

# Towards an encoding for the Ranjana and Lantsa scripts

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## 1 Introduction

A few documents have been submitted for encoding the Ranjana script in the Unicode standard:

- L2/09-192 “Preliminary proposal for encoding the Rañjana script in the SMP of the UCS” (Michael Everson)
- L2/13-243 “Proposal to Encode Ranjana Script in ISO/IEC 10646” (Dev Dass Manandhar, Samir Karmacharya and Bishnu Chitrakar)

These proposals provide valuable information regarding the development of an encoding for Ranjana. There are, however, several pertinent issues that they do not address. This document outlines some of these.

## 2 Considerations for encoding the script

**Scope** An encoding for Ranjana must take into consideration the requirements for representing the Lantsa script. The Ranjana script is used in South and Central Asia for writing a variety of languages. It is used primarily in Nepal and Tibet for writing Sanskrit along with local languages, such as Newar. A style of the script is used in Mongolia, where it often appears as one of four or five scripts in Buddhist manuscripts. There is evidence that an additional style of the script was used in Korea. All of these styles are found in numerous sources encompassing inscriptions and manuscripts. Outside of Nepal and India it is known as ‘Lantsa’ or ‘Landza’, which is the Tibetan transcription of the name ‘Ranjana’.

**Approach** The encoding should unify the characters used in the Ranjana and Lantsa styles. There are alternate methods in Lantsa of representing semi-vowels in conjuncts, which do not occur in Ranjana. Contextual forms of these semi-vowels may need to be encoded. Similarly, there are invocation, punctuation, and other marks specific to each style that may have the same semantic value, but which have different graphical representations. These may require separate encodings. The block for Ranjana will be a superset of distinctive characters required for all styles.

***Representative glyphs*** Although the basic characters of Ranjana and Lantsa have the same graphical structure, there are features that are definitive of each style. A determination is required regarding the style that will serve as the representative form. Ideally, the code chart would present characters of other styles in parallel, when appropriate. A comparison of Ranjana, Lantsa, and Siddham (a related script) is given in the following tables.

***Unification of Vartu*** A determination is required regarding whether or not to unify the script known as ‘Vartu’, ‘Wartu’, ‘Vartula’. This script is based upon Ranjana / Lantsa, but possesses a curved headstroke instead of a horizontal or wedge-like form. The approach towards Vartu may be similar to the case of Tibetan in Unicode, which unifies several styles.

### **3 Acknowledgments**

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	Ranjana	Lantsa	Siddham
A	𑂀	𑂁	𑂂
AA	𑂃	𑂄	𑂅
I	𑂆	𑂇	𑂈
II	𑂉	𑂊	𑂋
U	𑂌	𑂍	𑂎
UU	𑂏	𑂐	𑂑
VOCALIC R	𑂒	𑂓	𑂔
VOCALIC RR	𑂕	𑂖	𑂗
VOCALIC L	𑂘	𑂙	𑂚
VOCALIC LL	𑂛	𑂜	𑂝
E	𑂞	𑂟	𑂠
AI	𑂡	𑂢	𑂣
O	𑂤	𑂥	𑂦
AU	𑂧	𑂨	𑂩

Table 1: Comparison of vowel letters of Ranjana, Lantsa, and Newar.

	Ranjana	Lantsa	Siddham
VOWEL SIGN AA	◌ं	◌ं	◌ं
VOWEL SIGN I	◌ि	◌ि	◌ि
VOWEL SIGN II	◌ी	◌ी	◌ी
VOWEL SIGN U	◌ु	◌ु	◌ु
VOWEL SIGN UU	◌ू	◌ू	◌ू
VOWEL SIGN R	◌ृ	◌ृ	◌ृ
VOWEL SIGN RR	◌ॄ	◌ॄ	◌ॄ
VOWEL SIGN L	◌ौ	◌ौ	—
VOWEL SIGN LL	◌्	◌्	—
VOWEL SIGN E	◌े	◌े	◌े
VOWEL SIGN AI	◌ै	◌ै	◌ै
VOWEL SIGN O	◌ो	◌ो	◌ो
VOWEL SIGN AU	◌ौ	◌ौ	◌ौ

Table 2: Comparison of vowel signs of Ranjana, Lantsa, and Newar.

