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Title: Proposal to Encode the Mongolian Square Script in ISO/IEC 10646
Source: Script Encoding Initiative (SEI)
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1 Introduction

This is a proposal to encode the Mongolian Square script in the Universal Character Set (ISO/IEC 10646). It supersedes the following documents:

- N3956 L2/10-411 "Preliminary Proposal to Encode the Xawtaa Dorboljin Script in ISO/IEC 10646"
- N4041 L2/11-162 "Preliminary Proposal to Encode the Mongolian Square Script in ISO/IEC 10646"
- N4160 L2/11-379 "Revised Preliminary Proposal to Encode the Mongolian Square Script"

The major change from the revised preliminary proposal is the model for encoding consonant. The proposed model employs a control character for indicating the subjoining behavior of letters in conjuncts. A set of characters that represent contextual-forms of letters has been proposed in order to accommodate the encoding model. Additionally, the names of some characters have changed, the encoding order has been slightly altered, and the script block has been reallocated to a new range within the SMP.

The Mongolian Square font used here is based upon the font developed by Oliver Corff in November 2001 for his "Xäwtää Dörböljin for LaTeX 2_ε" package. The proposal author has made modifications to Corff's original font, which consist of the addition of new characters and glyphs.

2 Background

The Mongolian Square Script (Mongolian: Хэвтээ Дөрвөлжин бичиг *xewtee dörböljin bicig*) is an alpha-syllabary based upon the Brahmi model and inspired directly by Tibetan. It is also known as the 'Mongolian Horizontal Square Script'. The script was used for writing Mongolian, Sanskrit, and Tibetan. Mongolian Square was developed by Zanabazar, the first spiritual leader of Tibetan Buddhism in Mongolia, who also developed the Soyombo script. Mongolian Square was inspired by the Tibetan script and has graphical similarities to the Phags-pa seal and book scripts.

3 Proposal Details

The proposed name for the script is 'Mongolian Square'. The Mongolian name 'Xewtee Dörböljin' and its English rendering 'Horizontal Square' have been added as alternate names in an annotation to the names list.

Sixty-four characters are proposed for encoding in the Mongolian Square script block. A code chart and names list are attached. Names for characters are based upon Latin transliterations given in secondary

sources, such as Shagdarsürüng (2001), with descriptors added for distinguishing characters with identical transliterated names. An attempt has been made to align names with those for Tibetan characters in the UCS, and in parallel to those proposed for Soyombo (see N4414 L2/13-069).

The encoding order for Mongolian Square attempts to follow the general arrangement of the script as shown in traditional charts. However, differences between the proposed order and that of script charts are inherently necessary as the encoded repertoire contains elements that are not enumerated in traditional charts.

4 Script Details

4.1 Structure

The Mongolian Square script is written from left to right. As indicated by its Mongolian name, *xewtee dörböljin bicig*, the script is written horizontally and is not used in vertical environments. Independent vowels are written using a vowel-carrier letter to which vowel signs are attached. Vowel length is indicated by a sign that is attached to a base letter or to a combination of a base letter and a dependent vowel sign. Consonant letters possess the inherent vowel *a*. The phonetic value of a consonant letter is changed by attaching a vowel sign to it. Consonant clusters are rendered as stacks, with non-initial letters written beneath the initial letter. A model based upon the use of a joiner is proposed for encoding such stacks, and superfixed and subjoined forms of some letters are proposed in order to facilitate this approach.

4.2 Vowel Letter

The LETTER A represents both the vowel *a* and a zero vowel. It functions as a vowel carrier for writing independent and initial vowels, and in such contexts it assumes the phonetic value of the combining vowel sign.

4.3 Vowel Length Mark

The VOWEL LENGTH MARK indicates vowel length. When attached to a letter it represents the lengthening of the inherent vowel *a* to *ā*, eg ā and *kā*. When it is written in combination with a vowel sign, the mark always occurs after the latter, eg. *ī* is encoded as <LETTER A, VOWEL SIGN I, VOWEL LENGTH MARK>. It can only occur after a base letter or a vowel sign.

4.4 Vowel Signs

There are 8 dependent vowel signs:

VOWEL SIGN I	VOWEL SIGN U	VOWEL SIGN AI
VOWEL SIGN E	VOWEL SIGN O	VOWEL SIGN AU
VOWEL SIGN UE	VOWEL SIGN OE	

Initial and independent forms of vowels are represented by attaching vowel signs to LETTER A. Long vowels are represented by combining the vowel signs with the VOWEL LENGTH MARK. The 8 vowel signs and the VOWEL LENGTH MARK can be used for writing the 16 vowel sounds provided for by the script:

a	*ā*	*i*	*ī*	*e*	*ē*	*ü*	*ṻ*	*u*	*ū*	*o*	*ō*	*ö*	*ō̈*	*ai*	*au*

The ◌̿ VOWEL SIGN OE has the alternate form ◌̅, eg. *ö* and *ō̈*. It is a mirrored form of ◌̅ VOWEL SIGN E. This sign is a glyphic variant and its use is to be handled through fonts.

4.5 Other Vowel Forms

The glyphs *r̥*, *r̥̄*, *l̥*, *l̥̄* represent the Sanskrit vocalic letters. They are not distinct letters, but combinations of a consonant letter and combining signs. They are represented in encoded text using RA and LA in conjunction with ◌̂ VOWEL SIGN I. Long forms are produced by attaching ◌᠊ VOWEL LENGTH MARK to the base sequences.

Some vowels have alternate representations: the form <LETTER A, VOWEL SIGN AI, VOWEL LENGTH MARK> is used in some records in place of <LETTER A, VOWEL SIGN AU> for representing the diphthong *au*. The proposal treats these as distinct text elements with separate encoded representations.

4.6 Consonant Letters

There are 40 consonant letters:

GA	PA	GALIG TTA	GALIG JA
KA	MA	GALIG TTHA	GALIG JHA
NGA	YA	GALIG DDA	GALIG VA
JA	RA	GALIG DDHA	GALIG DA
CA	LA	GALIG NNA	GALIG DHA
NYA	VA	GALIG ZHA	GALIG BHA
DA	SHA	GALIG ZA	GALIG TSA
TA	SA	GALIG SMALL A	GALIG TSHA
NA	HA	GALIG GA	GALIG DZA
BA	GALIG KSSA	GALIG GHA	GALIG SSA

The order of the consonant letters adheres to that given in traditional charts. The letters GA .. HA are used in common for writing Mongolian, Sanskrit, and Tibetan. The letters with names containing the descriptor 'GALIG' (from гали *galig*, a Mongolian term for the transcription of non-Mongolian sounds) are used for writing Sanskrit and Tibetan. The term distinguishes letters used for writing the same sound, but in different languages, eg. GA and GALIG GA both represent /g/, but the latter is reserved for Sanskrit and Tibetan.

4.6.1 Notes on consonants

VA Traditional charts of the script show two instances of the letter VA with various phonetic values. In figure 1, the first instance occurs after LA and is given the values /v/ and /b/; the second precedes GALIG BHA and has the value /b/. The first VA occurs among the common letters, while the second VA occurs among the *galig* letters. It is clear that the charts attempt to show usage of the letter in both common and *galig* environments. Shagdarsürüng indicates that the first VA is used for writing /v/ in Mongolian, Tibetan, and

Sanskrit (see figure 7), while the second (‘*galig ba*’) is used for writing /b/ and /p/ in Sanskrit (see figure 9); GALIG VA is used for writing Sanskrit and Tibetan /v/. Given the identical glyphic representation of both instances of , only one is proposed for encoding, and that as the common letter VA.

GALIG KSSA The letter GALIG KSSA represents the Sanskrit cluster *kṣa* (/kṣa/). In Mongolian Square, this letter represents a phoneme that is phonetically a consonant cluster, but, it has the structure of an atomic letter. It is encoded as a consonant letter because in all cases consonant conjunct forms are written as stacks in Mongolian Square, not as ligatures. While in some scripts the written form for Sanskrit /kṣa/ has an encoded representation as a character sequence, such an approach would not be consistent with this script.

GALIG SMALL A The letter GALIG SMALL A corresponds to U+0F60 TIBETAN LETTER -A.

GALIG VA The is some confusion in the secondary sources regarding the value of the glyph . Kapaj believes it represents /v/, but is uncertain and so glosses the glyph as ‘(v?)’ (figure 2). Kara shows the glyphic variant for and expresses a similar uncertainty as he also annotates the glyph as ‘(v?)’ (figure 1). On the other hand, Shagdarsürüng departs from the idea that represents a semi-vowel and offers with uncertainty that it may be used for /s/, writing ‘sa (?)’ (figure 8). An analysis of Soyombo, a sister script, offers clarification. The Soyombo character is used for /v/ and is fairly similar to the Mongolian Square glyphic variant for .

GALIG SSA The letter GALIG SSA does not appear in traditional charts of the script, but it is attested in a record. It represents the Sanskrit retroflex sibilant /ṣ/. The letter occurs in the word *mañjughoṣāya* “to Mañjughoṣa” shown in the invocation at the top of the chart in figure 2. It is a reversed form of SHA. Representing a sound using a reversed form of a letter for a related sound is adapted from Tibetan, in which U+0F64 TIBETAN LETTER SHA is reversed in order to produce U+0F65 TIBETAN LETTER SSA.

Glyphic variants There are glyphic variants for some consonant letters: = GALIG GHA; = GALIG DHA; = GALIG VA. These are to be managed through fonts.

4.6.2 Representation of Sanskrit and Tibetan

Mongolian is written using the common letters:

ga		GA	*ta*		TA	*la*		LA
ka		KA	*na*		NA	*va*		VA
ṅa		NGA	*ba*		BA	*ša*		SHA
ǰa		JA	*pa*		PA	*sa*		SA
ča		CA	*ma*		MA	*ha*		HA
ña		NYA	*ya*		YA			
da		DA	*ra*		RA			

Sanskrit and Tibetan are represented using a mix of common and *galig* letters. The common letters for voiced sounds (eg. GA, JA, DA, BA) are used for Sanskrit voiceless unaspirated stops, while the letters for voiceless sounds (eg. KA, CA, TA, PA) are used for the voiceless aspirated counterparts. The *galig* letters are used for the voiced unaspirated and aspirated pairs. The Sanskrit repertoire is as follows:

ka	𑨋	GA	*ḍa*	𑨖	GALIG DDA	*ma*	𑨢	MA
kha	𑨌	KA	*ḍha*	𑨗	GALIG DDHA	*ya*	𑨪	YA
ga	𑨍	GALIG GA	*ṇa*	𑨘	GALIG NNA	*ra*	𑨫	RA
gha	𑨎	GALIG GHA	*ta*	𑨙	DA	*la*	𑨬	LA
ṅa	𑨏	NGA	*tha*	𑨚	TA	*va*	𑨭	GALIG VA
ca	𑨐	JA	*da*	𑨛	GALIG DA	*śa*	𑨮	SHA
cha	𑨑	CA	*dha*	𑨜	GALIG DHA	*ṣa*	𑨯	GALIG SSA
ja	𑨒	GALIG JA	*na*	𑨝	NA	*sa*	𑨰	SA
jha	𑨦	GALIG JHA	*pa*	𑨞	BA	*ha*	𑨱	HA
ña	𑨓	NYA	*pha*	𑨟	PA	*kṣa*	𑨲	GALIG KSSA
ṭa	𑨔	GALIG TTA	*ba*	𑨠	VA			
ṭha	𑨕	GALIG TTHA	*bha*	𑨡	GALIG BHA			

Tibetan is represented by adding the following to the Sanskrit repertoire:

tsa	𑨣	GALIG TSA	*dza*	𑨥	GALIG DZA	*za*	𑨨	GALIG ZA
tsha	𑨤	GALIG TSHA	*zha*	𑨧	GALIG ZHA	*'a*	𑨩	GALIG SMALL A

4.7 Final Consonant Mark

The ◌𑨳 FINAL CONSONANT MARK is used for indicating a coda, or syllable-final consonant, in Mongolian. The following are valid codas in Mongolian: 𑨋𑨳 *g*, 𑨌𑨳 *k*, 𑨏𑨳 *ṅ*, 𑨙𑨳 *d*, 𑨝𑨳 *n*, 𑨞𑨳 *b*, 𑨢𑨳 *m*, 𑨫𑨳 *r*, 𑨬𑨳 *l*, 𑨮𑨳 *ś*, 𑨰𑨳 *s*. The mark can only attach to a consonant letter. It cannot occur in a consonant cluster.

