

Preliminary proposal to encode Devanagari letter numerals

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1 Introduction

This is preliminary proposal to encode letter numerals found in Devanagari script. The objective is to bring them to the attention of the Unicode Technical Committee and to seek advice regarding the encoding of the numerals.

2 Background

The modern Devanagari has a set of digits with the use of zero. In addition to digits, a distinct numerical notation system is attested early and medieval manuscripts. These numerals are referred as ‘letter numerals’ in the scholarly literature to distinguish from regular digits. The letter numerals were largely used for marking page numbers in manuscripts.

These numbers are derived from Brahmi numbers (U+11052...U+11065). These Devanagari numerals are paleographically analogous to letter numerals found in closely related North Indic scripts like Bhaikṣukī, Tocharian, Khotanese, Ranjana, Newa and Sharada.

Often the numbers were used alongside with digits. Letter numerals are written in the margin to the left, whereas digits are written in the margin to the right. North Indian letters numerals are distinct from alphasyllabic numeration used in of other parts of India such as Aksharapalli and Katapayadi systems. In these notations existing letters are reused, whereas the North Indian numerals are evolved from Brahmi numbers. The term ‘letter-numerals’ here does not symbolize that these numerals are evolved or conceptually derived from letters.

These numerals were used predominantly in states of Gujarat and Rajasthan of Western India. These numerals occur in both ‘Jainanagari’ and regular styles of Devanagari. These numbers have been at least used up to the 16th century. The widespread use of decimal digits led to decline of these numerals.

3 Details

Block name The proposed characters belong to a new block named ‘Devanagari Supplement’. Currently five columns are allocated in the Supplementary Multilingual Plane at the range U+11F00..U+11F4F to avoid the creation of new scattered blocks in the future. The allocation of range and number of columns are tentative and is subjected to change.

Character repertoire and representative glyphs The character repertoire and representative glyphs are based upon on the examinations of the numerals, as found in various manuscripts and scholarly articles on these numerals.

Directionality Devanagari numbers are commonly written vertically with each unit occupying a separate line, such that the largest unit is at the top and the smallest unit is at the bottom. The reason for the vertical directionality may be attributed for economizing space in the margin. However, when the numerals are employed in inside the texts of the Chedasutras, Bhashyas, Churnis etc. and in mathematical manuscripts are not written vertical line but in a horizontally similar to regular digits.

Structure and Representation The numerals represent units of a decimal positional system. There is no character for zero; it is represented in the distinct numbers for the various decimal orders. There are distinctive numbers for the primary units from 1 to 9, tens from 10 to 90 and hundreds from 100 to 500. The hundreds beyond 500 are not found as manuscripts exceeding 500 folios are rarely attested. In the following extract 123 is represented having 100 is placed on the top, 20 beneath the 100 and 3 in the bottom.



Note on some characters Some numbers like 10 and 30 show some resemblance visually with लृ VOCALIC L or ल LA. Both forms are evolved from Brahmi numbers 𑀭 and 𑀮 respectively. They have no genetic association with letters. The situation is comparable to Tamil digits ௧ one and ௭ seven which are graphically similar to ௧ ka and ௭ e. The numbers 10 and 30 may be considered as confusables and thus are proposed for independent encoding.

4 Characters proposed

4.1 Primary numbers

The following 7 characters are proposed for the primary units:

१	DEVANAGARI NUMBER ONE
४	DEVANAGARI NUMBER FOUR
५	DEVANAGARI NUMBER FIVE
६	DEVANAGARI NUMBER SIX
७	DEVANAGARI NUMBER SEVEN
८	DEVANAGARI NUMBER EIGHT
९	DEVANAGARI NUMBER NINE

The numbers two and three are represented using

0968 २ DEVANAGARI DIGIT TWO

0969 ३ DEVANAGARI DIGIT THREE

4.2 Tens

The following 9 characters are used for representing the tens:

ॐ	DEVANAGARI NUMBER TEN
ॐ	DEVANAGARI NUMBER TWENTY
ॐ	DEVANAGARI NUMBER THIRTY
ॐ	DEVANAGARI NUMBER FORTY
ॐ	DEVANAGARI NUMBER FIFTY
ॐ	DEVANAGARI NUMBER SIXTY
ॐ	DEVANAGARI NUMBER SEVENTY
ॐ	DEVANAGARI NUMBER EIGHTY
ॐ	DEVANAGARI NUMBER NINETY

4.3 Hundreds

The following 5 characters are proposed for the hundreds:

ॐ	DEVANAGARI NUMBER ONE HUNDRED
ॐ	DEVANAGARI NUMBER TWO HUNDRED
ॐ	DEVANAGARI NUMBER THREE HUNDRED
ॐ	DEVANAGARI NUMBER FOUR HUNDRED
ॐ	DEVANAGARI NUMBER FIVE HUNDRED

5 Characters not proposed

The following characters not proposed as they require additional research. Spaces have been reserved in case of their discovery in future.

TWO and **THREE**: The glyphs of these two numbers are identical to 0968 २ DEVANAGARI DIGIT TWO 0969 ३ DEVANAGARI DIGIT THREE. They are represented using existing characters. Since both digits and letter numerals derive from same Brahmi forms, they are not proposed independently.

