L2/03-229

ISO/IEC JTC 1/SC 2/WG 2

PROPOSAL SUMMARY FORM TO ACCOMPANY SUBMISSIONS
FOR ADDITIONS TO THE REPERTOIRE OF ISO/IEC 10646
Please fill all the sections A, B and C below.

(Please read Principles and Procedures Document for guidelines and details before filling this form.)
See http://www.dkuug.dk/JTC1/SC2/WG2/docs/summaryform.html for latest Form.
See http://www.dkuug.dk/JTC1/SC2/WG2/docs/principles.html for latest Principles and Procedures document.
See http://www.dkuug.dk/JTC1/SC2/WG2/docs/roadmaps.html for latest roadmaps.

(Form number: N2352-F (Original 1994-10-14; Revised 1995-01, 1995-04, 1996-04, 1996-08, 1999-03, 2001-05, 2001-09)

A. Administrative

```
1. Title:  Proposal to encode the Phags-pa script_____

2. Requester's name: Andrew C. West_____
3. Requester type:   Individual contribution_____
4. Submission date:  22nd July 2003_____
5. Requester's reference (if applicable): _____
6. (Choose one of the following:)
  This is a complete proposal:                        Complete Proposal
  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: PHAGS-PA_____
  b. The proposal is for addition of character(s) to an existing block: _____
   Name of the existing block: _____
2. Number of characters in proposal:                        51_____
3. Proposed category (see section II, Character Categories):  C_____
4. Proposed Level of Implementation (1, 2 or 3)
                (see clause 14, ISO/IEC 10646-1: 2000):   2_____
  Is a rationale provided for the choice?                  No_____
   If Yes, reference: _____
5. 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 ISO/IEC 10646-1: 2000? Yes____
  b. Are the character shapes attached in a legible form suitable for review?
                                                              Yes___
6. Who will provide the appropriate computerized font (ordered preference:
   True Type, or PostScript format) for publishing the standard?
   Andrew C. West_____
   If available now, identify source(s) for the font (include address,
   e-mail, ftp-site, etc.) and indicate the tools used:
     _____
     _____
     _____
7. 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_____
8. 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_____
```

```
9. 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/Public/UNIDATA/UnicodeCharacterDatabase.html and
associated Unicode Technical Reports for information needed for consideration
by the Unicode Technical Committee for inclusion in the Unicode Standard.
```

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? Academic community and Unicode community_____
     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?                           Mostly scholarly
     Reference: _____
4. The context of use for the proposed characters (type of use;
   common or rare)                                         Academic_____
     Reference: _____
5. Are the proposed characters in current use by the user community? Yes_____
   If YES, where?  Reference: Academic journals and monographs_____
6. After giving due considerations to the principles in Principles and
   Procedures document (a WG 2 standing document) must the proposed
   characters be entirely in the BMP?      No, but roadmapped to AB80-ABDF__
   If YES, is a rationale provided?                        _____
     If YES, reference: Unicode and ISO/IEC 10646 Roadmaps_____
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 an existing character?       Yes_____
    If YES, is a rationale for its inclusion provided?       No_____
     (Phags-pa is derived from Tibetan, and so some characters are similar)
     If YES, reference: _____
11. Does the proposal include use of combining characters and/or use of
    composite sequences (see clauses 4.12 and 4.14
    in ISO/IEC 10646-1: 2000)?                              No_____
    If YES, is a rationale for such use provided?           _____
     If YES, reference: _____
    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?                  No_____
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   If YES, describe in detail (include attachment if necessary) _____
13. Does the proposal contain any Ideographic compatibility character(s)? No_
   If YES, is the equivalent corresponding unified ideographic character(s)
   identified?                                                   _____
    If YES, reference: _____
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ADDITIONAL INFORMATION

The Phags-pa script (known as basiba wen 八思巴文 in modern Chinese) is derived from the Tibetan script, but unlike other Brahmic scripts it is written in vertical columns from left to right, after the manner of the Mongolian script. The script was devised by the Tibetan 'Phags-pa Lama འཕགས་པ་བློ་མ་ (1239-1280) at the behest of Kublai Khan in 1260, and promulgated as the official script of the Mongolian empire in 1269.

The script was intended to represent the various languages spoken throughout the Mongolian empire, including Mongolian, Chinese, Tibetan and Uighur. The vast majority of the extant Phags-pa inscriptions and texts dating from the 13th and 14th centuries are in Chinese or Mongolian. These include monumental inscriptions, printed texts, manuscript documents, banknotes, coins and seals.

After the collapse of the Mongolian Yuan dynasty in 1368, the Phags-pa script fell out of use amongst the Chinese and Mongolians, although it did continue in use amongst the Tibetans to a limited extent as a decorative script. Tibetan woodblock texts from the early 20th century that describe the Phags-pa script are known (see Example 4), but the Tibetan use of the Phags-pa script seems now to have virtually died out.

Note that the script is more commonly known as **'Phags-pa**, **hP'ags-pa** or **hPhags-pa** in academic literature, but as the initial letter is silent (representing TIBETAN LETTER -A) and the apostrophe is disallowed by the naming guidelines in Annex L of ISO/IEC 10646-1: 2000, it is proposed to use the name **Phags-pa** for both the script and for the script element of the character names.

2. SCRIPT REPERTOIRE

The Phags-pa script seems to have originally comprised forty-one letters. This is the number of Phags-pa letters said to have been devised by the 'Phags-pa Lama in his biography in the History of the Yuan Dynasty (compiled 1369-1370). Although the History of the Yuan Dynasty does not enumerate these forty-one letters, two other contemporaneous works, Fashu Kao 法書考 (a work on calligraphy composed by the Yuan dynasty Uighur official Sheng Ximing 盛熙明, first published in 1334) and Shushi Huiyao 書史會要 (a work on the history of calligraphy by the late Yuan / early Ming author Tao Zongyi 陶宗儀, first published in 1376) do list the forty-one Phags-pa letters (see Illustration 1).

Illustration 1 : Table of 41 Phags-pa Letters in Shushi Huiyao

Source : Shushi Huiyao 書史會要 vol. 7 folio 22a.