4.8 Dependent Consonant Sign

The ◌𑨩 CONSONANT SIGN FINAL SMALL A is used for writing syllable-final Tibetan འ *'a chung*. It attaches to the bottom right corner of a letter, eg. 𑨬𑨩. It also occurs as the glyphic variant ◌𑨩 (see figure 11). The sign can occur only after a letter. If it occurs in a consonant cluster, it can only occur in the final position.

4.9 Consonant Conjuncts

Consonant clusters are written as conjuncts, which are rendered as vertical stacks by placing non-initial letters one below the other beneath the initial letter, eg. 𑨝 NA + 𑨛 GALIG DA is written as 𑨝𑩇𑨛 *nda*. Stacks are written using regular forms of consonant letters. The exceptions are 𑨪 YA, 𑨫 RA, 𑨬 LA, 𑨠 VA. whose shapes are determined by their position in a cluster.

When used for representing Sanskrit, these letters are written in clusters as follows:

1. 𑨪 YA has the subjoined form 𑨻 when cluster final, eg. 𑨋𑨻 *kya*.
2. 𑨫 RA has the superfixed form 𑨺 when initial, eg. 𑨺𑨍 *rga*; the subjoined form 𑨼 when final, eg. 𑨋𑨼 *kra*.
3. 𑨬 LA has the subjoined form 𑨽 when final, eg. 𑨋𑨽 *kla*.
4. 𑨠 VA has the subjoined form 𑨾 when final, eg. 𑨋𑨾 *kva*.

If any of these four letters occurs initially in a Sanskrit consonant cluster and is followed by any of the other three, the second letter is written using the subjoined form, eg. RA + YA is rendered as . When these letters occur as the penultimate and final consonants in a cluster, both are written using subjoined forms, eg. GA + RA + YA is rendered as and GA + RA + VA is rendered as .

Moreover, as Mongolian Square is used for transcribing Tibetan and Buddhist Hybrid Sanskrit, these letters may be written using their regular forms when they occur in the medial or final position in a cluster. For example, the conjunct GA + RA may be written as instead of . The use of the regular forms in these positions within a stack follows the use of fixed forms of the corresponding letters in Tibetan. Both renderings of cluster-final RA are used in old Sanskrit-Tibetan lexicons for showing lexical differences. Furthermore, although RA is written as when it is initial, it may also be written in this position using its full form when used for transcribing Tibetan, eg. RA + RA may be rendered as as well as .

4.9.1 Proposed Encoding Model

The proposed model for representing Mongolian Square stacks in encoded text requires a character for controling stacking behavior and a set of characters for the contextual forms of YA, RA, LA, VA.

The control character is the MONGOLIAN SQUARE SUBJOINER. The SUBJOINER is written before a consonant letter to indicate that the letter is to be rendered using a subjoined form. Thus, a stack is represented in encoded text as <*consonant*, SUBJOINER, *consonant*>, eg. *nda* is encoded as <NA, SUBJOINER, GALIG DA>. The SUBJOINER is not visibly rendered, unless needed for indicating the inability of a font to render a stack (see section 4.9.2).

The model also requires the accommodation of the following forms of YA, RA, LA, VA, which are proposed for encoding as independent characters:

LETTER SUPERFIXED RA	LETTER SUBJOINED RA	LETTER SUBJOINED VA
LETTER SUBJOINED YA	LETTER SUBJOINED LA	

The SUPERFIXED RA is written in place of RA in cluster-initial position. It can occur only at the head of a cluster and never independently. The character inherently implies that the following consonant is subjoined, therefore it is not necessary to insert the SUBJOINER before the following consonant. For example, *rka* is encoded as <SUPERFIXED RA, GA>.

The letters SUBJOINED YA, SUBJOINED RA, SUBJOINED LA, SUBJOINED VA may occur in the penultimate and final positions in a cluster, and never independently. As these letters are inherently subjoined forms, there is no need to place the SUBJOINER before them. For example, *tra* is represented in encoded text as <DA, SUBJOINED RA>.

As the superfixed and subjoined letters are proposed for encoding as independent characters, when the SUBJOINER is placed before YA, RA, LA, VA, the letters will be rendered using subjoined forms of their regular shapes, eg. , , , .

The proposed model resolves the ambiguity regarding encoded representations for forms such as and , and and , and for the rendering of sequences such as RA + RA, as well as adjacent pairs of YA, RA, LA, VA in various positions in a cluster without too much processing by the rendering engine. The proposed encoding model also eliminates the need to adopt the Tibetan subjoined-letter model for Mongolian Square, which would require the independent encoding of a full set of subjoined letters for each consonant letter, in addition to context-specific forms of YA, RA, LA, VA.

4.9.2 Font Requirements for the Rendering of Stacks

To be considered complete a Mongolian Square font must contain a full set of subjoined forms for each consonant letter. The font will produce a consonant stack by substituting each <◌ SUBJOINER, *consonant*> pair with a subjoined form of the consonant letter. If the subjoined form of a letter is not available in a font, the SUBJOINER will be visibly displayed along with the regular form of the consonant letter. For example, if the subjoined form ◌ of GALIG DA is unavailable, then <NA, ◌ SUBJOINER, GALIG DA> will be rendered as NA◌GALIG DA instead of as .

4.9.3 Vowel Signs in Stacks

Above-base vowel signs are written above the initial letter, eg. NA + GALIG DA + ◌ VOWEL SIGN I is rendered as *ndi*.

Below-base vowel signs are written beneath the final letter, eg. NA + GALIG DA + ◌ VOWEL SIGN U is rendered as *ndu*.

The ◌ VOWEL LENGTH MARK attaches to the final letter, eg. NA + GALIG DA + ◌ VOWEL SIGN I + ◌ VOWEL LENGTH MARK is rendered as *ndī*.

4.9.4 Sizing of Letters in Stacks

The size of character glyphs used for rendering a stack may be adjusted for visual uniformity with surrounding characters. There are no formal rules for sizing. By default, there is no size change and the regular forms of letters are used: *nda* <NA, ◌ SUBJOINER, GALIG DA>. In some sources (see figure 16), the normal glyph size of the initial letter is used, while the glyphs of non-initial consonants are compressed along the vertical axis such that their x-height matches that of below-base vowel signs, eg. . Other sources (see figure 14) illustrate a practice of condensing the glyphs for both the base and subjoined letters so that the height of the stack matches the head-height of surrounding letters, eg. . Depending on the head-height of surrounding letters, such size adjustments may be practical only for stacks consisting of two letters.

4.9.5 Stack Depth

As Mongolian Square is used for representing Tibetan, consonant stacks may consist of up to 6 or more letters. One such stack is *tthddhnra*, which although rare, is attested in Tibetan religious texts (Fynn [nd]):

Tibetan	Mongolian Square
	

The encoded representation of the above stack in Mongolian Square is <DA, ◌ SUBJOINER, TA, ◌ SUBJOINER, GALIG DA, ◌ SUBJOINER, GALIG DHA, ◌ SUBJOINER, NA, ◌ SUBJOINED RA>.

4.9.6 Conjuncts Shown in Traditional Script Charts

The following conjuncts are shown in traditional script charts: *kra*, *khya*, *gla*, *rka*, *ska*, *lka*. They are not independent characters, but are ligatures that represent consonant stacks. It is likely that they are shown in order to illustrate the use of the special subjoined forms of YA, RA, LA and the superfixed form of RA in the script. The presence of *ska* and *lka* is likely intended to illustrate the representation of Tibetan ལ་མགོ་ *la-mgo* and ས་མགོ་ *sa-mgo* letters. These stacks are to be represented in encoded text as:

1. *kra* = <GA, SUBJOINED RA>
2. *khya* = <KA, SUBJOINED YA>
3. *gla* = <GALIG GA, SUBJOINED LA>
4. *rka* = <SUPERFIXED RA, GA>
5. *ska* = <SA, SUBJOINER, GA>; this is a stylized ligated form of the stack.
6. *lka* = <LA, SUBJOINER, GA>; this is a stylized ligated form of the stack.

4.10 Various Signs

The following combining signs are used for writing Sanskrit:

1. ANUSVARA is used for indicating nasalization in Sanskrit words.
2. VISARGA is used for indicating post-vocalic aspiration in Sanskrit words.

4.11 Punctuation

The following characters are used for punctuation:

1. TSHEG marks the end of a syllable. It corresponds to ་ U+0F0B TIBETAN MARK INTERSYLLABIC TSHEG.
2. SHAD indicates the end of a phrase or sentence. It corresponds to ། U+0F0D TIBETAN MARK SHAD.
3. DOUBLE SHAD indicates the end of a text section (see figure 14). It corresponds to ༎ U+0F0E TIBETAN MARK NYIS SHAD.

4.12 Head Mark

The HEAD MARK is used at the beginning of a text. It is generally written with SHAD as .

4.13 Digits

Digits are not attested. Sources do not indicate the use of digits or number forms in the script.