600-900: The primary purpose of letter numbers is Page numbering. So far the hundreds beyond five hundred are not attested as manuscripts exceeding 500 folios are rarely attested. It is possible that numbers beyond 500 are found in mathematical manuscripts.

6 Variants and alternate forms

The shapes of glyphs are based on the observation as found in manuscripts. The shapes are relatively homogenous in nature. However, in many manuscripts we notice a repha like element े is affixed above the headstroke. Perhaps, it is an ornamental element used to embellish the writing. Such variations are to be handled at font level.

Apart from regular forms, the numbers 1-3 are also written in following ways.

1. ए *e* द्वि *dvi* and त्रि *tri*
2. स्व *sva* सि *sti* and श्री *śrī*
3. श्री *śrī* दे *de* and व *va*
4. ॐ न *na* and मह *mah*

In the first method they represent the initial letter of the word एक-*one* and the entire words द्वि-*two* and त्रि-*three*. The second method indicates splitting up of word श्रीदेव, a sacred word. In the third method the word वसिष्ठी is split up into three syllables make up the well known benedictory phrase. The use of ॐ, न and मह together make up ॐ नमः. The above forms can be represented using existing characters.

7 Character Data

Character Properties

The character properties are as follows:

```
11F00;DEVANAGARI NUMBER ONE;No;0;L;;;1;N;;;;;
11F03;DEVANAGARI NUMBER FOUR;No;0;L;;;4;N;;;;;
11F04;DEVANAGARI NUMBER FIVE;No;0;L;;;5;N;;;;;
11F05;DEVANAGARI NUMBER SIX;No;0;L;;;6;N;;;;;
11F06;DEVANAGARI NUMBER SEVEN;No;0;L;;;7;N;;;;;
11F07;DEVANAGARI NUMBER EIGHT;No;0;L;;;8;N;;;;;
11F08;DEVANAGARI NUMBER NINE;No;0;L;;;9;N;;;;;
11F09;DEVANAGARI NUMBER TEN;No;0;L;;;10;N;;;;;
11F0A;DEVANAGARI NUMBER TWENTY;No;0;L;;;20;N;;;;;
11F0B;DEVANAGARI NUMBER THIRTY;No;0;L;;;30;N;;;;;
11F0C;DEVANAGARI NUMBER FORTY;No;0;L;;;40;N;;;;;
11F0D;DEVANAGARI NUMBER FIFTY;No;0;L;;;50;N;;;;;
11F0E;DEVANAGARI NUMBER SIXTY;No;0;L;;;60;N;;;;;
11F0F;DEVANAGARI NUMBER SEVENTY;No;0;L;;;70;N;;;;;
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Preliminary proposal to encode Devanagari letter numerals

11F10;DEVANAGARI NUMBER EIGHTY;Nॐ;0;L;;;80;N;;;;;
