Proposal to Encode the Phags-pa Script

## Part One: A Brief Account of the Phags-pa Script

(1) The Phags-pa script was invented by a special edict of Khubilai Khan, Emperor Shi Zu of the Yuan Dynasty and in 1269 the Emperor issued another edict to implement this script across the country. In certain places, Phags-pa Script was used as late as the early Ming Dynasty (Northern Yuan). The Phags-pa script is a set of phonetic symbols for multi-lingual writing that can be used to "translate and write" all languages. According to materials so far discovered, Phags-pa script has been used to "translate and write" Mongolian, Chinese (Han), Tibetan, Uighur as well as Sanskrit, and other languages yet to be deciphered. Needless to say, of the above-mentioned languages, Mongolian as the national language of Yuan Dynasty, and Chinese as the language widely used by so many ethnic groups in China, are the two major languages for which Phags-pa script has been used.

(2) As a special system of letters for "translating & writing" all languages, Phags-pa script is characterized by some striking features. In "translating / writing" languages of different ethnic groups, Phags-pa script uses different numbers of letters which differ in pronunciation and spelling. In "translating / writing" Mongolian and Chinese, these two languages are transcribed, i,e., spelt according to their sounds, whereas in "translating / writing" Tibetan and Sanskrit, they are in principle transliterated based on their forms of letters, or in the cases of certain words, transcribed according to their spelling of the words. Phags-pa script ought to reflect such details as much as possible. Phags-pa script is written from left to right, and from above downward, which follows the tradition of the Uighur-Mongol script. Phags-pa system uses syllables as its writing unit, which differs from Mongol writing. In Tibetan, a special punctuation mark is used to indicate the limits of a syllable or a word, whereas Phags-pa script does not use any mark to indicate the limits of a syllable or a word. In Phags-pa writing, the vowel letters are all ligatures of a few elements including isolate, syllable-initial (or word-initial) form, syllable-medial (or word-medial) form, as well as syllable-final (or word-final) form, which is quite different from Tibetan writing, but is very much like Mongol writing. In a word, Phags-pa writing has its own independent orthographic system, though it has had direct or indirect relationship with Tibetan, Mongol and Chinese; as a whole, it differs from any other writing system, nor is it a mere "variation" based on these languages.

(3) So far as we know, extant monuments written in Phags-pa letters include the following kinds: (a) Inscriptions of the Yuan court like imperial edicts, the empress dowager's decrees, the princes' orders, the imperial master's instructions and various regulations concerning monasteries exempt from taxes and corvees issued by government departments; (b) Various gold, silver, copper and iron *pai-tzu* (tallies) for diplomatic envoys or officials bestowed by the emperor or military or administrative organizations; (c) Government seals and commanding officers' seals of various levels of Yuan Dynasty provided by *Li Bu* (Ministry of Education) under the *Zhong Shu* (State Council), paper banknotes and coins distributed by Yuan court as well as great numbers of private seals and signatures; (d) Books like *Menggu Ziyun* (Book of Chinese Rhymes) in Phags-pa and Chinese (Han) writings and

Baijiaxing (A Complete Guide to Surnames) remain relatively intact, while *Subhā*

ṣitaratnanidhi is a block-printed fragment in Mongolian; and (e) Religious stone

inscriptions. In all the above-mentioned important monuments and relics, Phags-pa script is used to "translate / write" many languages.

(4) The Phags-pa script has a square seal script designed specially for transliterating Tibetan characters. Judged by its forms of script, this system of glyphs belongs to the Phags-pa writing system: its forms were invented in imitation of the decorative style of the Phags-pa script; and just like Phags-pa writing itself, this system of glyphs is also written from left to right, from above downward. Tibetan, however, has its own independent system inasmuch as it differs from Phags-pa writing both in form of letters and structure of strokes. Specifically, Tibetan has a number of forms of letters which are either altogether wanting in Phags-pa writing, or not quite the same as Phags-pa writing. On the contrary, many forms of Phags-pa letters are not adopted by this Tibetan system of square seal characters. All its glyphs for writing correspond with the 30 letters and 4 vowel glyphs in Tibetan. However, for lack of enough material on hand and in view of little research about it, in the present Proposal to Encode the Phags-pa Script, we will not include its characters.

(5) In the past, not so much material of Phags-pa writing had been discovered and what's more, its research was mainly carried out outside China and Mongolia. Since the 1980's, however, emerged an unprecedented upsurge of research for Phags-pa script in its native land China and Mongolia. In the past 20 years, a great amount of new material has been discovered; e.g., scholars in China and Mongolia have published some 110 highly valuable monographs and treatises, in which they put forward a series of new ideas. Those all-sided and rather abundant materials possessed by Chinese and Mongolian scholars and the latest research results they have achieved, provide us with adequate scientific ground for the encoding of Phags-pa script. The present situation, however, is that on the one hand now and then we discover new texts of Phags-pa writing, on the other hand our research about the discoveries does not seem sufficient, and there still exist a large number of monuments, e.g., Chinese monuments written in Phags-pa letters, which require our further research. That's why scholars have reached a common understanding on quite a number of problems concerning Phags-pa script, but their opinions still vary on certain important problems. The encoding of Phags-pa script must not and cannot possibly pass any judgment on such different opinions, affirming this opinion while denying that one. Therefore our attitude in formulating this code is to include as much as possible the problems on which opinions do vary. In other words, we do not hope to see a situation in which our Phags-pa encoding would impose restrictions on a certain viewpoint.

