

Towards Encoding Nepal Scripts: A Report and Preliminary Proposal

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Encoding of Nepal scripts was proposed in August 2006 by several likeminded advocates of diverse backgrounds. They included both local and foreign professional font developers, historians, Nepalologists and user community. For the past five years, exchange of communication, consultation and discussion have taken place and the interest in encoding Nepal scripts rejuvenated after a major consultative meeting held in Kathmandu on 14 September 2008. Within last year, a formal Nepal Script Encoding Committee was formed in Kathmandu on 17 April 2009, the Universal Scripts Project of University of California took initiative to prepare a Working Group Document presenting a Roadmapping the scripts of Nepal in September, and the Nepal

Study Center, Japan (NSCJ) launched three major projects such as Nepal Lipi Online bulletin, Font project for developing Nepal script and Ranjana script, with a new Romanized Keyboard mapping, and compilation of a Guide to Reading and Nepal Lipi (script) with a complete inventory of the shaping behavior of the Nepal Lipi³. These are all in the pipeline, seeking funding support. This is a report of efforts in working towards encoding for the past several years, and proposal which Nepal scripts⁴ to encode and how it will benefit user community and scholars of local and international communities.

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³ Nepal Lipi is the preferred term recognized by the consultative gathering of Nepal script experts, linguistics, technicians, and user community of Nepal for the term used Prachalit or Prachalit Nepal Lipi or even Newari by some foreign scholars and later followed by some local scholars. Hence, the term "Nepal Lipi" is used in this entire paper.

⁴ The plural term of Nepal scripts mean here Nepal and Ranjana scripts.

1. Historical Perspective

History of Nepal⁵ scripts goes back to the 3rd century B. C. The world famous pillar inscription of "Hida Budha Jaateti Luminigaame - Buddha was born here in Lumbini Village" (B.C. 249) and South Asia's oldest Brahmi script⁶ inscription in Kapilavastu (B.C. 255) were both found in southern districts of Nepal. Several scripts were in use in Nepal during the Licchavi period (350-750AD), until Nepal's own script originated in the 9th century. Derived from Brahmi and its diverse forms of Gupta scripts, the script originated in Nepal became known as *Nepal Lipi* (Script of Nepal) in the way that language of Nepal is known as *Nepal Bhasa* and culture of Nepal as *Nepal Sanskriti* and the calendar originated in Nepal as *Nepal Samvat*. Newal⁷, Newar are synonyms of Nepal since time immemorial. Hence, people of Nepal came to be known as Newar.

Nepal Lipi today is used to write Nepal Bhasa and Sanskrit while it was also used to write Maithili, Bhojpuri, Tibetan, Bengali and Khas manuscripts in the past. Nepal Bhasa was the state language of Nepal⁸ and remained popular during medieval period and even later until it was discouraged. Hundreds of inscriptions and coinages, thousands of manuscripts on Nepal's history, culture, religion, law, official documents, deeds, agreements, medicine, veterinary, were written in this script even in gold letters and on gold plates. Nepal Lipi was also a source for development of other scripts including Ranjana Lipi that has spread out to Tibet, China, Korea and Japan through the Buddhist scriptures from the 11th century. The original Nepal Lipi came to be known as "Prachalit" (for its popular and wider use) to distinguish the original Nepal script from other scripts that had developed later. However, despite its importance and advanced features, the use of Nepal scripts began to decline from end of the eighteenth century for political reasons. The use of the scripts further decreased after it was banned in 1905 by the Rana government (1847-1951 A.D.).

Although banned from public use of Nepal script along with its primary language, the Nepal Bhasa, several writers kept the language and script alive. With the campaign for revivalism of indigenous languages, Nepal scripts were also revived in 1940 by personal initiatives to publish alphabet books, magazines and holding training classes at different places. Various individuals and organizations continued the campaign finally to set up a Nepal Lipi Guthi (Nepal Script Trust), a government registered trust for preservation and promotion of the Nepal scripts in 1980 followed by Asha Safoo Kuthi, an archive for manuscripts in 1985. The Guthi (Trust) has been instrumental in promoting the Nepal scripts in Nepal for the past 32 years. This has inspired many to learn the native scripts again, develop fonts, publish books, newspaper and magazines to the recent launch of a first

⁵ Derived from the historical Nepal Mandala, a ring of sacred areas that surrounds Kathmandu valley (Kathmandu, Lalitpur, Bhaktapur districts) and its adjoining nine districts.