11F11;DEVANAGARI NUMBER NINETY;Nॐ;0;L;;;90;N;;;;;
11F12;DEVANAGARI NUMBER ONE HUNDRED;Nॐ;0;L;;;100;N;;;;;
11F13;DEVANAGARI NUMBER TWO HUNDRED;Nॐ;0;L;;;200;N;;;;;
11F14;DEVANAGARI NUMBER THREE HUNDRED;Nॐ;0;L;;;300;N;;;;;
11F15;DEVANAGARI NUMBER FOUR HUNDRED;Nॐ;0;L;;;400;N;;;;;
11F16;DEVANAGARI NUMBER FIVE HUNDRED;Nॐ;0;L;;;500;N;;;;;

8 References

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_____. *Descriptive Catalogue of Manuscripts in the Government Manuscripts library*. Bhandarkar Oriental Research Institute, Poona, 1936.

Muni Punyavijaya, ભારતીય જૈન શ્રમણસંસ્કૃતિ અને લેખનકળા (*Bhāratīya jaina śramaṇasaṃskṛti ane lekhanakaḷā*).

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11F00

Devanagari Supplement

11F4F

	11F0	11F1	11F2	11F3	11F4
0	ॐ 11F00	ॐ 11F10			
1		ॐ 11F11			
2		ॐ 11F12			
3	ॐ 11F03	ॐ 11F13			
4	ॐ 11F04	ॐ 11F14			
5	ॐ 11F05	ॐ 11F15			
6	ॐ 11F06	ॐ 11F16			
7	ॐ 11F07				
8	ॐ 11F08				
9	ॐ 11F09				
A	ॐ 11F0A				
B	ॐ 11F0B				
C	ॐ 11F0C				
D	ॐ 11F0D				
E	ॐ 11F0E				
F	ॐ 11F0F				

11F00

Devanagari Supplement

11F4F

Numbers

11F00 DEVANAGARI NUMBER ONE

11F01 <reserved>

11F02 <reserved>

11F03 DEVANAGARI NUMBER FOUR

11F04 DEVANAGARI NUMBER FIVE

11F05 DEVANAGARI NUMBER SIX

11F06 DEVANAGARI NUMBER SEVEN

11F07 DEVANAGARI NUMBER EIGHT

11F08 DEVANAGARI NUMBER NINE

11F09 DEVANAGARI NUMBER TEN

11F0A DEVANAGARI NUMBER TWENTY

11F0B DEVANAGARI NUMBER THIRTY

11F0C DEVANAGARI NUMBER FORTY

11F0D DEVANAGARI NUMBER FIFTY

11F0E DEVANAGARI NUMBER SIXTY

11F0F DEVANAGARI NUMBER SEVENTY

11F10 DEVANAGARI NUMBER EIGHTY

11F11 DEVANAGARI NUMBER NINETY

11F12 DEVANAGARI NUMBER ONE HUNDRED

11F13 DEVANAGARI NUMBER TWO HUNDRED

11F14 DEVANAGARI NUMBER THREE HUNDRED

11F15 DEVANAGARI NUMBER FOUR HUNDRED

11F16 DEVANAGARI NUMBER FIVE HUNDRED

11F17 <reserved>

11F18 <reserved>

11F19 <reserved>

11F1A <reserved>



Figure 1. Folios from the manuscript *Kalpa-sūtra* and *Kālakācārya-kathā* in 'Jainanagari' style depicting the letter numerals in the left margin and digits in right margin. The page numbers are 16 and 25 respectively. 1404 CE (from Royal Asiatic Society, Tod MS 34).¹

