On Devanagari letter numerals

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Thread:

L2/17-010	Srinidhi et al	Preliminary proposal
L2/17-040	Sharma	Feedback
L2/17-116	Srinidhi et al	Response to above feedback

The preliminary proposal L2/17-010 expresses intent to encode "letter numerals found in [sic] Devanagari script".

In my feedback L2/17-040, I had quoted from a well known epigraphical work:

... the letter forms (whether simple letters or ligatures) which were most similar to the separate written forms of the numbers were used to denote those numbers.

... and taken this to the obvious conclusion that letters or ligatures which are re-used as numerals cannot be encoded separately for their numeral use alone.

However, in their response L2/17-116, the proposers protest that these are "not re-use of letter forms" and that "these are directly derived from Brahmi numbers".

There is no doubt that these are *derived* from Brahmi numbers insofar as the forms are *intended to imitate* the forms of the numbers. However this does not alter the fact that these are a re-use of letters and ligatures thereof, as can be seen by the following comparison of some of the numerals even with Modern Devanagari letters and conjuncts:

4	5	6	7	8	10	20	30	40
ष्क	न्य	फु	ग्र	ह	ॢ	घ	ल	स
ṣka	nya	phu	**gra**	ha	ḷ	gha	**la**	**pta**

Not all of these are necessarily the accurate equivalents or transliterations, since the proper thing to do would be to compare with the Devanagari letters of the same manuscripts and period and not with modern Devanagari, but note that some of these (those in bold) correspond even to the combinations identified for Malayalam aksharapalli as shown in L2/13-051R p 10. As such, this casts serious doubt upon the argument that this is an entirely separate numeral system. In fact, it is incumbent on the *proposers* to compare the proposed characters to the look-alike letters of the same manuscript period to show that the proposed characters are in fact consistently *distinct*.

One can not over-stress the importance of *avoiding* the encoding of anachronistic written forms as part of a script without examining their relationship of the other written forms of the script *of the same period*[*].

The following points are additional causes for dissatisfaction with the current proposal:

1)	The proposal has failed to explain sufficiently why these would be called *letter* numerals if they are not actually letters. The response "to distinguish from regular digits" does not quite cut it. Why, of all possible names, should these be called *letter* numerals just for distinguishing from regular numerals if they were not related to letters?

2)	It is also not satisfactorily explained why there was ever a need for having this separate set of numerals if these are *not* the aksharapalli system which was evolved "to include numbers into metrical form in Sanskrit scientific literature" as the proposal correctly says. Nothing evolves without a purpose and/or a reason.

3)	Furthermore, the attestations provided ("figures 9 ~ 14") are not sufficient for encoding these characters. The proposal has marked only the shapes from Jaina manuscripts for encoding. The question of whether the shapes provided nearby from Nepalese manuscripts etc are glyphic variants of the same Devanagari characters, or whether they are similar/distinct to letters in the script vogue in that region (Newa?) should be addressed, since whatever applies to these characters should normally apply to the cognates in nearby scripts.

4)	If these characters form a distinct numerical representation system, why is there a lacuna in the matter of the numbers 1, 2 and 3 (p 6)? If it is acceptable to represent those numbers using other digits, letters or conjuncts, doesn't that also indicate that

To conclude, I feel that much more due diligence needs to be applied to this matter and it should especially be satisfactorily proved that these numerals had consistent usage with distinctive shapes from the letters/conjuncts before they may be encoded.

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[*]	In fact, by this same logic, I feel that the Brahmi proposal L2/07-342 (p 7) should not have disunified the later Brahmi digits from the older ones based on the difference in usage model, especially when it is evident that the later digits are merely stylized derivatives of the older:

$$- = \equiv + \, \text{ⱶ} \, \text{Ɛ} \, \text{ʔ} \, \text{Ϡ} \, \text{ʔ}$$

... (with only '6' being somewhat different) and it is seen that in Tamil the same digits are used in both positional and additive systems: http://www.unicode.org/notes/tn21/. I did not have an opportunity to comment on this as I had not entered the Unicode scene at that time.