequences /ʌe/ and /ɥe/ share two features:

- a feature of “mid” tongue height, realized on either segment, or on both
- a back approximant at the beginning of the sequence

They differ by the feature [±rounding] on the approximant (which correlates with greater or lesser backness of the approximant).

The same statements apply to the pair /ɥi/ vs. /ʌi/ changing the feature “mid” to “high”.

4.3. Timing, stricture-type and location of articulation

Now that I have established the distinctivity in Marphali of what I transcribe as /ɔ/ or /ʌ/, the question remains of whether that entity justifies a different treatment from its neighbours in phonetic charts. I show in appendix 2 the place in the IPA chart where a new symbol would be inserted.

4.3.1. Location of articulation

We have said that [-rounding] is an important feature to differentiate /ʌ/ from /w/ = /ɥ/, which has [+rounding]. Should we consider the Marphali “*a*-approximant” as a simple unrounded /w/, i.e. [ɥ]? Phonetically this does not correspond to what is realized, which is closer to cardinal vowel 14 [ʌ]. Moreover, we have seen that it has a backing effect on a preceding velar stop, changing a [k] to a uvular [q]. The semivowel /w/ does not have this effect. /ʌ/ is further back, in the uvular or pharyngeal area.

4.3.2. Timing

Short of recharacterizing the Marphali “*a*-approximant” as the velar semi-vowel [ʉ], we could avoid using a new symbol for it by interpreting the difference between it and the vowel /ʌ/ as a matter of timing only. There are two drawbacks to this solution.

First, since the relative duration of the two vocalic elements in contact would not be determined by the sonority hierarchy as we know it (ʌ being a lower vowel than *i* or *e*), we would have to recognize “ultra-short” as a phonemic feature, marked in the lexicon. This new principle of structuration of the spoken chain into syllables would hardly be an economy.

Secondly, although there is the theoretical possibility for any vowel to become semivocalic in terms of ultra-brief (Catford 1977: 131 and § 2 above), in Marphali not all vowels are fit to play this role. Front /*a*/ never occurs as a reduced glide. So we should rather look for some feature defining a natural class for those vowels which do have a semivocalic partner.

4.3.3. Stricture type

If we use Catford’s (1977: 185) polar co-ordinate diagram (reproduced as fig. 4) to represent the degrees of stricture among the vowels, we may be in a better position to recognize the identical degree of stricture of *i*, *u* and *a*.

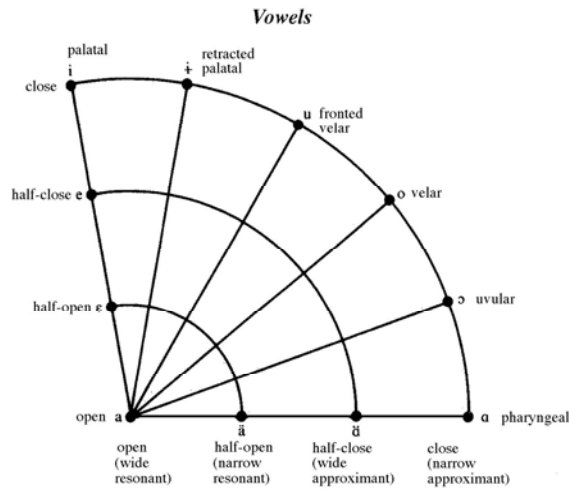


Figure 4. Catford's polar co-ordinate vowel diagram describing vowels in terms of articulatory location and stricture-type

With this model, we could change the representation of the Marphali vowel space from the diagram on the left in figure 5, to that on the right. Solid lines represent the vowel space; dotted lines extend it one small degree of constriction more, to the corresponding narrow“-er” approximants (or should we say “consonantic approximants”?). As can be seen, these glides fall into place very naturally in the polar co-ordinate diagram, and not at all in the traditional one, where $\underset{\sim}{\Lambda}$ has no place.