¹ <http://www.jainpedia.org/manuscripts/detail-view-meta/manuscript/kalpa-sutra-and-kalakacarya-katha-tod-ms-34/ras-todms34-034.html>



Figure 2. A table showing inventory of letter numerals found in the manuscript *Kalpa-sūtra* and *Kālakācārya-kathā*.

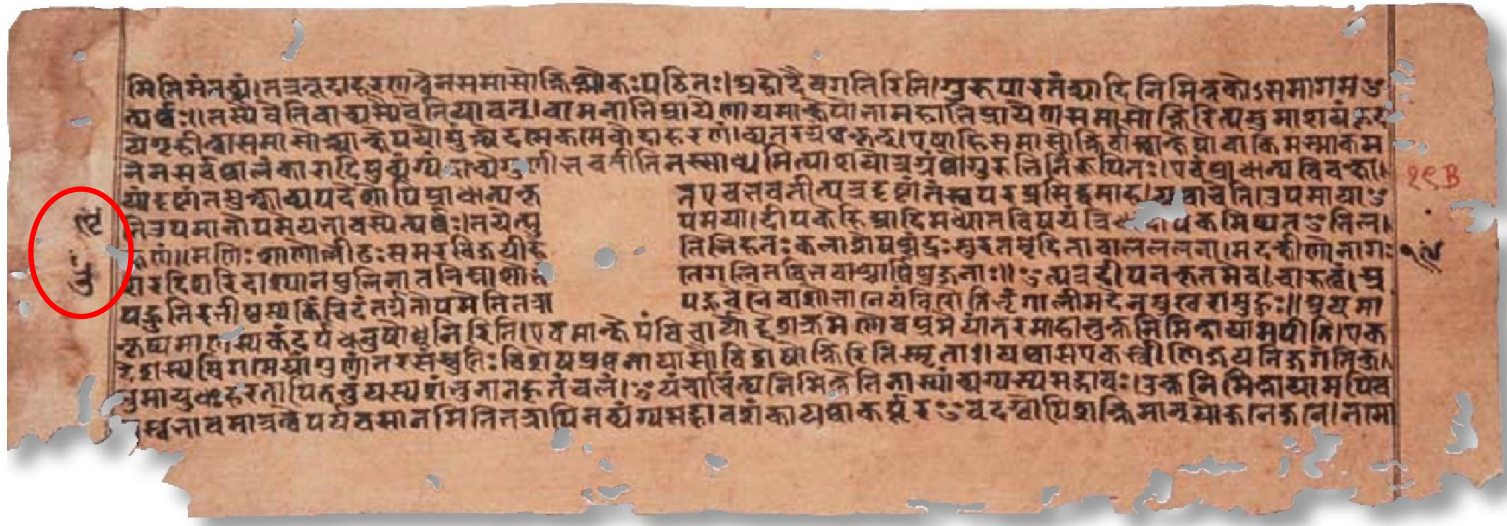


Figure 3. A folio from the manuscript *Dhvanyālokalocana*, written by Abhinavagupta in regular Devanagari. This manuscript was copied in 1647 CE. The page number is 19 in this folio (from Rajasthan Oriental Research Institute, Jodhpur).



Figure 4. Letter numerals used in various illustrated Jaina manuscripts (from Nawab 1935).



Figure 5. Letter numerals used in various illustrated Jaina manuscripts (from Nawab 1935).



Figure 6. Folios from the Sanskrit manuscript *Brhaccūrṇivyākhyā* showing the use of letter numerals. 13th century (from Digitised manuscripts of British Library, Or 1386).

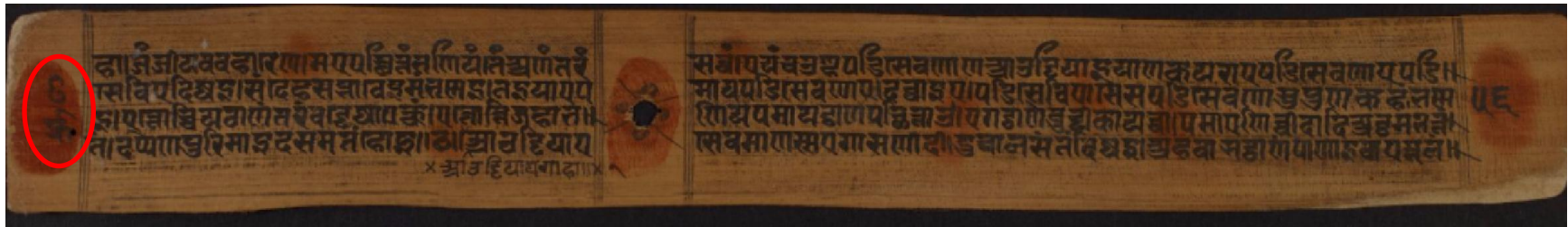


Figure 7. Folios from the manuscript *Jitakalpacūrṇi* showing the use of letter numerals. 13th century (from Digitised manuscripts of British Library, Or 1385).



Figure 8. Folio from the manuscript *Śrāvakaṇṭikamāsūtra-cūrṇi* using distinct glyphs for number and digit one.

PLATE IX		NUMERAL NOTATIONS	
Inscriptions and Coins		MSS.	
{ Aśoka-edict, 3rd. cent. B. C. Nānāghāṭī, 2nd. cent. B. C. Māsik, 1-2 cent. A. D. Kṣatrapa-coins, 2-3 cent. A. D. { Kuṣāṇā, 1-2 cent. A. D. Yaggyayapaṭṭa Pallava, 3-4 cent. A. D. } Gupta, 4-6 cent. A. D. Valabhī, 6-8 cent. A. D. Rāṣṭrakūṭa, 6 cent. A. D. } Nepāl, 5 (?) - 8 cent. A. D. Kallīnga, 7-8 cent. A. D. Vākāṭaka &c., 5 (?) - 8 cent. A. D. Northern Inscriptions, 8 cent. A. D. Orissa, 9 cent. A. D.		{ Bower MS. No. 1049 { No. 1702 No. 866 { Nepāl MSS. { Jaina MSS. Nepāl MSS. No. 1648-88	
I	𑀓	I	१
II	𑀔	II	२
III	𑀕	III	३
IV	𑀖	IV	४
V	𑀗	V	५
VI	𑀘	VI	६
VII	𑀙	VII	७
VIII	𑀚	VIII	८
IX	𑀛	IX	९
X	𑀜	X	१०
XI	𑀝	XI	११
XII	𑀞	XII	१२
XIII	𑀟	XIII	१३
XIV	𑀠	XIV	१४
XV	𑀡	XV	१५
XVI	𑀢	XVI	१६
XVII	𑀣	XVII	१७
XVIII	𑀤	XVIII	१८
XIX	𑀥	XIX	१९
XX	𑀦	XX	२०
XXI	𑀧	XXI	२१
XXII	𑀨	XXII	२२
XXIII	𑀩	XXIII	२३
XXIV	𑀪	XXIV	२४
XXV	𑀫	XXV	२५
XXVI	𑀬	XXVI	२६
XXVII	𑀭	XXVII	२७
XXVIII	𑀮	XXVIII	२८
XXIX	𑀯	XXIX	२९
XXX	𑀰	XXX	३०
XXXI	𑀱	XXXI	३१
XXXII	𑀲	XXXII	३२