The forty-one Phags-pa letters given in Shushi Huiyao and Fashu Kao comprise (in the order listed in these works) :

- Thirty consonant letters corresponding to the thirty basic Tibetan consonants (TIBETAN LETTERS KA, KHA, GA, NGA, CA, CHA, JA, NYA, TA, THA, DA, NA, PA, PHA, BA, MA, TSA, TSHA, DZA, WA, ZHA, ZA, -A, YA, RA, LA, SHA, SA, HA and A).
- Four vowel letters corresponding to the four primary Tibetan vowel signs (TIBETAN VOWEL SIGNS I, U, E and O).
- Four consonant letters that do not correspond to Tibetan letters, but which are used to represent sounds found in Mongolian, Chinese and other languages :
  - QA : used in Mongolian and Old Uighur
  - XA : used in Mongolian and Chinese
  - FA : used in Chinese and Old Uighur
  - GGA : not used in Chinese, Mongolian or Old Uighur. This letter does not occur in any extant Phags-

pa texts other than the lists of Phags-pa letters given in <u>Shushi Huiyao</u> and <u>Fashu Kao</u>, and the list of "seal script" Phags-pa letters given in the Phags-pa rhyming dictionary <u>Menggu Ziyun</u> 蒙古字韵. It may have been used to represent a glottal stop for use in writing Persian (i.e. the letter 'ayn ع); however no Persian Phags-pa texts survive.

- One vowel letter (EE) that does not correspond to a Tibetan vowel, which is used to represent an "e" vowel (usually transliterated as "ė") in Mongolian and Chinese, or in combination with the letters U and O to represent the front vowels "ü" and "ö" respectively.
- Two subjoined letters corresponding to the Tibetan subjoined letters WA [U+0FAD] (Tib. wa-zur) and YA [U+0FB1] (Tib. ya-btags).

In addition to the forty-one basic letters listed in <u>Shushi Huiyao</u> and <u>Fashu Kao</u>, the Yuan dynasty Phags-pa inscriptions of Buddhist texts at Juyong Guan 居庸關 at the Great Wall north-west of Beijing include a number of additional Phags-pa letters that are used to represent Sanskrit (see Example 3) :

- Four reversed consonant letters (reversed TA, THA, DA and NA) corresponding to the Tibetan letters TTA, TTHA, DDA and NNA that are used to represent Sanskrit retroflex letters. Note that a reversed letter SHA corresponding to the Tibetan letter SSA [U+0F65] is not found. All instances of the Tibetan letter SSA in the Tibetan version of the Juyong Guan Buddhist inscriptions correspond to an ordinary, unreversed letter SHA in the Phags-pa version. The reason for this is probably because a reversed letter SHA would be indistinguishable from the letter -A.
- One subjoined letter corresponding to the Tibetan subjoined letter RA [U+0FB2] (Tib. ra-btags). This letter is also used in Tibetan Phags-pa inscriptions.
- The Candrabindu sign that is used to represent the nasalization of the vowel it is attached to or a nasal consonant that is homorganic with the following sound (in modern Devanagari usage the Candrabindu is used for the former, and the Anusvara is used for the latter). The Phags-pa Candrabindu corresponds to TIBETAN SIGN RJES SU NGA RO (Anusvara) [U+0F7E] and TIBETAN SIGN SNA LDAN (Candrabindu) [U+0F83].

Tibetan Phags-pa inscriptions also make use of one further letter and several punctuation marks that are derived from the Tibetan script :

- One superfixed letter corresponding to the Tibetan superfixed letter RA (Tib. ra-mgo) (see Example 5).
- A "head mark" (Tib. yig-mgo) corresponding to the ligature of TIBETAN MARK INITIAL YIG MGO MDUN MA [U+0F04] and TIBETAN MARK CLOSING YIG MGO SGAB MA [U+0F05] or the 3rd variant form of the Mongolian Birga [U+1800], which is used to indicate the start of a text (see Example 4).
- Two punctuation marks corresponding to TIBETAN MARK SHAD [U+0F0D] and TIBETAN MARK NYIS SHAD [U+0F0E] (see Example 4).

These Phags-pa letters and marks are listed in Table 1 below :

Table 1 : Proposed PHAGS-PA Characters

Proposed Code Point	Representative Glyph	Proposed Character Name	UnicodeData Properties	Notes
AB80	�ꂷ	PHAGS-PA LETTER KA	Lo;0;L;;;;;N;;;;;	→ 0F40 ཀ tibetan letter ka
AB81		PHAGS-PA LETTER KHA	Lo;0;L;;;;;N;;;;;	→ 0F41 ཁ tibetan letter kha
AB82		PHAGS-PA LETTER GA	Lo;0;L;;;;;N;;;;;	→ 0F42 ག tibetan letter ga
AB83		PHAGS-PA LETTER NGA	Lo;0;L;;;;;N;;;;;	→ 0F44 ང tibetan letter nga
AB84		PHAGS-PA LETTER CA	Lo;0;L;;;;;N;;;;;	→ 0F45 ཅ tibetan letter ca
AB85		PHAGS-PA LETTER CHA	Lo;0;L;;;;;N;;;;;	→ 0F46 ཆ tibetan letter cha
AB86		PHAGS-PA LETTER	Lo;0;L;;;;;N;;;;;	