(6) Moreover, since documents and materials in Phags-pa script are all historical documents, the present Phags-pa encoding is meant to well preserve or represent such materials. Its spelling is not quite consistent, nor is it very standard, and since it is not a current written language, there is no need to standardize the "historical documents." We must not delete from our encoding such spellings or letter forms which do exist in historical documents; instead, we must include as much as possible such letter forms in our encoding. And as soon as those academic problems are solved, we can, according to the then conditions, revise, replenish

and improve our Phags-pa encoding.

(7) The Phags-pa script we encode should present its letter system precisely and entirely. However, we have to admit that, unlike the encoding of one single language which is so simple, letter forms of various languages have to be handled not always in the same way, a matter which is very complicated. **We maintain that the nominal glyphs of the Phags-pa alphabet is a system with pronunciation as its content and with their graphic symbols to distinguish themselves. However, the variant presentation glyphs of its letter system is a system with only pronunciation as its content, regardless of the written forms of the letters.** So far as Phags-pa Mongol is concerned, its alphabet evidently include vowel harmony.

(8) As is shown by scholars in China and Mongolia in their studies, **the Phags-pa alphabet and written Mongolian have many inherent connections.** Thus, the Phags-pa presentation forms of the Mongol vowel letters ꡥ OE and ꡟ UE are based on ᠥOE and ᠦ UE in Mongolian; the isolate, word-initial, word-medial and word-final forms of vowels in Phags-pa script are also designed according to the vowel forms in the Mongol language. In addition, the variant forms ꡯ and ꡩ of the vowels ꡥOE and ꡟ UE in syllables other than the first one are based on vowel harmony in Mongolian, too.[1]

(9) In the late 1980's and early 1990's, workers on Mongol language information in Mongolia, China and Germany prepared their respective editing devices for Mongolian texts in Phags-pa script. [2]In China, more than ten years' practice has enabled us to gain a lot of experience and draw many lessons in Phags-pa encoding and Phags-pa information treatment, which is very precious for preparing the present encoding of Phags-pa script. For example, although there was no symbol to indicate the limits of syllables in the original Phags-pa script, we designed the syllable delimiter based on our own experience which will be extremely advantageous for Phags-pa information treatment.

(10) As the Phags-pa encoding is one of the type of "nominal glyphs", it must use both variant presentation glyphs and a few control symbols. However, it is not in the range of ISO (10646) to formulate rules for how to use the variant presentation glyphs and the control symbols. Therefore, it is necessary to prepare, along with the Phags-pa encoding itself, "A Users' Agreement Related to Phags-pa Script Encoding" so as to provide a unified standard for the benefit of unmistakable communication among the users.

Part two: Views on How to Handle Certain Problems

As is mentioned above, though the Phags-pa script is a system based on Tibetan and

---

[1] For details see Төмөртогоо, 《Монгол бичгийн тогтолцоо түүний нөлөө》 ; Choijinjab, A Few Problems Concerning the Encoding of Phags-pa Script, its abstract presented to the 4th International Symposium on Mongolian Studies held by Inner Mongolia University, in August, 2004.

[2] See "vMong"(1978) in Germany, Multi-lingual Editing Device (1989) by Inner Mongolia University in China, "Founder BookMaker 6.1 for Mongolian" (1990) in China, and "Light Printing" (1990) in Mongolia.

Sanskrit writings with reference to Mongolian spelling, it is an independent system with its own characteristic features quite different from any other writing system. Consequently, our emphasis ought to focus on these features of the Phags-pa script itself in preparing our proposal to encode it. The following are briefly our concrete views on how to handle certain problems in its encoding:

(1) Method of encoding: The majority of letters in Phags-pa writing have their respective "variant presentation forms", the only difference being that some letters have relatively more variant presentation forms, others have fewer. So, according to relevant regulations in the *UCS*, a method called "nominal glyph" should be used to encode the Phags-pa script, i.e., at first, we have to classify glyphs of each Phags-pa letter under nominal glyphs and variant presentation glyphs, and then to encode each nominal glyph. At the same time, we have to prepare a variant presentation glyph set and "regulations on the use of control symbol".

(2) Nominal glyph: According to the *UCS*, the "nominal glyph" is a glyph "to be used to denote, transmit, exchange, handle, input and present the written forms as well as additional signs of various languages". The majority of Phags-pa letters have a few variants for one and the same sound, from which one should be chosen as its nominal glyph. It is above all the isolate form of a letter which is chosen, or, in the case of there being a few isolate forms, the one which appears the most frequently is to be chosen.

