

# UC Berkeley

## Proposals from the Script Encoding Initiative

### Title

Proposal for encoding the Inscriptional Parthian, Inscriptional Pahlavi, and Psalter Pahlavi scripts in the SMP of the UCS

### Permalink

<https://escholarship.org/uc/item/2hm6b38h>

### Authors

Everson, Michael  
Pournader, Roozbeh

### Publication Date

2007-09-18

Peer reviewed

Universal Multiple-Octet Coded Character Set  
 International Organization for Standardization  
 Organisation Internationale de Normalisation  
 Международная организация по стандартизации

**Doc Type:** Working Group Document

**Title:** Proposal for encoding the Inscriptional Parthian, Inscriptional Pahlavi, and Psalter Pahlavi scripts in the SMP of the UCS

**Source:** UC Berkeley Script Encoding Initiative (Universal Scripts Project)

**Authors:** Michael Everson and Roozbeh Pournader

**Status:** Individual Contribution






















**Action:** For consideration by JTC1/SC2/WG2 and UTC



**Date:** 2007-08-24

**1. Introduction.** The three scripts proposed here were used to write a number of Iranian and Indo-European languages, chiefly Parthian, and Middle Persian. They are descended from the Imperial Aramaic script used in Persia during the Achaemenid period (549–330 BCE), the Seleucid period (330–210 BCE) and the early Parthian period (210 BCE–224 CE). By the second century CE the **Inscriptional Parthian** script had evolved, and was used as an official script (besides Inscriptional Pahlavi, used to write the Sasanians' own language) during the first part of the Sassanian period (224–651 CE). The main sources of Parthian are the inscriptions from Nisa (near present Ashgabat, Turkmenistan) and from Hecatompolis, as well as texts in Manichaean script, and a number of Sasanian multilingual inscriptions. In Pars, in what is now southern Iran, the Aramaic script evolved differently, into the **Inscriptional Pahlavi** script, which was used regularly as a monumental script until the fifth century CE. The **Psalter Pahlavi** script, a conservative variety of Pahlavi used by Christians in Iran, is so named because of its use in a fragmentary manuscript of the Psalms of David. The Pahlavi script(s) developed (or decayed) into the ambiguous **Book Pahlavi** script, which was replaced by the **Avestan** reformed script (exclusively used for the *Avesta*). Book Pahlavi will be the subject of a later proposal.

**2. Processing.** All three of these scripts are alphabetic scripts written right-to-left, usually with spaces between words.

**3.1. Inscriptional Parthian** makes use of seven standard ligatures. Ligation is common, but not obligatory. In fonts which implement automatic ligation, ZWNJ can be used to break the ligatures. Note that the glyph for the YODH-WAW and NUN-WAW ligatures are identical. See Figure 5. The table below is displayed in visual order:

gw		=	WAW		+	GIMEL		←
xw		=	WAW		+	HETH		←
yw		=	WAW		+	YODH		←
nw		=	WAW		+	NUN		←
ʿlw		=	LAMEDH		+	WAW		←
rw		=	WAW		+	RESH		←
tw		=	WAW		+	TAW		←

The Inscriptional Parthian letters SADHE and NUN have swash tails which typically trail under the following letter. Two NUNS will nest  nn, and some fonts may lower the diacritic of DALETH beneath the trailing line  nd.

**3.2 Inscriptional Parthian numbers.** Inscriptional Parthian has its own numbers, which have right-to-left directionality. Numbers are built up out of 1, 2, 3, 4, 10, 20, 100, and 1000. The inscriptions are not normalized uniformly. The units are sometimes written with strokes of the same height, or with a final stroke that is longer, either descending or ascending to show the end of the number; compare 5 in 15 (𐭒𐭓𐭔 or 2 + 3) and in 45 (𐭒𐭓𐭔𐭕 or 1 + 4); compare 6 in 16 (𐭒𐭓𐭔𐭕 or 3 + 3) and in 36 (𐭒𐭓𐭔𐭕 or 1 + 2 + 3). The encoding here allows the specialist to choose his or her preferred representation. The following is an list of numbers attested in Inscriptional Parthian. The third column is displayed in visual order.

4	𐭒𐭓𐭔	1 + 3 ←
5	𐭒𐭓𐭔𐭕	1 + 4 ←
8	𐭒𐭓𐭔𐭕𐭕	4 + 4 ←
15	𐭒𐭓𐭔𐭕𐭕	2 + 3 + 10 ←
16	𐭒𐭓𐭔𐭕𐭕	3 + 3 + 10 ←
18	𐭒𐭓𐭔𐭕𐭕𐭕	4 + 4 + 10 ←
19	𐭒𐭓𐭔𐭕𐭕𐭕𐭕	3 + 3 + 3 + 10 ←
20	𐭒	20 ←
24	𐭒𐭓𐭔𐭕	4 + 20 ←
36	𐭒𐭓𐭔𐭕𐭕𐭕	1 + 2 + 3 + 10 + 20 ←
37	𐭒𐭓𐭔𐭕𐭕𐭕	1 + 3 + 3 + 10 + 20 ←
40	𐭒𐭓𐭔𐭕	20 + 20 ←
45	𐭒𐭓𐭔𐭕𐭕	1 + 4 + 20 + 20 ←
55	𐭒𐭓𐭔𐭕𐭕𐭕	1 + 4 + 10 + 20 + 20 ←
58	𐭒𐭓𐭔𐭕𐭕𐭕𐭕	4 + 4 + 10 + 20 + 20 ←
70	𐭒𐭓𐭔𐭕𐭕	10 + 20 + 20 + 20 ←
84	𐭒𐭓𐭔𐭕𐭕𐭕	4 + 20 + 20 + 20 + 20 ←
100	𐭒𐭓	100 ←
158	𐭒𐭓𐭔𐭕𐭕𐭕𐭕𐭕	4 + 4 + 10 + 20 + 20 + 100 ←
159	𐭒𐭓𐭔𐭕𐭕𐭕𐭕𐭕𐭕	1 + 4 + 4 + 10 + 20 + 20 + 100 ←
166	𐭒𐭓𐭔𐭕𐭕𐭕𐭕	3 + 3 + 20 + 20 + 20 + 100 ←
170	𐭒𐭓𐭔𐭕𐭕𐭕	10 + 20 + 20 + 20 + 100 ←
171	𐭒𐭓𐭔𐭕𐭕𐭕	1 + 10 + 20 + 20 + 20 + 100 ←
180	𐭒𐭓𐭔𐭕𐭕𐭕	20 + 20 + 20 + 20 + 100 ←
191	𐭒𐭓𐭔𐭕𐭕𐭕𐭕	1 + 10 + 20 + 20 + 20 + 20 + 100 ←
300	𐭒𐭓𐭔	100 + 3 ←
500	𐭒𐭓𐭔𐭕	100 + 2 + 3 ←
60000	𐭒𐭓𐭔𐭕𐭕𐭕𐭕	1000 + 20 + 20 + 20 ←

**3.3. Names and ordering.** The names used for the Inscriptional Parthian characters are based on their Imperial Aramaic analogues. The order of the characters in the code charts is their alphabetical order.