5 Character Data

5.1 Character Properties

Character properties given in the data format of `UnicodeData.txt`:

```
11860;MONGOLIAN SQUARE LETTER A;Lo;0;L;;;;;N;;;;;
11861;MONGOLIAN SQUARE VOWEL SIGN I;Mn;0;NSM;;;;;N;;;;;
11862;MONGOLIAN SQUARE VOWEL SIGN E;Mn;0;NSM;;;;;N;;;;;
11863;MONGOLIAN SQUARE VOWEL SIGN UE;Mn;0;NSM;;;;;N;;;;;
11864;MONGOLIAN SQUARE VOWEL SIGN U;Mn;0;NSM;;;;;N;;;;;
11865;MONGOLIAN SQUARE VOWEL SIGN O;Mn;0;NSM;;;;;N;;;;;
11866;MONGOLIAN SQUARE VOWEL SIGN OE;Mn;0;NSM;;;;;N;;;;;
11867;MONGOLIAN SQUARE VOWEL SIGN AI;Mc;0;L;;;;;N;;;;;
11868;MONGOLIAN SQUARE VOWEL SIGN AU;Mc;0;L;;;;;N;;;;;
11869;MONGOLIAN SQUARE VOWEL LENGTH MARK;Mc;0;L;;;;;N;;;;;
1186A;MONGOLIAN SQUARE LETTER GA;Lo;0;L;;;;;N;;;;;
1186B;MONGOLIAN SQUARE LETTER KA;Lo;0;L;;;;;N;;;;;
1186C;MONGOLIAN SQUARE LETTER NGA;Lo;0;L;;;;;N;;;;;
1186D;MONGOLIAN SQUARE LETTER JA;Lo;0;L;;;;;N;;;;;
1186E;MONGOLIAN SQUARE LETTER CA;Lo;0;L;;;;;N;;;;;
1186F;MONGOLIAN SQUARE LETTER NYA;Lo;0;L;;;;;N;;;;;
11870;MONGOLIAN SQUARE LETTER DA;Lo;0;L;;;;;N;;;;;
11871;MONGOLIAN SQUARE LETTER TA;Lo;0;L;;;;;N;;;;;
11872;MONGOLIAN SQUARE LETTER NA;Lo;0;L;;;;;N;;;;;
11873;MONGOLIAN SQUARE LETTER BA;Lo;0;L;;;;;N;;;;;
11874;MONGOLIAN SQUARE LETTER PA;Lo;0;L;;;;;N;;;;;
11875;MONGOLIAN SQUARE LETTER MA;Lo;0;L;;;;;N;;;;;
11876;MONGOLIAN SQUARE LETTER YA;Lo;0;L;;;;;N;;;;;
11877;MONGOLIAN SQUARE LETTER RA;Lo;0;L;;;;;N;;;;;
11878;MONGOLIAN SQUARE LETTER LA;Lo;0;L;;;;;N;;;;;
11879;MONGOLIAN SQUARE LETTER VA;Lo;0;L;;;;;N;;;;;
1187A;MONGOLIAN SQUARE LETTER SHA;Lo;0;L;;;;;N;;;;;
1187B;MONGOLIAN SQUARE LETTER SA;Lo;0;L;;;;;N;;;;;
1187C;MONGOLIAN SQUARE LETTER HA;Lo;0;L;;;;;N;;;;;
1187D;MONGOLIAN SQUARE LETTER GALIG KSSA;Lo;0;L;;;;;N;;;;;
1187E;MONGOLIAN SQUARE LETTER GALIG TTA;Lo;0;L;;;;;N;;;;;
1187F;MONGOLIAN SQUARE LETTER GALIG TTHA;Lo;0;L;;;;;N;;;;;
11880;MONGOLIAN SQUARE LETTER GALIG DDA;Lo;0;L;;;;;N;;;;;
11881;MONGOLIAN SQUARE LETTER GALIG DDHA;Lo;0;L;;;;;N;;;;;
11882;MONGOLIAN SQUARE LETTER GALIG NNA;Lo;0;L;;;;;N;;;;;
11883;MONGOLIAN SQUARE LETTER GALIG ZHA;Lo;0;L;;;;;N;;;;;
11884;MONGOLIAN SQUARE LETTER GALIG ZA;Lo;0;L;;;;;N;;;;;
11885;MONGOLIAN SQUARE LETTER GALIG SMALL A;Lo;0;L;;;;;N;;;;;
11886;MONGOLIAN SQUARE LETTER GALIG GA;Lo;0;L;;;;;N;;;;;
11887;MONGOLIAN SQUARE LETTER GALIG GHA;Lo;0;L;;;;;N;;;;;
11888;MONGOLIAN SQUARE LETTER GALIG JA;Lo;0;L;;;;;N;;;;;
11889;MONGOLIAN SQUARE LETTER GALIG JHA;Lo;0;L;;;;;N;;;;;
1188A;MONGOLIAN SQUARE LETTER GALIG VA;Lo;0;L;;;;;N;;;;;
1188B;MONGOLIAN SQUARE LETTER GALIG DA;Lo;0;L;;;;;N;;;;;
1188C;MONGOLIAN SQUARE LETTER GALIG DHA;Lo;0;L;;;;;N;;;;;
1188D;MONGOLIAN SQUARE LETTER GALIG BHA;Lo;0;L;;;;;N;;;;;
1188E;MONGOLIAN SQUARE LETTER GALIG TSA;Lo;0;L;;;;;N;;;;;
1188F;MONGOLIAN SQUARE LETTER GALIG TSHA;Lo;0;L;;;;;N;;;;;
11890;MONGOLIAN SQUARE LETTER GALIG DZA;Lo;0;L;;;;;N;;;;;
11891;MONGOLIAN SQUARE LETTER GALIG SSA;Lo;0;L;;;;;N;;;;;
11892;MONGOLIAN SQUARE SIGN ANUSVARA;Mn;0;NSM;;;;;N;;;;;
11893;MONGOLIAN SQUARE SIGN VISARGA;Mc;0;L;;;;;N;;;;;
11894;MONGOLIAN SQUARE FINAL CONSONANT MARK;Mn;0;NSM;;;;;N;;;;;
11895;MONGOLIAN SQUARE CONSONANT SIGN FINAL SMALL A;Mn;0;NSM;;;;;N;;;;;
```

```
11896;MONGOLIAN SQUARE LETTER SUPERFIXED RA;Lo;0;L;;;;;N;;;;;
11897;MONGOLIAN SQUARE LETTER SUBJOINED YA;Lo;0;L;;;;;N;;;;;
11898;MONGOLIAN SQUARE LETTER SUBJOINED RA;Lo;0;L;;;;;N;;;;;
11899;MONGOLIAN SQUARE LETTER SUBJOINED LA;Lo;0;L;;;;;N;;;;;
1189A;MONGOLIAN SQUARE LETTER SUBJOINED VA;Lo;0;L;;;;;N;;;;;
1189B;MONGOLIAN SQUARE TSHEG;Po;0;L;;;;;N;;;;;
1189C;MONGOLIAN SQUARE SHAD;Po;0;L;;;;;N;;;;;
1189D;MONGOLIAN SQUARE DOUBLE SHAD;Po;0;L;;;;;N;;;;;
1189E;MONGOLIAN SQUARE HEAD MARK;Po;0;ON;;;;;N;;;;;
1189F;MONGOLIAN SQUARE SUBJOINER;Mn;9;NSM;;;;;N;;;;;
```

5.2 Linebreaking Properties

Linebreaking properties given in the data format of `LineBreak.txt`:

```
11860;        AL     # LETTER A
11861..11869; CM     # VOWEL SIGN I .. VOWEL LENGTH MARK
1186A..11891; AL     # LETTER GA .. LETTER GALIG SSA
11892..11895; CM     # SIGN ANUSVARA .. CONSONANT SIGN FINAL SMALL A
11896..1189A; AL     # LETTER SUPERFIXED RA .. LETTER SUBJOINED VA
1189B..1189D; BA     # TSHEG .. DOUBLE SHAD
1189E; BB            # HEAD MARK
1189F; CM            # SUBJOINER
```

5.3 'Confusable' Characters

Some Mongolian Square letters resemble those found in other scripts encoded in the UCS:

```
1186C MONGOLIAN SQUARE LETTER NGA           ;  A843 PHAGS-PA LETTER NGA
11878 MONGOLIAN SQUARE LETTER LA            ;  A859 PHAGS-PA LETTER LA
1187B MONGOLIAN SQUARE LETTER SA            ;  004E LATIN CAPITAL LETTER N
11884 MONGOLIAN SQUARE LETTER GALIG ZA      ;  018E LATIN CAPITAL LETTER REVERSED E
11884 MONGOLIAN SQUARE LETTER GALIG ZA      ;  A855 PHAGS-PA LETTER ZA
11885 MONGOLIAN SQUARE LETTER GALIG SMALL A ;  A855 PHAGS-PA LETTER SMALL A
11889 MONGOLIAN SQUARE LETTER GALIG JHA     ;  A846 PHAGS-PA LETTER JA
11890 MONGOLIAN SQUARE LETTER GALIG DZA     ;  0045 LATIN CAPITAL LETTER E
11896 MONGOLIAN SQUARE LETTER SUPERFIXED RA ;  A872 PHAGS-PA SUPERFIXED LETTER RA
11897 MONGOLIAN SQUARE LETTER SUBJOINED RA  ;  A871 PHAGS-PA SUBJOINED LETTER RA
1189B MONGOLIAN SQUARE TSHEG                ;  0F0B TIBETAN MARK INTERSYLLABIC TSHEG
1189C MONGOLIAN SQUARE SHAD                 ;  0F0D TIBETAN MARK SHAD
1189D MONGOLIAN SQUARE DOUBLE SHAD          ;  0F0E TIBETAN MARK NYIS SHAD
1189E MONGOLIAN SQUARE HEAD MARK            ;  A874 PHAGS-PA SINGLE HEAD MARK
```

There is one internal confusable:

```
11866 MONGOLIAN SQUARE SIGN OE  ;  11896 MONGOLIAN SQUARE LETTER SUPERFIXED RA
```

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	1186	1187	1188	1189
0	11860	11870	11880	11890
1	11861	11871	11881	11891
2	11862	11872	11882	11892
3	11863	11873	11883	11893
4	11864	11874	11884	11894
5	11865	11875	11885	11895
6	11866	11876	11886	11896
7	11867	11877	11887	11897
8	11868	11878	11888	11898
9	11869	11879	11889	11899
A	1186A	1187A	1188A	1189A
B	1186B	1187B	1188B	1189B
C	1186C	1187C	1188C	1189C
D	1186D	1187D	1188D	1189D
E	1186E	1187E	1188E	1189E
F	1186F	1187F	1188F	1189F

The script is also called Horizontal Square Script. It is known as Xewtee Dörböljin in Mongolian.

