

## Developing a Devanagari-based multi-language orthography for Nepalese languages

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### 1. Background

This working paper presents an analysis of the existing practice of using Devanagari for the languages of Nepal with the list of advantages and disadvantages, and a proposal for a Devanagari-based multi-language orthography for the languages of Nepal. The paper is divided into seven sections including background.

### 2. Writing systems in Nepal

Nepal is a multilingual country with more than ninety two officially recognized languages (CBS 2001). These languages employ more than seventeen distinct orthographies. The orthographies with their corresponding languages are presented in table 1 below.

Orthography	Language/s
Akkha	Magar
Bangla	Bengali
Bhujimo	Newar
Devanagari	Nepali, Maithili, Bhojpuri, Awadhi, Magar, Tamang, Gurung, Newar, ...
Golmo	Newar
Gurumukhi	Punjabi
Khema	Gurung
Latin	English, Gurung, Santhali
Litumo	Newar
Mithilakshar/Tirahuta	Maithili
Ol Cemet/Ol ciki/Ol	Santhali
Pachumo	Newar
Perso-Arebic	Urdu
Ranjana	Newar
Rong	Lepcha
Sambota/Tibetan	Tibetan, Sherpa, Tamang
Sirijanga	Limbu
Tamhig	Tamang

Among the languages presented in table 1, Nepali is spoken by 48.61% population of Nepal as a first language which uses only Devanagari orthography. Other 11 languages (having more than 1% speakers) are spoken by 46% of the total population of Nepal viz. Maithili (12.30%), Bhojpuri (7.53%), Tharu (5.86%), Tamang (5.19%), Newar (3.63%), Magar (3.39%), Awadhi (2.74%), Bantawa (1.63%), Gurung (1.49%), Limbu (1.47%), Bajjika

(1.05%) which use either only Devanagari (Bhojpuri, Awadhi, and Tharu) or their own orthography and Devanagari also. Thus the languages spoken by 94.61% of the total population of Nepal use Devanagari either primarily or secondarily. More than 70 languages (a rough estimation) out of 92 languages are either not written yet all or are started writing recently and have only a few publications. Most of the languages which are started writing recently use modified Devanagari.

### **3. Devanagari for the languages of Nepal**

Besides the facts presented above there are number of reasons which support the use of Devanagari for the Languages of Nepal.

Nepali language in Devanagari script is official language as defined by the Interim Constitution of Nepal 2063VS. It was given the status of the National Language by the Constitution of the Kingdom of Nepal 2047VS. Because of the status given to Nepali language and Devanagari as its orthography other linguistic communities had to learn and use Devanagari.

Nepali is a compulsory subject in the national education system of Nepal from grade 1 up to Bachelors level as well as a medium of instruction. And Devanagari, obviously, is used as medium of instruction in the written mode.

Devanagari is the orthography for most of the print media published in Nepal.

These situations make Devanagari widely used among the linguistic communities in Nepal.

#### **3.1 Advantages and problems with Devanagari**

##### **3.1.1 Advantages of using Devanagari**

There are number of reasons in favour of Devanagari for the languages of Nepal;

- Nepali has more than 800 years long written tradition with Devanagari;
- Nepali is developed from Sanskrit; Sanskrit is written in Devanagari; and the literature in Sanskrit is the foundation for Nepali language;
- Nepali in Devanagari has been the medium of education, administration, and media for a long time. Thus the people native to other languages are also familiar to Devanagari; and
- Nepali in Devanagari has developed standard in computer and printing press relatively.

##### **3.1.2 Problems of using Devanagari**

The problems of Devanagari in present use can be classified in to three categories as follows:

###### **a. Devanagari's own problems**

- There is no diacritic for 'ॐ' (schwa) which violets the rule of consistency in the system. It also introduces nullification system which is a burden for the users. And finally, It is problematic while we need to set the sorting order for the computational purpose.
- Diacritic for 'ॐ' (ॐ) is written before the consonant but read after the consonant. It violets the rule of direction or linearity in the system which creates difficulty in learning.
- There are several forms of 'र' (r) all the alternatives are the burden for the system

and create difficulty in learning and use.

- ‘Half’ and ‘halanta’ both forms of consonants are used alternatively which is also a burden for the system and creates difficulty in learning.
- Simple and cluster both forms of consonants are used alternatively which is also a burden for the system and is difficult to learn and use.

b. Problems in Nepali

- There are less phonemes in Nepali than the symbols in Devanagari alphabet. Thus more than one symbols are used for one phoneme.
- Sanskrit spelling rules are followed for the words with Sanskrit origin. That creates the situation of writing something but reading something else, as in schwa (अ); ‘व’ for ‘w’ and ‘b’ etc.

c. Problems in other languages

- Same problems for the languages developed from Sanskrit as in Nepali.
- The phonemic system of the Tibeto-Burman languages is different from Indo-Aryan languages. Thus there are no symbols in Devanagari alphabet for several phonemes of the T-B languages (these sounds are listed below).
- At the same time various symbols available in Devanagari alphabet are not needed for the T-B languages.

The sounds that are not represented with Devanagari symbols

- Glottal stop (IPA symbol 'ʔ')
  - Found in Kirati languages.
- Breathy vowels (IPA symbol '◌̤' at the bottom of the vowel symbol)
  - Found in Magar, Gurung, etc.
- Breathy velar nasal (IPA symbol 'ŋ̤')
  - Found in Magar, Tamang, etc.
- Long ‘अः’, ‘आः’, ‘एः’, and ‘ओः’ (IPA symbols: ʌ:, a:, e:, o: respectively)
  - Found in Kirati languages.
- Implosives (IPA symbols ɓ, ɗ)
  - Found in Wambule (a Kirati language).
- Tone (IPA symbols ˈ ˌ etc.)
  - Found in Sherpa, Thakali, etc.
- Syllabic nasal (IPA symbol '◌̚' at the bottom of the vowel or consonant symbol)
  - Found in Kulung (a Kirati language).
- Voiced alveolar fricative (IPA symbol 'z')
  - Found in Kaiké
- Post-alveolar fricative (IPA symbols 'ʃ, ʒ')
  - Found in Sherpa.

- Central, back unrounded and front rounded vowels (IPA symbols i, ə, ʊ, y, œ etc.)  
– In Kirati languages
- Low-mid vowels (IPA symbols ɛ, ɔ)  
– In Kirati languages

#### 4. Practice of writing in Devanagari and the problems

Though the writing in Devanagari is problematic for T-B languages, there is a common practice of writing in Devanagari with some modifications. The following common practices are found in modification:

- For glottal stop
  - Halanta with 'अ'
  - IPA symbol 'ʔ'
  - Add downward-right curve with घ 'क'
- For short and long i and u
  - Write as in Nepali (इ ि, ई िी, उ ु, ऊ ू)
  - Write long symbols for short and add colon like symbol as in IPA for long (ई िी, ईः िीः)
- For other vowels
  - Diacritic with 'अ' (अ, आ, अि, औ, अु, अू, ओ etc.)
- For breathy vowels and consonants and aspirated consonants
  - Use 'ह' with basic or clear vowel consonant
  - Use two dots at the bottom as in IPA
  - Use one dot at the bottom
- For alveolar voiced fricative
  - One dot at the bottom with 'ज'
- For front rounded, central and back unrounded vowels
  - One dot at the bottom

There are some problems with these practices:

- No uniformity among the languages which use basically the same writing system.
- One dot at the bottom for several sounds creates problems with the bilingual/multilingual dictionaries, which is widely practiced in Nepal.
- There is no possibility of writing glottal stop at onset position using halanta with अ (अ)
- No symbols and system for writing tone

- Unsystematic use of diacritics may be useful for typing and printing but not for language processing.
- If we have to develop multilingual database of these languages unsystematic practice will be a great problem.

## **5. Inter-operable Devanagari-based orthography**

With this background, the proposal for an inter-operable Devanagari-based orthography is presented which will provide:

- Symbols for contrastive sounds in all the Nepalese languages
- A single standard for writing all the languages of Nepal, which is very useful in preparing multilingual databases, dictionaries, and comparative linguistic studies.
- Reading and writing other's languages, which will be useful in multilingual setting.

## **6. The proposed orthography**

It is hoped that the proposed orthography will provide solutions for the problems noted above and lay the foundation for language development to the undescribed and unwritten languages of Nepal. The proposed orthography has the following characteristics:

- It is based in Devanagari
- It provides the symbols for each contrastive sound in the Nepalese languages.
- diacritic for 'ॐ' is added
- consonants with vowel is the basic form of a symbol
- consonants with vowel is same as current devanagari
- All the vowel diacritics are placed after the consonant (it may occur at the top, at the bottom or at the right But not at the left)
- The shape of the new or modified symbol is not much different from the original one.
- consistency is maintained in representing the features.
- There is a provision to write tones.
- There is no provision of alternative writing like simple/cluster, half/halanta, etc.

The following is the proposed orthography.

### Vowels

	Front		Central		Back	
	Unrounded	Rounded	Unrounded	Rounded	Unrounded	Rounded
High	इ ि	उ ि	ऊ ॄ	ऊ ॄ	उ ॄ	उ ॄ
High-mid	ए ॑	ए ॑			ओ ॑	ओ ॑
Low-mid	ऐ ॑	ऐ ॑	अ ॑		अ ॑	अ ॑
Low	आ ॑				आ ॑	

### Diacritics

Nasalized	Long	Breathy	Devoiced	Syllabic	Tone				
					High	Mid	Low	Rising	Falling
ॐ	:	.	॰	॑	॒	॒	॒	॒	॒

Consonants									
	Bilabial	Dental	Alveolar	Post-alveolar	Retroflex	Palatal	Velar	Glottal	
Plosive	प फ ब भ	त थ द ध	ट ठ ड ढ	क ख ग घ	ङ ङ	च छ ज झ	क ख ग घ	क ग	ह
Affricate			च छ ज झ	क ख ग घ		च छ ज झ			
Fricative	फ		स श		ष	य			ह
Nasal	म		न ण		ण	य ल ङ ण			
Tap/Flap			ड		ड				
Trill			र ण						
Lateral approximant			ल						
Approximant	व					य			
Implosive	ब	द	ड			ड	ग		

Consonants (with vowel)									
	Bilabial	Dental	Alveolar	Post-alveolar	Retroflex	Palatal	Velar	Glottal	
Plosive	प फ ब भ	त थ द ध	ट ठ ड ढ	क ख ग घ	ङ ङ	च छ ज झ	क ख ग घ	क ग	ह
Affricate			च छ ज झ	क ख ग घ		च छ ज झ			
Fricative	फ		स श		ष	य			ह
Nasal	म		न ण		ण	य ल ङ ण			
Tap/Flap			ड		ड				
Trill			र ण						
Lateral approximant			ल						
Approximant	व					य			
Implosive	ब	द	ड			ड	ग		

## 7. Concluding Remarks

This writing system is proposed with the idea that if all the languages of Nepal can be written in a single interoperable orthography, that could be a great help for language development and revitalization and mother tongue based multilingual education through the use of the orthography in education, media, and computational aspects of the languages. That will support the constitutional and legal provisions, and the strategy of social inclusion. However, the proposal is not presented against the existing traditional writing systems and at the cost of identity of the linguistic communities. It will be helpful to the communities which want to use Devanagari based standard orthography. Besides, it can be helpful to the linguists working with multilanguage data.

## References

- CBS. 2001. *Population Census*. Kathmandu  
G/N. 2063VS. *Interim Constitution of Nepal*. Kathmandu.  
HMG/N. 2047VS. *Constitution of the Kingdom of Nepal*. Kathmandu.