Reconsidering the glyph change of
Vedic signs Jihvamuliya and Upadhmaniya

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1 Introduction

The document L2/17-095 requested to change the glyph of glyphs of 1CF5 ☛ VEDIC SIGN JIHVAMULIYA and 1CF6 ☛ VEDIC SIGN UPADHMANIYA to reflect the shapes in the original sources like manuscripts and inscriptions in Devanagari. Additional study indicated that the current glyphs (or slight variant) are majorly and widely used in Bengali script. We were not aware of its use in other sources and Bengali script during that point of time. These forms are also occasionally seen in few Devanagari books published in Bengal. Appearance of these forms in few Devanagari publications is likely due to the influence of Bengali script.

2 Glyph shapes

2.1 VEDIC SIGN JIHVAMULIYA

The current glyph jihvamuliya is correct and we suggest retaining the current glyph.

2.2 VEDIC SIGN UPADHMANIYA

The current glyph ☛ upadhmaniya is strictly not incorrect as it is found in some printed sources. The major glyph found in examined Bengali manuscripts appears to be ☛. It also has inverted variant as ☛. The current glyph appears to be stacked form of and the inverted form.

The forms ☛ and ☛ are evolutionarily related to upadhmaniya signs in other Indic scripts like Tibetan ☛, Kannada ☛, Landza (Ranjana) ☛, Sharada ☛ and Devanagari ☛. All of them are ultimately derived from Brahmi ☛.

Based on the manuscripts and also uniformity in glyph shape in other scripts, it is requested to change the glyph shape of upadhmaniya to ☛. The inverted form can be considered as a variant.
3 Encoding model

The jihvamuliya (voiceless velar fricative) occurs before the unvoiced velar letters ka and kha and upadhmaniya (voiceless bilabial fricative) occurs before the unvoiced labial letters pa and pha.

There are two ways of representing these combinations

3.1 Stacked conjuncts

As in other Indic scripts like Brahmi, Sharada and Kannada, these characters are placed above the following consonant to form a stack. The following sequences are provided in Bengali. As in other Indic scripts by default formation of stack/conjunct without the use of virama is recommended.

\[
\begin{align*}
\text{jihvamuliya} + क & \rightarrow क \\
\text{upadhmaniya} + प & \rightarrow प
\end{align*}
\]

3.2 Explicit forms (without the use of stack)

The sequences can also be depicted without formation of stack where the letters are written side-by-side (i.e. the jihvamuliya/upadhmaniya glyph followed by the consonant glyph). The U+200C zero width non-joiner should be placed after the jihvamuliya or upadhmaniya to avoid the formation of stack.

This proposed sequence is similar to use of ZWNJ in Indic Virama model where ZWNJ is used to prevent the conjunct formation.

Explicit Virama in Indic scripts: क k + ZWNJ + क ka → कक
Since *jīhvamuliya* and *upadhmaniya* are also vowelless consonants, the model used to explicitly depict vowelless consonant (such as ख) in consonant conjuncts can also be used for these two letters without the use of virama.

\[
\begin{align*}
\text{jīhvamuliya} + \text{ZWNJ} + \text{k} & \rightarrow \text{क} \\
\text{upadhmaniya} + \text{ZWNJ} + \text{p} & \rightarrow \text{प}
\end{align*}
\]

\[
\begin{align*}
\text{jīhvamuliya} + \text{ZWNJ} + \text{k} & \rightarrow \text{ख} \\
\text{upadhmaniya} + \text{ZWNJ} + \text{f} & \rightarrow \text{ফ}
\end{align*}
\]

4 Acknowledgements

We would like to thank Shriramana Sharma and Deborah Anderson for providing comments on this document.

5 Summary

- Retain the glyph of *jīhvamuliya* as \( \text{क} \) and change the glyph of *upadhmaniya* to \( \text{प} \).
- The glyphs should be enclosed in a dotted box.
- Extend the use of 1CF5 and 1CF6 to Bengali in Script Extensions.
- Mention the rendering and behavior of these two letters in Bengali section of Core specification.
- Assign the Indic_Syllabic_Category for the two characters to be Consonant_With_Stacker.
- In consonant clusters, these two letters behave same as other consonants. More than two consonants can also occur such as ḷкра, ḷпра. Vowel signs can also occur with these clusters.
- The action item 152-A32 Removal of Kannada from ScriptExtensions.txt for U+1CF5 VEDIC SIGN JIHVAMULIYA should remain intact.
- Devanagari glyphs used in L2/17-095 \( \text{क} \) and \( \text{प} \) will be discussed separately in an upcoming document.
6 Attestations

All manuscripts are obtained from the Endangered Archives Programme. *Jihvamuliya* is marked with Red and *upadhmaniya* is marked with blue.

Figure 1. Use of current glyphs in a Mugdhabodha *Vyākaraṇa* written by Vopadeva printed in 1826 in Bengali script.¹

Figure 2. Use of current glyphs (or slight variant) in a Mugdhabodha *Vyākaraṇa* written by Vopadeva printed in 1826 in Devanagari script at Calcutta, West Bengal.²

¹ https://books.google.co.in/books?id=8LlFAAAAcAAJ&dq=mugdhabodha&source=gbs_navlinks_s
² https://books.google.co.in/books?id=xjQ_AAAAIAAJ&dq=mugdhabodha&source=gbs_navlinks_s
Figure 3. Gāndharva Kalāpa Vyākaraṇa printed in 1902. Here upadhmaniya is written using inverted form.\(^3\)

Figure 4. Mugdhabodha Vyākaraṇa EAP759/1/12

Figure 5. Mugdhabodha Vyākaraṇa EAP781/1/176.

\(^3\) https://archive.org/details/in.ernet.dli.2015.486849
Figure 6. Mugdhabodha Vyākaraṇa EAP781/1/1/188.

Figure 7. Mugdhabodha Vyākaraṇa EAP781/1/1/197.

Figure 8. Kātantravrśtipañjikā EAP781/1/1/206.

Figure 9. Mugdhabodha Vyākaraṇa EAP781/1/1/624
Figure 10. Daurgasimha-avritti of Kātantra EAP781/1/1/222.

Figure 11. Mugdhabodha Vyākaraṇa EAP781/1/1/243

Figure 12. Mugdhabodha Vyākaraṇa EAP781/1/1/244.
Figure 13. The Katantra, with the commentary of Durgasimha. Published by Asiatic Society of Bengal under Bibliotheca Indica in 1874 at Calcutta, West Bengal.

https://ia800200.us.archive.org/34/items/Bibliotheca_Indica_Series/KatantraWithTheCommentaryOfDurgasimhaFasc1.2-JuliusEggeling1874bis.pdf