Vowel letter

11860 MONGOLIAN SQUARE LETTER A
- used for representing independent vowels in combination with vowel signs

Vowel signs

11861 MONGOLIAN SQUARE VOWEL SIGN I
11862 MONGOLIAN SQUARE VOWEL SIGN E
11863 MONGOLIAN SQUARE VOWEL SIGN UE
11864 MONGOLIAN SQUARE VOWEL SIGN U
11865 MONGOLIAN SQUARE VOWEL SIGN O
11866 MONGOLIAN SQUARE VOWEL SIGN OE
11867 MONGOLIAN SQUARE VOWEL SIGN AI
11868 MONGOLIAN SQUARE VOWEL SIGN AU

Vowel length mark

11869 MONGOLIAN SQUARE VOWEL LENGTH MARK

Consonants

1186A MONGOLIAN SQUARE LETTER GA
- used for Sanskrit ka

1186B MONGOLIAN SQUARE LETTER KA
- used for Sanskrit kha

1186C MONGOLIAN SQUARE LETTER NGA
1186D MONGOLIAN SQUARE LETTER JA
- used for Sanskrit ca

1186E MONGOLIAN SQUARE LETTER CA
- used for Sanskrit cha

1186F MONGOLIAN SQUARE LETTER NYA
11870 MONGOLIAN SQUARE LETTER DA
- used for Sanskrit ta

11871 MONGOLIAN SQUARE LETTER TA
- used for Sanskrit tha

11872 MONGOLIAN SQUARE LETTER NA
11873 MONGOLIAN SQUARE LETTER BA
- used for Sanskrit pa

11874 MONGOLIAN SQUARE LETTER PA
- used for Sanskrit pha

11875 MONGOLIAN SQUARE LETTER MA
11876 MONGOLIAN SQUARE LETTER YA
11877 MONGOLIAN SQUARE LETTER RA
11878 MONGOLIAN SQUARE LETTER LA
11879 MONGOLIAN SQUARE LETTER VA
- used for Sanskrit ba

1187A MONGOLIAN SQUARE LETTER SHA
1187B MONGOLIAN SQUARE LETTER SA
1187C MONGOLIAN SQUARE LETTER HA

Additions for Sanskrit and Tibetan

1187D MONGOLIAN SQUARE LETTER GALIG KSSA
1187E MONGOLIAN SQUARE LETTER GALIG TTA
1187F MONGOLIAN SQUARE LETTER GALIG TTHA
11880 MONGOLIAN SQUARE LETTER GALIG DDA
11881 MONGOLIAN SQUARE LETTER GALIG DDHA
11882 MONGOLIAN SQUARE LETTER GALIG NNA
11883 MONGOLIAN SQUARE LETTER GALIG ZHA
11884 MONGOLIAN SQUARE LETTER GALIG ZA
11885 MONGOLIAN SQUARE LETTER GALIG SMALL A
- used for Tibetan a chung

11886 MONGOLIAN SQUARE LETTER GALIG GA
11887 MONGOLIAN SQUARE LETTER GALIG GHA
11888 MONGOLIAN SQUARE LETTER GALIG JA
11889 MONGOLIAN SQUARE LETTER GALIG JHA
1188A MONGOLIAN SQUARE LETTER GALIG VA
1188B MONGOLIAN SQUARE LETTER GALIG DA
1188C MONGOLIAN SQUARE LETTER GALIG DHA
1188D MONGOLIAN SQUARE LETTER GALIG BHA
1188E MONGOLIAN SQUARE LETTER GALIG TSA
1188F MONGOLIAN SQUARE LETTER GALIG TSHA
11890 MONGOLIAN SQUARE LETTER GALIG DZA
11891 MONGOLIAN SQUARE LETTER GALIG SSA

Various signs

11892 MONGOLIAN SQUARE SIGN ANUSVARA
11893 MONGOLIAN SQUARE SIGN VISARGA

Final consonant mark

11894 MONGOLIAN SQUARE FINAL CONSONANT MARK

Dependent consonant sign

11895 MONGOLIAN SQUARE CONSONANT SIGN FINAL SMALL A
- used for Tibetan syllable-final a chung

Superfixed letter

11896 MONGOLIAN SQUARE LETTER SUPERFIXED RA

Subjoined letters

11897 MONGOLIAN SQUARE LETTER SUBJOINED YA
11898 MONGOLIAN SQUARE LETTER SUBJOINED RA
11899 MONGOLIAN SQUARE LETTER SUBJOINED LA
1189A MONGOLIAN SQUARE LETTER SUBJOINED VA

Punctuation

1189B MONGOLIAN SQUARE TSHEG
→ 0F0B tibetan mark intersyllabic tsheg

1189C MONGOLIAN SQUARE SHAD
→ 0964 । devanagari danda

1189D MONGOLIAN SQUARE DOUBLE SHAD
→ 0965 ॥ devanagari double danda

Head mark

1189E MONGOLIAN SQUARE HEAD MARK

Subjoiner

1189F MONGOLIAN SQUARE SUBJOINER
- used for representing conjuncts
- indicates that the following letter is to be rendered as a subjoined form
- is not visibly rendered

Figure 1: Characters of the Mongolian Square script (from Kara 1972: 96).

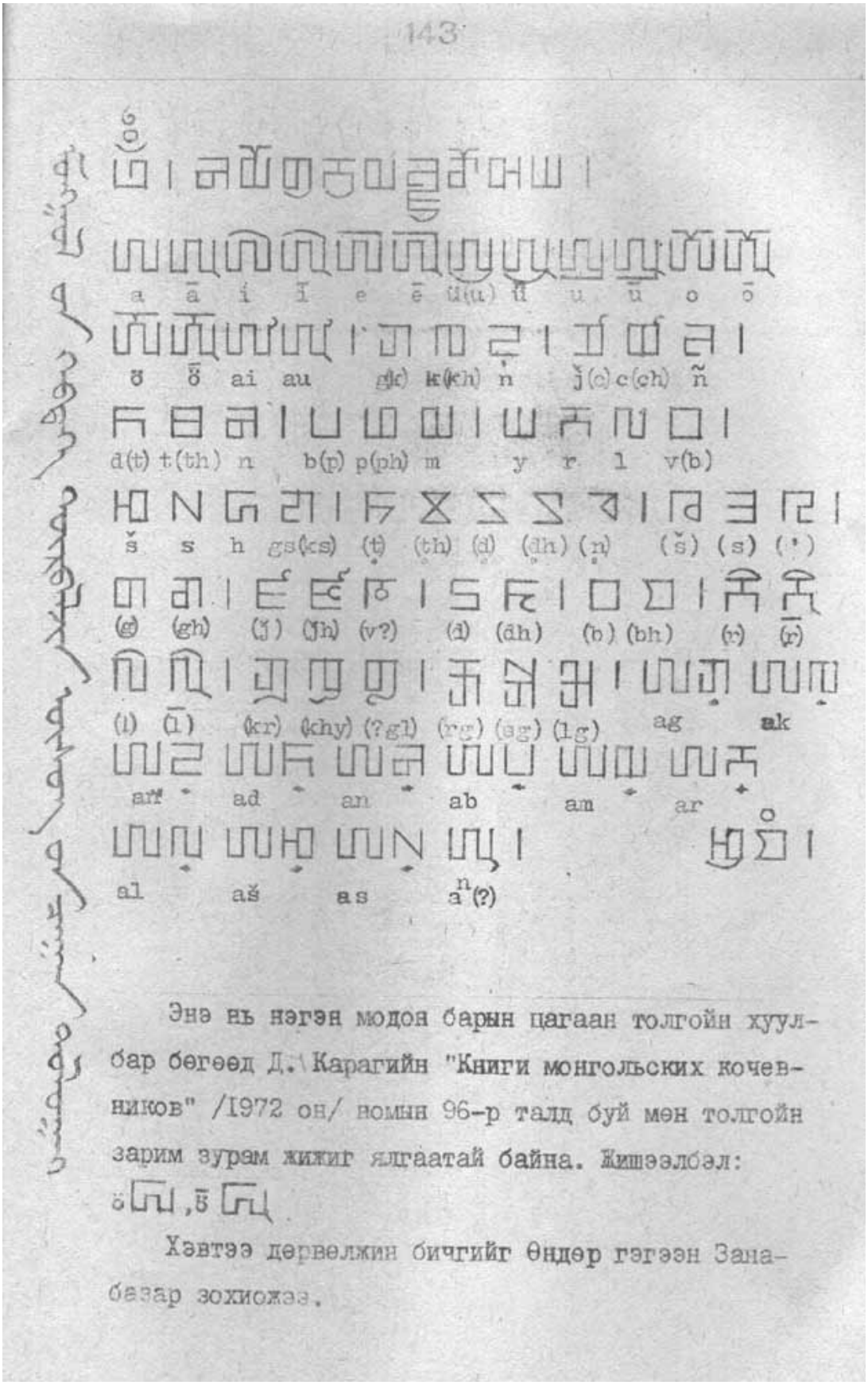


Figure 2: Characters of the Mongolian Square script (from Kapaj 2002).

гэдэг өгүүлэлдээ тодруулан өгчээ. Академич Ринчен ийнхүү тодруулахдаа Угалзын лам хэмээн олонд алдаршсан Лувсансодовжамц (1878-1961)-ын *"Yig-bçad gsal bai'i me-long žes bya ba bzugs-so"* буюу хэвтээ дөрвөлжин бичгийн тайлбар болгож зохиосон *"Үсэгийн номлол тодорхой толь хэмээх оршивой"* гэдэг гар бичмэл номын[10] мэдээнд үндэслэсэн буй *за*.

Хэвтээ дөрвөлжин бичгээр үлдсэн дурсгал гэвэл 1972 оныг хүртэл хэдэн зүйл хэсэг бусаг цагаан толгой, нэгэн зүйл тарнийн үсгээс өөр тоймтой баримт олдоогүй байсан гэж хэлж болно. 1972 онд проф. Д. Кара *"Книги монгольских кочевников"* номдоо хэвтээ дөрвөлжин бичгийн цагаан толгойд үсэгүйн ажиглалт хийж, дуудалгын латин галигийн хамт анхлан судлагааны хүрээнд танилцуулж Жамсраны Цэвээн авгайн цуглуулгаас олдсон монгол хэлээр, хэвтээ дөрвөлжин бичгээр буй "А-му-гу-ла-н-ту та-ма-га"-ын дардасыг хавсаргажээ[11] (3-р хавсралтаас үзмүү).

Хэдэн жилийн дараа энэ номын зохиогч Гандан хийдийн ламтан Данзан-осор гуайн цуглуулгад байсан самгард хэл, бичгээрхи ханын чимэгийн эцэс дэхи хэвтээ дөрвөлжин бичгээр, монгол хэлээр буй бичвэрийг олж судлагааны эргэлтэнд оруулсан билээ[12]. Монгол хэлээрхи эл дурсгалын талаар хойно арай дэлгэрүүлэн өгүүлэх болно.

1997 онд судлагч Р. Бямбаа хэвтээ дөрвөлжин бичгээр төвөд, монгол, самгард хэлээр буй дурсгалуудыг нэгтгэн судлаж *"Хэвтээ дөрвөлжин үсэг, түүний дурсгалууд"* гэдэг бие даасан тусгай ном нийтлүүлсэн бөгөөд үүндээ уг бичигт холбогдох мэдээ баримтыг багтаан оруулжээ[13]. Энэ жишилэнгээр сүүлийн үес монгол, төвөд, самгард хэлээр хэвтээ дөрвөлжин үсгээр бичсэн дурсгалын зүйл мэр сэр нэмэгдсээр байна.

Хэвтээ дөрвөлжин бичиг, түүгээр үлдсэн монгол хэлний дурсгалын ач холбогдолын тухайд гэвэл түрүүчийн бөлөгт соёмбо бичгийн баримт дурсгал монгол хэлний түүхэнд хэрхэн холбогдох талаар Л. Лигети академичийн хэлсэнтэй агаар нэгэн мөр тул дахин нурших хэрэггүй. Харин үсэгзүйн үүднээс төвөд, самгард үсэг бичигтэй харьцуулан тодруулах зүйл багагүйгээр барахгүй бас 1444/1446 оны солонгос бичигийн зарчимтай төстэй зүйл харагддаг[14] нь шууд буюу эсбөгөөс Төв Ази дахины бусад бичиг үсгийн уламжлалтай дам холбоотойн алин болохыг энэ хир шийдээгүй боловч бас анхааралгүй орхиж болохгүй гэж санаж байна.

Хэвтээ дөрвөлжин бичигийн цагаан толгой

Хуудас эхлэсний буюу хуудасны өвөр талын тэмдэг. Бярга буюу эгчимтэй адил үүрэг гүйцэтгэнэ.