XXXIII	𑀳	XXXIII	३३
XXXIV	𑀴	XXXIV	३४
XXXV	𑀵	XXXV	३५
XXXVI	𑀶	XXXVI	३६
XXXVII	𑀷	XXXVII	३७
XXXVIII	𑀸	XXXVIII	३८
XXXIX	𑀹	XXXIX	३९
XL	𑀺	XL	४०
XL I	𑀻	XL I	४१
XL II	𑀼	XL II	४२
XL III	𑀽	XL III	४३
XL IV	𑀾	XL IV	४४
XL V	𑀿	XL V	४५
XL VI	𑁀	XL VI	४६
XL VII	𑁁	XL VII	४७
XL VIII	𑁂	XL VIII	४८
XL IX	𑁃	XL IX	४९
XL X	𑁄	XL X	५०
XL XI	𑁅	XL XI	५१
XL XII	𑁆	XL XII	५२
XL XIII	𑁇	XL XIII	५३
XL XIV	𑁈	XL XIV	५४
XL XV	𑁉	XL XV	५५
XL XVI	𑁊	XL XVI	५६
XL XVII	𑁋	XL XVII	५७
XL XVIII	𑁌	XL XVIII	५८
XL XIX	𑁍	XL XIX	५९
XL XX	𑁎	XL XX	६०
XL XXI	𑁏	XL XXI	६१
XL XXII	𑁐	XL XXII	६२
XL XXIII	𑁑	XL XXIII	६३
XL XXIV	𑁒	XL XXIV	६४
XL XXV	𑁓	XL XXV	६५
XL XXVI	𑁔	XL XXVI	६६
XL XXVII	𑁕	XL XXVII	६७
XL XXVIII	𑁖	XL XXVIII	६८
XL XXIX	𑁗	XL XXIX	६९
XL XXX	𑁘	XL XXX	७०
XL XXXI	𑁙	XL XXXI	७१
XL XXXII	𑁚	XL XXXII	७२
XL XXXIII	𑁛	XL XXXIII	७३
XL XXXIV	𑁜	XL XXXIV	७४
XL XXXV	𑁝	XL XXXV	७५
XL XXXVI	𑁞	XL XXXVI	७६
XL XXXVII	𑁟	XL XXXVII	७७
XL XXXVIII	𑁠	XL XXXVIII	७८
XL XXXIX	𑁡	XL XXXIX	७९
XL XL	𑁢	XL XL	८०
XL XL I	𑁣	XL XL I	८१
XL XL II	𑁤	XL XL II	८२
XL XL III	𑁥	XL XL III	८३
XL XL IV	𑁦	XL XL IV	८४
XL XL V	𑁧	XL XL V	८५
XL XL VI	𑁨	XL XL VI	८६
XL XL VII	𑁩	XL XL VII	८७
XL XL VIII	𑁪	XL XL VIII	८८
XL XL IX	𑁫	XL XL IX	८९
XL XL X	𑁬	XL XL X	९०
XL XL XI	𑁭	XL XL XI	९१
XL XL XII	𑁮	XL XL XII	९२
XL XL XIII	𑁯	XL XL XIII	९३
XL XL XIV	𑁰	XL XL XIV	९४
XL XL XV	𑁱	XL XL XV	९५
XL XL XVI	𑁲	XL XL XVI	९६
XL XL XVII	𑁳	XL XL XVII	९७
XL XL XVIII	𑁴	XL XL XVIII	९८
XL XL XIX	𑁵	XL XL XIX	९९
XL XL XX	𑁶	XL XL XX	१००

Figure 9. A table showing numerals in Devanagari (Jaina mss) and their evolution from Brahmi (from Bühler 1904, Plate IX).

VALEUR.	GUPTA Vatābhī.	KUČĀ, Asie Centrale, Khotan.	Mss népalais, 11 ^e -14 ^e siècle.	Mss jaina.	SINGHALAIS.	VALEUR.	GUPTA Vatābhī.	KUČĀ, Asie Centrale, Khotan.	Mss népalais, 11 ^e -14 ^e siècle.	Mss jaina.	SINGHALAIS.
1	𑀓	𑀓	𑀓	𑀓	𑀓	100	𑀓𑀓𑀓𑀓𑀓	𑀓𑀓𑀓𑀓𑀓	𑀓𑀓𑀓𑀓𑀓	𑀓𑀓𑀓𑀓𑀓	𑀓𑀓𑀓𑀓𑀓
2	𑀔	𑀔	𑀔	𑀔	𑀔	200	𑀓𑀓𑀓𑀓𑀓𑀓	𑀓𑀓𑀓𑀓𑀓𑀓	𑀓𑀓𑀓𑀓𑀓𑀓	𑀓𑀓𑀓𑀓𑀓𑀓	𑀓𑀓𑀓𑀓𑀓𑀓
3	𑀕	𑀕	𑀕	𑀕	𑀕	300	𑀓𑀓𑀓𑀓𑀓𑀓𑀓	𑀓𑀓𑀓𑀓𑀓𑀓𑀓	𑀓𑀓𑀓𑀓𑀓𑀓𑀓	𑀓𑀓𑀓𑀓𑀓𑀓𑀓	𑀓𑀓𑀓𑀓𑀓𑀓𑀓
4	𑀖	𑀖	𑀖	𑀖	𑀖	400	𑀓𑀓𑀓𑀓𑀓𑀓𑀓𑀓	𑀓𑀓𑀓𑀓𑀓𑀓𑀓𑀓	𑀓𑀓𑀓𑀓𑀓𑀓𑀓𑀓	𑀓𑀓𑀓𑀓𑀓𑀓𑀓𑀓	𑀓𑀓𑀓𑀓𑀓𑀓𑀓𑀓
5	𑀗	𑀗	𑀗	𑀗	𑀗	1.000	𑀓𑀓𑀓𑀓𑀓𑀓𑀓𑀓𑀓	𑀓𑀓𑀓𑀓𑀓𑀓𑀓𑀓𑀓	𑀓𑀓𑀓𑀓𑀓𑀓𑀓𑀓𑀓	𑀓𑀓𑀓𑀓𑀓𑀓𑀓𑀓𑀓	𑀓𑀓𑀓𑀓𑀓𑀓𑀓𑀓𑀓
6	𑀘	𑀘	𑀘	𑀘	𑀘						
7	𑀙	𑀙	𑀙	𑀙	𑀙						
8	𑀚	𑀚	𑀚	𑀚	𑀚						
9	𑀛	𑀛	𑀛	𑀛	𑀛						
10	𑀜	𑀜	𑀜	𑀜	𑀜						
11	𑀝	𑀝	𑀝	𑀝	𑀝						