⁶ Emperor Asoka, in his 14th anniversary of coronation (B.C. 255), rebuilt a stupa in Niglihawa, Kapilavastu in memory of Buddha Kanaka Muni, and in his visit to Lumbini on the 20th anniversary of his coronation (B.C. 249), he exempted people of Lumbini Village from paying seven eighth tax as the Buddha Sakyamuni was born there.

⁷ Dr. Naresh Man Vajracharya, Vajracharya Preservation Guthi, Kathmandu, Buddhism in Nepal and Nepal Mandala, a summary of the paper presented in Nepal Bhasa at 'Conference on the Buddhist Heritage of Nepal Mandala' in Kathmandu, 1998.

⁸ Bal Gopal Shrestha and Bert Van den Hoek, Education in the Mother Tongue: The Case of Nepal Bhasa (Newari), in *Contributions to Nepalese Studies*, Vol. 22, No.1 (January 1995), 73-86

online bulletin in Nepal Scripts.⁹

2. Efforts towards Encoding Nepal Scripts

After several years of persuasive contacts with several font designers at home and abroad, the author of this paper was able to found a Nepal Study Center in Japan (NSCJ) through which three projects such as launching of the Nepal-lipi-online.com, the first online bulletin in Nepal scripts on the auspicious day of 1129th Nepal New Year (19 October 2009); development of two fonts for Nepal and Ranjana scripts; and compilation of a Guide book to Writing and Reading Nepal Scripts. These projects were launched to contribute in some way to support the encoding of Nepal scripts. Meanwhile, the Universal Scripts Project of University of California initially proposed to encode separate Ranjana script has later changed to consider encoding both Prachalit (Nepal Lipi) and Ranjana Lipi together.

Roadmapping of the Scripts of Nepal

UC Berkeley Script Encoding Initiative (Universal Scripts Project) has prepared a Working Group Document on Roadmapping of scripts of Nepal. A liaison contribution by Michael Everson has sought open public discussion¹⁰ on unifying variants of the scripts of Nepal, the “nine scripts” (*Partiality, Pacumol, Himmol, Kummol, Bhijimmol, Golamol, Kvenmol, Litumol* plus *Ranjana*). Although some members of the user community criticized this idea of unified encoding, Everson points out analogy of style of scripts such as Saelic and ꝛfraktur variants of Latin script and recommends that the same is applicable to the scripts of Nepal. The “nine scripts” are distinguished by their headlines such as *Pachumol, Himmol* and *Kummol* as having flat head similar to *Prachalit*, while *Golamol, Kvenmol* and *Litumol* are curved or wiggly headed letters similar to *Bhujimmol*. And the major difference between Nepal and Ranjana scripts is the way in which *-e, -ai, -o,* and *-ou* are made by changing the top bar. Everson indicates in the document that the two major distinctions have, however, not provided enough evidence to determine whether or not it is appropriate to encode them separately from one another (Everson: 2009).

3. Proposal for Encoding Nepal and Ranjana

In our closer analysis of the style of the aforementioned nine different “scripts”, they were found to be identical as variants of Nepal Lipi than as separate scripts. On an experiment, we carried out while developing fonts for both Nepal and Ranjana scripts, we found that same key for two different font styles whether they are with headstroke or without headstroke of both Nepal and Ranjana are applicable. This suggests different font style can be used on a particular encoded script. However, separate encoding may be useful if the particular script is utilized for a particular language in computer system such as Nepal Lipi for Nepal Bhasa and Ranjana Lipi for Sanskrit and Pali languages