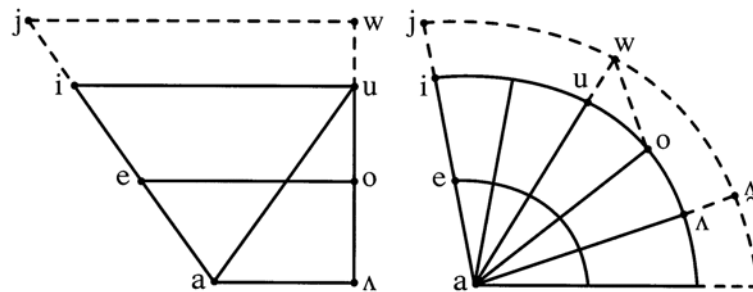


Figure 5. The Marphali vowel system on the traditional and the co-ordinate diagrams

5. Conclusions

From the above discussion it appears that the sonority hierarchy cannot hold in a single scale from the most consonantal consonants to the most sonorous vowels ... unless we use the same classificatory principle for vowels and consonants, a principle also advocated, from a different perspective, by Clements (1993).

We need, in order to understand Marphali glides, to treat the series of “peripheral ‘narrow approximant’ vowels” (Catford 1977: 186), the cardinals [*i* – *ị* – *u* – *o* – *ɔ* – *a*] (and their partners with reversed lip positions), as a natural class.¹⁸

This class should take the place, in the sonority hierarchy, of the “high vowels”, below the “*r*-sounds”. The notions of “mid vowels” and “low vowels” (referring to the dome of the tongue) do not seem useful in the context of syllabification. Maybe both could be replaced by a single class of “resonants”. Many more studies are needed to clarify this point.

Appendix 1

Comparative data relative to the two Marphali non-palatal glides¹⁹

Some variant phonetic notations have been retained; the phonemic interpretation is that in the headings. Tone values are marked by a preceding number. Their approximate phonetic values are indicated in the table below.

Marphali /ɥ/
/ɥi/ [*wi*, *ɥi*] { [+rounding], [1st degree], [back to front] }

language:	Thakali			Tamang	Gurung
village:	Marpha	Syang	Tukche	Risiangku	Ghachok
‘ghost’	³ <i>dwi</i>	<i>dɥi</i> (^h)	⁴ <i>ma:ŋ</i> ³ <i>tuj</i>	–	–
‘body’	³ <i>lɥi</i>	<i>lɥi</i> (^h)	³ <i>li</i>	³ <i>lwi</i>	–
‘exorcism figure’	¹ <i>lɥi/lwi</i>	<i>li</i>	–	–	–
‘landslide’	⁴ <i>ɥwi</i>	<i>ɥi</i> ^h	⁴ <i>ti</i>	⁴ <i>ɥwi</i>	⁴ <i>ɥwi</i>
‘ball of wool’	¹ <i>thwi</i>	<i>tɕi</i>	<i>thi pholton</i>	–	–
‘shade’	¹ <i>kwi</i>	<i>ku:</i>	–	² <i>krip</i>	–
‘lump on neck of fowls’	² <i>mwi</i>	<i>mun</i>	(loan)	–	² <i>mwi</i> ‘fur’
‘silver’	⁴ <i>mwi</i>	<i>mwi</i> ^h	(loan)	⁴ <i>mwi</i>	⁴ <i>mwi</i> ‘money’
‘cousin’	¹ <i>ŋwi</i>	–	–	–	² <i>ŋɔlo</i>

/ʉe/ [ɔi, ɔe, ɔɛ, ɔɛ] { [+rounding], [2nd degree], [back to front] }

language:	Thakali			Tamang	Gurung	Manang
village:	Marpha	Syang	Tukche	Risiangku	Ghachok	Praka
'song'	⁴ koe	goi/gwe (^{fi})	⁴ koj	³ wai	⁴ kwe	⁴ khwe
'rice'	² fjɔe	fje	^u sje/swe	³ s(j)e:ba	–	–
'book'	¹ tʃhjɔɛ	tʃhje	–	¹ tshjoi	–	–
'colour'	² tshɔe	tshɛ	–	² tshon	–	–
'incense'	² pɔe	pwe	–	² poiraŋ	–	–

Note: /ʉe/ is not found after a dental stop in Marpha or Syang. In Syang, the labiovelar glide disappears also after the sibilants ('book', 'rice', 'colour').

Marphali /ʌ/

/ʌi/ [ʌi, ʌi, ʌi, ʌi] { [-rounding], [1st degree], [back to front] or [back+ front] }

language:	Thakali			Tamang	Gurung	Manang
village:	Marpha	Syang	Tukche	Risiangku	Ghachok	Praka
'dirt'	³ gvi	gi (^{fi})	–	¹ khiti	³ kri	³ kri
'one'	⁴ ki/ ⁴ kʌi	–	⁴ ti	⁴ kik	⁴ gri	⁴ hri:/khri:
'to roll up'	khilba/qhilba	¹ khil-pa	–	–	–	–

/ʌe/ [ʌe, ʌe, ʌe, ʌe, ʌe, ʌe] { [-rounding], [2nd degree], [back to front] or [back+ front] }

language:	Thakali			Tamang	Gurung	Manang
village:	Marpha	Syang	Tukche	Risiangku	Ghachok	Praka
'plank'	⁴ kʌe/ ⁴ kʌɛ	–	–	⁴ krai- ¹ siŋ	–	–
'voice, language'	² kʌe/ ² kʌɛ	–	^u kʌj	² kat	¹ kʌe	² kje
'waist'	¹ kʌe/ ¹ qʌɛ	kʌɛ	^u te	¹ ke:	¹ kre	¹ kre
'basket with holes'	³ gʌɛ	gʌi (^{fi})	⁴ kʌj 'cradle'	³ kai 'rack'	–	–
'basket (straight)'	³ tsʌɛ	tso (^{fi})	–	–	–	–
'bamboo strap'	¹ tshʌɛ/tshɛ	tshʌɛ	–	¹ tshai	¹ tshʌɛ	–
'iron'	¹ phʌɛ	–	^u phʌj	² phai	–	–
'leftover rice'	¹ ŋʌɛ/ ¹ ŋʌɛ	ŋʌɛ	ŋʌi (Gopang)	–	² ŋʌɛba	–
'buffalo'	² mʌɛ/ ² mʌɛ	–	–	² mahi	–	–
'to bite'	² khʌɛ/qhɛwa	khʌi	–	¹ khrap-pa	–	–

'to spin thread'	² kh _Λ e/qh _ε wa	kh _Λ i	–	² khai-pa	–	–
'to climb'	k _Λ εwa/qεwa	–	² tε	¹ krat-pa	¹ kre	–

Note that /t_Λe/ and /n_Λe/ are not found in Marpha. The uvular/pharyngeal glide, retained in Syang, has disappeared after dentals in Marpha.

	Marpha	Syang	Tukche	Risiangku	Gurung	cf. WT
'load'	⁴ te	t _Λ ε/de*	⁴ te	⁴ tot	⁴ tj	dos
'pilgrimage'	² ne	n _Λ i	² ne	² ne:	–	gnas

* loan from the Tukche form

Phonetic pitch of the 4 tones in the dialects quoted (in Chao Yuen-ren's [1933] notation)

language:	Thakali			Tamang	Gurung	Manang
village:	Marpha	Syang	Tukche	Risiangku	Ghachok	Ngawal
/ ¹ /	43	43	54	54	33	33
/ ² /	45	45	44/33	44	54	45
/ ³ /	33/22	11	11	33/22	11	54
/ ⁴ /	51	33/22	121	211	12	31

Appendix 2

Excerpt from the chart of the IPA with the indication of the proposed location of a low approximant symbol

CONSONANTS (PULMONIC)

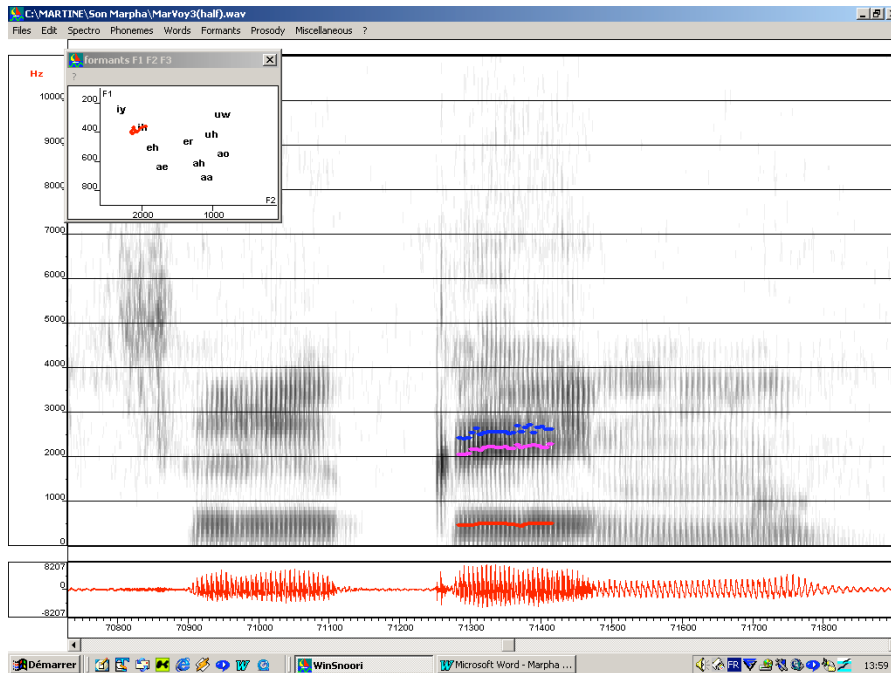
	Bilabial	Labiodental	Dental	Alveolar	Postalveolar	Retroflex	Palatal	Velar	Uvular	Pharyngeal	Glottal
Plosive	p b			t d		ʈ ɖ	c ɟ	k ɡ	q ɢ		ʔ
Nasal	m	ɱ		n		ɳ	ɲ	ŋ	ɴ		
Trill				ʀ					ʀ		
Tap or Flap				ɾ		ɽ					
Fricative	ɸ β	f v	θ ð	s z	ʃ ʒ	ʂ ʐ	ç ʝ	x ɣ	χ ʁ	ħ ʕ	h ɦ
Lateral fricative				ɬ ɮ							
Approximant		ʋ		ɹ		ɻ	j	ɰ			
Lateral approximant				l		ɭ	ʎ	ʟ			

Where symbols appear in pairs, the one to the right represents a voiced consonant. Shaded areas denote articulations judged impossible.

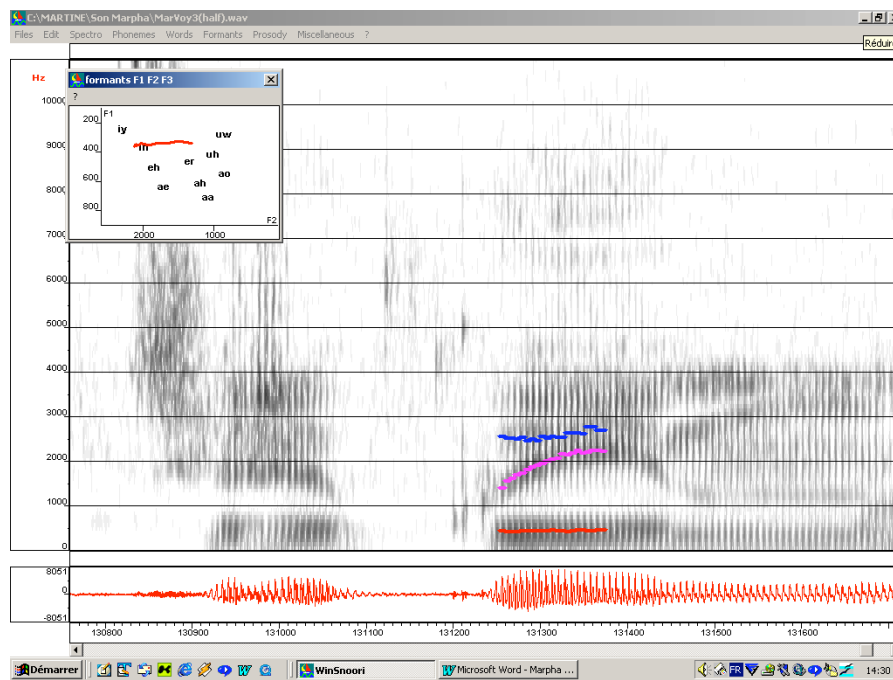
ɹ / ʀ

Appendix 3

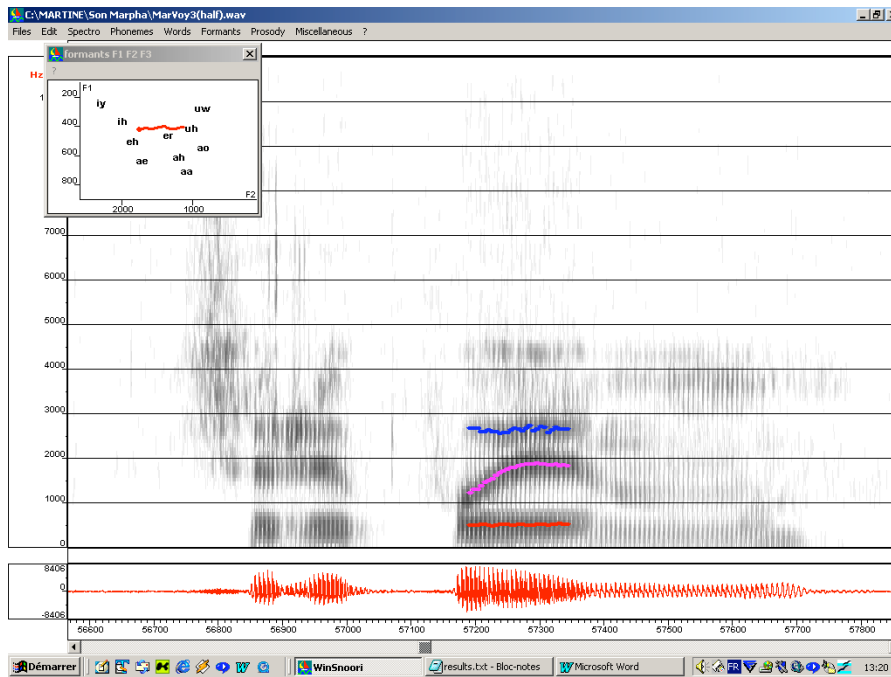
Spectrograms



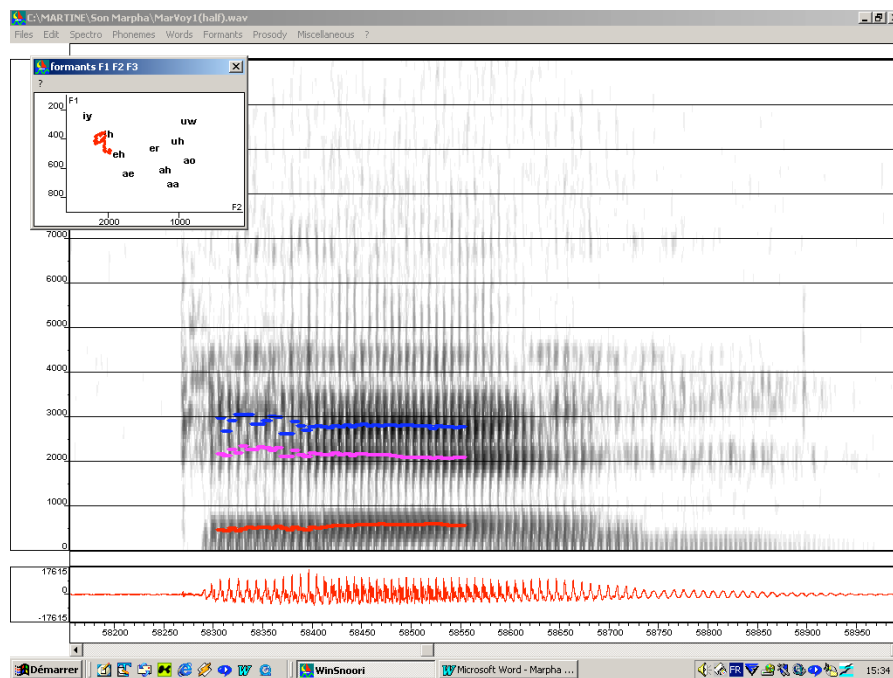
Marpha ⁴*k_Δi* 'one': *tsuri k_Δi mumo* 'here there is one'



Marpha /kwi/ 'shadow': *tsuri kwi mumo* 'here there is a shadow'

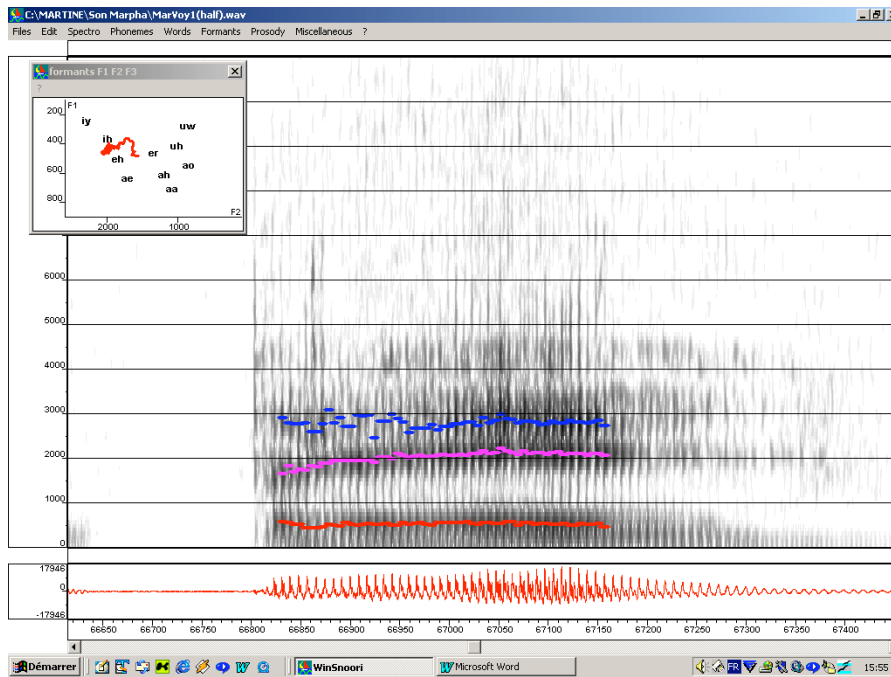


Marpha ²pwe 'incense': *tsuri pwe mumo* 'here there is incense'



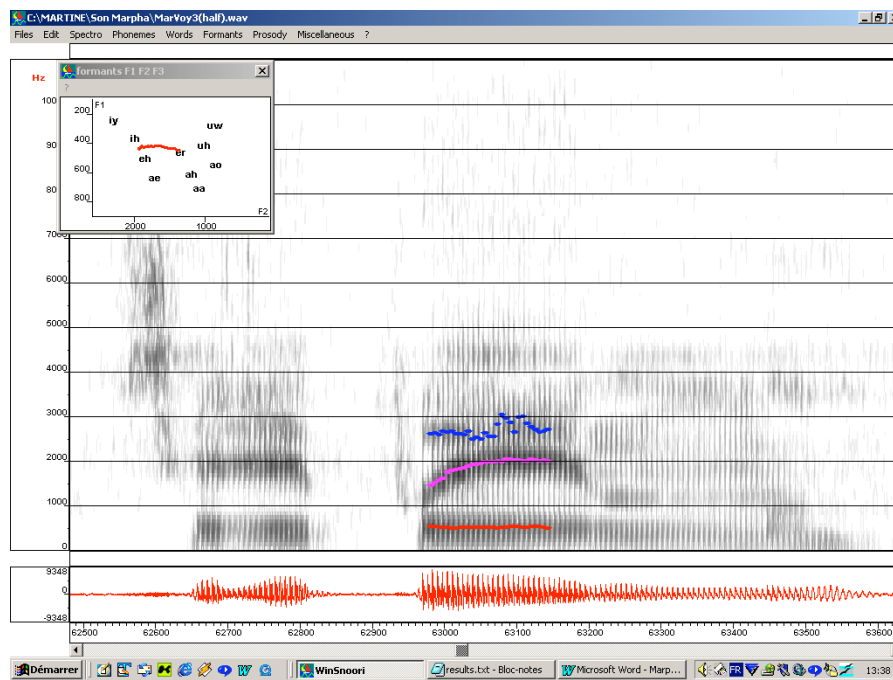
Marpha ³pe 'wife'

Note: tone 3 is accompanied by a degree of breathiness.



Marpha ³pre 'a grain, *Fagopyrum tataricum*'

Note: tone 3 is accompanied by a degree of breathiness.



Marpha² p_Δe 'wool': tsuri p_Δe mumo 'here there is wool'

Notes

1. Earlier stages of this research have been presented in talks and conferences, starting with the International Conference on Sino-Tibetan Languages and Linguistics in 1996. Many people contributed welcome ideas, references, and discussions. I would like to thank more particularly E. G. Pulleyblank, J.-F. Prunet, N. Clements and J. Esling, exonerating everyone from any responsibility for the remaining shortcomings.
2. Hankamer and Aissen (1974) trace the idea of a sonority hierarchy at least as far back as 1916 to W. Geiger (Pāli, *Literatur und Sprache, Grundriss der Indo-Arischen Philologie und Altertumskunde* 1/7, Strassburg) and to Ferdinand de Saussure.
3. A sub-ordering among high vowels has to be introduced for Tamang, with *i/j* more consonantal than *u/w*, which is itself more consonantal (less sonorous) than any other vowel (Mazaudon 1973: 126).
4. Vennemann proposes the idea that Nucleus is a function which is mostly but not entirely determined by the sonority hierarchy, and gives an example from English, (where it does not concern “standard” nucleus material, but the sequence of potentially syllabic consonants *rn*): *lantern* [læ̃n.t̃ɹ̃n] vs. *apron* [ẽj.p̃r̃n] (1988: 5 and footnote 11).
5. “Approximation of two articulators without production of a turbulent airstream, ... when voiced” (Ladefoged’s definition as completed by Catford [1977: 122]).
6. Catford (1977: 117–128).
7. That is, fricatives, approximants other than semivowels and resonants (but also stops, for Catford, because the closure of stops can be maintained, although their release is momentary).
8. “Semivowels written [j] and [w] can be formed by moving rapidly to and from opener vowels than [i] and [u], for example [e] and [ɛ], [o] and [ɔ] as in [aɛ̃a], [aɛ̃a] (where [ɛ̃], [ɛ̃] mean ultra-brief, non-syllabic, [e] and [ɛ]) = [aja], and [aɔ̃a], [aɔ̃a] = [awa]” (Catford 1977: 131).
9. See fig. 45 in Catford (1977: 167) for a graphic representation of the diverging ways of classifying oral articulation used for vowels and consonants.
10. The new *Handbook of the International Phonetic Association* (1999) does not either.
11. While other “fricatives” in the language appear in voiceless/voiced pairs (*sh/zh*, *f/v*, and *s/z*), *gh* does not have a voiceless partner. In morphophonology, the following alternations are observed: *e > y > z*, *o > w* and *a > gh*.
12. The Tamang-Gurung-Thakali-Manang group (or TGTM for short), is a sister branch to the Tibetan branch in the Bodish section of the Bodic division of Sino-Tibetan (Shafer 1955). Marphali, the speech of the village of Marpha, like the dialect of Syang mentioned below, can be tentatively placed in the Thakali sub-group. The TGTM languages are spoken in North-Central Nepal. They are closely related, but there is no intercomprehension.

- For a presentation of the group and a tentative reconstruction see Mazaudon (1978).
13. The spectrograms were realized with Snoori. Thanks to Martine Toda for her help using this program.
 14. Obviously “close” when used by Glover next to “low” has to mean “having a certain amount of stricture”. It could not have the meaning “high”.
 15. *au* is found in a single word: ³*kau^h* ‘frog’.
 16. Except in some loans from Nepali, which keep a different phonological system.
 17. *ɥa* is found only once, in the name of Marpha village in Marphali, [³*mwa*], which is dissyllabic in the neighbouring Syang village [*mɔβaŋ*].
 18. Inside the “peripheral narrow approximant” class, a ranking may also exist, as it does e.g. in Tamang (note 3). That ranking is overridden by the left to right rule in Gurung and Marphali, because these languages have developed a strong open or smooth syllable phonotactic constraint (no finals at all in Gurung, only nasals and liquids in Marphali).
 19. Data from the author’s field notes (1972) for Marpha, Syang and Gopang Thakali, and for Risiangku Tamang. Tukche Thakali is from Hari (1971), Gurung from Glover (1969) and Glover, Glover, and Gurung (1977), Manang from Hoshi (1984).

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