		JA		→ 0F47 ᐈ tibetan letter ja
AB87		PHAGS-PA LETTER NYA	Lo;0;L;;;;;N;;;;;	→ 0F49 ᐈ tibetan letter nya
AB88		PHAGS-PA LETTER TTA	Lo;0;L;;;;;N;;;;;	→ 0F4A ᐈ tibetan letter tta
AB89		PHAGS-PA LETTER TTHA	Lo;0;L;;;;;N;;;;;	→ 0F4B ᐈ tibetan letter ttha
AB8A		PHAGS-PA LETTER DDA	Lo;0;L;;;;;N;;;;;	→ 0F4C ᐈ tibetan letter dda
AB8B		PHAGS-PA LETTER NNA	Lo;0;L;;;;;N;;;;;	→ 0F4E ᐈ tibetan letter nna
AB8C		PHAGS-PA LETTER TA	Lo;0;L;;;;;N;;;;;	→ 0F4F ᐈ tibetan letter ta
AB8D		PHAGS-PA LETTER THA	Lo;0;L;;;;;N;;;;;	→ 0F50 ᐈ tibetan letter tha
AB8E		PHAGS-PA LETTER DA	Lo;0;L;;;;;N;;;;;	→ 0F51 ᐈ tibetan letter da
AB8F		PHAGS-PA LETTER NA	Lo;0;L;;;;;N;;;;;	→ 0F53 ᐈ tibetan letter na
AB90		PHAGS-PA LETTER PA	Lo;0;L;;;;;N;;;;;	→ 0F54 ᐈ tibetan letter pa
AB91		PHAGS-PA LETTER PHA	Lo;0;L;;;;;N;;;;;	→ 0F55 ᐈ tibetan letter pha
AB92		PHAGS-PA LETTER BA	Lo;0;L;;;;;N;;;;;	→ 0F56 ᐈ tibetan letter ba
AB93		PHAGS-PA LETTER MA	Lo;0;L;;;;;N;;;;;	→ 0F58 ᐈ tibetan letter ma
AB94		PHAGS-PA LETTER TSA	Lo;0;L;;;;;N;;;;;	→ 0F59 ᐈ tibetan letter tsa
AB95		PHAGS-PA LETTER TSHA	Lo;0;L;;;;;N;;;;;	→ 0F5A ᐈ tibetan letter tsha
AB96		PHAGS-PA LETTER DZA	Lo;0;L;;;;;N;;;;;	→ 0F5B ᐈ tibetan letter dza
AB97		PHAGS-PA LETTER WA	Lo;0;L;;;;;N;;;;;	→ 0F5D ᐈ tibetan letter wa
AB98		PHAGS-PA LETTER ZHA	Lo;0;L;;;;;N;;;;;	→ 0F5E ᐈ tibetan letter zha
AB99		PHAGS-PA LETTER ZA	Lo;0;L;;;;;N;;;;;	→ 0F5F ᐈ tibetan letter za
AB9A		PHAGS-PA LETTER -A	Lo;0;L;;;;;N;;;;;	→ 0F60 ᐈ tibetan letter -a
AB9B		PHAGS-PA LETTER YA	Lo;0;L;;;;;N;;;;;	→ 0F61 ᐈ tibetan letter ya
AB9C		PHAGS-PA LETTER RA	Lo;0;L;;;;;N;;;;;	→ 0F62 ᐈ tibetan letter ra
AB9D		PHAGS-PA LETTER LA	Lo;0;L;;;;;N;;;;;	→ 0F63 ᐈ tibetan letter la
AB9E		PHAGS-PA LETTER SHA	Lo;0;L;;;;;N;;;;;	→ 0F64 ᐈ tibetan letter sha

	ᛕ			
AB9F		PHAGS-PA LETTER SA	Lo;0;L;;;;;N;;;;;	→ 0F66 ས tibetan letter sa
ABA0		PHAGS-PA LETTER HA	Lo;0;L;;;;;N;;;;;	→ 0F67 ཧ tibetan letter ha
ABA1		PHAGS-PA LETTER A	Lo;0;L;;;;;N;;;;;	→ 0F68 ཨ tibetan letter a
ABA2		PHAGS-PA LETTER QA	Lo;0;L;;;;;N;;;;;	
ABA3		PHAGS-PA LETTER XA	Lo;0;L;;;;;N;;;;;	
ABA4		PHAGS-PA LETTER FA	Lo;0;L;;;;;N;;;;;	
ABA5		PHAGS-PA LETTER GGA	Lo;0;L;;;;;N;;;;;	
ABA6		PHAGS-PA SUBJOINED LETTER WA	Lo;0;L;;;;;N;;;;;	→ 0FAD ྭ tibetan subjoined letter wa
ABA7		PHAGS-PA SUBJOINED LETTER YA	Lo;0;L;;;;;N;;;;;	→ 0FB1 ྱ tibetan subjoined letter ya
ABA8		PHAGS-PA SUBJOINED LETTER RA	Lo;0;L;;;;;N;;;;;	→ 0FB2 ྲ tibetan subjoined letter ra
ABA9		PHAGS-PA SUPERFIXED LETTER RA	Lo;0;L;;;;;N;;;;;	→ 0F62 ར tibetan letter ra
ABAA		PHAGS-PA LETTER I	Lo;0;L;;;;;N;;;;;	→ 0F72 ི tibetan vowel sign i
ABAB		PHAGS-PA LETTER U	Lo;0;L;;;;;N;;;;;	→ 0F74 ུ tibetan vowel sign u
ABAC		PHAGS-PA LETTER E	Lo;0;L;;;;;N;;;;;	→ 0F7A ེ tibetan vowel sign e
ABAD		PHAGS-PA LETTER O	Lo;0;L;;;;;N;;;;;	→ 0F7C ོ tibetan vowel sign o
ABAE		PHAGS-PA LETTER EE	Lo;0;L;;;;;N;;;;;	
ABAF		PHAGS-PA LETTER CANDRABINDU	Lo;0;L;;;;;N;;;;;	→ 0F83 ྃ tibetan sign sna ldan → 0F7E ཾ tibetan sign rjes su nga ro
ABB0		PHAGS-PA MARK HEAD MARK	Po;0;ON;;;;;N;;;;;	• marks beginning of text → 0F04 ༄ tibetan mark initial yig mgo mdun ma, 0F05 ༅ tibetan mark closing yig mgo sgab ma
ABB1		PHAGS-PA MARK SHAD	Po;0;ON;;;;;N;;;;;	→ 0F0D ། tibetan mark shad
ABB2		PHAGS-PA MARK DOUBLE SHAD	Po;0;ON;;;;;N;;;;;	→ 0F0E ༎ tibetan mark nyis shad

Notes

1. Proposed code points reflect the provisional range for the **'Phags-pa** script given in the Unicode and ISO/IEC 10646 Roadmaps (U+AB80..ABDF).
2. Representative glyphs are intended to represent the most common forms of Phags-pa letters, but in many cases letters occur in a number of variant forms depending on individual the text. In particular the letter E occurs in a wide range of different forms in different texts and inscriptions (see Table 2 for examples), and there is no single form that can be considered standard. Generally speaking the double-toothed forms are more common in Mongolian Phags-pa inscriptions and texts, and the single-toothed forms are more common in Chinese Phags-pa inscriptions and texts. The double-toothed form of the letter E that is found in the Juyong Guan inscriptions has been selected as the representative glyph.
3. Character names follow those used for the corresponding Tibetan character where appropriate (note that the proposed character name "PHAGS-PA LETTER -A" has a leading hyphen).
4. The letter FA is transliterated as "hụ" (i.e. HA + SUBJOINED-WA) by some authorities (e.g. Junast and Yang Naisi in their Menggu Ziyun Jiaoben). However, although the letter FA superficially resembles the letter HA with a subjoined letter WA, in texts such as Baijiaxing Mengguwen 百家姓蒙古文 [The Phags-pa version of the "Hundred Chinese Surnames"] the letter FA and the compound letter HWA are clearly differentiated : in the letter FA the upper part of the letter resembling a letter HA with no tail kink joins smoothly onto the lower part of the letter resembling a subjoined letter WA [as shown in Example 11 "fang" of Table 3]; whereas in the letter HWA there is a kink in the tail of the letter HA before it joins onto the subjoined letter WA [as shown in Example 4 "hwa" of Table 3].