(a) Each of the letters 𑪀 A840 , 𑪁 A841, 𑪂 A842, 𑪄 A844 and 𑪋 A84B has only one isolate form, which is naturally chosen as its nominal glyph.

(b) Letters like 𑪓 A853 and 𑪟 A85F have each two isolate forms 𑪓 𑪓, 𑪟 𑪟, out of which we choose as nominal glyphs 𑪓 and 𑪟 which have a high frequency of appearance, 𑪓 and 𑪟 should be free variants of 𑪓 A853 and 𑪟 A85F.

(c) The three letters 𑪦 A866, 𑪧 A867 and 𑪊 A868A have no isolate forms, so we adopt forms 𑪦, 𑪧 and 𑪊 which appear the most frequently.

(d) 𑪩 A869 OE and 𑪪 A86A UE are two indispensable basic vowels in the Mongolian language. Although their variant presentation glyphs are "compound letters" each consisting of two or three "elements", they are regarded in the majority of academic monographs (e.g., N. Poppe, 1941,1957; B.Rinchen, 1956; L.Ligeti, 1964,1972; D.Čoijilsüreng, 1974; Č. Šagdarsüreng, 1981, 2001; B. Bulag, 1983; Bao Xiang, 1984; A. Damdinsüreng；1985; Tulgaguri, 1998; Y. Jančib, 2002) as compound yet independent letters listed in their respective alphabet. Other scholars who have not included these two letters in their alphabet also say that "sometimes a double letter is used to represent one sound". The forms of the two vowel letters 𑪩 and 𑪪 in the Phags-pa system are based on the forms that represent the two vowel letters in Mongolian writing. The sounds they mark are not mere combinations of their original glyphs A+E+O and A+E+U, instead what they mark are two
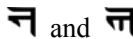
other simple sounds *ö* and *ü* which have nothing to do with them. It is very much like the letter 剤 A864 of N2719. Therefore, it is necessary, like the handling of the letter 剤 , to distinguish them as two independent vowel letters instead of anything like "compound vowels". ᠊ and ᠊ under "Mongol" in the UCS are handled in such a way, too. Even in terms of information treatment, these two letters should also be handled as independent letters, otherwise, numerous inconveniences in retrieval and sequential arrangement would be caused for these two vowel letters which take up 14.8% of the total number of letters. The same is true if we take into consideration the "automatic transliteration of Phags-pa text into Latin alphabet".

(3) Variant Presentation Glyph: As is regulated in the *UCS*, the "variant presentation glyph" shows, "in presenting certain characters, the graphic symbol of an individual glyph; this symbol depends on the position of the given glyph with relation to other glyphs."

(a) Strictlly speaking, each Phags-pa letter has several "variant presentation forms". The majority of consonants can be divided into four variants which somewhat differ from each other, viz., isolate form, syllable-initial (or word-initial) form, syllable-medial (or word-medial) form and syllable-final (or word-final) form. For example, the letter A846 has its isolate form 丂, syllable-initial form 丂, syllable-medial form 丂 and syllable-final form 丂. A few letters each have less than four variants. Owing to different styles of writing, there may appear cases in which several variants have the same form.

(b) The "variant presentation forms" of the Phags-pa script are divided into "conditional variants" and "free variants" so far as different conditions of their appearance are concerned.
"Conditional variants" are those which appear "with relation to the position of other glyphs", which include in turn "positional variant" and "postpositive variant". The four variants of the letter A846 are positional variants, while the six variants 禾 , 阝, 卩, 爪, 卩 and 刁 which appear only after the five "reversed letters" 刂, 氐, 乛 , 石 and （禾） are "postpositive variants" conditioned by their preceding glyphs.
"Free variants" are those of one and the same letter that appear under the same condition. 刁 and 刁, or 雨 and 雨 which differ in strokes but mark the same sound are "free variants".

(c) Certain glyphs mark two sounds in one language, but one sound in another language. The former are two different letters; the latter two free variants of one letter. Such pairs of glyphs as 刁 and 刁, and 刁 and 刁 mark one sound in Mongolian, but two sounds in Chinese texts. In our encoding, we'd better handle such glyphs as individual letters.

(d) By the "stroke variants" are meant variants slightly different in their size, thickness, length

5

or sharpness of turn in the strokes. Glyph figures like न, न, न and न, which do not mark different sounds, nor any variant of a letter in certain cases, show only slight difference in calligraphy. Such "stroke variants" are not expressed in our encoding system.

(e) A vowel letter has more "positional variants". Apart from its normal isolate, syllable-initial, syllable-medial and syllable-final forms, it also has "postpositive variants" which appear after "reversed letters". One may distinguish a postpositive variant through its preceding letter. Still, there are cases in which normal letter variants (i.e., variants of non reversed letters) appear after "reversed letters", e.g., 悉, which is to be chosen with the "variant selector".