⁹ www.nepal-lipi-online.com

¹⁰ Visit <http://std.dkuug.dk/jtc1/sc2/wg2/docs/n3692.pdf> to read the document

as used in the past. But in the case of different font styles of Nepal script indicated above and which some writers equate style name with script identity can be encoded on a unified structural ground yet retaining each style if so desired. However, the reality is that except three styles of Nepal, Bhujimmol and Ranjana, there have been no manuscripts found upto now¹¹ (Tamot, 2009). And among the three styles, Nepal Lipi style are found in inscriptions, coinage and thousands of manuscripts as already indicated above. Therefore, the Nepal Lipi consolidates its position to be a better qualified script to be encoded. Below is a chart of Nepal Lipi table recommended for encoding:

Nepal Lipi Character Chart for Encoding

Vowels

Vowels and their dependent signs are given below (The dependent sign for AE is described in a later section).

अ	आ	अ्	ऌ	ऍ	उ	ऊ	म्	मृ	०	ॠ	ॡ	अ	औ	अं	अँ	अः	
	ा	ा्	ि	ि्	ु	ु्	ृ	ृ		ॊ	ो	ौ	्	ं	ँ	ः	
A	AA	AE	I	II	U	UU	R	RR	LR	LLR	E	AI	O	AU	AM	AN	AH

Consonants

All the consonants bear inherent vowel of A, which is reduced to half sound by Hal anta (्) to form with other vowels.

क	ख	ग	घ	ङ	च	छ	ज	झ	ञ	ट	ठ	ड	ढ	
KA	KHA	GA	GHA	NGA	CA	CHA	JA	JHA	NYA	TTA	TTHA	DDA	DDHA	NNA
ण	थ	द	ध	न	प	फ	ब	भ	म	य	र	ल	व	ह
TA	THA	DA	DHA	NA	pa	PHA	BA	BHA	MA	YA	RA	LA	VA	HA
श	ष	स												
SHA	SSA	SA												

Note: There are seven letters, which have no headstroke, marked in red. They form different textual forms when combined with आ AA उ U ँ E ऐ AI अ O औ AU from other letters with headstrokes.

¹¹ From personal communication with Kashinath Tamot, German-Nepal Research Center, Kathmandu

Conjugation of consonants

Example of conjugation of consonants with headstroke:

क का कि की कु कू क कौ का कौ कं कं कः
KA KAA KI KII KU KUU KE KAI KO KAU KAM KAN KAH

All consonants with headstroke (क KA, ख KHA, घ GHA, ङ NGA, च CA, छ CHA, ज JA, झ JHA, ट TTA, ड DDA, ढ DDHA, ण TA, थ THA, द DA, न NA, प PA, फ PHA, व BA, ब BHA, म MA, य YA, र RA, ल LA, व VA, श SSA, ह HA) follow above conjugation except in the case of ण TU, ण BHU, ञ RU, and ञ RUU)

Example of conjugation of consonants without headstroke:

ग गा गि गी गु गू गे गौ गो गौ गं गं गः
GA GAA GI GII GU GUU GE GAI GO GAU GAM GAN GAH

All the seven headstrokeless consonants (ग GA, ङ NYA, ठ TTHA, ध NNA, थ THA, ध DHA, श SHA) follow above conjugation except in the case of ङ NYU, ठ TTHU, ध NNU, थ THU, ध DHU.

Consonant compounds

Consonant compounds are made up of two or three consonants – one or two halved or reduced to combine with another full letter.

कः KSSA गः GYAN मः MHYA

क-ष ग-य म-ह-य
K-SSA G-YAN M-H-YA

When a consonant combines with य YA, न RA, ल LA, व VA & ह HA, the first letter is reduced to half.

य न ल व ह
क-य क-न क-ल क-व ह-ह
कः कः कः कः कः
K-YA K-RA K-LA K-VA NG-HA

Combination with य YA

Combining YA with headstrokeless consonants differ from other consonants, while KYA, JYA, BHYA, RYA & HYA are further distinct from both letters with headstroke and without headstrokes:

क KYA	ख KHYA	ग GYA	घ GHYA	ङ NGYA	च CYA
ख CHYA	ज JYA	घ JHYA	च TTYA	ट TTHYA	ज DDYA
झ DDHYA	झ NNYA	ण TYA	थ THYA	ड DYA	ध DHYA
ण NYA	य PYA	श PHYA	ब BYA	भ BHYA	म MYA
य YYA	र RYA	ल LYA	व VYA	श SHYA	ष SSYA
य SYA	ह HYA				

Combination with र RA

क KRA	ख KHRA	ग GRA	घ GHRA	ङ NGRA	च CRA
ख CHRA	ज JRA	घ JHRA	ञ NYRA	ट TTRA	ज TTHRA
झ DDRA	झ DDHRA	ण NNRA	ण TRA	थ THRA	ड DRA
ण DHRA	य NRA	प PRA	फ PHRA	ब BRA	भ BHRA
म MRA	य YRA	र RRA	ल LRA	व VRA	श SHRA
ष SSRA	स SRA	ह HRA			

Combination with ल LA

क KLA	ख KHLA	ग GLA	घ GHLA	ङ NGLA	च CLA
ख CHLA	ज JLA	घ JHLA	ञ NYLA	ट TTLA	ज TTHLA
झ DDLA	झ DDHLA	ण NNLA	ण TLA	थ THLA	ड DLA
ण DHLA	य NLA	प PLA	फ PHLA	ब BLA	भ BHLA
म MLA	य YLA	र RLA	ल LLA	व VLA	श SHLA
ष SSLA	स SLA	ह HLA			

Combination with व VA

क KVA	ख KHVA	ग GVA	घ GHVA	ङ NGVA	च CVA
ख CHVA	ज JVA	घ JHVA	ञ NYVA	ट TTVA	ज TTHVA
झ DDVA	झ DDHVA	ण NNVA	ण TVA	थ THVA	ड DVA
ण DHVA	य NVA	प PVA	फ PHVA	ब BVA	भ BHVA
म MVA	य YVA	र RVA	ल LVA	व VVA	श SHVA
ष SSVA	स SVA	ह HVA			

Combination with ह HA:

In the case of ह ha, the combinable consonants are limited to ङ ञ ण न म ल व
ङ NGHA ङ NYHA ञ NNHA ण NHA ऋ MHA ऌ LHA
व VHA

Numbers: Nepal Lipi has its own full set of decimal numbers:

० ZERO १ ONE २ TWO ३ THREE ४ FOUR ५ FIVE ६ SIX ७ SEVEN ८ EIGHT ९ NINE

Symbols of Nepal Lipi

In addition to dependent vowel signs noted above, there are symbols in Nepal Lipi as below:

◌̣	Sinhaphuti (Anusvara)	◌̣̣	Milaphuti (Chandrabindu)
◌̣̣̣	Lyuphuti (Visarga)		Dipuchin (Danda/Virama/period)
◌̣̣̣̣	Tutipala chin (Halanta)		Nidho Dipuchin (Double Danda/Virama/period)
ॐ	Bhin chin (Siddhi/Subha) sign	१ २	Akhala hilabulachin (changer)
,	Khangvo jhasuchin (comma)	∇	Khalithasaytaegu chin (blank)
^	Akhala tophyuchin (Kaakapada/ missing letter indicator)	////	Mhusa chin (delete)
≡	Khangvo svapu chin (word connector)	⊞	Bhinka chin (correction)
◌̣̣̣̣	Kvocagu chin (end sign)		

A New Symbol for AE diphthong

Although there are many words that read AE sound in Nepal Bhasa, there is no dependent sign for it. Further there are also a number of foreign names starting with AE vowel sounds of many countries in the world. Therefore, a dependent sign for AE is considered very vital and this author proposes a new dependent symbol ॐ for (AE) to be added in the dependent symbols of vowels when encoding Nepal Lipi to facilitate writing both local and foreign words as in ॐ (mhyay-daughter); कानेडा (Canada), कानेना (Canberra), अमस्टरडाम् (Amsterdam). The author proposes the sign to be named *Beikoh chin* (bent symbol) as one needs to bend one's jaw to pronounce AE, and add lyuphuti (visarga) for a long letter as in अॐन् (Ann).

Keymapping for Nepal Script

Key mapping can be of diverse styles. Present keymapping of Devanagari script is somewhat similar to Romanized Japanese keyboard. However, a study conducted recently found an easier keyboard with lesser key to hit for selected letter as below:

For:	!	"	#	रु.	%	/	'	()	=		
Hit:	!	"	#	\$	%	&	'	()	=		
	१	२	३	४	५	६	७	८	९	०	-	^
	1	2	3	4	5	6	7	8	9	0	-	^
			ॐ	ॄ	थ	ढ़	ॠ	ी	उ	रु		
	Q	W	E	R	T	Y	U	I	O	P	'	{
			ॐ	न	ग	य	ॠ	ि	उ	प	@	[
	Q	w	E	R	T	y	u	i	o	p	@	[
	अ	ष	ध		घ	ॠ	म	ख			*	
	A	S	D	F	G	H	J	K	L	+	*	}
	ा	स	द		ग	ह	ज	क	ल	;	:	
	A	s	D	F	G	h	j	k	l	;	:]
			ॠ	ँ	र	ॠ				?		
	Z	X	C	V	B	N	M	<	>	?	_	
	ष	ॠ	च	व	न	म				ॠ		
	Z	x	C	V	B	n	m	,	.	/	¥	

Opt (Mac) and Alt (Windows) key+ i for ॐ, u for उ, n for ठ, t for ट, T for ०, d for उ, and D for ठ, are suggested in the new keymapping.

A Guide to Reading and Writing Nepal Lipi

Having reiterated the importance of encoding Nepal scripts and its benefits, another volunteer project launched last April for compiling a Guide book to Reading and Writing Nepal Lipi is seeking funding support. In an effort to contribute to the encoding of Nepal scripts, this guide book being compiled will provide an idea of the shaping behavior of the Nepal Lipi in detail. Benefactors are cordially welcome to sponsor the publication of this important book.

Benefit of Encoding Nepal Lipi

The encoding of Nepal Lipi can turn a new page in the history of Nepal and its culture, providing an unprecedented opportunity for scholars to further discoveries in the Nepalology and for user community to prevent Nepal scripts from falling into an endangered script despite it's a living language and for which right advocates have campaigned since decades for its upliftment. The Nepal-lipi-online.com, the world's first ever online bulletin will be among the first to be benefiting from the encoding of Nepal scripts along with The Newah blog, Lipipau monthly, which will in turn contribute to promote literatures written in Nepal scripts to the user community as well as the

researchers of Nepalology, scholars and students of both local and international caliber. The encoding will particularly benefit printing and publishing houses while web and font developers will also enjoy considerable business opportunities in program designing, website making, font designing, producing translations, dictionaries to mention a few among many individual and public benefit from encoding Nepal scripts.

4. Conclusion

Encoding of Nepal scripts has taken a longer time because of some complication in determining which Nepal script to encode as some have equate font style name with script identity. A further examination on this matter reveals that anatomy of script style are variants of a particular script none other than the original Nepal script also known as Prachalit script, so named because of its wider use and popularity among the writers in the past and also user community of today. In addition, while presenting an inventory of the shaping behavior of the Nepal Lipi in a guide book, two new proposals are made with this presentation: one is to add a dependent vowel sign of AE to facilitate writing local and loan or foreign words, another is an easier key mapping for the typing purpose of the scripts for the user. While seeking consultation and an open discussion on this report and the proposal at this gathering (of experts on Nepal, language, literature, script and culture chaired by Sarad Kasah 'Kasahchen', Nepal Lipi Guthi (Nepal Script Trust) attended by Vice Chancellor Laxman Rajawamsi of Nepal Bhasa Academy, Poet Durgalal Shrestha, Professor Prem Shanti Tuladhar, Head of the Department of Nepal Bhasa, Tribhuvan university, Dr. Tejratna Kansakar, Professor of Linguistics, Tribhuvan University, Professor Patrick Hall of Kathmandu University, Dr. Carole Faucher, Professor of Anthropology, University of Tsukuba Japan and many other distinguished persons of expertise and scholarship), the author of this paper seeks advice and feedback from those attending this gathering on this paper to help expedite the encoding of Nepal scripts.

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