1. **tl.** A;
tc. mong., tib., sans.: a. Энэ нь а эгшигийн бие даасан буюу (IF) хэлбэр. Үг буюу үеийн эхинд тохиолдоно.

tl. a_0;
tc. a. Энэ нь а эгшигийн гол буюу (MF) хэлбэр. Үг буюу үеийн дунд, адагт тохиолдох нууц буюу тэг хэлбэр.

[10] Р. Бямбаа, *Хэвтээ дөрвөлжин үсэг, түүний дурсгалууд,* Улаанбаатар, 1997, х.22-38.
[11] Д. Кара, *"Книги монгольских кочевников"*, Москва, 1972, стр. 93-96.
[12] Ц. Шагдарсүрэн, *Монгол үсэг зүй,* Тэргүүн дэвтэр, Улаанбаатар, 1981, 108-110; Ц. Шагдарсүрэн, *Об одном новонайденном памятнике горизонтально-квадратного письма*, - Монгольский лингвистический сборник, Москва, 1985, стр. 150 - 154.
[13] Р. Бямбаа, *Хэвтээ дөрвөлжин үсэг, түүний дурсгалууд,* Улаанбаатар, 1997, 90 х.
[14] Ц. Шагдарсүрэн, *Монгол солонгос бичиг үсгийн харилцаа холбооны асуудалд*, - Mongolian Studies (The Korean Association for Mongol Studies), N. 4 (1996), Soeul, 1997, 169-192 х; Ts. Shagdarsurung, *A Study of Relation between the Korean and Mongolian Scripts,* The Research Paper to The Korea Foundation, Seoul, 1998, pp. 1-27.

Figure 3: Description of Mongolian Square letters (from Shagdarsürüng 2001: 160).

1.a. 

tl. Ā;
tc. mong., sans.: ā. Урт а эгшигийн бие даасан буюу (IF) хэлбэр.

tl. $ā_0$;
tc. ā. Энэ нь урт ā эгшигийн нууц буюу тэг (Ø) хэлбэр.

2. 

tl. I;
tc. mong., tib., sans.: i. Энэ нь i эгшигийн бие даасан буюу (IF) хэлбэр. Үг буюу үеийн эхинд тохиолдоно.

tl. i;
tc. i. i эгшигийн гол буюу (MF) хэлбэр. Үг буюу үеийн дунд, адагт тохиолдоно.

2.a. 

tl. Ī;
tc. mong., sans.: ī. Урт ī эгшигийн бие даасан буюу (IF) хэлбэр. Үг буюу үеийн эхинд тохиолдоно.

tl. ī.
tc. ī. Урт ī эгшигийн гол буюу (MF) хэлбэр. Үг буюу үеийн дунд, адагт тохиолдоно.

3. 

tl. E;
tc. mong., tib.: e; sans. (diphtongue) e. Энэ нь монгол, төвөд хэлний е эгшиг, самгард хэлний хос е эгшигийн бие даасан буюу (IF) хэлбэр. Үг буюу үеийн эхинд тохиолдоно.

tl. e;
tc. e. Энэ нь е эгшигийн гол буюу (MF) хэлбэр. Үг буюу үеийн дунд, адагт тохиолдоно.

3.a. 

tl. Ē;
tc. mong.: ē; sans: (diphtongue) ai. Монгол хэлний урт ē, самгард хэлний хос ai эгшигийн бие даасан буюу (IF) хэлбэр. Үг буюу үеийн эхинд тохиолдоно.

tl. ē;
tc. ē / ai; Монгол хэлний урт ē, самгард хэлний хос ai эгшигийн гол буюу (MF) хэлбэр. Үг буюу үеийн дунд, адагт тохиолдоно.

4. 

tl. mong., tib.: Ü; sans.: U;
tc. mong., tib.: ü; sans.: u. Монгол, төвөд хэлний ü эгшиг, самгард хэлний u эгшигийн бие даасан буюу (IF) хэлбэр. Үг буюу үеийн эхинд тохиолдоно.

tl. mong., tib.: ü; sans. u;
tc. mong., tib.: ü; sans. u; Монгол, төвөд хэлний ü эгшиг, самгард хэлний u эгшигийн гол буюу (MF) хэлбэр. Үг буюу үеийн дунд, адагт тохиолдоно.

4.a. 

tl. mong. Ū; sans.: ū;
tc. mong. ū; sans. ū; Монгол хэлний урт ü эгшиг, самгард хэлний урт ū эгшигийн бие даасан буюу (IF) хэлбэр. Үг буюу үеийн эхинд тохиолдоно.

Figure 4: Description of Mongolian Square letters (from Shagdarsürüng 2001: 161).

tl. mong. ū̄; sans. ū;
tc. mong. ū̄; sans. ū. Монгол, хэлний урт ū эгшиг, самгард хэлний урт ū эгшигийн гол буюу (MF) хэлбэр. Үг буюу үеийн дунд, адагт тохиолдоно.

5. 

tl. mong. U;
tc. mong. u. Монгол хэлний u эгшигийн бие даасан буюу (IF) хэлбэр. Үг буюу үеийн эхинд тохиолдоно.

tl. mong. u;
tc. mong. u. U эгшигийн гол буюу (MF) хэлбэр. Үг буюу үеийн дунд болоод адагт тохиолдоно.

5.a. 

tl. mong. ū;
tc. mong. ū. Монгол хэлний урт ū эгшигийн бие даасан буюу (IF) хэлбэр. Үг буюу үеийн эхинд тохиолдоно.

tl. mong. ū;
tc. mong. ū. Монгол хэлний урт ū эгшигийн гол буюу (MF) хэлбэр. Үг буюу үеийн дунд болоод адагт тохиолдоно.

6. 

tl. mong., tib., O; sans. (diphtongue) O;
tc. mong., tib. o; sans. (diphtongue) o. Энэ нь монгол, төвөд хэлний o эгшиг, самгард хэлний хос o эгшигийн бие даасан буюу (IF) хэлбэр. Үг буюу үеийн эхинд тохиолдоно.

tl. mong., tib. o; sans. (diphtongue) o;
tc. mong., tib. o; sans. (diphtongue) o. Энэ нь монгол, төвөд хэлний o эгшиг, самгард хэлний хос o эгшигийн гол буюу (MF) хэлбэр. Үг буюу үеийн дунд болоод адагт тохиолдоно.

6.a. 

tl. mong. ō; sans. (diphtongue) AU;
tc. mong. ō; sans. (diphtongue) au. Энэ нь монгол хэлний урт ō эгшиг, самгард хэлний хос au эгшигийн бие даасан буюу (IF) хэлбэр. Үг буюу үеийн эхинд тохиолдоно.

tl. mong. ō; sans. (diphtongue) au;
tc. mong. ō; sans. (diphtongue) au. Энэ нь монгол хэлний урт ō эгшиг, самгард хэлний хос au эгшигийн гол буюу (MF) хэлбэр. Үг буюу үеийн дунд болоод адагт тохиолдоно.

7. 

tl. mong. Ö;
tc. mong. ö. Энэ нь монгол хэлний ö эгшигийн бие даасан буюу (IF) хэлбэр. Үг буюу үеийн эхинд тохиолдоно.

tl. mong. ö;
tc. mong. ö. Энэ нь монгол хэлний ö эгшигийн гол буюу (MF) хэлбэр. Үг буюу үеийн дунд болоод адагт тохиолдоно.

Figure 5: Description of Mongolian Square letters (from Shagdarsürüng 2001: 162).

7.a. 

tl. mong. Ō;
tc. mong. ō. Энэ нь монгол хэлний урт ö эгшигийн бие даасан буюу (IF) хэлбэр хэлбэр. Yr буюу үеийн эхинд тохиолдоно.

tl. mong. ō;
tc. mong. ō. Энэ нь монгол хэлний урт ö эгшигийн гол буюу (MF) хэлбэр. Yr буюу үеийн дунд болоод адагт тохиолдоно

8. 

tl. Au_1;
tc. mong. au (буюу diphtongue waw). Монгол хэлнээ тохиолдоно. (Энэ хэлбэрийг жагсаалтын No. 5-д дурдсан u эгшигтэй харьцуулагтун).

9. 

tl. Ai_1;
tc. mong. ai (буюу diphtongue yod). Монгол хэлнээ тохиолдоно. (Энэ хэлбэрийг жагсаалтын No. 2-т дурдсан i эгшигтэй харьцуулагтун).

10. 

tl. mong. G(a); tib., sans.: K(a);
tc. mong. ga; tib., sans. ka. Монгол хэлний ga, төвөд, самгард хэлний ka гийгүүлэгчийн бие даасан буюу (IF) хэлбэр.

11. 

tl. mong. K(a), tib., sans.: KH(a);
tc. mong. ka, tib., sans.: kha. Монгол хэлний ka, төвөд, самгард хэлний kha гийгүүлэгчийн бие даасан буюу (IF) хэлбэр.

12. 

tl. (mong. n̲), tib., sans.: Ṅ(a);
tc. mong., tib., sans.: n̲a. Монгол хэлнээ үгийн буюу үеийн эхинд тохиолддоггүй. Төвөд, самгард хэлний ṅa гийгүүлэгчийн бие даасан (IF) хэлбэр. Монгол хэлний тухайд зөвхөн гол буюу (MF) хэлбэрээр тохиолдоно.

13. 

tl. mong. J(a), tib., sans.: C(a);
tc. mong. ja, tib., sans.: ca. Монгол хэлний ja, төвөд, самгард хэлний ca гийгүүлэгчийн бие даасан буюу (IF) хэлбэр.

14. 

tl. mong. C(a); tib., sans.: CH(a);
tc. mong. ca, tib., sans.: cha. Монгол хэлний ca, төвөд, самгард хэлний cha гийгүүлэгчийн бие даасан буюу (IF) хэлбэр.

15. 

tl. tib., sans.: N̄(a);
tc. tib., sans.: n̄a. Төвөд, самгард хэлний n̄a гийгүүлэгчийн бие даасан (IF) хэлбэр.

16. 

tl. mong., D(a), tib., sans. T(a);
tc. mong. da, tib,, sans.: ta. Монгол хэлний da, төвөд, самгард хэлний ta гийгүүлэгчийн бие даасан буюу (IF) хэлбэр.

17. 

tl. mong. T(a), tib., sans. TH(a);
tc. mong. ta, tib., sans. tha. Монгол хэлний ta, төвөд, самгард хэлний tha гийгүүлэгчийн бие даасан буюу (IF) хэлбэр.

Figure 6: Description of Mongolian Square letters (from Shagdarsürüng 2001: 163).

18. 
tl. mong., tib., sans. N(a);
tc. mong., tib., sans. na. Монгол, төвөд, самгард хэлний na гийгүүлэгчийн бие даасан буюу (IF) хэлбэр.

19. 
tl. mong. ba, tib., sans.: P(a);
tc. mong. ba, tib., sans.: pa. Монгол хэлний ba, төвөд, самгард хэлний pa гийгүүлэгчийн бие даасан буюу (IF) хэлбэр.

20. 
tl. mong. P(a), tib., sans. PH(a);
tc. mong. pa, tib., sans.: pha. Монгол хэлний pa, төвөд, самгард хэлний pha гийгүүлэгчийн бие даасан буюу (IF) хэлбэр.