20	𑀞	𑀞	𑀞	𑀞	𑀞						
30	𑀟	𑀟	𑀟	𑀟	𑀟						
40	𑀠	𑀠	𑀠	𑀠	𑀠						
50	𑀡	𑀡	𑀡	𑀡	𑀡						
60	𑀢	𑀢	𑀢	𑀢	𑀢						
70	𑀣	𑀣	𑀣	𑀣	𑀣						
80	𑀤	𑀤	𑀤	𑀤	𑀤						
90	𑀥	𑀥	𑀥	𑀥	𑀥						

	TA- MOUL.	MALAY- ĀLAM.		TA- MOUL.	MALAY- ĀLAM.
1	𑀓	𑀓	1/80	𑀓	𑀓
2	𑀔	𑀔	1/40	𑀔	𑀔
3	𑀕	𑀕	3/80	𑀕	𑀕
4	𑀖	𑀖	1/20	𑀖	𑀖
5	𑀗	𑀗	1/16	𑀗	𑀗
6	𑀘	𑀘	1/10	𑀘	𑀘
7	𑀙	𑀙	1/8	𑀙	𑀙
8	𑀚	𑀚	3/20	𑀚	𑀚
9	𑀛	𑀛	3/16	𑀛	𑀛
10	𑀜	𑀜	1/5	𑀜	𑀜
100	𑀝	𑀝	1/4	𑀝	𑀝
1.000	𑀞	𑀞	1/2	𑀞	𑀞
1/320	𑀟	𑀟	3/4	𑀟	𑀟
1/160	𑀠	𑀠		𑀠	𑀠

Figure 10. Comparison of numerals found in Devanagari (Jaina mss) with scripts of Nepal, Khotanese and their evolution from Gupta Brahmi (from Renou & Filliozat 1953: 706).

44	THE INDIAN ANTIQUARY						[FEBRUARY, 1877.]		
Numerals.	EARLY INDIAN NUMERALS.—FROM INSCRIPTIONS AND COINS.						FROM MSS.		
	1 Nāgañāt Inscrip- tions.	2 Kohadraps Andhrabā- tā Insc.	3 Kohadraps Coins and Inscriptions.	4 Gupta Inscrip- tions.	5 Valabhi Plates.	6 Eastern Plates, 8th-10th century.	7 Baudhā Nipāl Palm-leaf MSS.	8 Jaina Palm-leaf MSS.	9 Baudhā Nipāl Paper MSS.
1	—	—	—	—	—		ॐ	१	४
2	=	=	=	=	=	२	२	२	६
3		≡	≡	≡	≡	३	३	३	७
4	𑀘	𑀘𑀓	𑀘	𑀘𑀓𑀓	𑀘𑀓𑀓		𑀘	𑀘	𑀘
5		𑀓𑀓	𑀓𑀓	𑀓𑀓𑀓	𑀓𑀓𑀓		𑀓	𑀓	𑀓
6	𑀓	𑀓	𑀓	𑀓𑀓	𑀓𑀓		𑀓	𑀓	𑀓
7	𑀓	𑀓	𑀓	𑀓𑀓	𑀓		𑀓	𑀓	𑀓
8		𑀓	𑀓	𑀓𑀓𑀓	𑀓𑀓𑀓	𑀓	𑀓	𑀓	𑀓
9	𑀓	𑀓	𑀓	𑀓𑀓𑀓	𑀓	𑀓	𑀓	𑀓	𑀓
10	𑀓	𑀓𑀓	𑀓𑀓	𑀓𑀓𑀓	𑀓𑀓𑀓	𑀓	𑀓	𑀓	𑀓
20	𑀓	𑀓𑀓	𑀓	𑀓	𑀓	𑀓	𑀓	𑀓	𑀓
30			𑀓	𑀓𑀓	𑀓		𑀓	𑀓	𑀓

Figure 11. Numerals used in Devanagari (Jaina mss) and other scripts (from Bhagvanlal Indraji 1887: 44).

FEBRUARY, 1877.] THE ANCIENT NĀGARĪ NUMERALS. 45

Numerals.	1 Nāgari Inscriptions.	2 Kashmiri Inscriptions.	3 Kashmiri Coins and Inscriptions.	4 Gupta Inscryp- tions.	5 Valabhi Plates.	6 Eastern Plates, 4th-10th century.	7 Buddha Nipāl Palm-leaf MSS.	8 Jaina Palm-leaf MSS.	9 Buddha Nipāl Paper MSS.
40		५	५५	५	५		५	५	५
50			७		७	७	७	७	७
60	१		७७	१	७		७	७	७
70		१	७७७		७७		७	७	७
80	०		००	०	००	०	०	०	०
90			००	००	००		०	०	०
100	२	१	१	२११	११	२	२	२	२
200		१	११		११		२	२	२

Figure 12. Numerals used in Devanagari (Jaina mss) and other scripts (from Bhagvanlal Indraji 1887: 45).

TABLE V—Brāhmī Numerals

	VII to VIII Century (?) A. D.	IX to X Century A. D.	V to VIII Century A. D.	Manuscripts		
	Grants of the Gaṅgā Dynasty	Pratihāra Inscs. & Grants	Misc. Inscs. & Grants	Bower Manuscripts	Buddhist Manuscripts from Nepal	Jaina Manuscripts