(f) Various "free variants" are to be chosen with the "variant selector". For example, the letter न has its 1st syllable-initial form न, 2nd syllable-initial form न and 3rd syllable-initial form यि. Its free variants distinguished by the variant selector are for example न← न ; न←न VS₁ ; यि←न VS₂ .
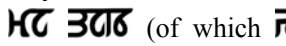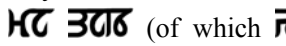
(g) The figures of variant presentation glyphs and the use of the "control symbol" should be regulated in "A Users` Agreement Related to Phags-pa Script" so as to facilitate common use by various kinds of users (See the Supplement "A Users` Agreement" itself.)

(4) Control symbol: The encoding of Phags-pa script requires several control symbols.

(a) Three "free variant selectors" are needed in order to distinguish different "free variants" of a glyph that appear under the same conditions. The three variant selectors in *UCS* may be used, viz., VS₁ (U+FE00), VS₂ (U+FE01) and VS₃ (U+FE02)，or the three variant selectors of Mongolian in *UCS* may be used, viz., FVS₁（U+180B）, FVS₂ （U+180C）and FVS₃（U+180D）.

(b) A "syllable delimiter" should be used in order to distinguish the limit of a syllable and that of a word. To mark the limits of syllables in a word, a gap of 1/3 space is required. We may use the narrow non-break space in the *UCS* NNB/SP (U+202F). ཚ༔ ༔ ༔༔༔ ༔༔ ༔༔༔ (of which ཚ༔ ༔ is a disyllabic word, and ༔༔༔ ༔༔ ༔༔༔ is a tri syllable word) ought to be recorded like ༔༔༔ NNB/SP ༔ SP ༔༔༔ NNB/SP ༔༔ NNB/SP ༔༔༔ SP .

(c) In order to present the "positional variants" of certain letters, we choose from the *General Punctuations* of the *UCS* the following two punctuation marks: ZWJ (ZERO WIDTH JOINER, U+200D) and ZWNJ (ZERO WIDTH NON-JOINER, U+200C).

ZWJ (ZERO WIDTH JOINER, U+200D) is used as follows:

1. isolate form: (letter), e.g., य → य; ཐི → ཐི.

2. syllable-initial form: (letter) [ZW J], e.g., ꡏ[ZW J] → ꡏ; ꡡ[ZW J] → ꡡ.

3. syllable-medial form: [ZW J](letter) [ZW J], e.g., [ZW J]ꡏ[ZW J] → ꡏ; [ZW J]ꡡ[ZW J] → ꡡ.

4. syllable-final form: [ZW J](letter), e.g., [ZW J]ꡏ → ꡏ; [ZW J]ꡡ → ꡡ.

[ZW NJ](ZERO WIDTH NON-JOINER, U+200C) is used as follows:

[ZW NJ] is used in recording when normal positions are violated. Thus, a syllable-initial form at

the end of a syllable can be recorded like: ꡘ[ZW NJ]ꡡ → ꡡꡘ, or the common ꡡ when [ZW NJ] is
not used.

(5) Punctuation marks: Very few punctuation marks are used in Phags-pa writing. Judging by
the monuments and sources now extant, we find the following marks, whose figures are the
same as Mongolian and Chinese punctuation marks, which can be borrowed for use from the
UCS.

(a) ● (1802)

(b) ● (1803)

(c) ● (1805)

(d) 。 (02DA)

(6) Joiner. Since in Phags-pa script the syllable is the unit for joining, so the letters in one syllable
should be joined together. While the majority of joined parts are on the right side of a letter, there
are individual letters whole joined parts are on each letter's left side. The right joined parts after
the non reversed letters and the left joined parts after the reversed letters are common joining, so
there is no need to register the joiner, instead, one may make automatic selection, using the

preceding and following glyphs as the condition. For example, ꡡ ← ꡘꡡ, ꡡ ← ꡘ

ꡡ, ꡱ ← ꡘꡱ and ꡡ ← ꡠꡡ, ꡨ ← ꡠꡨ, ꡨ ← ꡠꡨ, ꡨ ← ꡘꡨ. But the

right joined parts after the "reversed letters" and the left joined parts after non "reversed letters"

are special joining, there is need for special selection of the joiner, thus, ꡨ ← ꡠ '[VS 1]ꡨ, ꡨ

← ꡠ '[VS 1]ꡨ, ꡨ ← ꡘ '[VS 1]ꡨ. Only when the letter ꡘ is to be joined with its

preceding glyph and with its following glyph, middle part connection is required; however, seeing
that it is difficult to standardize the length of the joiner, we can design no middle joiner, and
instead, handle it by means of such variants as ꡘ ꡘ. To use the joiner will facilitate the
connection of various letters, and also enable us to select the joined parts; moreover, it will
decrease the number of variant presentation glyphs.

(a) The right joiner (▪) is on the right side of a glyph and is used between glyphs joined on the right.

(b) The left joiner (▪) is on the left side of a glyph and is used between glyphs joined on the left side.

(7) Signs of indication:

    (a) The Phags-pa punctuation marks are preceded by the sign PHAGS-PA.

    (b) Letters of a given language are spelt in Latin letters close to the pronunciation of that language.

    (c) In the note for the name of a glyph, the different languages printed in the Phags-pa letters are indicated as Mon. (Mongolian), Han.(Chinese), Tib.(Tibetan), San.(Sanskrit), Uig.(Uighur) respectively.

(8) Order of encoding: The letters of the Phags-pa alphabet are arranged in quite different orders by various schools; hence, there has never existed, so to speak, a standard and universally acknowledged alphabet for the Phagsp-ps script. So we may consider the following principles:

Letters found in the "original alphabet" are arranged according to their accepted order, while the "newly added letters" are arranged in the order of their similar letters and after the letters of the "original alphabet". The quality of each letter is not indicated.

(9) Style of writing: The figures of letters found in Phags-pa documents and sources can be classified under three kinds, viz., the regular style, the decorative style and the square style. The regular style is used in official monuments, tallies, stone tablets and books of the Yuan Dynasty, with texts in Mongolian, Chinese, Tibetan, Sanskrit and other languages. This is the most widely used style of the Phags-pa script. The regular style can be subdivided into Khubilai style (1277/1289) 　,　,　,and 　; Togan style (1345) 　,　,　and 　; the Juyong Pass style (1345) 　,　,　 and 　; wood-engraved block style 　, 　,　 and 　; and the fine style 　, 　,　 and 　, etc. Besides, there appeared in more recent publications other styles of the script, such as styles of Phags-pa script in Soviet academic books and Chinese publications.

The decorative style is mainly used in official seals, tablets and tallies of the Yuan Dynasty. These are mainly Chinese materials written in decorative style. The Phags-pa decorative style first appeared in *Menggu Ziyun* (Mongolian Rhymes) revised in 1308. The regular style and the decorative style of Phags-pa script are closely dependent upon each other in their figures.

The square style was mainly used in Tibetan Buddhist monasteries or on their seals, and continued to be in use in certain scope as late as modern times. Its figures differ greatly from the regular style and the decorative style.

We think it's preferable to adopt a style which has been frequently used in monuments written in Phags-pa letters and at the same time to some extent standardized and look smooth and beautiful. In the present encoding of Phags-pa script, we advocate using the Khubilai style because this style is not only the style of the original texts of Emperor Khubilai's edicts (1277-1289), it has also been used for nearly 20 years in the computerized composing system in Mongolia.

References:

1) Andrew C. West：Response to comments on Phags-pa proposal in N2706，ISO/IEC JTC1/SC2/WG2 N2719，March, 2004.

2) Proposal to encode the Phags-pa script，ISO/IEC JTC1/SC2/WG2 N2622，September, 2003.

3) ISO/IEC JTC1/SC2：Project subdivision proposal for ISO/IEC 10646：2003/Amendment 1，WG2 N2706，October, 2003.

4) Principles on Encoding Phags-pa Script, ISO/IEC JTC1/SC2/WG2 N2666，October, 2003.

5) ᠪᠠᠣᠰᠢᠶᠠᠩ： ᠮᠣᠩᠭᠣᠯ ᠪᠢᠴᠢᠭ ᠤᠨ ᠰᠤᠳᠤᠯᠤᠯ · ᠥᠪᠥᠷ ᠮᠣᠩᠭᠣᠯ ᠤᠨ ᠰᠤᠷᠭᠠᠨ ᠤ ᠬᠡᠪᠯᠡᠯ ᠦᠨ ᠬᠣᠷᠢᠶ᠎ᠠ · 1 9 8 4 （Bao Xiang: A Study on Mongolian Script, Educational Press of Inner Mongolia, 1984)

6) ᠪᠣᠯᠠᠭ᠄ ᠮᠣᠩᠭᠣᠯ ᠪᠢᠴᠢᠭ ᠤᠨ ᠲᠡᠥᠬᠡ ᠲᠣᠪᠴᠢ · ᠥᠪᠥᠷ ᠮᠣᠩᠭᠣᠯ ᠤᠨ ᠠᠷᠠᠳ ᠤᠨ ᠬᠡᠪᠯᠡᠯ ᠦᠨ ᠬᠣᠷᠢᠶ᠎ᠠ · 1983 (B. Bulag: A Brief History of Mongolian Script, People's Press of Inner Mongolia, 1983)

7) Н. Поппе: Квадратная письменность, Издательство академии наук с с с р, 1941   N. Poppe: Phags-pa Script, Press of U.S.S.R. Academy of Sciences, 1941)

— The Mongolian monuments in Phags-pa script, edited by John R.Krueger, Wiesbaden, 1957.

— 八思巴字蒙古语碑铭，内蒙古文化出版社，1986 (Tablet Inscriptions in ʼPhags-pa-Mongolian Script, Cultural Press of Inner Mongolia, 1986)

8)Marian Lewiciki, Newly Discovered Inscriptions in Phags-pa Script, Wilno, 1937

9)L. Ligeti：Monuments en éʼcriture ʼphags-pa，akadémiai kiadó， Budapest，1973 (L. Ligeti: Monuments in Phags-pa Script, Budapest: Akademiai Kiado, 1973.)

10)罗常培、蔡美彪：八思巴字与元代汉语资料汇编，科学出版社，1959(Luo Changpei, Cai Meibiao: The Phags-pa script and Yuan dynasty Chinese materials)

11)Ц. Шагдарсүрэн：Монгол үсэгзүй, Улаанбаатар, 1981 (Ts. Šagdarsüreng, Mongol Paleography, Ulan-Bator 1981; Beijing, 1989

— Монголчуудын үсэг бичгийн товчоон，Улаанбаатар, 2001 (Ts. Šagdarsüreng, A Study of Mongolian Scripts, 2nd enlarged edition, Ulan-Bator, 2001)

12) ᠱᠣᠩᠬᠣᠷ： ᠵᠤᠢᠶᠣᠩᠭᠤᠸᠠᠨ ᠤ ᠬᠠᠳᠠᠨ ᠤ ᠪᠢᠴᠢᠭ ᠤᠨ ᠱᠠᠰᠢᠨ ᠲᠠᠷᠨᠢ · ᠮᠣᠩᠭᠣᠯ ᠬᠡᠯᠡ ᠪᠢᠴᠢᠭ᠌ · 1988 · 2 (Šonghor: A Study on the Religious Spells Inscribed on the Stone Walls of Ju Yong Pass)

13)陶宗儀：书史会要，上海书店，1984 (Tao Zongyi: Shu Shi Hui Yao, Shanghai Publishing house, 1984.)

14) ᠲᠤᠯᠭᠠᠭᠤᠷᠢ： ᠮᠣᠩᠭᠣᠯ ᠪᠢᠴᠢᠭ ᠤᠨ ᠲᠡᠥᠬᠡ ᠲᠣᠪᠴᠢ · ᠥᠪᠥᠷ ᠮᠣᠩᠭᠣᠯ ᠤᠨ ᠰᠤᠶᠤᠯ ᠤᠨ ᠬᠡᠪᠯᠡᠯ ᠦᠨ ᠬᠣᠷᠢᠶ᠎ᠠ · 1998 (Tulgaguri: A Short History of Mongolian Script, Cultural Press of Inner Mongolia, 1998)

15) Д. Төмөртого: Монгол дөрвөлжин үсгийн дурсгалын судалга ， Улаанбатар, 2002 (D. Tumurtogoo: Studies on Mongolian Monuments in Phags-pa Script, Ulan-Bator, 2002)

— Дөрвөлжин бичгийн мөнгке гэдэг үгийн тухай, SM IV, 1967 (D. Tumurtogoo: Graphical Peculiarity of the Word "Mongke" in Phags-pa Writing, in: Studia Mongolica, Vol. IV: 1967)

—The Graphical System of Vowel Letters in Phags-pa Script, in: "Theoretical and Historical Problems in Mongolian Linguistics", Ulan-Bator, 2002, PP. 357-361.

—Монгол вичгийн тогтолцоо， түүний нөлөө

16)А. Дамдинсүрэн：Монгол дөрвөлжин бичиг, Улаанбатар, 1986 (A. Damdinsüreng: Phags-pa Mongol Writing, 1986)

17) ᠴᠠᠭᠠᠨᠰᠠᠷ᠎ᠠ: [Phags-pa script text] ᠂ 2000 2 (Čagansara: The Transliterating of Sanskrit Words in Phags-pa-Mongol Documents, in Journal of Inner Mongolia University, No. 2, 2002)

18)照那斯图 杨耐思: 蒙古字韵校本，民族出版社，1987 (Jagunasutu & Yang Naisi: A Collated Guide to Mongolian Rhymes, Nationalities Press, 1987)

19)照那斯图：新编元代八思巴字百家姓，文物出版社，2003 (Jagunasutu: A New Complete Guide to Surnames in Yuan Phags-pa Script, Relic Press, 2003)

— 八思巴字和蒙古语文献 Ⅰ 研究文集，アジア・アフリカ言语文化研究所，1990 (The Phags-pa Script and Mongol Monuments, (I) Collection of Essays, Tokyo: Institute for the Study of Languages & Cultures of Asia and Africa, 1990)

— 八思巴字和蒙古语文献 Ⅱ 文献汇集，アジア・アフリカ言语文化研究所，1991 (The Phags-pa Script and Mongol Monuments, (II) Collection of Monuments, Tokyo: Institute for the Study of Languages & Cultures of Asia and Africa, 1991)

—素囊黄台吉献给阿兴喇嘛的金印，香港中文大学文物馆 2000 刊

20)Я. Жанчив：дөрвөлжин үсгийн монгол дурсгал ，Улаанбатар, 2002 (Y. Jančiv: Phags-pa-Mongol Monuments, Ulan-Bator, 2002)

21) ᠵᠠᠯᠰᠠᠨ: [Phags-pa script text] ᠂ 1992 2 (Jalsan: The Transliterating of Tibetan Words in Phags-pa-Mongol Monument, in Journal of Inner Mongolia University, No.2, 1992)

—[Phags-pa script text] ᠂ 1988 3 (Jalsan: A Few Problems Concerning the Relationship Between Phags-pa Script and the Indian & Tibetan Writings, in Journal of Inner Mongolia University, No.3, 1998)

22)盛熙明：法书考，上海古书流通处，1921 (Sheng Ximing: Fashu Kao, Shanghai Ancient Books Circulation Centre, 1921)

	A84	A85	A86	A87
0	ꡀ A840	ꡐ A850	ꡠ A860	ꡰ A870
1	ꡁ A841	ꡑ A851	ꡡ A861	ꡱ A871
2	ꡂ A842	ꡒ A852	ꡢ A862	ꡲ A872
3	ꡃ A843	ꡓ A853	ꡣ A863	ꡳ A873
4	ꡄ A844	ꡔ A854	ꡤ A864	꡴ **A874**
5	ꡅ A845	ꡕ A855	ꡥ A865	
6	ꡆ A846	ꡖ A856	ꡦ A866	
7	ꡇ A847	ꡗ A857	ꡧ A867	
8	ꡈ A848	ꡘ A858	ꡨ A868	
9	ꡉ A849	ꡙ A859	ꡩ A869	
A	ꡊ A84A	ꡚ A85A	ꡪ A86A	
B	ꡋ A84B	ꡛ A85B	ꡫ A86B	
C	ꡌ A84C	ꡜ A85C	ꡬ A86C	
D	ꡍ A84D	ꡝ A85D	ꡭ A86D	
E	ꡎ A84E	ꡞ A85E	ꡮ A86E	
F	ꡏ A84F	ꡟ A85F	ꡯ A86F	

A840 ꡀ PHAGS-PA LETTER KA
Use: Han. Tib. San.
→ 0F40 ཀ tibetan letter ka

A841 ꡁ PHAGS-PA LETTER KHA
Use:Mon. Han. Tib. San. Uig.

A842 ꡂ PHAGS-PA LETTER GA
Use:Mon. Han. Tib. San. Uig.

A843 ꡃ PHAGS-PA LETTER NGA
Use:Mon. Han. Tib. San. Uig.

A844 ꡄ PHAGS-PA LETTER CA
UseHan. Tib.
→ 0F45 ཅ tibetan letter ca

A845 ꡅ PHAGS-PA LETTER CHA
Use:Mon. Han. Tib. Uig.
→ 0F46 ཆ tibetan letter cha

A846 ꡆ PHAGS-PA LETTER JA
Use:Mon. Han. Tib. Uig.
→ 0F47 ཇ tibetan letter ja

A847 ꡇ PHAGS-PA LETTER NYA
Use: Han. Tib. San.
→ 0F49 ཉ tibetan letter nya

A848 ꡈ PHAGS-PA LETTER TA
Use: Mon. Han. Tib. San.

A849 ꡉ PHAGS-PA LETTER THA
Use:Mon. Han. Tib. San. Uig.
→ 0F50 ཐ tibetan letter tha

A84A ꡊ PHAGS-PA LETTER DA
Use:Mon. Han. Tib. San. Uig.
→ 0F51 ད tibetan letter da

A84B ꡋ PHAGS-PA LETTER NA
Use:Mon. Han. Tib. San. Uig.
→ 0F53 ན tibetan letter na

A84C ꡌ PHAGS-PA LETTER PA
Use: Han. Tib. San. Uig.
→ 0F54 པ tibetan letter pa

A84D ꡍ PHAGS-PA LETTER PHA
Use: Han. Tib. San. Uig.

A84E ꡎ PHAGS-PA LETTER BA
Use:Mon. Han. Tib. San. Uig.

Use:Mon. Han. Tib. San. Uig.
→ 0F56 བ tibetan letter ba

A84F ꡏ PHAGS-PA LETTER MA
Use:Mon. Han. Tib. San. Uig.
→ 0F58 མ tibetan letter ma

A850 ꡐ PHAGS-PA LETTER TSA
Use: Han. Tib. San.
→ 091E ञ devanagari letter nya

A851 ꡑ PHAGS-PA LETTER TSHA
Use: Han. Tib. San.
→ 091C ज devanagari letter ja

A852 ꡒ PHAGS-PA LETTER DZA
Use: Han. Tib. San.

A853 ꡓ PHAGS-PA LETTER WA
Use:Mon. Han. Tib. San.

A854 ꡔ PHAGS-PA LETTER ZHA
Use: Han. Tib.
→ 0F5E ཞ tibetan letter zha

A855 ꡕ PHAGS-PA LETTER ZA
Use: Mon. Han. Tib.
→ 0F5F ཟ tibetan letter za

A856 ꡖ PHAGS-PA LETTER MINUSCULE A
Use:Mon. Han. Tib. San. Uig.
→ 0F60 འ tibetan letter -a

A857 ꡗ PHAGS-PA LETTER YA
Use:Mon. Han. Tib. San. Uig.
→ 0F61 ཡ tibetan letter ya

A858 ꡘ PHAGS-PA LETTER RA
Use:Mon. Han. Tib. San. Uig.
→ 0F62 ར tibetan letter ra

A859 ꡙ PHAGS-PA LETTER LA
Use:Mon. Han. Tib. San. Uig.
→ 0F63 ལ tibetan letter la

A85A ꡚ PHAGS-PA LETTER SHA
Use:Mon. Han. Tib. San. Uig.
≡ 0F64 ཤ tibetan letter sha

A85B ꡛ PHAGS-PA LETTER SA
Use:Mon. Han. Tib. San. Uig.
→ 0F66 ས tibetan letter sa

A85C ꡜ PHAGS-PA LETTER HA Use:Mon.

Use Han. Tib. San. Uig.

→ 0F67 ཧ tibetan letter ha

A85D ꡝ **PHAGS-PA LETTER A**

Use:Mon. Han. Tib. San. Uig.

→ 0F68 ཨ tibetan letter a

A85E ꡞ **PHAGS-PA LETTER   I**

Use:Mon. Han. Tib. San. Uig.

→ 0F72 ི tibetan vowel sign i

A85F ꡟ **PHAGS-PA LETTER   U**

Use:Mon. Han. Tib. San. Uig.

→ 0F74 ུ tibetan vowel sign u

A860 ꡠ **PHAGS-PA LETTER   E**

Use:Mon. Han. Tib. San. Uig.

≡ 090F ए devanagari letter e

A861 ꡡ **PHAGS-PA LETTER   O**

Use:Mon. Han. Tib. San. Uig.

→ 0F7C ཽ tibetan vowel sign o

A862 ꡢ **PHAGS-PA LETTER   QA**

Use:Mon. Han. Tib. San. Uig.

→ 0F41 ཁ tibetan letter kha

A863 ꡣ **PHAGS-PA LETTER   XA**

Use: Han.

A864 ꡤ **PHAGS-PA LETTER   FA**

Use: Han.

A865 ꡥ **PHAGS-PA LETTER   QA**

Use:

→ 0F42 ག tibetan letter ga

A866 ꡦ **PHAGS-PA LETTER   EE**

Use:Mon. Han. Tib. San. Uig.

A867 ꡧ **PHAGS-PA LETTER SUBJOINED WA**

Use: Han. Tib. San.

→ 18A6 ᢦ   mongolian letter ag half u

→ 0FAD ྭ   tibetan subjoined letter wa

A868 ꡨ **PHAGS-PA LETTER SUBJOINED YA**

Use:Han. Tib. San.

→ 18A7 ᢧ   mongolian letter ag half ya

→ 0FB1 ྱ   tibetan subjoined letter ya

A869 ꡩ **PHAGS-PA LETTER   OE**

Use:Mon. Han.

≡ 0911 ऑ **DEVANAGARI LETTER CANDRA O**

A86A ꡪ **PHAGS-PA LETTER UE**

Use:Mon. Han.

A86B ꡫ **PHAGS-PA LETTER TTA**

Use:San.

= reversed ta

A86C ꡬ **PHAGS-PA LETTER TTHA**

Use:San.

= reversed tha

→ 0F4B ཋ tibetan letter ttha

A86D ꡭ **PHAGS-PA LETTER   DDA**

Use: San.

= reversed da

→ 0F4C ཌ tibetan letter dda

A86E ꡮ **PHAGS-PA LETTER   NNA**

Use: San.

= reversed na

→ 0F4E ཎ Tibetan letter nna

A86F ꡯ **PHAGS-PA LETTER   0A**

Use: Han.

≡ 0F61 ཡ tibetan letter ya

A870 ꡰ   **PHAGS-PALETTER   VOICELESS SHA**

Use:Han.

A871 ꡱ **PHAGS-PA LETTER VOICED   HA**

Use:Mon. Han. Tib. San. Uig.

≡ 0F67 ཧ tibetan letter ha

A872 ꡲ **PHAGS-PA LETTER ASPIRATED FA**

Use:Han.

A873 ꡳ **PHAGS-PA JOINER**

Use:Mon. Han. Tib. San. Uig.

A874 ꡴ **CANDARABINDU**

Use: Tib. San.

A875 **(This position shall not be used)**

A876 **(This position shall not be used)**

A877 **(This position shall not be used)**

A878 **(This position shall not be used)**

A879 **(This position shall not be used)**

A87A **(This position shall not be used)**

A87B   PHAGS-PA   A87F

A87B (This position shall not be used)

A87C (This position shall not be used)

A87D (This position shall not be used)

A87E (This position shall not be used)

A87F (This position shall not be used)