21. 
tl. mong., tib., sans. M(a);
tc. mong., tib., sans. ma. Монгол, төвөд, самгард хэлний ma гийгүүлэгчийн бие даасан буюу (IF) хэлбэр.

22. 
tl. mong., tib.: Y(a), sans. (semi-vowel) Y(a);
tc. mong., tib.: ya, sans. (semi-vowel) ya. Монгол, төвөд хэлний ya, самгард хэлний тал (буюу хагас) ya гийгүүлэгчийн бие даасан буюу (IF) хэлбэр.

23. 
tl. mong., tib.: R(a), sans. (semi-vowel) R(a);
tc. mong., tib.: ra, sans.: (semi-vowel) ra. Монгол, төвөд хэлний ra, самгард хэлний тал (буюу хагас) ra гийгүүлэгчийн бие даасан буюу (IF) хэлбэр.

24. 
tl. mong., tib., L(a), sans.; (semi-vowel) L(a);
tc. mong., tib., la, sans.: (semi-vowel) la. Монгол, төвөд хэлний la, самгард хэлний тал (буюу хагас) la гийгүүлэгчийн бие даасан буюу (IF) хэлбэр.

25. 
tl. mong., tib., V(a), sans.; (semi-vowel) V(a);
tc. mong., tib., va, sans.: (semi-vowel) va. Монгол, төвөд хэлний va, самгард хэлний тал (буюу хагас) va гийгүүлэгчийн бие даасан буюу (IF) хэлбэр.

26. 
tl. mong. Š(a), tib., sans.: Ç(a) / Ś(a).
tc. mong. ša, tib., sans.: ça / sa. Монгол хэлний ša, төвөд, самгард хэлний ça / sa гийгүүлэгчийн бие даасан буюу (IF) хэлбэр.

27. 
tl. mong., tib., sans. S(a);
tc. mong., tib., sans. sa. Монгол, төвөд, самгард хэлний sa гийгүүлэгчийн бие даасан буюу (IF) хэлбэр.

28. 
tl. mong., tib. H(a), sans.: (semi-vowel) H(a);
tc. mong., tib., ha, sans: (semi-vowel) ha. Монгол, төвөд хэлний ha, самгард хэлний тал (буюу хагас) ha гийгүүлэгчийн бие даасан буюу (IF) хэлбэр.

29. 
tl. sans. KS(a);
tc. sans. ksa. Самгард хэлний ksa гийгүүлэгчийн бие даасан буюу (IF) хэлбэр.

Figure 7: Description of Mongolian Square letters (from Shagdarsürüng 2001: 164).

30.  **tl.** sans. T(a);
tc. sans. ta. Самгард хэлний ta гийгүүлэгчийн бие даасан буюу (IF) хэлбэр.

31.  **tl.** sans. TH(a);
tc.sans. tha. Самгард хэлний tha гийгүүлэгчийн бие даасан буюу (IF) хэлбэр.

32.  **tl.** sans. D(a);
tc. sans. da. Самгард хэлний da гийгүүлэгчийн бие даасан буюу (IF) хэлбэр.

33.  **tl.** sans. DH(a);
tc. sans. dha. Самгард хэлний dha гийгүүлэгчийн бие даасан буюу (IF) хэлбэр.

34. **tl.** sans. N(a);
tc. sans. na. Самгард хэлний na гийгүүлэгчийн бие даасан буюу (IF) хэлбэр.

35. **tl.** tib. Z(a);
tc. tib. za. Төвөд хэлний za гийгүүлэгчийн бие даасан буюу (IF) хэлбэр.

36. **tl.** tib. Z(a);
tc. tib. za. Төвөд хэлний za гийгүүлэгчийн бие даасан буюу (IF) хэлбэр.

37. **tl.** tib. '(a);
tc. tib. 'a. Төвөд хэлний 'a-čhuṅ буюу шанаган "a" гийгүүлэгчийн бие даасан буюу (IF) хэлбэр.

38. **tl.** tib., sans.: G(a);
tc. tib., sans.: ga. Төвөд, самгард хэлний ga гийгүүлэгчийн бие даасан буюу (IF) хэлбэр.

39. **tl.** sans. GH(a);
tc. sans. gha. Самгард хэлний gha гийгүүлэгчийн бие даасан буюу (IF) хэлбэр.

40.  **tl.** tib., sans.: J(a);
tc. tib., sans.: ja. Төвөд, самгард хэлний ja гийгүүлэгчийн бие даасан буюу (IF) хэлбэр.

41.  **tl.** sans. JH(a);
tc. sans. jha. Самгард хэлний jha гийгүүлэгчийн бие даасан буюу (IF) хэлбэр.

42. **tl.** sans. S(a);
tc. sa (?). Самгард хэлний sa (?) гийгүүлэгчийн бие даасан буюу (IF) хэлбэр.

Figure 8: Description of Mongolian Square letters (from Shagdarsürüng 2001: 165).

43. 
tl. sans. D(a);
tc. sans. da. Самгард хэлний da гийгүүлэгчийн бие даасан буюу (IF) хэлбэр.

44. 
tl. sans. DH(a);
tc. sans. dha. Самгард хэлний dha гийгүүлэгчийн бие даасан буюу (IF) хэлбэр.

45. 
tl. sans. B(a) / P(a);
tc. sans. ba / pa. Самгард хэлний ba / pa гийгүүлэгчийн бие даасан буюу (IF) хэлбэр.

46. 
tl. sans. BH(a);
tc. sans. bha. Самгард хэлний bha гийгүүлэгчийн бие даасан буюу (IF) хэлбэр.

47. 
tl. sans. R / Ri;
tc. sans. r / ri. Самгард хэлний r / ri эгшигийн бие даасан буюу (IF) хэлбэр.


tl. sans. r / ri;
tc. sans. r /ri. Самгард хэлний r / ri эгшигийн гол буюу (MF) хэлбэр. Yr буюу үеийн дунд, адагт тохиолдоно.

47.a. 
tl. sans. R / Ri;
tc. sans. r / ri. Самгард хэлний урт r / ri эгшигийн бие даасан буюу (IF) хэлбэр.


tl. sans. R / Ri;
tc. sans. r / ri. Самгард хэлний урт r / ri эгшигийн гол буюу (MF) хэлбэр. Yr буюу үеийн дунд, адагт тохиолдоно.

48. 
tl. sans. L / Li;
tc. sans. l / li. Самгард хэлний l / li эгшигийн бие даасан буюу (IF) хэлбэр.


tl. sans. l / li;
tc. sans. l / li. Самгард хэлний l / li эгшигийн гол буюу (MF) хэлбэр. Yr буюу үеийн дунд, адагт тохиолдоно.

48.a. 
tl. sans. L / Li;
tc. sans. l / li. Самгард хэлний урт l / li эгшигийн бие даасан буюу (IF) хэлбэр.


tl. sans. L / Li;
tc. sans. l / li. Самгард хэлний урт l / li эгшигийн гол буюу (MF) хэлбэр. Yr буюу үеийн дунд, адагт тохиолдоно.

49. 
tl. tib., sans. Kr(a);
tc. tib., sans. kra. Төвөд, самгард хэлний нийлмэл (буюу га зүүлтэт) kra гийгүүлэгчийн бие даасан буюу (IF) хэлбэр.

Figure 9: Description of Mongolian Square letters (from Shagdarsürüng 2001: 166).

50. 
tl. tib., sans. KHy(a);
tc. tib., sans. khya. Төвөд, самгард хэлний нийлмэл (буюу ya зүүлтэт) khya гийгүүлэгчийн бие даасан буюу (IF) хэлбэр.

51. 
tl. tib., sans. Gl(a);
tc. tib., sans. gla. Төвөд, самгард хэлний нийлмэл (буюу la зүүлтэт) gla гийгүүлэгчийн бие даасан буюу (IF) хэлбэр.

52. 
tl. tib., sans. rK(a);
tc. tib., sans. rka. Төвөд, самгард хэлний нийлмэл (буюу ra толгойт) rka гийгүүлэгчийн бие даасан буюу (IF) хэлбэр.

53. 
tl. tib., sans. sK(a);
tc. tib., sans. ska. Төвөд, самгард хэлний нийлмэл (буюу sa толгойт) ska гийгүүлэгчийн бие даасан буюу (IF) хэлбэр.

54. 
tl. tib., sans. lK(a);
tc. tib., sans. lka. Төвөд, самгард хэлний нийлмэл (буюу la толгойт) lka гийгүүлэгчийн бие даасан буюу (IF) хэлбэр.

Хэвтээ дөрвөлжин бичгийн уламжлалт цагаан толгойн эцэст, тоо болон дэс дарааны хувьд соёмбо бичгийнхитэй яг дүйх арван хоёр дэвсгэр гийгүүлэгчийг хэрхин тэмдэглэх аргыг жагсаан үзүүлсэн байдаг. Үүнд: тэдгээр гийгүүлэгч дэвсгэрлэхдээ соёмбо бичгийнхитэй адил "дүр урваж" жижигрэн зүүлт болж ордоггүй, бие даасан (IF) хэлбэрээрээ тэмдэглэгдэх боловч үе хаасны тэмдэг болох зураас буюу хэвтээ сүйхэлжин цэгийг доороо авдаг бөлгөө.

55. 
tl. mong.: AG, tib., sans.: AK;
tc. mong. ag, tib., sans.: ak (Жагсаалтын No. 10-тай харьцуулагтун).

56. 
tl. mong.: AK, tib., sans.: AKH;
tc. mong.: ak, tib., sans. akh (Жагсаалтын No. 11-тай харьцуулагтун).

57. 
tl. mong.: AN, tib., sans.: AN;
tc. mong.: an, tib., sans. an (Жагсаалтын No. 12-тай харьцуулагтун).

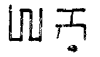
58. 
tl. mong.: AD, tib., sans.: AT;
tc. mong.: ad, tib., sans. at (Жагсаалтын No. 16-тай харьцуулагтун).

59. 
tl. mong., tib., sans. AN;
tc. mong., tib., sans. an (Жагсаалтын No. 18-тай харьцуулагтун).

60. 
tl. mong.: AG, tib., sans.: AK;
tc. mong. ag, tib., sans. ak (Жагсаалтын No. 19-тай харьцуулагтун).

61.
tl. mong., tib., sans. AM;
tc. mong., tib., sans. am (Жагсаалтын No. 21-тай харьцуулагтун).

Figure 10: Description of Mongolian Square letters (from Shagdarsürüng 2001: 167).

62. 
tl. mong., tib., sans. AR;
tc. mong., tib., sans. ar (Жагсаалтын No. 23-тай харьцуулагтун).

63. 
tl. mong., tib., sans. AL;
tc. mong., tib., sans. al (Жагсаатын No. 24-тай харьцуулагтун).

64. 
tl. mong. Aš, tib., sans.: Aç / Aś;
tc.mong. aš, tib., sans.: aç / aś (Жагсаалтын No. 26-тай харьцуулагтун).

65.
tl. mong., tib., sans. AS;
tc. mong., tib., sans. as (Жагсаалтын No. 27-тай харьцуулагтун).