1				— — — —	१ १ १ १	१ १
2	३३		३	२ २ २ २	२ २ २ २	२
3	४	३ ३		३ ३ ३ ३	३ ३ ३ ३	३
4			४	४ ४ ४ ४	४ ४ ४ ४	४ ४ ४ ४
5	५ ५	५	५	५	५ ५ ५ ५	५ ५ ५ ५
6	६		६	६ ६	६ ६ ६ ६	६ ६ ६ ६
7	७		७	७	७ ७ ७ ७	७ ७ ७ ७
8	८ ८ ८	८	८	८	८ ८ ८ ८	८ ८ ८ ८
9		९ ९ ९	९	९ ९	९ ९ ९ ९	९ ९

Figure 13. Numerals used in Devanagari (Jaina mss) and other scripts (from Datta and Singh 1935: 111).

TABLE VIII—Brāhmī Numerals

	IX—X Cent. A.D.	V—VIII Century A. D.	Manuscripts		
	Pratihāra Grants	Miscellaneous Grants and Inscriptions	Bower Mss.	Buddhist Manus- cripts from Nepal	Jaina Manuscripts
10	५ ५ ५	५ ५ ५	५ ५	५ ५ ५ ५	५ ५
20		५ ५ ५	५	५ ५ ५ ५	५ ५ ५
30			५ ५	५ ५ ५ ५	५ ५
40		५ ५		५ ५ ५ ५	५ ५ ५
50	५	५ ५		५ ५ ५ ५	५ ५
60		५		५ ५ ५ ५	५ ५
70		५		५ ५ ५ ५	५ ५
80	५	५ ५		५ ५ ५ ५	५ ५
90		५ ५ ५ ५		५ ५ ५ ५	५ ५

114
NUMERAL NOTATION

TABLE X—Brāhmī Numerals

	VIII to IX Cent. A.D.	VII to VIII Cent. A.D.	IX to X Century A.D.	V—VIII Cent. A.D.	Manuscripts	
	Inscs. from Nepal	Grants of the Gaṅgā Dynasty	Pratihāra Grants	Misc. Inscrip- tions	Buddhist Manuscripts	Jaina Manuscripts
100	५	५ ५		५ ५	५ ५ ५	५ ५
200				५ ५	५ ५ ५	५ ५
300	५ ५			५ ५	५ ५ ५	५ ५
400	५ ५ ५			५ ५	५ ५ ५	५ ५
500	५ ५			५ ५	५ ५ ५	५ ५
600				५ ५	५ ५ ५	५ ५
700				५ ५	५ ५ ५	५ ५
800				५ ५	५ ५ ५	५ ५
900			५ ५ ५ ५ ५ ५	५ ५	५ ५ ५	५ ५

116
NUMERAL NOTATION

Figure 14. Numerals used in Devanagari (Jaina mss) and other scripts (from Datta and Singh 1935: 114,116).

Appendix III

Typical Letter-numerals from No 36 of 1880-81

ॐ ॐ 1	ॐ ॐ 2	ॐ ॐ 3	ॐ ॐ 4
ॐ ॐ 5	ॐ ॐ 6	ॐ ॐ 7	ॐ ॐ 8
ॐ ॐ 9	ॐ ॐ 10	ॐ ॐ 11	ॐ ॐ 12
ॐ ॐ 13	ॐ ॐ 14	ॐ ॐ 15	ॐ ॐ 16
ॐ ॐ 17	ॐ ॐ 18	ॐ ॐ 19	ॐ ॐ 20
ॐ ॐ 21	ॐ ॐ 30	ॐ ॐ 31	ॐ ॐ 40

Figure 15. Typical letter numerals found in Devanagari manuscripts (from Kapadia 1936:15).

Appendix III

(Continued)

५५ ५५ 44	८० ८० 50	८५ ८५ 56	८५ ८५ 60
८५ ८५ 70	८५ ८५ 80	८५ ८५ 90	८५ ८५ 100
८५ ८५ 101	८५ ८५ 102	८५ ८५ 110	८५ ८५ 111
८५ ८५ 127	८५ ८५ 200	८५ ८५ 201	८५ ८५ 260
८५ ८५ 290	८५ ८५ 299	८५ ८५ 300	८५ ८५ 344
८५ ८५ 358	८५ ८५ 385	८५ ८५ 400	८५ ८५ 401

N. B.— Figures in inset squares represent numerical values of the corresponding letter-numerals.

Figure 16. Typical letter numerals found in Devanagari manuscripts (from Kapadia 1936:16).

Appendix IV

(Variants of Typical Letter-numerals)

1	श्री १	श्री १	श्री १	स १	स १	व १
2	द २	श्री २	श्री २	श्री २	सि २	सि २
3	व ३	३	श्री ३	श्री ३	श्री ३	श्री ३
4	का ४	के ४	का ४	श्री ४	क ४	क ४
	क ४	क ४	क ४	क ४	क ४	क ४

Appendix IV

(Continued)

5	श्री ५	श्री ५	श्री ५	श्री ५	श्री ५	श्री ५
6	क ६	क ६	क ६	क ६	क ६	क ६
7	का ७	का ७	का ७	का ७	का ७	का ७
8	का ८	का ८	का ८	का ८	का ८	का ८

Figure 17. Variants of letter numerals found in Devanagari manuscripts (from Kapadia 1936:17-18).

Appendix IV

(Continued)

9	ॐ	ॐ	ॐ	ॐ	ॐ	ॐ
	ॐ	ॐ	ॐ	ॐ	ॐ	ॐ
10	ॐ	ॐ	ॐ	ॐ	ॐ	ॐ
	ॐ	ॐ	ॐ	ॐ	ॐ	ॐ
20	ॐ	ॐ	ॐ	ॐ	ॐ	ॐ
	ॐ	ॐ	ॐ	ॐ	ॐ	ॐ
30	ॐ	ॐ	ॐ	ॐ	ॐ	ॐ
	ॐ	ॐ	ॐ	ॐ	ॐ	ॐ
40	ॐ	ॐ	ॐ	ॐ	ॐ	ॐ
	ॐ	ॐ	ॐ	ॐ	ॐ	ॐ

Appendix IV

(Continued)

50	ॐ	ॐ	ॐ	ॐ	ॐ	ॐ
	ॐ	ॐ	ॐ	ॐ	ॐ	ॐ
60	ॐ	ॐ	ॐ	ॐ	ॐ	ॐ
	ॐ	ॐ	ॐ	ॐ	ॐ	ॐ
70	ॐ	ॐ	ॐ	ॐ	ॐ	ॐ
	ॐ	ॐ	ॐ	ॐ	ॐ	ॐ
80	ॐ	ॐ	ॐ	ॐ	ॐ	ॐ
	ॐ	ॐ	ॐ	ॐ	ॐ	ॐ
90	ॐ	ॐ	ॐ	ॐ	ॐ	ॐ
	ॐ	ॐ	ॐ	ॐ	ॐ	ॐ

Figure 18. Variants of letter numerals found in Devanagari manuscripts (from Kapadia 1936:19-20).

Appendix IV

(Continued)

100				
200				
300				
400				

Figure 19. Variants of letter numerals found in Devanagari manuscripts (from Kapadia 1936:21).

એકમ અંકી

੨ = ੨, ਭ, ਬ, ਥ, ਜੀ, ਯੀ

२ = २, न, सि, सि, श्री, श्री

३ = ३, मः, श्री, श्री, श्री.

x = क, क, क, का, क, का, क, का, क

५ = ढ, ढँ, ढ, ढँ, ढ, ढँ, ढ, ढँ, न, ना, ढ, ढँ, ढ, ढँ.

६ = क, क, का, का, क, क, का, का, कु, कु, कु, कु, प्र

७ = य, र्य, या, र्या.

८ = रु, रू, झा, झी, झः.

ੴ = ਗੁੰ, ਤੁੰ, ਤੁੰਡੀ.

દશક અંકો

१ = वृ. ली.

૨ = ઘ, ઘા.

३ = ल, ला.

૪ = ઇ, ઈ, ણા, ણી.

$\gamma = C, G, E, D.$

$$E = \frac{1}{2}mv^2$$

ॐ नमो भगवते वासुदेवाय ॥

၆။ လူ့အဖွဲ့အစည်း

$\mathcal{L} = \{K, M, E, \dots\}$

0 11 0

શતક અંકો

१ = अ, इ.

२ = क, ख, स.

३ = स्त्रा, स्त्रा, स्त्रा .

४ = इत्ता, इत्ता, इत्ता.

५ = स्त्री, स्त्री, स्त्री .

६ = स्तं, सं, स्रं .

ॐ = स्तः, सः, सूः .

24

Comparison of letter numerals among various Indic scripts

Hindu-Arabic	Devanagari	Brahmi	Khotanese	Tocharian	Bhaikṣukī	Newa	Sharada
1	१	—	𑖀	𑖁	𑖂	𑖃	𑖄
2	२	=	𑖅	𑖆	𑖇	𑖈	𑖉
3	३	≡	𑖊	𑖋	𑖌	𑖍	𑖎
4	४	𑖐	𑖑	𑖒	𑖓	𑖔	𑖕
5	५	h	𑖗	𑖘	𑖙	𑖚	𑖛
6	६	e	𑖜	𑖝	𑖞	𑖟	𑖠
7	७	𑖡	𑖢	𑖣	𑖤	𑖥	𑖦
8	८	𑖨	𑖩	𑖪	𑖫	𑖬	𑖭
9	९	𑖮	𑖯	𑖰	𑖱	𑖲	𑖳
10	१०	α	𑖵	𑖶	𑖷	𑖸	𑖹
20	२०	Θ	𑖻	𑖼	𑖽	𑖾	𑖿
30	३०	𑖿	𑗀	𑗁	𑗂	𑗃	𑗄
40	४०	𑗁	𑗂	𑗃	𑗄	𑗅	𑗆

50	ॐ	८	८	८	८	८	८
60	ॐ	८	८	८	८	८	८
70	ॐ	८	८	८	८	८	८
80	ॐ	८	८	८	८	८	८
90	ॐ	८	८	८	८	८	८
100	ॐ	८	८	८	८	८	८