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3. SCRIPT EXAMPLES

Example 1

This is a typical Yuan dynasty Phags-pa monumental inscription dated 1298. It comprises parallel Phags-pa and ideographic versions of an imperial edict written in Chinese. The Phags-pa text, which reads from left to right, is an exact transliteration of the ideographic text, which reads from right to left.

上天眷命　皇帝聖旨　　　先朝　其　安　順　永　貞　時　崇　故
三代以　有鎮山所以　德也　未　加　王　應　靖　德　與　德　兹
　　　　　　　　　　　　五嶽四　嘗　東　南　王　王　廣　嶽　應　詔
　　　　　　　　　　　　瀆　加　鎮　西　北　寧　瀆　靈　示
　　　　　　　　　　　　　封　沂　鎮　鎮　王　同　王　想
　　　　　　　　　　　　　　　　山　會　醫　中　　　　　　宜
大德二年

Source : <u>Basibazi yu Yuandai Hanyu</u> Plate 29.

Example 2

This is an impression of the seal of the Imperial Preceptor (viz. the viceroy of Tibet, a position first bestowed on the 'Phags-pa Lama by Kublai Khan) that was used on documents dated 1290 through 1337.

As is typical of official seals dating from the Yuan (1271-1368) and Northern Yuan (1368-1402) dynasties, the text is engraved in a labyrinthine, pseudo-archaic "seal script" form of the Phags-pa letters.

Source : <u>Minzu Yuwen</u> 民族語文 1997.3 Back Cover Illustration XII.

Example 3

This is a portion of the Phags-pa transliteration of a Sanskrit text that is engraved on the east wall of the "Cloud Platform" 雲台 at Juyong Guan 居庸關 at the Great Wall north-west of Beijing. This is part of a set of parallel versions of Buddhist texts engraved in the scripts of six languages (Sanskrit, Tibetan, Mongolian, Uighur, Chinese and Tangut) in commemoration of the construction of a Buddhist edifice in 1345.

This example illustrates the use of the series of reversed letters (TTA, TTHA, DDA and NNA), as well as the subjoined letter RA and the Candrabindu sign.

Source : Chü-Yung-Kuan 居庸關 : The Buddhist Arch of the Fourteenth Century A.D. at the Pass of the Great Wall Northwest of Peking.

Example 4

This is the first page of a Tibetan primer of the Phags-pa and Lantsa scripts obtained by the Buriat Cossack officer Tsokto Garmeyevich Badmazhapov in 1903.

This example illustrates the distinctive style of the decorative Tibetan form of the Phags-pa script, as well as some punctuation marks (the head mark, the shad and the double shad) that are Tibetan innovations.

Source : The Mongolian Monuments in ḤP'AGS-PA Script page 16.

Example 5

This is the seal of the Imperial Preceptor Sangs-rgyas-dpal (1267-1314).

The main text reads **sangs rgyal dpal** (Tibetan sangs-rgyal-dpal སངས་རྒྱས་དཔལ), whilst the word **ti shi**

(Chinese dìshī 帝師 "Imperial Preceptor") is engraved horizontally along the bottom of the seal.

This seal illustrates usage of the superfixed letter RA (top of middle column) and the Tibetan shad mark (bottom of right column).

Source : Minzu Yuwen 民族語文 1997.3 Back Cover Illustration XI.

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4. SCRIPT STYLES

There are three distinctive styles of the Phags-pa script :

- The standard script used on monumental inscriptions, printed texts and manuscript documents, etc. (see Examples 1 and 3)
- A labyrinthine, pseudo-archaic "seal script" form of the Phags-pa letters that is used mainly on official seals dating from the Yuan (1271-1368) and Northern Yuan (1368-1402) dynasties (see Example 2), but which is also sometimes used for the title on monumental inscriptions.
- A distinctive squashed, rectilinear form of the Phags-pa letters used as a decorative script in Tibet (see Example 4). The Tibetan style of Phags-pa letters may be seen in seals (such as that of the 13th Dalai Lama that was made in 1909) and in architectural inscriptions (e.g. on the pillars on either side of the main alter at the St. Petersburg Buddhist Monastery [Datsan Kuntsechoinei] which was consecrated in 1915).

Examples of the various forms of the Phags-pa letters that occur in these three script styles are given in Table 2 below :

Table 2 : Variant Forms of Phags-pa Letters

Character Name	Standard Style	Tibetan Style	Seal Script Style
KA			
KHA			

	占	固	占 囯
GA	句	勾	句 圀 刊 刋
NGA	己	己	己 己 己
CA	司	司	司 司
CHA	击	击	击 击 击
JA	臣	臣	臣 气 原
NYA	冂冂	冂	冂 冂
TTA	刃		
TTHA	吕吕		
DDA	刁		
NNA	⼞		
TA	仄仄	仄	仄 仄 仄
THA	吕	吕	吕 吕

DA			
NA			
PA			
PHA			
BA			
MA			
TSA			
TSHA			
DZA			
WA			

ZHA			
ZA			
-A			
YA			
RA			
LA			
SHA			
SA			
HA			
A			

QA			
XA			
FA			
GGA			
Subjoined WA			
Subjoined YA			
Subjoined RA			
Superfixed RA			
I			
U			

E			
O			
EE			
Candrabindu			
Head Mark			
Shad			
Double Shad			

Notes

1. Tibetan style letters are based on the forms given in the primer shown in figs.5-7 of Poppe's The Mongolian Monuments in HP'AGS-PA Script (see Example 4). Letters missing in the pages of the text published by Poppe are based on a very similar text which is available at http://snark.ptc.spbu.ru/~uwe/tibex/phagspa/. Note that slightly different forms of these letters may be encountered (see for example page 192 of Pozdneyev's Лекціи по исторіи монгольской литературы).
2. Seal script style letters are taken from the examples given in Menggu Ziyun 蒙古字韻, and from actual seals and epigraphic inscriptions.

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5. MORPHOLOGICAL DESCRIPTION

The Phags-pa script is written in vertical columns reading from top-to-bottom, laid out left-to-right across the writing surface. This follows the directionality and page layout of the Uighur-derived Mongolian script that was in use at the time that the 'Phags-pa Lama devised the Phags-pa script. This top-to-bottom / left-to-right layout is common to all extant Phags-pa texts, whether written in Mongolian, Chinese, Tibetan, Sanskrit or Old Uighur. The only example of horizontal textual layout that I have encountered is the word **ti shi** (Chinese dìshī 帝師 "Imperial Preceptor") that is engraved horizontally left-to-right along the bottom of the seal shown in Example 5. This anomalous layout is probably an artefact of the limited space available for engraving the word on the seal, and may perhaps better be regarded as four vertical columns of one letter each rather than a single horizontal row.

In writing Chinese, Mongolian, Old Uighur, Tibetan, Sanskrit and other languages with the Phags-pa script, Phags-pa letters combine to form discrete syllable units, separated from each other by whitespace. For Chinese, which is monosyllabic at the ideographic level, this means that one ideograph corresponds to one Phags-pa syllable unit. On the other hand, for languages like Mongolian, Tibetan and Sanskrit, which have polysyllabic words, a word

spelled in the Phags-pa script comprises one or many syllable units separated by whitespace. The normal Space character [U+0020] should be used to separate syllable units. A line break opportunity may occur between syllable units, but not within a syllable unit.

The simplest syllable unit comprises either a vowel letter (I, U, E or O) by itself or a consonant letter by itself. As with Tibetan, when an initial consonant is not followed by a vowel letter, it carries an inherent vowel "a". Thus, for example, the letter KA by itself represents the sound "ka", but when followed by the vowel letter I, the two letters combine to represent the sound "ki". A null consonant letter [PHAGS-PA LETTER A] is used to represent an initial vowel "a". Note that, unlike the Tibetan vowel signs, Phags-pa vowel letters other than EE can occur in isolation or initially, and do not have to be attached to a null consonant (i.e. the letter A, transcribed as an apostrophe in the examples below) to represent an initial vowel sound.

Examples of various words in Chinese, Mongolian, Uighur, Tibetan and Sanskrit, as written in the Phags-pa script, are given in Table 3 below (the individual syllable units that make up a polysyllabic word are separated by whitespace) :

Table 3 : Example Phags-pa Words

1	2	3	4	5	6	7	8	9	10

11	12	13	14	15	16	17	18	19	20

Key to Table 3

1. **u** = Chinese 吳 wú "Wu [proper name]"
2. **'eeu** = Chinese 虞 yú "Yu [proper name]" (the letters EE and U form a digraph representing a front u, normally transcribed as **ü**)
3. **shi** = Chinese 石 shí "stone"
4. **hwa** = Chinese 花 huā "flower"
5. **hya** = Chinese 夏 xià "summer"
6. **hay** = Chinese 海 hǎi "sea"
7. **ngiw** = Chinese 牛 niú "ox"
8. **mue** = Chinese 梅 méi "plum"
9. **-an** = Chinese 安 ān "peaceful"
10. **lhing** = Chinese 冷 lěng "cold" (the the letters HA and I form a digraph representing a vowel sound that is sometimes transcribed as **ï**)
11. **fang** = Chinese 方 fāng "square"
12. **na yan** = Classical Mongolian **nayan** ᠨᠠᠶᠠᠨ "eighty"

13. **deng ri** = Classical Mongolian **tengri** ᠊ᠩᡅᠷᡅ "heaven"

14. **q-an** = Classical Mongolian **qaɣan** ᠊ᠠᠠᠠ "emperor, khan" (in a medial position the letter -A is used to represent a long vowel)

15. **ta layi** = Classical Mongolian **dalai** ᠊ᠠᠯᠠᡅ "sea, ocean" (the final **yi** forms a diphthong with the preceding vowel in Mongolian and Sanskrit Phags-pa texts, and **layi** is thus a single syllable, written with the letters ligated together)

16. **quth luq** = Old Uighur **qutluɣ** "with fortune"

17. **sangs rgyas** = Tibetan **sangs-rgyas** སངས་རྒྱས་ "Buddha"

18. **ba dzra** = Sanskrit **vajra**

19. **'-a kad ddha ya** = Sanskrit **ākaḍḍhaya**

20. **bh-ruM** = Sanskrit **bhrūṁ** (the **M** is used to transcribe the Candrabindu sign)

Within each syllable unit all Phags-pa letters except for the Candrabindu are ligated together, usually by extending the right-hand stem of a letter down to join up with the next letter. The reversed series of letters TTA, TTHA, DDA and NNA normally ligate by extending their left-hand stem. In some Tibetan Phags-pa texts the ligature is a short vertical line along the central axis of adjacent letters. How these ligatures are achieved would be up to the individual font designer. In very many cases two adjacent letters are able to ligate simply by having zero spacing between them (for example, the stem of the letter KA would naturally join up with the stem of a following letter I if there was no spacing between them).

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6. ENCODING MODEL

The proposed encoding model for the Phags-pa script is very simple : each letter of a syllable unit is encoded in visual order from top to bottom. Note that unlike Tibetan and most other Brahmic scripts, the Phags-pa vowels are normal spacing letters rather than vowel signs.

The physical/visual order of Phags-pa letters within a syllable unit normally represents their logical and pronunciation order. The one exception to this is the Candrabindu sign, which is always physically written as the first character in a syllable unit, even though it is logically the last character (as it represents nasalization of the final vowel). For example the well-known mantric syllable OM is written top-to-bottom as a Candrabindu sign followed by the letter O (see Example 3 lines 1 & 2). Quite long sequences with an initial Candrabindu also occur, such as CANDRABINDU + BA + HA + -A + SUBJOINED-RA + U [representing Sanskrit **bhrūṁ**] (see Example 3 line 2).

It would be difficult for the rendering engine and inconvenient for the end user to encode the Candrabindu sign as the last character in a syllable unit (its logical position) and yet render it as the first glyph in a syllable unit (its visual position), as cursor movement, text selection and delete/backspace operations would be confusing. It is therefore proposed to treat the Candrabindu as a normal spacing letter, and encode it within a text stream in its visual position. Thus, for example, the Phags-pa syllable OM would be encoded as <CANDRABINDU, O>, and the Phags-pa representation of Sanskrit **bhrūṁ** would be encoded as <CANDRABINDU, BA, HA, -A, SUBJOINED-RA, U>. Nevertheless, an Input Method Editor for the Phags-pa script that processed keystrokes representing romanized transcription could accept the keystroke representing Candrabindu as the final keystroke in a keystroke sequence for a syllable unit, and simply reorder the Candrabindu within the text stream as appropriate.

It is proposed to encode subjoined forms of the letters WA, YA and RA, and a superfixed form of the letter RA, in addition to (and separately from) the ordinary letters WA, YA and RA. The reason why these positional forms of the letters WA, YA and RA must be encoded separately is that without an explicit vowel "a" it would be impossible to distinguish, and hence correctly render, normal and subjoined/superfixed forms of the letters in a syllable with an inherent "a" vowel. For example, the Phags-pa spelling of the Chinese word 海 hǎi "sea" is **hay** <HA, YA>, whereas the Phags-pa spelling of the Chinese word 夏 xià "summer" is **hya** <HA, SUBJOINED-YA>. With no explicit vowel, the only way to tell whether the second letter in each Phags-pa syllable is the normal form of the letter YA or the graphically distinct subjoined form of the letter YA is to encode the two forms of the letter YA separately. The same applies for the normal and graphically distinct subjoined forms of the letters WA and RA. Likewise, it is necessary to separately encode the graphically distinct superfixed form of the letter RA that is found before the letters KA, GA, NGA, JA, TA, DA, NA, BA, MA, TSA and DZA when writing Tibetan (before the letter

NYA only, the normal form of the letter RA is used), as otherwise it would be impossible to distinguish, and hence correctly render, Tibetan words written in the Phags-pa script such as **rnga** ᠊ "drum" and **rang** ᠊ "self". The important thing here is to provide a mechanism for determining which graphic form of the letter RA to render, not necessarily to distinguish which is the base consonant. Thus it is not necessary to separately encode superfixed forms of the letters LA and SA that are also used in writing Tibetan, as the normal and superfixed forms of the letters LA and SA are identical. In fact, in the case of words with a superfixed letter LA or SA, the base consonant is indicated in Phags-pa spelling by suffixing the letter -A when there is no explicit vowel (e.g. **sam** for Chinese ᠊ sān "three", but **sm-a** for Sanskrit "sma").

7. POSITIONAL VARIANTS

Positional variants are variant glyphs used for a particular character in a given position within a syllable unit. The rendering engine would be expected to select the correct glyph for any given position without any need for additional control codes or user intervention.

The vowel letters I, U, E and O (but not EE) each take two or more graphic forms, depending upon their position within a syllable unit.

U+200C [ZERO WIDTH NON-JOINER] (**ZWNJ**) and U+200D [ZERO WIDTH JOINER] (**ZWJ**) may be used to override the expected positional variant for the letters I, U, E and O in the same way as they do for the Mongolian script :

- A preceding ZWNJ will force selection of the initial or isolate form even when the letter is not in an initial position
- A preceding ZWJ will force selection of the medial or final form even when the letter is in an initial position
- A following ZWNJ will force selection of the final or isolate form even when the letter is not in a final position
- A following ZWJ will force selection of the medial or initial form even when the letter is in a final position

The positional variants of these vowel letters, and the code sequences needed to obtain each positional variant in isolation are shown in Table 4. Note that for the letters I and E, the initial form is usually the same as the isolate form, and for the letters I, U and E, the final form is usually the same as the medial form. The letter O has a medial stem that ligates with the following letter when in the initial or medial position, and the letter U has a medial stem that ligates with the following letter when in the initial position (see Example 3 line 6).

Table 4 : Phags-pa Positional Variants

Vowel	Isolate	Initial	Medial	Final
I	᠊ <I>	᠊ <I, ZWJ>	᠊ <ZWJ, I, ZWJ>	᠊ <ZWJ, I>
U	᠊ <U>	᠊ <U, ZWJ>	᠊ <ZWJ, U, ZWJ>	᠊ <ZWJ, U>
E	᠊ <E>	᠊ <E, ZWJ>	᠊ <ZWJ, E, ZWJ>	᠊ <ZWJ, E>
O	᠊ <O>	᠊ <O, ZWJ>	᠊ <ZWJ, O, ZWJ>	᠊ <ZWJ, O>

It should be noted that the Candrabindu sign does not affect the positional variant for a vowel with which it is associated. Thus, for example, the mantric syllable OM is written with the isolate form of the letter O preceded by a Candrabindu sign.

8. CONTEXTUAL VARIANTS

Contextual variants are variant glyphs used for a particular character in certain defined contexts. The rendering engine would be expected to select the correct glyph for the context without any need for additional control codes or user intervention.

In the Phags-pa script, reversed forms of the letters HA, Subjoined YA, I, U and E occur after the letters TTA, TTHA, DDA and NNA. These five reversed letters cannot be considered to be separate characters in their own right, as they only occur after the letters TTA, TTHA, DDA and NNA, and they do not represent different phonetic values compared with their unreversed counterparts. The reason why these letters occur in a reversed form after the letters TTA, TTHA, DDA and NNA is simply because TTA, TTHA, DDA and NNA are themselves reversed forms of the letters TA, THA, DA and NA (but in this case they are distinct characters), and so following letters need to have their stem on the left rather than the right in order to ligate with them.

The reversed letter HA only occurs after the letter DDA, where the combination DDA + HA corresponds to U+0F4D [TIBETAN LETTER DDHA] (note that in the corresponding Tibetan letter DDHA, the HA component is not reversed).

Reversed letters I, U and E can occur after any of the letters TTA, TTHA, DDA or NNA. There is no reversed letter O, as it is symmetrical about a central stem.

Reversed letter Subjoined YA is found after the letter NNA.

Another letter that commonly occurs after the letter TTHA is the letter -A (which is used to represent a long vowel A). However, the letter -A never occurs in a reversed form, although it may ligate with the preceding letter TTHA either along the left stem or the right stem (which side the ligation occurs on would be up to the individual font designer to decide).

In the Juyong Guan inscriptions the letter I occurs in both reversed and unreversed forms after the letter TTHA, with no semantic or phonetic differences between the two forms.

Table 5 : Phags-pa Contextual Variants

Letter	Normal Form	Reversed Form	Example Syllables
HA			**ddha** [Juyong Guan West Wall]
Subjoined YA			**nnya** [Juyong Guan West Wall]
I			**tthi** [Juyong Guan West Wall] **nni** [Juyong Guan East & West Wall]
U			**nnu** [Juyong Guan West Wall]
E			**tthe** [Juyong Guan West Wall] **dde** [Juyong Guan West Wall] **nne** [Juyong Guan West Wall]

In order to show a reversed letter HA, Subjoined YA, I, U or E in isolation (e.g. for metalanguage descriptions of the Phags-pa script) and for overriding the default shape of the letters HA, Subjoined YA, I, U and E (reversed after TTA, TTHA, DDA and NNA, unreversed after all other letters), it is necessary to have a mechanism for inhibiting letter reversal where normally expected, and producing letter reversal where not normally expected. This is especially needed to deal with the cases in the Juyong Guan inscriptions where both reversed and unreversed forms of the letter I are arbitrarily found after the letter TTHA.

There is no obvious mechanism for doing this with any existing Unicode control character, and it may be that a new control character will need to be introduced for this purpose. For example, a hypothetical "Contextual Variant Override" (**CVO**) character could be used to control the shaping behaviour of Phags-pa letters as illustrated in Table 6 :

Table 6 : Overriding Phags-pa Contextual Variants

| Code Sequence	Rendered Glyphs	Description
<ZWJ, I>		Default final form letter I in isolation (unreversed)
<ZWJ, I, CVO>		Non-default final form letter I in isolation (reversed)
<TTHA, I>		Letter TTHA with default form letter I (reversed)
<TTHA, I, CVO>		Letter TTHA with non-default letter I (unreversed)
<THA, I>		Letter Letter THA with default form letter I (unreversed)
<THA, I, CVO>		Letter THA with non-default letter I (reversed) [this glyph combination does not occur naturally, but is included for completeness]

9. STANDARDIZED VARIANTS

Standardized Variants are particular graphic variants of a character that are selected by means of a Variation Selector [U+FE00..FE0F] (**VS-1** through **VS-16**) or [U+E0100..E01EF] (**VS-17** through **VS-256**). Such variants are not simple glyph variants, but are used contrastively with respect to the standard glyph form of the character. Standardized Variants are regulated by Unicode (see http://www.unicode.org/Public/UNIDATA/StandardizedVariants.html), and only those defined by Unicode may be recognised as such by any Unicode conformant process.

The rhyming dictionary of Chinese ideographs, <u>Menggu Ziyun</u> 蒙古字韻 that was revised and edited by Zhu Zongwen 朱宗文 in 1308 (this work now only survives as a single manuscript copy) is one of the most important sources for understanding the Phags-pa script, as it gives Phags-pa spellings for over 9,000 Chinese ideographs, arranged according to fifteen rhyme categories.

Within each rhyme category the Chinese ideographs are ordered according to an idealised set of thirty-six initials devised over a period of time from the Tang to the Song dynasty by Chinese phoneticists. Unlike the fifteen rhyme categories, which clearly do correspond to Yuan dynasty phonetics, the thirty-six initials represent an earlier stage in the history of Chinese phonetic evolution. As the Phags-pa letters had been devised to represent Chinese as spoken during the Yuan dynasty (i.e. Old Mandarin), there is not a one-to-one correspondence between the classical thirty-six initials and the thirty consonant letters of the Phags-pa script, as is shown in Illustration 2.

Illustration 2 : Table of 36 Initials in <u>Menggu Ziyun</u>
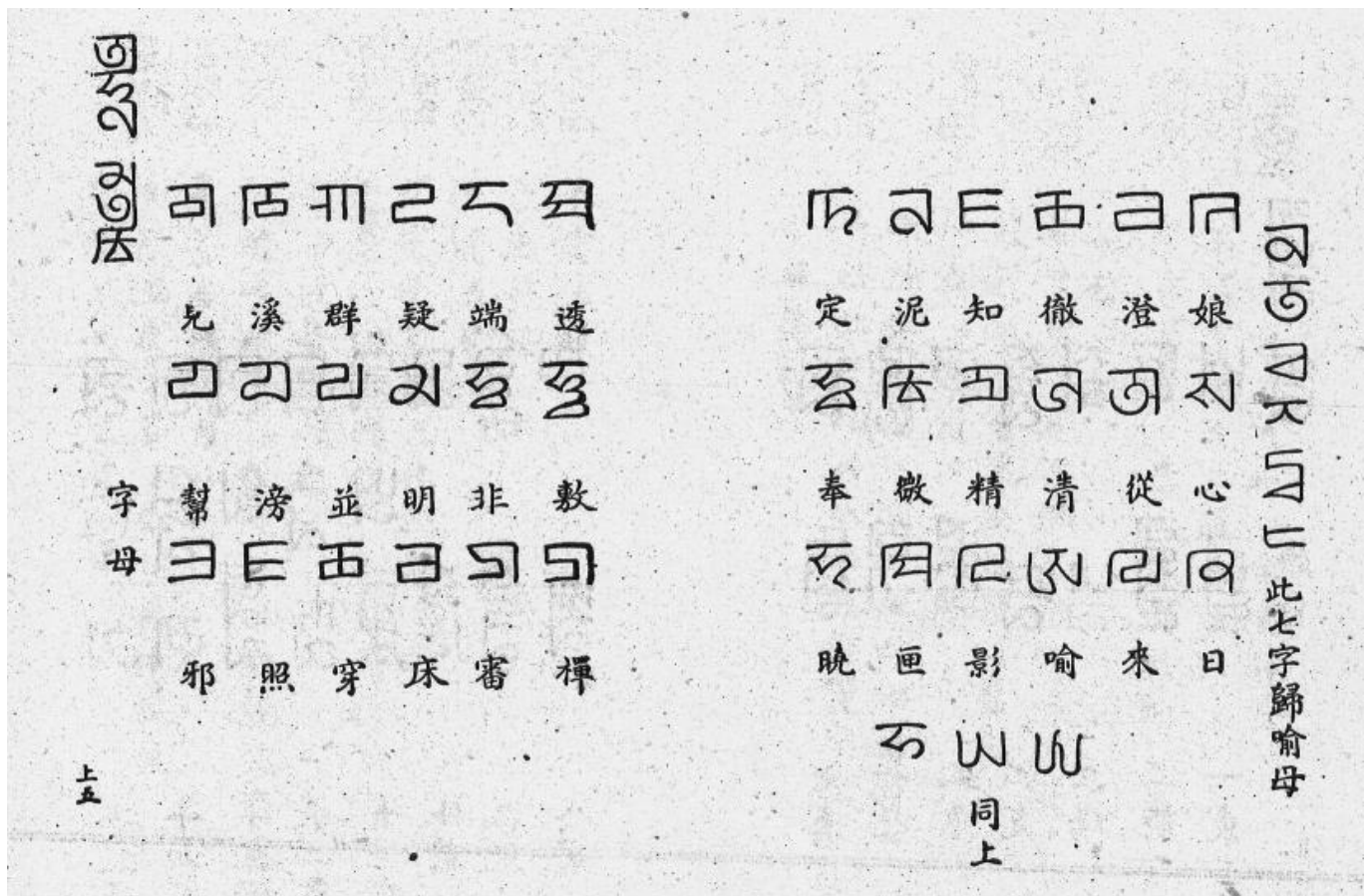
**Source :** <u>Basibazi yu Yuandai Hanyu</u> 八思巴字與元代漢語 page 97.