66.
tl. mong.Ān;
tc. mong. ān. Үүнийг соёмбо бичигийн цагаан толгойн 41-рт дурдсан тайлбар сэлттэй харьцуулан үзнэ үү ().

Хэвтээ дөрвөлжин бичигт Монгол, төвөд, самгард хэлнээ дэвсгэрлэж орсон гийгүүлэгчийг ийнхүү дор нь тусгайлан тэмдэглэдэг уламжлал Төв Азийн бусад үндэстний бичиг үсгийн тогтолцоонд ч харагддаг бөлгөө. Тухайлбал: солонгос бичигт гол төлөв харь үгийн дэвсгэр гийгүүлэгчийг иймэрхүү байдлаар тэмдэглэдэг тухай энэ номын зохиогчийн бичсэн зүйл буй[15].

Дээрхи жагсаалтаас үзэхүл, хэвтээ дөрвөлжин бичигийг төвөд үсэг болон түүнээ үндэслэн зохиосон монгол дөрвөлжин бичигт тулгуурлаж, тэр цагийнхаа номын гурван хэл болж байсан монгол, төвөд, самгард хэлний үгийг тэмдэглэхэд зориулан таацуулж зохиосон болох нь тодорхой харагдана.

Одоо энэ хир хэвтээ дөрвөлжин бичигээрхи дурсгалын зүйл гэвэл тоо ширхэгийн хувьд тийм ч цөөнгүй, хэмжээний хувьд харьцангуй янз бүр, зарим нь тамгын дардас төдий байхад зарим нь 7-8 хуудас ар өвөргүй байх жишээтэй. Хэлний хувьд, төвөд болон самгардаар бие даалган бичсэн буюу хадсан дурсгал харьцангуй илүү боловч сүүлийн үес монгол хэлээр буй дурсгал нэмэгдэн олдсоор буй бөгөөд эдгээр дурсгалуудыг цуглуулах, судлах, хэвлэн нийтлэхэд Р. Бямбаа онцгой үүрэг гүйцэтгэснийг энэ ташрамд дурдалгүй орхих аргагүй.[16] Үүнээс гадна Р. Бямбаа номдоо соёмбо бичгийн тайлбар болгон тусгай ном зохиож байсан "Угалзын лам" хэмээн алдаршсан Лувсансодовжамцын *"Yig-bçad gsal ba'i me-long žes bya ba bzugs-so"* буюу *"Үсэгийн номлол тодорхой толь хэмээх оршивой"* гэдэг нэртэй бүтээлийг монгол орчуулгын хамт эрдэм шинжилгээний гүйлгээнд оруулсан нь хэвтээ дөрвөлжин бичгийн талаар энэ хир бидний үетэй золгосон цорын ганц уламжлалт тайлбар зохиол болж өгсөн ач холбогдолтой юм. Энэ номын мэдээнээс үзвэл нэлээд зүйл тодорхой болж өгнө. Тухайлбал:

> 1.б.: (3)... Ранжүн Ишдоржбалсамбуу-бээр зохиосон үсгээс өөрөө аяндаа гарсан "Соёмбо" хэмээх үсэг нь их алдаршсан бөгөөд <u>үсэг бүсдыг зохиосон</u> нь энэ богдын шавийн ахмад

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[15] Ц. Шагдарсүрэн, *Монгол солонгос бичиг үсгийн харилцаа холбооны асуудалд*, - Mongolian Studies (The Korean Association for Mongol Studies), N. 4 (1996), Soeul, 1997, 169-192 х; Ts. Shagdarsurung, *A Study of Relation between the Korean and Mongolian Scripts,* The Research Paper to The Korea Foundation, Seoul, 1998, pp. 1-27.

[16] Р. Бямбаа, *Хэвтээ дөрвөлжин үсэг, түүний дурсгалууд*, Улаанбаатар, 1997, 90 х.

Figure 11: Description of Mongolian Square letters (from Shagdarsürüng 2001: 168).

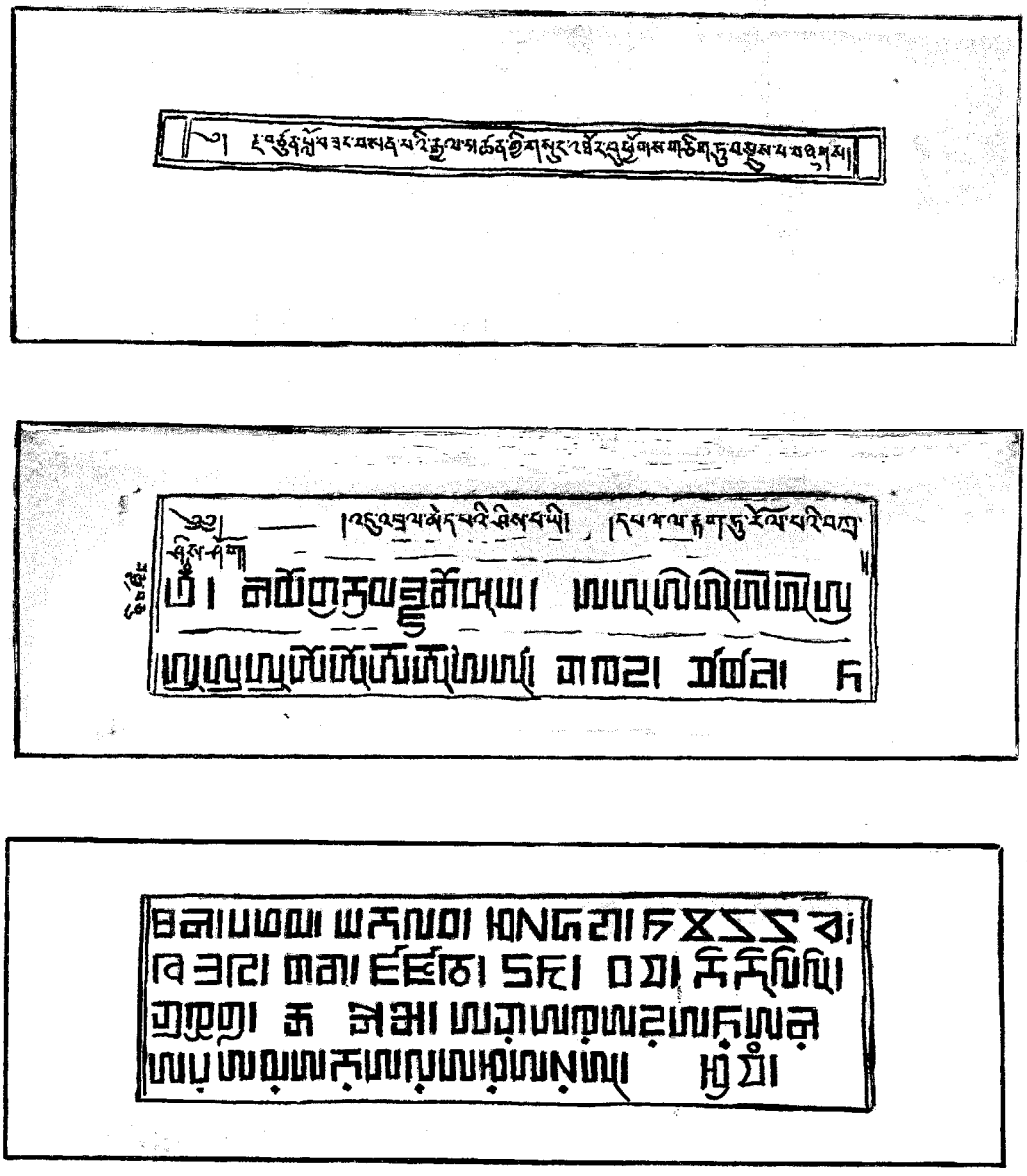

Figure 12: A record showing letters of Mongolian Square (from Shagdarsürüng 2001: 171).

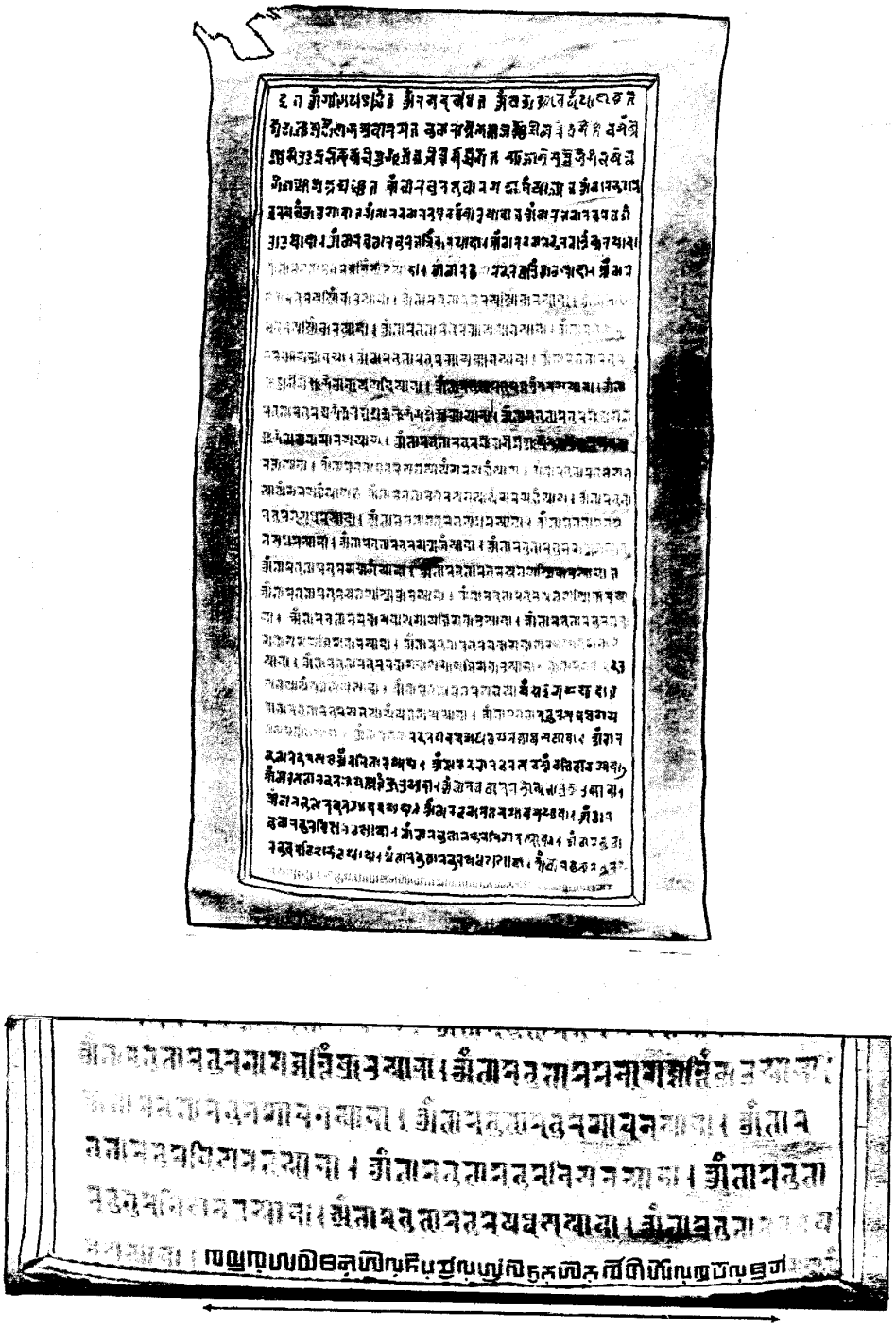

Figure 13: Mongolian Square text at the bottom of a record written in Ranjana (from Shagdarsürüng 2001: 172).