	Ranjana	Lantsa	Siddham		Ranjana	Lantsa	Siddham
KA	क	क	क	DA	द	द	द
KHA	ख	ख	ख	DHA	ध	ध	ध
GA	ग	ग	ग	NA	न	न	न
GHA	घ	घ	घ	PA	प	प	प
NGA	ङ	ङ	ङ	PHA	फ	फ	फ
CA	च	च	च	BA	ब	ब	ब
CHA	छ	छ	क	BHA	भ	भ	भ
JA	ज	ज	ज	MA	म	म	म
JHA	झ	झ	रु	YA	य	य	य
NYA	ण	ण	रु	RA	र	र	र
TTA	ट	ट	८	LA	ल	ल	ल
TTHA	ठ	ठ	०	VA	व	व	व
DDA	ड	ड	इ	SHA	श	श	श
DDHA	डध	डध	रु	SSA	स	स	स
NNA	न	न	३	SA	स	स	स
TA	त	त	त	HA	ह	ह	ह
THA	थ	थ	थ				

Table 3: Comparison of consonant letters of Ranjana, Lantsa, and Siddham.

	1150	1151	1152	1153	1154	1155	1156	1157
0	ୱ 11500	ୱ 11510	ୱ 11520	ି 11530	ୱ 11540	ୱ 11550		
1	ୱ 11501	ୱ 11511	ୱ 11521	ି 11531	ୱ 11541	ୱ 11551		
2	ୱ 11502	ୱ 11512	ୱ 11522	ି 11532	ୱ 11542	ୱ 11552		
3	ୱ 11503	ୱ 11513	ୱ 11523	ି 11533	ୱ 11543	ୱ 11553		
4	ୱ 11504	ୱ 11514	ୱ 11524	ି 11534	ୱ 11544	ୱ 11554		
5	ୱ 11505	ୱ 11515	ୱ 11525	ି 11535	ୱ 11545	ୱ 11555		
6	ୱ 11506	ୱ 11516	ୱ 11526	ି 11536	ୱ 11546	ୱ 11556		
7	ୱ 11507	ୱ 11517	ୱ 11527	ି 11537	ୱ 11547	ୱ 11557		
8	ୱ 11508	ୱ 11518	ୱ 11528	ି 11538	ୱ 11548	ୱ 11558		
9	ୱ 11509	ୱ 11519	ୱ 11529	ି 11539	ୱ 11549	ୱ 11559		
A	ୱ 1150A	ୱ 1151A	ୱ 1152A	ି 1153A	ୱ 1154A			
B	ୱ 1150B	ୱ 1151B	ୱ 1152B	ି 1153B	ୱ 1154B			
C	ୱ 1150C	ୱ 1151C	ୱ 1152C	ି 1153C	ୱ 1154C			
D	ୱ 1150D	ୱ 1151D	ୱ 1152D	ି 1153D				
E	ୱ 1150E	ୱ 1151E	ୱ 1152E	ି 1153E				
F	ୱ 1150F	ୱ 1151F	ୱ 1152F	ି 1153F				

*Lantsa (Lantsa, Landza) and Vartu (Varula, Wartu) are unified with Ranjana.*

### Independent vowels

11500	अ	RANJANA LETTER A
11501	आ	RANJANA LETTER AA
11502	इ	RANJANA LETTER I
11503	ई	RANJANA LETTER II
11504	उ	RANJANA LETTER U
11505	ऊ	RANJANA LETTER UU
11506	ऋ	RANJANA LETTER VOCALIC R
11507	ॠ	RANJANA LETTER VOCALIC RR
11508	ऌ	RANJANA LETTER VOCALIC L
11509	ॡ	RANJANA LETTER VOCALIC LL
1150A	ए	RANJANA LETTER E
1150B	ऐ	RANJANA LETTER AI
1150C	ओ	RANJANA LETTER O
1150D	औ	RANJANA LETTER AU

### Consonants

1150E	क	RANJANA LETTER KA
1150F	ख	RANJANA LETTER KHA
11510	ग	RANJANA LETTER GA
11511	घ	RANJANA LETTER GHA
11512	ङ	RANJANA LETTER NGA
11513	च	RANJANA LETTER CA
11514	छ	RANJANA LETTER CHA
11515	ज	RANJANA LETTER JA
11516	झ	RANJANA LETTER JHA
11517	ञ	RANJANA LETTER NYA
11518	ट	RANJANA LETTER TTA
11519	ठ	RANJANA LETTER TTHA
1151A	ड	RANJANA LETTER DDA
1151B	ढ	RANJANA LETTER DDHA
1151C	ण	RANJANA LETTER NNA
1151D	त	RANJANA LETTER TA
1151E	थ	RANJANA LETTER THA
1151F	द	RANJANA LETTER DA
11520	ध	RANJANA LETTER DHA
11521	न	RANJANA LETTER NA
11522	प	RANJANA LETTER PA
11523	फ	RANJANA LETTER PHA
11524	ब	RANJANA LETTER BA
11525	भ	RANJANA LETTER BHA
11526	म	RANJANA LETTER MA
11527	य	RANJANA LETTER YA
11528	र	RANJANA LETTER RA
11529	ल	RANJANA LETTER LA
1152A	व	RANJANA LETTER VA
1152B	श	RANJANA LETTER SHA
1152C	ष	RANJANA LETTER SSA
1152D	स	RANJANA LETTER SA
1152E	ह	RANJANA LETTER HA

### Dependent vowel signs

1152F	◌ा	RANJANA VOWEL SIGN AA
11530	◌ि	RANJANA VOWEL SIGN I
11531	◌ी	RANJANA VOWEL SIGN II
11532	◌ु	RANJANA VOWEL SIGN U
11533	◌ू	RANJANA VOWEL SIGN UU
11534	◌ृ	RANJANA VOWEL SIGN VOCALIC R
11535	◌ॠ	RANJANA VOWEL SIGN VOCALIC RR
11536	◌ॡ	RANJANA VOWEL SIGN VOCALIC L
11537	◌ॢ	RANJANA VOWEL SIGN VOCALIC LL
11538	◌े	RANJANA VOWEL SIGN E
11539	◌ै	RANJANA VOWEL SIGN AI
1153A	◌ो	RANJANA VOWEL SIGN O
1153B	◌ौ	RANJANA VOWEL SIGN AU

### Various signs

1153C	◌ं	RANJANA SIGN VIRAMA
1153D	◌◌	RANJANA SIGN CANDRABINDU
1153E	◌◌	RANJANA SIGN ANUSVARA
1153F	◌ं	RANJANA SIGN VISARGA

### Sanskrit signs

11540	◌ं	RANJANA SIGN JIHVAMULIYA
11541	◌ं	RANJANA SIGN UPADHMANIYA

### Avagraha

11542	◌	RANJANA SIGN AVAGRAHA
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### Fixed-form subjoined consonants

11543	◌	RANJANA SUBJOINED FIXED-FORM LETTER YA
11544	◌	RANJANA SUBJOINED FIXED-FORM LETTER RA
11545	◌	RANJANA SUBJOINED FIXED-FORM LETTER LA
11546	◌	RANJANA SUBJOINED FIXED-FORM LETTER VA

### Invocation signs

11547	ॐ	RANJANA OM
11548	ॐ	RANJANA ANJI

### Head marks

11549	॥	RANJANA SVASTI = yig mgo
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### Punctuation

1154A	।	RANJANA DANDA = shad
1154B	॥	RANJANA DOUBLE DANDA = nyis shad
1154C	≒	RANJANA CONTINUATION MARK

### Digits

11550	०	RANJANA DIGIT ZERO
11551	१	RANJANA DIGIT ONE
11552	२	RANJANA DIGIT TWO
11553	३	RANJANA DIGIT THREE
11554	४	RANJANA DIGIT FOUR
11555	५	RANJANA DIGIT FIVE
11556	६	RANJANA DIGIT SIX
11557	७	RANJANA DIGIT SEVEN
11558	८	RANJANA DIGIT EIGHT
11559	९	RANJANA DIGIT NINE