The following discrepancies between the idealised set of thirty-six initials and the actual phonetic characteristics of 14th century Chinese are reflected in <u>Menggu Ziyun</u> :

- Initials 9-11 (知, 徹 and 澄) [ȶ, ȶ' and ȡ] had merged with Initials 26-28 (照, 穿 and 床) [tɕ, tɕ' and dʑ] (to form the tɕ/tʂ, tɕ'/tʂ', dʑ/dʐ series in Yuan Chinese). Initials 9 & 26, 10 & 27 and 11 & 28 are represented by the Phags-pa letters JA, CHA and CA respectively (i.e. the distinction between Initials 9-11 and Initials 26-28 is not preserved in the Phags-pa script).
- Initials 17-19 (非, 敷 and 奉) [f, f' and v] had merged together (all pronounced [f] in Yuan Chinese). Two forms of the Phags-pa letter FA (one with a tail kink, one without) are used to represent these three initials. These two forms are distributed with apparent randomness between Initials 17-19 (e.g. the words 風 fēng "wind" and 方 fāng "square" both have an historic Initial 17 [f], but in <u>Menggu Ziyun</u> the former word is spelled with the form of the letter FA with a tail kink, whereas the latter word is spelled with the form of the letter FA without a tail kink).
- Initials 29 (審) [ɕ] and 30 (禪) [ʑ] had merged together (both pronounced ɕ/ʂ in Yuan Chinese). Two forms of the Phags-pa letter SHA are used to represent these two initials (the normal form of the letter SHA is used for Initial 30, whereas a variant form of the letter SHA with a sloping stroke is used for Initial 29).
- Initial 32 (匣) [ɣ] had diverged. The Phags-pa letters XA and a variant form of the letter HA with no tail kink are both used to represent this initial (the standard form of the letter HA is used to represent Initial 31 (曉) [x]). When representing Initial 32 the letters XA and variant form HA are mutually exclusive, as the former letter only occurs before back vowels and [i], whereas the latter letter only occurs before the semi-vowel [j] and front vowels other than [i].
- Initial 33 (影) [Ø] had diverged. The Phags-pa letters -A and the standard form of the letter YA are both used to represent this initial.
- Initial 34 (喻) [j] had diverged. The Phags-pa letters A and a variant form of the letter YA with a rounded appearance are both used to represent this initial.

In summary, Menggu Ziyun uses variant forms of the letters FA, SHA, HA and YA contrastively in order to represent historical phonetic differences between Chinese syllables that were pronounced the same (except for tone, which is not represented in the Phags-pa script) in early 14th century Chinese.

As this dictionary is the single most important source for the Phags-pa spelling of Chinese, it is important to be able to represent the differences between the standard and variant forms of the letters FA, SHA, HA and YA. However, as these variant forms seem to be an artificial distinction devised by Zhu Zongwen, and are not used contrastively in any Yuan dynasty Phags-pa inscription (i.e. syllables that are differentiated by variant forms of the letters FA, SHA, HA or YA in Menggu Ziyun are written identically in actual inscriptions), I do not believe that the variant forms should be accorded individual character status. Indeed to do so would invite confusion amongst end-users over which is the correct character to use for the letters FA, SHA, HA and YA, when the variant form should normally be restricted to quotations from Menggu Ziyun. I believe that the most sensible solution would be to represent the variant forms of FA, SHA, HA and YA as standardized variants by means of variation selectors. This proposed solution is shown in Table 7 :

Table 7 : Phags-pa Standardized Variants

Ref Glyph	Code Sequence	Alt Glyph	Description of variant appearance
ᛃ	**<YA, VS-1>**	ᛃ	PHAGS-PA LETTER YA with rounded appearance
᠊	**<HA, VS-1>**	᠊	PHAGS-PA LETTER HA without tail kink
᠊	**<FA, VS-1>**	᠊	PHAGS-PA LETTER FA with tail kink
᠊	**<SHA, VS-1>**	᠊	PHAGS-PA LETTER SHA with sloping stroke

Note that the only extant manuscript copy of Menggu Ziyun uses two forms of the letter FA to represent the three historic initials 17-19 that merged into Yuan dynasty [f]. It is possible that if another manuscript or printed copy of this text is discovered (a copy of a Yuan dynasty printed edition of this work was seen by one 19th century Chinese source) the three historic initials may there be represented by three distinct variant forms of the letter FA, in which case a further standardized variant <FA, VS-2> may need to be designated.

In the Sekai Moji Jiten [Scripts and Writing Systems of the World] volume of the Sanseido Encyclopedia of Linguistics the three historic initials [f], [f'] and [v] are represented by three distinct variant forms of the letter FA (see Table 2 Letters 39-41 on p.729) : the normal form (Letter 39); the variant form with a tail kink (Letter 40); and a variant form without a tail kink but with a rounded triangular component (Letter 41). Although the table of 36 initials in Menggu Ziyun (see Illustration 2 above) does show a very slight rounding in the form of the letter FA used to represent Initial 17 (非) compared with the form of the letter FA used to represent Initial 19 (奉), I believe that this is purely accidental. Within the body of the text (and I have examined the original manuscript of Menggu Ziyun in person) there is definitely no differentiation into three distinct graphic forms of the letter FA : the only obvious distinction between the forms of the letter FA used to represent historic Initials 17-19 is the presence or absence of a tail kink (in some cases the shapes of the Phags-pa letters are corrupted in the manuscript to the extent that the lower triangular component of both forms of the letter FA is missing). It is therefore not justified to define a second standardized variant of the letter FA at the present time.

Indeed, as the three initials 17, 18 and 19 do not occur together for any single final (e.g. **f'am** and **vam** occur but not **fam**; **fang** and **vang** occur but not **f'ang**), it is possible that in Menggu Ziyun the two variant forms of the letter FA are used to distinguish between any two of initials 17-19 that occur with the same final, but are not fixed to a specific initial.

10. PUNCTUATION

Most Phags-pa texts and inscriptions do not use any punctuation marks at all. Those that do generally borrow Chinese or Mongolian punctuation marks. For example the Phags-pa texts inscribed at Juyong Guan use the

Mongolian punctuation marks ˈ [U+1802 : MONGOLIAN COMMA], ˈˈ [U+1803 : MONGOLIAN FULL STOP], and

⁙ [U+1805 : MONGOLIAN FOUR DOTS] (see Example 3); whereas the fragments of the printed edition of the Phags-pa script Mongolian translation of the **Subhāṣitaratnanidhi** use a small circle 。 [U+3002 : IDEOGRAPHIC FULL STOP] as a punctuation mark.

Tibetan Phags-pa texts may also make use of punctuation marks derived from the Tibetan script. These are included within Table 1.

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12. FURTHER INFORMATION

Further information on the history of the Phags-pa script, its usage, and examples of texts written in the Phags-pa script can be found at :

- http://uk.geocities.com/BabelStone1357/hPhags-pa/index.html

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