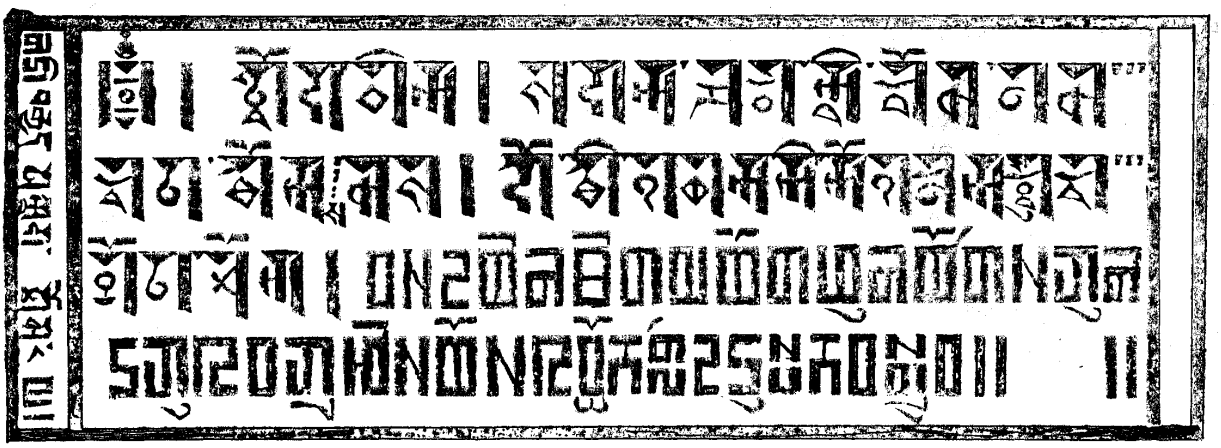

Figure 14: A manuscript containing text in Soyombo and Mongolian Square (from Shagdarsürüng 2001: 173). Note the sizing of consonant stacks, such that the letters are reduced so that the height of the stack matches the regular letter height.

Figure 15: Xylograph (block print) of a book cover with text in the Soyombo, Mongolian Square, Mongolian, and Cyrillic scripts (from Boldsaikhan, et al. 2005: 330). The title is Sanskrit written in Soyombo: *Mongal-svayaṃbhu-jyoti-varṇa-lipiḥ*. The Mongolian Square represents Tibetan, the Mongolian represents Mongolian, and the Cyrillic represents Modern (Khalkha) Mongolian. Notice the use of ◌ SUBJOINED VA in the word *svayambhu*.

Figure 16: A manuscript fragment containing text written in Ranjana, Soyombo, Mongolian Square, and Tibetan scripts (from Shagdarsüring 2001: 174).

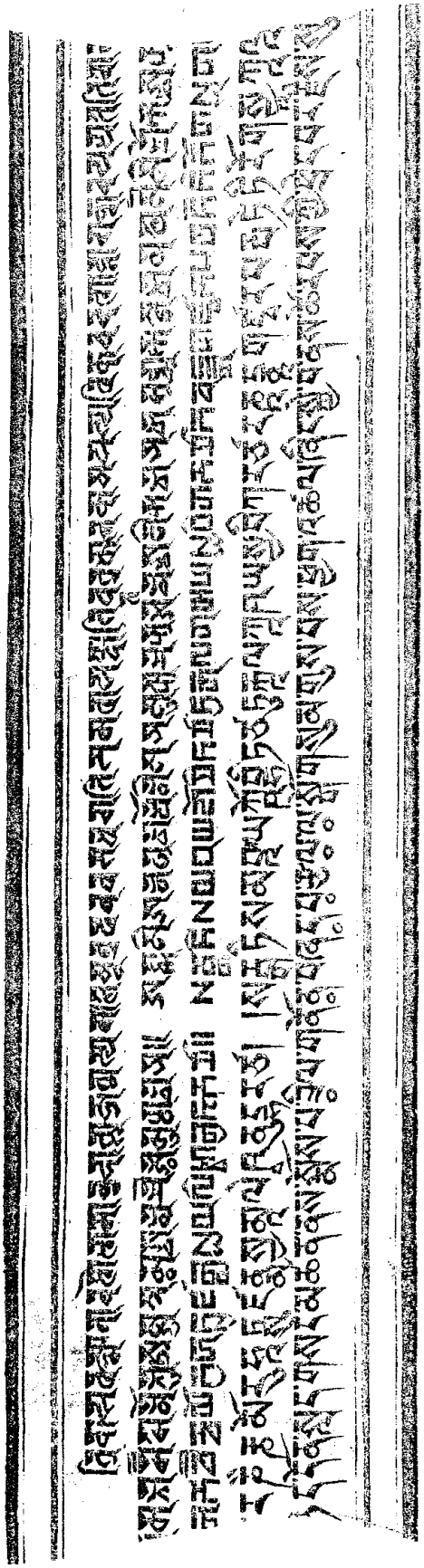

Figure 17: A manuscript fragment containing text written in Ranjana, Soyombo, Mongolian Square, and Tibetan scripts (from Shagdarsüŕüng 2001: 156).

ISO/IEC JTC 1/SC 2/WG 2
PROPOSAL SUMMARY FORM TO ACCOMPANY SUBMISSIONS
FOR ADDITIONS TO THE REPERTOIRE OF ISO/IEC 10646[1]
Please fill all the sections A, B and C below.
Please read Principles and Procedures Document (P & P) from http://www.dkuug.dk/JTC1/SC2/WG2/docs/principles.html **for guidelines and details before filling this form.**
Please ensure you are using the latest Form from http://www.dkuug.dk/JTC1/SC2/WG2/docs/summaryform.html**.**
See also http://www.dkuug.dk/JTC1/SC2/WG2/docs/roadmaps.html **for latest *Roadmaps*.**

A. Administrative

1. **Title:** *Proposal to Encode the Mongolian Square Script in ISO/IEC 10646*
2. Requester's name: *Script Encoding Initiative (SEI) / Anshuman Pandey (pandey@umich.edu)*
3. Requester type (Member body/Liaison/Individual contribution): *Liaison contribution*
4. Submission date: *2013-04-21*
5. Requester's reference (if applicable):
6. Choose one of the following:
   This is a complete proposal: *Yes*
   (or) More information will be provided later:

B. Technical – General

1. Choose one of the following:
   a. This proposal is for a new script (set of characters): *Yes*
      Proposed name of script: *Mongolian Square*
   b. The proposal is for addition of character(s) to an existing block:
      Name of the existing block:
2. Number of characters in proposal: *64*
3. Proposed category (select one from below - see section 2.2 of P&P document):
   A-Contemporary ( ) B.1-Specialized (small collection) (X) B.2-Specialized (large collection) ( )
   C-Major extinct ( ) D-Attested extinct ( ) E-Minor extinct ( )
   F-Archaic Hieroglyphic or Ideographic ( ) G-Obscure or questionable usage symbols ( )
4. Is a repertoire including character names provided? *Yes*
   a. If YES, are the names in accordance with the "character naming guidelines" in Annex L of P&P document? *Yes*
   b. Are the character shapes attached in a legible form suitable for review? *Yes*
5. Fonts related:
   a. Who will provide the appropriate computerized font to the Project Editor of 10646 for publishing the standard?
   Anshuman Pandey
   b. Identify the party granting a license for use of the font by the editors (include address, e-mail, ftp-site, etc.):
   Anshman Pandey (pandey@umich.edu)
6. References:
   a. Are references (to other character sets, dictionaries, descriptive texts etc.) provided? *Yes*
   b. Are published examples of use (such as samples from newspapers, magazines, or other sources) of proposed characters attached? *Yes*
7. Special encoding issues:
   Does the proposal address other aspects of character data processing (if applicable) such as input, presentation, sorting, searching, indexing, transliteration etc. (if yes please enclose information)? *Yes*

8. Additional Information:

Submitters are invited to provide any additional information about Properties of the proposed Character(s) or Script that will assist in correct understanding of and correct linguistic processing of the proposed character(s) or script. Examples of such properties are: Casing information, Numeric information, Currency information, Display behaviour information such as line breaks, widths etc., Combining behaviour, Spacing behaviour, Directional behaviour, Default Collation behaviour, relevance in Mark Up contexts, Compatibility equivalence and other Unicode normalization related information. See the Unicode standard at http://www.unicode.org for such information on other scripts. Also see Unicode Character Database (http://www.unicode.org/reports/tr44/) and associated Unicode Technical Reports for information needed for consideration by the Unicode Technical Committee for inclusion in the Unicode Standard.

[1] Form number: N4102-F (Original 1994-10-14; Revised 1995-01, 1995-04, 1996-04, 1996-08, 1999-03, 2001-05, 2001-09, 2003-11, 2005-01, 2005-09, 2005-10, 2007-03, 2008-05, 2009-11, 2011-03, 2012-01)

C. Technical - Justification

1. Has this proposal for addition of character(s) been submitted before? *No*
   If YES explain
2. Has contact been made to members of the user community (for example: National Body, user groups of the script or characters, other experts, etc.)? *Yes*
   If YES, with whom? *Specialists of Mongolian writing systems*
   If YES, available relevant documents:
3. Information on the user community for the proposed characters (for example: size, demographics, information technology use, or publishing use) is included? *Yes*
   Reference:
4. The context of use for the proposed characters (type of use; common or rare) *Rare*
   Reference:
5. Are the proposed characters in current use by the user community? *Yes*
   If YES, where? Reference: *By scholars of Mongolian history and linguistics*
6. After giving due considerations to the principles in the P&P document must the proposed characters be entirely in the BMP? *N/A*
   If YES, is a rationale provided?
   If YES, reference:
7. Should the proposed characters be kept together in a contiguous range (rather than being scattered)? *Yes*
8. Can any of the proposed characters be considered a presentation form of an existing character or character sequence? *No*
   If YES, is a rationale for its inclusion provided?
   If YES, reference:
9. Can any of the proposed characters be encoded using a composed character sequence of either existing characters or other proposed characters? *No*
   If YES, is a rationale for its inclusion provided?
   If YES, reference:
10. Can any of the proposed character(s) be considered to be similar (in appearance or function) to, or could be confused with, an existing character? *No*
    If YES, is a rationale for its inclusion provided?
    If YES, reference:
11. Does the proposal include use of combining characters and/or use of composite sequences? *Yes*
    If YES, is a rationale for such use provided? *Yes*
    If YES, reference: *Combining signs*
    Is a list of composite sequences and their corresponding glyph images (graphic symbols) provided?
    If YES, reference:
12. Does the proposal contain characters with any special properties such as control function or similar semantics? *Yes*
    If YES, describe in detail (include attachment if necessary) *Virama; see text of the proposal*
13. Does the proposal contain any Ideographic compatibility characters? *No*
    If YES, are the equivalent corresponding unified ideographic characters identified?
    If YES, reference: