

# Concerning the Brahmi and Sharada characters for jihvamuliya and upadhmaniya

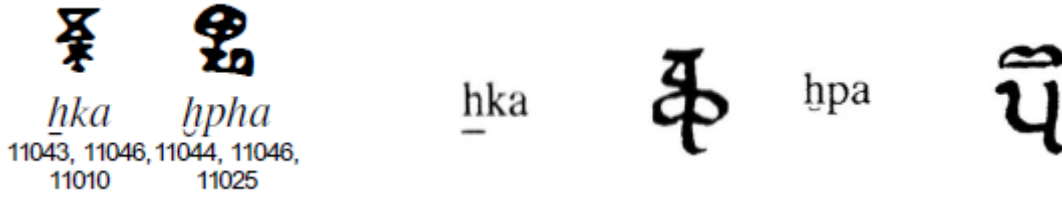
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2010-Sep-14

L2/10-330R

## Written form of jihvamuliya/upadhmaniya in Brahmi and Sharada

Among the few Indic scripts which have their own distinct written representation for the Sanskrit sounds jihvamuliya and upadhmaniya (voiceless velar and bilabial fricatives) are Brahmi and Sharada. The Brahmi proposal L2/07-342 and the Sharada proposal L2/09-074 have described these characters. In fact, in both Brahmi and Sharada, these characters are glyphically somewhat similar and behaviourally almost identical, which is understandable given that Sharada is one of the earlier descendents of Brahmi. Samples from L2/07-342 p 6 for Brahmi (left) and L2/09-074 p 24 for Sharada (right) follow:



In this document, we consider the behaviour of these characters. Both the above Brahmi and Sharada documents have noted that these characters are actually placed *above* the following consonant to form a stack (where sometimes a ligature may arise). Thus:

JIHVAMULIYA + CONSONANT → STACK OF JIHVAMULIYA AND CONSONANT

UPADHMANIYA + CONSONANT → STACK OF UPADHMANIYA AND CONSONANT

In most Indic scripts, the written sequence representing the jihvamuliya/upadhmaniya sounds followed by a consonant sound is that of the character representing the jihvamuliya/upadhmaniya *followed by* the character for the consonant. It is only in Brahmi and Sharada that (so far) such a stacking behaviour is attested.

## Suggestion of using virama in encoded representation

Now both the Brahmi and Sharada proposals mentioned above have suggested (for Brahmi in L2/07-342 p 21 and for Sharada in L2/09-074 p 24) that these stacks be represented in encoding as:

JHIVAMULIYA + VIRAMA + CONSONANT

UPADHMANIYA + VIRAMA + CONSONANT

While the Sharada proposal says this explicitly, the Brahmi proposal notes on p 21:

*11046. This is the Brāhmī virāma. It is used to indicate the suppression of the inherent vowel, and as a device to join consonants into conjunct signs, ... it should function as a control character that causes the consonant which it follows to appear as a subscript to the preceding akṣara. When followed immediately by another consonant it triggers a conjunct form representing both consonants, see § 2. It can only follow a consonant (11010–11031, 11072–11078–11082, 11086–1108E), or the BRAHMI LETTER JHIVAMULIYA (11043) and BRAHMI LETTER UPADHMANIYA (11044).*

(Boldening mine.) It would seem that the Sharada proposal suggested this way of handling the stacks using the virama based on the Brahmi proposal only and not independently.

### Inappropriateness of using the virama this way

However, this suggestion (by the Brahmi proposal) of using the virama in representing the written forms of jihvamuliya/upadhmaniya followed by a consonant in Brahmi and Sharada is neither appropriate nor in line with the pan-Indic model. In Indic, the signs for jihvamuliya and upadhmaniya are always used to represent the pure (i.e. vowelless) sounds (the velar and bilabial voiceless fricatives) by themselves *without the help of a virama*.

In Indic the virama is a vowel-killer. When a vowelless consonant is followed by another consonant in a consonant cluster, the representation in Unicode is CONS 1 + VIRAMA + CONS 2, since by themselves the characters CONS 1 and CONS 2 would always and only represent a consonant with an implied vowel.

Whether such a consonant cluster is rendered:

1. as a ligature,
2. using conjoining forms (which is where stacks come in)
3. or with the vowelless consonant rendered separately

that is a matter of how much the rendering layer (engine + font) supports the script. Whichever level of display is achieved in the end, the task of the virama character in Indic encoding is only to indicate that the inherent vowel of the preceding consonant is cancelled. The different ways of visual presentation are all semantically equivalent and are only distinctly represented in encoding, if at all, using ZWJ/ZWNJ and *not* the virama.

The virama in Indic is thus *not* the parallel of the KHMER COENG character, although the arguments in favour of the KHMER COENG quoted the Indic virama as precedent. The KHMER COENG is used to specifically request a stack, and perhaps may be said to be a control character. In Khmer this character is used to encode not only stacks of consonants but also those involving vowels. Thus it is evident that the KHMER COENG deviates from the Indic model and hence cannot be taken as precedent for Indic scripts, since the Indic virama – being at both the graphic and encoding level merely a vowel killer applied to consonants with inherent vowel – is not applied to either independent vowels or vowelless consonants.

Therefore the Indic virama is *not* a control character requesting stacks, and thus the it is inappropriate for the Brahmi (and hence Sharada) proposal to suggest its use so. Even in Brahmi (and Sharada) the virama is used in consonant clusters to produce ligatures (L2/07-342 p 5), and the possible *prevalence* of stacks as conjoining forms should not mislead one to interpret that the virama character itself specifically requests those stacks.

### Pan-Indic appropriate model

The appropriate model of representing the jihvamuliya/upadhmaniya sounds followed by a consonant sounds in encoding should be merely:

JIHVAMULIYA/UPADHMANIYA + CONSONANT

As mentioned at the outset of this document, these may easily be rendered as the required ligature or stack using a substitution mechanism in font tables:

JIHVA/UPADH + CONSONANT → LIGATURE/STACK OF JIHVA/UPADH AND CONSONANT

The virama character is not only useless here, but it is also troublesome, as it causes the Sharada proposal author to warn (in L2/09-974 p 24) that the jihvamuliya and upadhmaniya are “never written as a bare character with explicit virama”. If the virama were not prescribed to be used this way in the first place, such a warning would not be necessary since the very sequence JIHVAMULIYA/UPADHMANIYA + VIRAMA would never exist in usage. This situation recalls to my mind the Sanskrit maxim: “prakṣālanāddhi pañkasya dūrād asparśanam varam” – it is better to avoid mud from afar rather than wash it off later.

Thus *the above model without the virama is the pan-Indic appropriate model* not only because it preserves the semantics of the Indic virama but also because it simplifies the transliteration of sequences involving these characters from Brahmi and Sharada to other Indic scripts. Kannada has equivalents at 0CF1 and 0CF2, and generic Vedic equivalents have been proposed in L2/10-257. In those cases, no stacking is involved, and so even the

idea that the virama should be used in this logically fallacious way does not arise. So if the same sequence JIHVAMULIYA/UPADHMANIYA + CONSONANT as would be used for those scripts is used for Brahmi and Sharada, the transliteration would be much simplified.

It is also noted that 0D4E MALAYALAM LETTER DOT REPH – also denoting a vowelless consonant – is now encoded, and the rendering of this character is as placed above the following consonant. While this is not an exact parallel to the current discussion, it serves to illustrate that characters, that too with GC=Lo, can be visually presented in combination (vertical layout to be precise) with following characters without the use of a virama.

## Conclusion

Thus it is recommended that no virama is used with the Brahmi and Sharada (or any other) jihvamuliya and upadhmaniya characters, and any stacking or ligating behaviour be taken care of at the rendering level, as follows:

JIHVA/UPADH + CONSONANT → LIGATURE/STACK OF JIHVA/UPADH AND CONSONANT

If at all it is observed that there are variations in presentation in which sometimes the characters are seen side-by-side (i.e. as in other Indic scripts as the jihva/upadh glyph followed by the consonant glyph) and other times in ligated/stacked form, the ZWJ can be used to specifically request the a ligated/stacked form, so:

JIHVAMULIYA/UPADHMANIYA + ZWJ + CONSONANT → LIGATURE/STACK

Under no circumstances should the virama be used to specify such a ligature/stack, as there is no underlying semantic distinction between the ligated and any possible unligated forms and the virama would certainly cause semantic distinction to arise.

## Note

I note here before concluding that one should verify from appropriate sources that any vowel signs to be placed *above* the base consonant are, in these cases of stacking with jihvamuliya/upadhmaniya in Brahmi/Sharada (or any other such scripts to be encoded in the future), indeed placed above the entire stack. In all probability this will be the case as is seen for stacks representing consonant clusters in other scripts, but as this is not discussed in the relevant proposals, and since the jihvamuliya/upadhmaniya sounds/characters are a special and rare part of Indic, it would be good to verify this since it would certainly be necessary to describe this in the corresponding TUS chapter of those scripts.