**4.1. Inscriptional Pahlavi BETH** 𐭒 also has a swash tail which typically trails under the following letter.

**4.2. Inscriptional Pahlavi numbers.** Inscriptional Pahlavi has its own numbers, which have right-to-left directionality. Numbers are built up out of 1, 2, 3, 4, 10, 20, 100, and 1000. The following is an list of numbers attested in Inscriptional Parthian. The third column is displayed in visual order.

24	𐭒𐭓𐭔	4 + 20 ←
40	𐭒𐭓𐭔	20 + 20 ←
58	𐭒𐭓𐭔𐭕𐭕	4 + 10 + 20 + 20 ←
68	𐭒𐭓𐭔𐭕𐭕	4 + 20 + 20 + 20 ←
6798	𐭒𐭓𐭔𐭕𐭕𐭕𐭕𐭕𐭕𐭕𐭕𐭕𐭕	4 + 4 + 10 + 20 + 20 + 20 + 20 + 100 + 3 + 4 + 1000 + 3 + 3 ←

**4.3. Names and ordering.** The names used for the Inscriptional Pahlavi characters are based on their Imperial Aramaic analogues. The order of the characters in the code charts is their alphabetical order. The historical characters WAW, AYIN, and RESH and MEM and QOPH fell together into two characters, named here WAW-AYIN-RESH and MEM-QOPH respectively.

**5.1. Psalter Pahlavi** script has fully-developed joining behaviour. The table below shows the joining forms.

*Dual-joining Psalter Pahlavi Characters*

Character	X <sub>n</sub>	X <sub>r</sub>	X <sub>m</sub>	X <sub>l</sub>
ALEPH	Ⲁ	Ⲁ	Ⲁ	Ⲁ
GIMEL	Ⲃ	Ⲃ	Ⲃ	Ⲃ
ZAYIN	Ⲅ	Ⲅ	Ⲅ	Ⲅ
HETH	Ⲇ	Ⲇ	Ⲇ	Ⲇ
YODH	Ⲉ	Ⲉ	Ⲉ	Ⲉ
LAMEDH	Ⲋ	Ⲋ	Ⲋ	Ⲋ
MEM-QOPH	Ⲍ	Ⲍ	Ⲍ	Ⲍ
SAMEKH	Ⲏ	Ⲏ	Ⲏ	Ⲏ
SHIN	Ⲑ	Ⲑ	Ⲑ	Ⲑ

*Right-joining Psalter Pahlavi Characters*

Character	X <sub>n</sub>	X <sub>r</sub>
BETH	Ⲣ	Ⲣ
DALETH	Ⲥ	Ⲥ
HE	Ⲧ	Ⲧ
WAW-AYIN-RESH	Ⲩ	Ⲩ
KAPH	Ⲫ	Ⲫ
NUN	Ⲭ	Ⲭ
PE	Ⲯ	Ⲯ
SADHE	Ⲱ	Ⲱ
TAW	Ⲳ	Ⲳ

**5.2. Psalter Pahlavi numbers.** A PSALTER PAHLAVI PUNCTUATION MARK is attested, used at the beginning or end of a passage, and at various breaks within it (see Figure 10). Psalter Pahlavi has its own numbers, which have right-to-left directionality. Numbers are built up out of 1, 2, 3, 4, 10, 20, and 100; the number 1000 is not attested in Psalter Pahlavi. The following is an exhaustive list of numbers attested in Psalter Pahlavi. The third column is displayed in visual order.

3	Ⲣ	3 ←	<i>Hérat Cross l. 3r</i>
96	ⲢⲢⲢⲢⲢⲢ	3 + 3 + 10 + 20 + 20 + 20 + 20 ←	<i>f.2r.13</i>
98	ⲢⲢⲢⲢⲢⲢ	4 + 4 + 10 + 20 + 20 + 20 + 20 ←	<i>f.3r.1</i>
99	ⲢⲢⲢⲢⲢⲢⲢⲢⲢ	[3 + 3 + 3 + 10] + 20 + 20 + 20 + 20 ←	<i>f.3v.5</i>
122	ⲢⲢⲢⲢⲢⲢⲢ	2 + 20 + WAW + 100 ←	<i>f.5r.10</i>
123	ⲢⲢⲢⲢⲢⲢⲢ	3 + 20 + WAW + 100 ←	<i>f.5v.2</i>
124	ⲢⲢⲢⲢⲢⲢⲢ	4 + 20 + WAW + 100 ←	<i>f.5v.18</i>
125	ⲢⲢⲢⲢⲢⲢⲢⲢ	2 + 3 + 20 + WAW + 100 ←	<i>f.6r.11</i>
126	ⲢⲢⲢⲢⲢⲢⲢⲢ	3 + 3 + 20 + WAW + 100 ←	<i>f.6v.6</i>
127	ⲢⲢⲢⲢⲢⲢⲢⲢ	3 + 4 + 20 + WAW + 100 ←	<i>f.7r.7</i>
128	ⲢⲢⲢⲢⲢⲢⲢⲢ	2 + 3 + 20 + WAW + 100 ←	<i>f.7v.4</i>
129	ⲢⲢⲢⲢⲢⲢⲢⲢⲢ	ALEPH + SHIN + TAW + 20 + WAW + 100 ←	<i>f.8r.4</i>
130	ⲢⲢⲢⲢⲢⲢⲢⲢⲢ	10 + 20 + WAW + 100 ←	<i>f.8v.2</i>

131	وڍی ، فکلیہر [	[1] + 10 + 20 + WAW + 100 ←	f.8v.12
132	وڍی ، فکس [	[2 + 10] + 20 + WAW + 100 ←	f.9v.14
134	وڍی [ ، فکسر ]	[4 + 10 + 20 + WAW] + 100 ←	f.10r.3
135	وڍی ، فکسر	3 + 4 + 10 + 20 + WAW + 100 ←	f.11v.2
136	وڍی ، فک [ حصص ]	ALEPH + TAW + SHIN + [10 + 20 + WAW + 100] ←	f.12v.10
507	سسر وڍی سسر	3 + 4 + 100 + 2 + 3 ←	Hérat Cross l. 1v

Note that “129” is written “100 and 20 nine” ( و W means *ud* ‘and’ وحصص TŠA means *nō* ‘nine’); “136” is written “100 and 30 six” ( وحصص ŠTA means *šāš* ‘six’).

Some Psalter Pahlavi numbers have joining behaviour. Note that they can join with letters as well as numbers (see و 20-TAW in 129 above). The numbers 10 and 20 are dual joining, and the numbers 1, 2, 3, and 4 are right-joining, although these change their form in some combinations. The nominal forms of the numbers 2, 3, and 4 have a long final leg ( μ, μ, μ), but in combination when used in building up other numbers they ligate with a short form in the first ( μ 5, μ 6, μ 7, μ 8, μ 9). The numbers are right-joining, except when rules R1 and R2 apply.

**R1** A number 1, 2, 3, or 4 that has a right join-causing character to its right and a number 1, 2, 3, or 4 to its left will take the form of  $X_{rm}$ .

$$\mu 3 + \mu 4 + \omega 20 \rightarrow \mu + \mu + \omega \rightarrow \mu \text{ سسر } 27$$

**R2** A number 1, 2, 3, or 4 that has no right join-causing character to its right and a number 1, 2, 3, or 4 to its left will take the form of  $X_{nm}$ .

$$\mu 3 + \mu 4 + 100 \rightarrow \mu + \mu + \text{وڍی} \rightarrow \text{وڍی سسر } 107$$

#### Dual-joining Psalter Pahlavi Numbers

Character	$X_n$	$X_r$	$X_m$	$X_l$
TEN	𐭩	𐭪	𐭫	𐭬
TWENTY	𐭮	𐭯	𐭰	𐭱

#### Right-joining Psalter Pahlavi Numbers

Character	$X_n$	$X_r$	$X_{rm}$	$X_{nm}$
ONE	𐭠	𐭡	𐭢	𐭣
TWO	μ	μ	μ	μ
THREE	μ	μ	μ	μ
FOUR	μ	μ	μ	μ

**5.3. Psalter Pahlavi punctuation.** Four punctuation marks are used in Psalter Pahlavi to indicate semantic breaks; the exact distinctions of meaning are as yet uncertain. The FULL STOP is used, aligned with the baseline. Together with this, or separately, the PSALTER PAHLAVI COMBINING STOP BELOW or PSALTER PAHLAVI COMBINING STOP ABOVE can be used. A PSALTER PAHLAVI SECTION MARK is attested, used at the beginning or end of a passage, and at various breaks within it (see Figure 10).

**5.4. Names and ordering.** The names used for the Psalter Pahlavi characters are based on their Imperial Aramaic analogues. The order of the characters in the code charts is their alphabetical order. The historical characters WAW, AYIN, and RESH and MEM and QOPH fell together into two characters, named here WAW-AYIN-RESH and MEM-QOPH respectively.

## 6. Bibliography.

- Akbarzādeh, Dāriyūš. 2002 (1381 AP). *Katibe-hā-ye Pahlavi-ye aškāni (Pārti) = Parthian inscriptions*. Vol. II. Tehran: Pazineh Press. ISBN 964-5722-74-8
- Akbarzādeh, Dāriyūš. 2003 (1382 AP). *Katibe-hā-ye Pahlavi: sang-negāre, sekke, mohr, asar-e mohr, zarf-nebešte = Pahlavi inscriptions: inscriptions, coins, seals, sealing impression*. Vol. I. Tehran: Pazineh Press. ISBN 964-5722-44-6
- Andreas, F. C. 1933. *Bruchstücke einer Pehlevi-Übersetzung der Psalmen*. Aus dem Nachlass herausgegeben von Kaj Barr. Sonderausgabe aus den Sitzungberichten der Preussischen Akademie der Wissenschaften Phil.-Hist. Klasse, 1933.I. Berlin: Verlag der Akademie der Wissenschaften in Kommission bei Walter de Gruyter u. Co.
- Faulmann, Carl. 1990 (1880). *Das Buch der Schrift*. Frankfurt am Main: Eichborn. ISBN 3-8218-1720-8
- Gignoux, Philippe. 2001. “Une croix de procession de Hérat inscrite en pehlevi”, in *Le Muséon* 114, fasc. 3-4, pp. 291-304.
- MacKenzie, D. N. 1971. *A concise Pahlavi dictionary*. London: Oxford University Press.
- Nyberg, Henrik Samuel. 1964 *A manual of Pahlavi*. Wiedbaden: Otto Harrassowitz. Reprinted 2003 Tehran: Asatir. ISBN 964-331-131-7, 964-331-132-5
- Oryan, Saeed. 2003a (1382 AP). *Rahnmā-ye katibe-hā-ye Irāni-ye miyāne Pahlavi-Pārti = Manual of Middle Iranian Inscriptions (Parthian-Pahlavi)*. Tehran: Iranian Cultural Heritage Organization. ISBN 964-7483-71-6
- Oryan, Saeed. 2003b (1382 AP). *Zabur-e Pahlavi: matn-e Pahlavi, harf-nevisi, āvā-nevisi, tarojme-ye Fārsi va yaddāšt-hā = Pahlavi translation of the Psalms: text, transliteration, transcription, Persian translation, and notes*. Tehran: Iranian Cultural Heritage Organization. ISBN 964-7483-75-9
- Rezai Baghbidi, Hassan 2002 (1381 AP). *Dastur-e zanān-e Pārti (Pahlavi aškāni) = A grammar of Parthian (Arsacid Pahlavi)*. Iranian Academy of Persian Language and Literature. ISBN 964-7531-05-2
- Skjærvø, P. Oktor. 1996. “Aramaic scripts for Iranian languages” in *The World’s Writing Systems*, ed. Peter T. Daniels & William Bright. New York; Oxford: Oxford University Press. ISBN 0-19-507993-0
- Taylor, Isaac. 1883. *The alphabet: an account of the origin and development of letters*. Vol. 1: Semitic alphabets; Vol. 2: Aryan alphabets. London: Kegan Paul.

## 7. Unicode Character Properties

10B40; INSCRIPTONAL PARTHIAN LETTER ALEPH;Lo;0;R;;;N;;;;;  
10B41; INSCRIPTONAL PARTHIAN LETTER BETH;Lo;0;R;;;N;;;;;  
10B42; INSCRIPTONAL PARTHIAN LETTER GIMEL;Lo;0;R;;;N;;;;;  
10B43; INSCRIPTONAL PARTHIAN LETTER DALETH;Lo;0;R;;;N;;;;;  
10B44; INSCRIPTONAL PARTHIAN LETTER HE;Lo;0;R;;;N;;;;;  
10B45; INSCRIPTONAL PARTHIAN LETTER WAW;Lo;0;R;;;N;;;;;  
10B46; INSCRIPTONAL PARTHIAN LETTER ZAYIN;Lo;0;R;;;N;;;;;  
10B47; INSCRIPTONAL PARTHIAN LETTER HETH;Lo;0;R;;;N;;;;;  
10B48; INSCRIPTONAL PARTHIAN LETTER TETH;Lo;0;R;;;N;;;;;  
10B49; INSCRIPTONAL PARTHIAN LETTER YODH;Lo;0;R;;;N;;;;;  
10B4A; INSCRIPTONAL PARTHIAN LETTER KAPH;Lo;0;R;;;N;;;;;  
10B4B; INSCRIPTONAL PARTHIAN LETTER LAMEDH;Lo;0;R;;;N;;;;;  
10B4C; INSCRIPTONAL PARTHIAN LETTER MEM;Lo;0;R;;;N;;;;;  
10B4D; INSCRIPTONAL PARTHIAN LETTER NUN;Lo;0;R;;;N;;;;;  
10B4E; INSCRIPTONAL PARTHIAN LETTER SAMEKH;Lo;0;R;;;N;;;;;  
10B4F; INSCRIPTONAL PARTHIAN LETTER AYIN;Lo;0;R;;;N;;;;;  
10B50; INSCRIPTONAL PARTHIAN LETTER PE;Lo;0;R;;;N;;;;;  
10B51; INSCRIPTONAL PARTHIAN LETTER SADHE;Lo;0;R;;;N;;;;;  
10B52; INSCRIPTONAL PARTHIAN LETTER QOPH;Lo;0;R;;;N;;;;;  
10B53; INSCRIPTONAL PARTHIAN LETTER RESH;Lo;0;R;;;N;;;;;  
10B54; INSCRIPTONAL PARTHIAN LETTER SHIN;Lo;0;R;;;N;;;;;  
10B55; INSCRIPTONAL PARTHIAN LETTER TAW;Lo;0;R;;;N;;;;;  
10B58; INSCRIPTONAL PARTHIAN NUMBER ONE;No;0;R;;;1;N;;;;;  
10B59; INSCRIPTONAL PARTHIAN NUMBER TWO;No;0;R;;;2;N;;;;;  
10B5A; INSCRIPTONAL PARTHIAN NUMBER THREE;No;0;R;;;3;N;;;;;  
10B5B; INSCRIPTONAL PARTHIAN NUMBER FOUR;No;0;R;;;4;N;;;;;  
10B5C; INSCRIPTONAL PARTHIAN NUMBER TEN;No;0;R;;;10;N;;;;;  
10B5D; INSCRIPTONAL PARTHIAN NUMBER TWENTY;No;0;R;;;20;N;;;;;  
10B5E; INSCRIPTONAL PARTHIAN NUMBER ONE HUNDRED;No;0;R;;;100;N;;;;;  
10B5F; INSCRIPTONAL PARTHIAN NUMBER ONE THOUSAND;No;0;R;;;1000;N;;;;;

10B60;INSCRIPTIONAL PAHLAVI LETTER ALEPH;Lo;0;R;;;;N;;;;;  
10B61;INSCRIPTIONAL PAHLAVI LETTER BETH;Lo;0;R;;;;N;;;;;  
10B62;INSCRIPTIONAL PAHLAVI LETTER GIMEL;Lo;0;R;;;;N;;;;;  
10B63;INSCRIPTIONAL PAHLAVI LETTER DALETH;Lo;0;R;;;;N;;;;;  
10B64;INSCRIPTIONAL PAHLAVI LETTER HE;Lo;0;R;;;;N;;;;;  
10B65;INSCRIPTIONAL PAHLAVI LETTER WAW-AYIN-RESH;Lo;0;R;;;;N;;;;;  
10B66;INSCRIPTIONAL PAHLAVI LETTER ZAYIN;Lo;0;R;;;;N;;;;;  
10B67;INSCRIPTIONAL PAHLAVI LETTER HETH;Lo;0;R;;;;N;;;;;  
10B68;INSCRIPTIONAL PAHLAVI LETTER TETH;Lo;0;R;;;;N;;;;;  
10B69;INSCRIPTIONAL PAHLAVI LETTER YODH;Lo;0;R;;;;N;;;;;  
10B6A;INSCRIPTIONAL PAHLAVI LETTER KAPH;Lo;0;R;;;;N;;;;;  
10B6B;INSCRIPTIONAL PAHLAVI LETTER LAMEDH;Lo;0;R;;;;N;;;;;  
10B6C;INSCRIPTIONAL PAHLAVI LETTER MEM-QOPH;Lo;0;R;;;;N;;;;;  
10B6D;INSCRIPTIONAL PAHLAVI LETTER NUN;Lo;0;R;;;;N;;;;;  
10B6E;INSCRIPTIONAL PAHLAVI LETTER SAMEKH;Lo;0;R;;;;N;;;;;  
10B6F;INSCRIPTIONAL PAHLAVI LETTER PE;Lo;0;R;;;;N;;;;;  
10B70;INSCRIPTIONAL PAHLAVI LETTER SADHE;Lo;0;R;;;;N;;;;;  
10B71;INSCRIPTIONAL PAHLAVI LETTER SHIN;Lo;0;R;;;;N;;;;;  
10B72;INSCRIPTIONAL PAHLAVI LETTER TAW;Lo;0;R;;;;N;;;;;  
10B78;INSCRIPTIONAL PAHLAVI NUMBER ONE;No;0;R;;;1;N;;;;;  
10B79;INSCRIPTIONAL PAHLAVI NUMBER TWO;No;0;R;;;2;N;;;;;  
10B7A;INSCRIPTIONAL PAHLAVI NUMBER THREE;No;0;R;;;3;N;;;;;  
10B7B;INSCRIPTIONAL PAHLAVI NUMBER FOUR;No;0;R;;;4;N;;;;;  
10B7C;INSCRIPTIONAL PAHLAVI NUMBER TEN;No;0;R;;;10;N;;;;;  
10B7D;INSCRIPTIONAL PAHLAVI NUMBER TWENTY;No;0;R;;;20;N;;;;;  
10B7E;INSCRIPTIONAL PAHLAVI NUMBER ONE HUNDRED;No;0;R;;;100;N;;;;;  
10B7F;INSCRIPTIONAL PAHLAVI NUMBER ONE THOUSAND;No;0;R;;;1000;N;;;;;

10B80;PSALTER PAHLAVI LETTER ALEPH;Lo;0;R;;;;N;;;;;  
10B81;PSALTER PAHLAVI LETTER BETH;Lo;0;R;;;;N;;;;;  
10B82;PSALTER PAHLAVI LETTER GIMEL;Lo;0;R;;;;N;;;;;  
10B83;PSALTER PAHLAVI LETTER DALETH;Lo;0;R;;;;N;;;;;  
10B84;PSALTER PAHLAVI LETTER HE;Lo;0;R;;;;N;;;;;  
10B85;PSALTER PAHLAVI LETTER WAW-AYIN-RESH;Lo;0;R;;;;N;;;;;  
10B86;PSALTER PAHLAVI LETTER ZAYIN;Lo;0;R;;;;N;;;;;  
10B87;PSALTER PAHLAVI LETTER HETH;Lo;0;R;;;;N;;;;;  
10B88;PSALTER PAHLAVI LETTER YODH;Lo;0;R;;;;N;;;;;  
10B89;PSALTER PAHLAVI LETTER KAPH;Lo;0;R;;;;N;;;;;  
10B8A;PSALTER PAHLAVI LETTER LAMEDH;Lo;0;R;;;;N;;;;;  
10B8B;PSALTER PAHLAVI LETTER MEM-QOPH;Lo;0;R;;;;N;;;;;  
10B8C;PSALTER PAHLAVI LETTER NUN;Lo;0;R;;;;N;;;;;  
10B8D;PSALTER PAHLAVI LETTER SAMEKH;Lo;0;R;;;;N;;;;;  
10B8E;PSALTER PAHLAVI LETTER PE;Lo;0;R;;;;N;;;;;  
10B8F;PSALTER PAHLAVI LETTER SADHE;Lo;0;R;;;;N;;;;;  
10B90;PSALTER PAHLAVI LETTER SHIN;Lo;0;R;;;;N;;;;;  
10B91;PSALTER PAHLAVI LETTER TAW;Lo;0;R;;;;N;;;;;  
10B92;PSALTER PAHLAVI KASHIDA;Lm;0;AL;;;;N;;;;;  
10B96;PSALTER PAHLAVI COMBINING STOP BELOW;Mn;220;NSM;;;;N;;;;;  
10B97;PSALTER PAHLAVI COMBINING STOP ABOVE;Mn;230;NSM;;;;N;;;;;  
10B98;PSALTER PAHLAVI SECTION MARK;Po;0;AL;;;;N;;;;;  
10B99;PSALTER PAHLAVI NUMBER ONE;No;0;R;;;1;N;;;;;  
10B9A;PSALTER PAHLAVI NUMBER TWO;No;0;R;;;2;N;;;;;  
10B9B;PSALTER PAHLAVI NUMBER THREE;No;0;R;;;3;N;;;;;  
10B9C;PSALTER PAHLAVI NUMBER FOUR;No;0;R;;;4;N;;;;;  
10B9D;PSALTER PAHLAVI NUMBER TEN;No;0;R;;;10;N;;;;;  
10B9E;PSALTER PAHLAVI NUMBER TWENTY;No;0;R;;;20;N;;;;;  
10B9F;PSALTER PAHLAVI NUMBER ONE HUNDRED;No;0;R;;;100;N;;;;;

## 8. Additions for the file ArabicShaping.txt

# Psalter Pahlavi

10B80; ALEPH; D; No\_Joining\_Group  
10B81; BETH; R; No\_Joining\_Group  
10B82; GIMEL; D; No\_Joining\_Group  
10B83; DALETH; R; No\_Joining\_Group  
10B84; HE; R; No\_Joining\_Group  
10B85; WAW-AYIN-RESH; R; No\_Joining\_Group  
10B86; ZAYIN; D; No\_Joining\_Group  
10B87; HETH; D; No\_Joining\_Group  
10B88; YODH; D; No\_Joining\_Group  
10B89; KAPH; R; No\_Joining\_Group  
10B8A; LAMEDH; D; No\_Joining\_Group  
10B8B; MEM-QOPH; D; No\_Joining\_Group  
10B8C; NUN; R; No\_Joining\_Group  
10B8D; SAMEKH; D; No\_Joining\_Group  
10B8E; PE; R; No\_Joining\_Group  
10B8F; SADHE; R; No\_Joining\_Group

10B90; SHIN; D; No\_Joining\_Group  
10B91; TAW; R; No\_Joining\_Group  
10B92; KASHIDA; C; No\_Joining\_Group  
10B98; PUNCTUATION MARK; U; No\_Joining\_Group  
10B99; ONE; R; No\_Joining\_Group  
10B9A; TWO; R; No\_Joining\_Group  
10B9B; THREE; R; No\_Joining\_Group  
10B9C; FOUR; R; No\_Joining\_Group  
10B9D; TEN; D; No\_Joining\_Group  
10B9E; TWENTY; D; No\_Joining\_Group  
10B9F; HUNDRED; U; No\_Joining\_Group

## **9. Acknowledgements**

This project was made possible in part by a grant from the U.S. National Endowment for the Humanities, which funded the Universal Scripts Project (part of the Script Encoding Initiative at UC Berkeley), as well as by support from the FarsiWeb Project, Sharif FarsiWeb, Tehran.



Figures

THE IRANIAN ALPHABETS.

	ARAMEAN.		PEHLEVI.				INDO-BACTRIAN.	ARMENIAN. (Reversal.)	GEORGIAN. (H. v. p. 100.)	
	SATEAPERS & EGYPT.	PALMYRA.	ARSACIDAN.		SASSANIAN.					PARSI.
			Coins & Gems.	Haji-abad B.	Haji-abad A.	Coins.				MS.
			Sec. iv. & iii. B.C.	Sec. ii. A.D.	Sec. i. & ii. A.D.	Sec. iii. A.D.				Sec. iv. to vi. A.D.
		Sec. i. & ii. A.D.	Sec. iii. A.D.	Sec. iii. A.D.	Sec. iv. to vi. A.D.	Modern	Sec. iii. B.C.	Sec. ix. A.D.	Sec. xi. A.D.	
א	𐤀	𐤁	𐬀	𐬁	𐬂	𐬃	𐬄	𐬅	Ա	Ⴀ
ב	𐤂	𐤃	𐬂	𐬃	𐬄	𐬅	𐬆	𐬇	Բ	Ⴁ
ג	𐤄	𐤅	𐬃	𐬄	𐬅	𐬆	𐬇	𐬈	Գ	Ⴂ
ד	𐤆	𐤇	𐬄	𐬅	𐬆	𐬇	𐬈	𐬉	Դ	Ⴃ
ה	𐤈	𐤉	𐬅	𐬆	𐬇	𐬈	𐬉	𐬊	Ե	Ⴄ
ו	𐤊	𐤋	𐬆	𐬇	𐬈	𐬉	𐬊	𐬋	Զ	Ⴅ
ז	𐤌	𐤍	𐬇	𐬈	𐬉	𐬊	𐬋	𐬌	Է	Ⴆ
ח	𐤎	𐤏	𐬈	𐬉	𐬊	𐬋	𐬌	𐬍	Ը	Ⴇ
ט	𐤐	𐤑	𐬉	𐬊	𐬋	𐬌	𐬍	𐬎	Թ	Ⴈ
י	𐤒	𐤓	𐬊	𐬋	𐬌	𐬍	𐬎	𐬏	Ձ	Ⴉ
כ	𐤔	𐤕	𐬋	𐬌	𐬍	𐬎	𐬏	𐬐	Ղ	Ⴊ
ל	𐤖	𐤗	𐬌	𐬍	𐬎	𐬏	𐬐	𐬑	Ճ	Ⴋ
מ	𐤘	𐤙	𐬍	𐬎	𐬏	𐬐	𐬑	𐬒	Մ	Ⴌ
נ	𐤚	𐤛	𐬎	𐬏	𐬐	𐬑	𐬒	𐬓	Ն	Ⴍ
ס	𐤜	𐤝	𐬏	𐬐	𐬑	𐬒	𐬓	𐬔	Տ	Ⴎ
ע	𐤞	𐤟	𐬐	𐬑	𐬒	𐬓	𐬔	𐬕	Վ	Ⴏ
פ	𐤠	𐤡	𐬑	𐬒	𐬓	𐬔	𐬕	𐬖	Ր	Ⴐ
צ	𐤢	𐤣	𐬒	𐬓	𐬔	𐬕	𐬖	𐬗	Ց	Ⴑ
ק	𐤤	𐤥	𐬓	𐬔	𐬕	𐬖	𐬗	𐬘	Պ	Ⴒ
ר	𐤦	𐤧	𐬔	𐬕	𐬖	𐬗	𐬘	𐬙	Ռ	Ⴓ
ש	𐤨	𐤩	𐬕	𐬖	𐬗	𐬘	𐬙	𐬚	Տ	Ⴔ
ת	𐤬	𐤭	𐬖	𐬗	𐬘	𐬙	𐬚	𐬛	Տ	Ⴕ

(236)

Figure 1. Table of Iranian alphabets, from Taylor 1883. The Arsacidan columns (III, IV) show Parthian script, and the Sassanian columns (V, VI) show Inscriptional Pahlavi script. The Parsi column (VII) shows Book Pahlavi. Column I shows Imperial Aramaic; column II shows Palmyrene; column VIII shows Brahmi; column IX shows Armenian; and column X shows Georgian.

This table is given for historical interest. It stems from a period when the inscriptions were known but could not yet be properly read—and that did not happen until the 1920s. Taylor’s table is therefore inaccurate: under Parthian DALETH he has the letter TETH, the form of LAMEDH is wrong, and he gives no SADHE. Under Middle Persian, TETH is missing and TAW has the wrong shape.

## Alphabets.

Hebrew	Kaša'	Aramaic papyri	Palmyr. inscriptions	Kabat. inscriptions, Sinai	Parthian inscriptions	Persian inscriptions	Psalter	Book Pahlavi	Transliteration
א	𐎀	𐎁	𐎂	𐎃	𐎄	𐎅	𐎆	𐎇	'
ב	𐎈	𐎉	𐎊	𐎋, 𐎌	𐎍	𐎎	𐎏	𐎐	b
ג	𐎑	𐎒	𐎓	𐎔, 𐎕	𐎖	𐎗	𐎘	𐎙 (g)	g
ד	𐎚	𐎛, 𐎜	𐎝	𐎞, 𐎟	𐎠	𐎡	𐎢	𐎣 (d) (g, j)	d
ה	𐎤	𐎥	𐎦	𐎧, 𐎨	𐎩	𐎪	𐎫	𐎬 (h)	-h
ו	𐎭	𐎮	𐎯	𐎰, 𐎱	𐎲	𐎳	𐎴	𐎵	w
ז	𐎶, 𐎷	𐎸	𐎹	𐎺	𐎻	𐎼	𐎽	𐎾	z
ח	𐎿	𐏀	𐏁	𐏂, 𐏃	𐏄	𐏅	𐏆	𐏇	h, h'
ט	𐏈	𐏉	𐏊	𐏋, 𐏌	𐏍	𐏎	-	-	t
י	𐏐	𐏑	𐏒	𐏓, 𐏔	𐏕	𐏖	𐏗	𐏘 (j, j')	y (j')
כ, 𐏚	𐏛	𐏜	𐏝	𐏞, 𐏟	𐏠	𐏡	𐏢	𐏣	k
ל	𐏤	𐏥	𐏦	𐏧, 𐏨	𐏩	𐏪	𐏫	𐏬 (b)	l
מ, 𐏚	𐏭	𐏮	𐏯	𐏰, 𐏱, 𐏲	𐏳	𐏴	𐏵	𐏶	m
נ, 𐏚	𐏷	𐏸	𐏹	𐏺, 𐏻	𐏼	𐏽	𐏾	𐏿	n
ס	𐏿	𐐀	𐐁	𐐂	𐐃	𐐄	𐐅	𐐆, 𐐇	s
ע	𐐈	𐐉	𐐊	𐐋, 𐐌	𐐍	𐐎	𐐏	𐐐	c
פ, 𐐑	𐐒	𐐓	𐐔	𐐕, 𐐖	𐐗	𐐘	𐐙	𐐚	p
צ, 𐐑	𐐛	𐐜	𐐝	𐐞, 𐐟	𐐠	𐐡	𐐢	𐐣	c, s
ק	𐐤	𐐥	𐐦	𐐧, 𐐨	𐐩	-	-	-	q
ר	𐐫	𐐬	𐐭	𐐮, 𐐯	𐐰	𐐱	𐐲	𐐳	r
ש	𐐴	𐐵	𐐶	𐐷, 𐐸, 𐐹	𐐺	𐐻	𐐼	𐐽	š
ת	𐐿	𐑀	𐑁	𐑂, 𐑃	𐑄	𐑅	𐑆, 𐑇	𐑈	t

Figure 2. Table of Iranian alphabets, from from Nyberg 1964.

The Parthian inscriptions column refers to Parthian, the Persian inscriptions column refers to Inscriptional Pahlavi. Psalter Pahlavi and Book Pahlavi are also shown. Nyberg's table is slightly idiosyncratic and the shape of Parthian ALEPH is wrong.

TABLE 48.1: *Main West Iranian Scripts Developed from Aramaic*

Aramaic	Early Parthian (Nisa)	Parthian inscr's	Principal Phonetic Values (Parthian)	Middle Persian inscr's	Psalter	Early Cursive Pahlavi	Book Pahlavi	Principal Phonetic Values (MPers.)
ʾ	𐎠	𐎡	a, ā	𐎠	𐎡	𐎠	𐎠	a, ā
b	𐎡	𐎢	b, w	𐎢	𐎣	𐎢	𐎢	b, w
g	𐎣	𐎤	g, γ	𐎣	𐎤		𐎣 𐎤	g, γ
d	𐎤 = ʿ, r	𐎥	d, δ	𐎤	𐎥	𐎤	𐎤 𐎥	d, y
h (h)	𐎦	𐎧		𐎦	𐎧		𐎦	
w	𐎧	𐎨	w, ō, ū	2 = ʿ, r	1 = ʿ, r	1	1	w, ō, ū
z	𐎩	𐎪	z, ž	𐎩	𐎪		𐎩	z
ḥ (h)	𐎫	𐎬	h, x	𐎫	𐎬	𐎫	𐎫	h, x
t	𐎭	𐎮		𐎭				
y	𐎯	𐎰	y, ē, ī	𐎯	𐎰	𐎯	𐎯 𐎰	y, ē, ī, j
k	𐎱	𐎲	k, g	𐎱	𐎲	𐎱	𐎱	k, g
l (δ)	𐎳	𐎴	l	𐎳	𐎴	𐎳	𐎳	l, r
m	𐎵	𐎶	m	𐎵	𐎶	𐎵	𐎵	m
n	𐎷	𐎸	n	𐎷	𐎸	𐎷	𐎷	n
s	𐎹	𐎺	s	𐎹	𐎺	𐎹	𐎹 𐎺	s, h
ʿ	𐎻 = d, r	𐎼 = r		2 = w, r	1 = w, r	1	1	∅
p	𐎽	𐎿	p, b	𐎽	𐎿	𐎽 𐎿	𐎽	p, b, f
š (c)		𐏀	š	𐏀	𐏁	𐏀	𐏀 𐏁	š, j, z
q	𐏁	𐏂		𐏁	𐏂	𐏁	𐏁	
r	𐏃 = d, ʿ	𐏄 = ʿ	r	2 = w, ʿ	1 = w, ʿ	1	1	r
š	𐏅	𐏆	š, ž	𐏅	𐏆	𐏅	𐏅	š
t	𐏇	𐏈	t, d	𐏇	𐏈	𐏇	𐏇	t, d

Figure 3. Table of Iranian alphabets, from from Skjærvø 1996.

**TABLE I**

	Imperial Aramaic	Inscriptions		Pahlavi	
		Parthian	Persian	Psalter	Book
' ('ālp)	𐤀	𐭀	𐭁	𐭂	𐭃
h (bēṭ)	𐤁	𐭄	𐭅	𐭆	𐭇
g (gīnel)	𐤂	𐭈	𐭉	𐭊	𐭋
d (dālet)	𐤃	𐭌	𐭍	𐭎	𐭏
h (hē)	𐤄	𐭐	𐭑	𐭒	𐭓
w (wāw)	𐤅	𐭔	𐭕	𐭖	𐭗
z (zayin)	𐤆	𐭘	𐭙	𐭚	𐭛
h (hēṭ)	𐤇	𐭜	𐭝	𐭞	𐭟
t (tēt)	𐤈	𐭠	𐭡	𐭢	𐭣
y (yōd)	𐤉	𐭤	𐭥	𐭦	𐭧
k (kaṭ)	𐤊	𐭨	𐭩	𐭪	𐭫
l (lāmēd)	𐤋	𐭬	𐭭	𐭮	𐭯
m (mēm)	𐤌	𐭰	𐭱	𐭲	𐭳
n (nūn)	𐤍	𐭴	𐭵	𐭶	𐭷
s (sāmēk)	𐤎	𐭸	𐭹	𐭺	𐭻
' ('ayin)	𐤏	𐭼	𐭽	𐭾	𐭿
p (pē)	𐤐	𐭿	𐮀	𐮁	𐮂
š (šāḏē)	𐤑	𐮁	𐮂	𐮃	𐮄
q (qōṭ)	𐤒	𐮃	𐮄	𐮅	𐮆
r (rēš)	𐤓	𐮄	𐮅	𐮆	𐮇
š š (š/šīn)	𐤔	𐮅	𐮆	𐮇	𐮈
t (tāw)	𐤕	𐮆	𐮇	𐮈	𐮉

\* The under- and over-lining of letters in Semitic transcription indicates a fricative pronunciation, *āleph*, *bēth*, etc.

**Figure 4.** Table showing Imperial Aramaic, Inscriptional Parthian, Inscriptional Pahlavi, and Book Pahlavi, from MacKenzie 1971.

	z	s	A/ᵒ	𐭂
	y	j	H/h	𐭄
𐭘 + 𐭙 = 𐭛	p	𐭙	š	𐭛
𐭘 + 𐭚/𐭛 = 𐭜	s	𐭛	n	𐭛
𐭘 + 𐭜 = 𐭞	d	𐭜	m	𐭜
𐭘 + 𐭞 = 𐭠	O	𐭞	H	𐭞
𐭘 + 𐭠 = 𐭢	b	𐭠	Q	𐭠
𐭘 + 𐭢 = 𐭤	g	𐭢	t	𐭢
𐭘 + 𐭤 = 𐭦	r	𐭤	l	𐭤
𐭙 + 𐭚 = 𐭟	k	𐭚	š	𐭚
	T	𐭟	w	𐭟

**Figure 5.** Table of Inscriptional Parthian letters from Akbarzadeh 2002, showing the Inscriptional Parthian letters and their standard ligatures 𐭛 *tw*, 𐭜 *yw/nw*, 𐭞 *xw*, 𐭠 *gw*, 𐭢 *rw*, and 𐭤 *ʿl* in non-alphabetical but graphical sequence.

جدول الفباى پهلوى

حرف نويسى	زبور پهلوى	پهلوى كتابى	پهلوى كتيبه اى
Ⲁ A	𐭀	𐭀	𐭀
b	𐭁	𐭁	𐭁
g	𐭂	𐭂/𐭃	𐭂
d	𐭃	𐭂/𐭃	𐭃
E	𐭄	𐭄	𐭄
w	𐭅	𐭅	𐭅
z	𐭆	𐭆	𐭆
h	𐭇	𐭇	𐭇
t	𐭈	𐭈	𐭈
y	𐭉/𐭊	𐭉/𐭊	𐭉
k	𐭋	𐭋	𐭋
l	𐭌	𐭌	𐭌
m	𐭍	𐭍	𐭍
n	𐭎	𐭎	𐭎
s	𐭏	𐭏/𐭐	𐭏
O	𐭑	𐭑	𐭑
p	𐭒	𐭒	𐭒
c	𐭓	𐭓	𐭓
Q	𐭔	𐭔	𐭔
r	𐭕	𐭕	𐭕
s	𐭖	𐭖	𐭖
t	𐭗	𐭗	𐭗

Figure 6. Table of Iranian alphabets, showing Psalter Pahlavi on the left, Book Pahlavi in the centre, and Inscriptional Pahlavi on the right, from Akbarzadeh 2002.

- (۱) 𐭀𐭁
- (۲) 𐭁𐭂𐭃𐭄𐭅𐭆𐭇𐭈𐭉𐭊𐭋𐭌𐭍𐭎𐭏𐭐𐭑𐭒𐭓𐭔𐭕𐭖𐭗𐭘𐭙𐭚𐭛𐭜𐭝𐭞𐭟𐭠𐭡𐭢𐭣𐭤𐭥𐭦𐭧𐭨𐭩𐭪𐭫𐭬𐭭𐭮𐭯𐭰𐭱𐭲𐭳𐭴𐭵𐭶𐭷𐭸𐭹𐭺𐭻𐭼𐭽𐭾𐭿𐭰𐭱𐭲𐭳𐭴𐭵𐭶𐭷𐭸𐭹𐭺𐭻𐭼𐭽𐭾𐭿𐭰𐭱𐭲𐭳𐭴𐭵𐭶𐭷𐭸𐭹𐭺𐭻𐭼𐭽𐭾𐭿𐭰𐭱𐭲𐭳𐭴𐭵𐭶𐭷𐭸𐭹𐭺𐭻𐭼𐭽𐭾𐭿
- (۳) 𐭁𐭂𐭃𐭄𐭅𐭆𐭇𐭈𐭉𐭊𐭋𐭌𐭍𐭎𐭏𐭐𐭑𐭒𐭓𐭔𐭕𐭖𐭗𐭘𐭙𐭚𐭛𐭜𐭝𐭞𐭟𐭠𐭡𐭢𐭣𐭤𐭥𐭦𐭧𐭨𐭩𐭪𐭫𐭬𐭭𐭮𐭯𐭰𐭱𐭲𐭳𐭴𐭵𐭶𐭷𐭸𐭹𐭺𐭻𐭼𐭽𐭾𐭿
- (۴) 𐭀𐭁𐭂𐭃𐭄𐭅𐭆𐭇𐭈𐭉𐭊𐭋𐭌𐭍𐭎𐭏𐭐𐭑𐭒𐭓𐭔𐭕𐭖𐭗𐭘𐭙𐭚𐭛𐭜𐭝𐭞𐭟𐭠𐭡𐭢𐭣𐭤𐭥𐭦𐭧𐭨𐭩𐭪𐭫𐭬𐭭𐭮𐭯𐭰𐭱𐭲𐭳𐭴𐭵𐭶𐭷𐭸𐭹𐭺𐭻𐭼𐭽𐭾𐭿
- (۵) 𐭀𐭁𐭂𐭃𐭄𐭅𐭆𐭇𐭈𐭉𐭊𐭋𐭌𐭍𐭎𐭏𐭐𐭑𐭒𐭓𐭔𐭕𐭖𐭗𐭘𐭙𐭚𐭛𐭜𐭝𐭞𐭟𐭠𐭡𐭢𐭣𐭤𐭥𐭦𐭧𐭨𐭩𐭪𐭫𐭬𐭭𐭮𐭯𐭰𐭱𐭲𐭳𐭴𐭵𐭶𐭷𐭸𐭹𐭺𐭻𐭼𐭽𐭾𐭿
- (۶) 𐭀𐭁𐭂𐭃𐭄𐭅𐭆𐭇𐭈𐭉𐭊𐭋𐭌𐭍𐭎𐭏𐭐𐭑𐭒𐭓𐭔𐭕𐭖𐭗𐭘𐭙𐭚𐭛𐭜𐭝𐭞𐭟𐭠𐭡𐭢𐭣𐭤𐭥𐭦𐭧𐭨𐭩𐭪𐭫𐭬𐭭𐭮𐭯𐭰𐭱𐭲𐭳𐭴𐭵𐭶𐭷𐭸𐭹𐭺𐭻𐭼𐭽𐭾𐭿
- (۷) 𐭀𐭁𐭂𐭃𐭄𐭅𐭆𐭇𐭈𐭉𐭊𐭋𐭌𐭍𐭎𐭏𐭐𐭑𐭒𐭓𐭔𐭕𐭖𐭗𐭘𐭙𐭚𐭛𐭜𐭝𐭞𐭟𐭠𐭡𐭢𐭣𐭤𐭥𐭦𐭧𐭨𐭩𐭪𐭫𐭬𐭭𐭮𐭯𐭰𐭱𐭲𐭳𐭴𐭵𐭶𐭷𐭸𐭹𐭺𐭻𐭼𐭽𐭾𐭿
- (۸) 𐭀𐭁

Figure 7. Sample of Parthian text from Akbarzadeh 2002, showing the numbers 𐭀𐭁 24, 𐭀𐭁𐭂𐭃𐭄𐭅𐭆𐭇𐭈𐭉𐭊𐭋𐭌𐭍𐭎𐭏𐭐𐭑𐭒𐭓𐭔𐭕𐭖𐭗𐭘𐭙𐭚𐭛𐭜𐭝𐭞𐭟𐭠𐭡𐭢𐭣𐭤𐭥𐭦𐭧𐭨𐭩𐭪𐭫𐭬𐭭𐭮𐭯𐭰𐭱𐭲𐭳𐭴𐭵𐭶𐭷𐭸𐭹𐭺𐭻𐭼𐭽𐭾𐭿 170, and 𐭀𐭁𐭂𐭃 8 in lines 4, 5, and 6. The text is typeset by Akbarzadeh.

Inscription of Hajjiabad.

I.

The Pahlavik Text.

- ① כחברנו גנה לו דוקוון ובלחוב פחותה
- ② חלעיו חלעב צרוצר פ בצבוצו חנפ שומה חן
- ③ וצמתו בכו דוקוון ובלחוב עבחהמחמח חלעיו חלעב
- ④ צרוצר חנפ שומה חן וצמתו עבחהמחמח כח תצת
- ⑤ חלעב כ עחמ לן גנה מחוב שגומ חקדחמח משמקכו
- ⑥ ככחומעו ככעו כ עבחהמח שגומ נככו תמו נככו
- ⑦ מחחובחמח פ מחוב חנפ חמח שומו לככע כחומ כח
- ⑧ מחחוב חנפ מחוב חנפ חמח שגומ חמח חמח חמח
- ⑨ חמח שומו כחומ חמח חמח חמח חמח חמח חמח
- ⑩ חמח חמח חמח חמח חמח חמח חמח חמח
- ⑪ חמח חמח חמח חמח חמח חמח חמח חמח
- ⑫ חמח חמח חמח חמח חמח חמח חמח חמח
- ⑬ חמח חמח חמח חמח חמח חמח חמח חמח
- ⑭ חמח חמח חמח חמח חמח חמח חמח חמח

**Figure 8.** Inscription from Hajjiabad in Parthian script, from Nyberg 1964. The dots under WAW-AYIN-RESH and YODH in line 14 are editorial, showing a conjectural reading, and would be represented by U+0323 COMBINING DOT BELOW. The text is as written by Nyberg.

Inscription of Hajjiābād.

II

The Pārsik Text.

① מְכַלְמֵסוּן מְלֵסוּן כִּי מִלְּפִנֵּי מִלְּפִנֵּי מִלְּפִנֵּי  
② מְלֵסוּן מְלֵסוּן מְלֵסוּן מְלֵסוּן מְלֵסוּן מְלֵסוּן  
③ מְלֵסוּן מְלֵסוּן מְלֵסוּן מְלֵסוּן מְלֵסוּן מְלֵסוּן  
④ מְלֵסוּן מְלֵסוּן מְלֵסוּן מְלֵסוּן מְלֵסוּן מְלֵסוּן  
⑤ מְלֵסוּן מְלֵסוּן מְלֵסוּן מְלֵסוּן מְלֵסוּן מְלֵסוּן  
⑥ מְלֵסוּן מְלֵסוּן מְלֵסוּן מְלֵסוּן מְלֵסוּן מְלֵסוּן  
⑦ מְלֵסוּן מְלֵסוּן מְלֵסוּן מְלֵסוּן מְלֵסוּן מְלֵסוּן  
⑧ מְלֵסוּן מְלֵסוּן מְלֵסוּן מְלֵסוּן מְלֵסוּן מְלֵסוּן  
⑨ מְלֵסוּן מְלֵסוּן מְלֵסוּן מְלֵסוּן מְלֵסוּן מְלֵסוּן  
⑩ מְלֵסוּן מְלֵסוּן מְלֵסוּן מְלֵסוּן מְלֵסוּן מְלֵסוּן  
⑪ מְלֵסוּן מְלֵסוּן מְלֵסוּן מְלֵסוּן מְלֵסוּן מְלֵסוּן  
⑫ מְלֵסוּן מְלֵסוּן מְלֵסוּן מְלֵסוּן מְלֵסוּן מְלֵסוּן  
⑬ מְלֵסוּן מְלֵסוּן מְלֵסוּן מְלֵסוּן מְלֵסוּן מְלֵסוּן  
⑭ מְלֵסוּן מְלֵסוּן מְלֵסוּן מְלֵסוּן מְלֵסוּן מְלֵסוּן  
⑮ מְלֵסוּן מְלֵסוּן מְלֵסוּן מְלֵסוּן מְלֵסוּן מְלֵסוּן  
⑯ מְלֵסוּן מְלֵסוּן מְלֵסוּן מְלֵסוּן מְלֵסוּן מְלֵסוּן

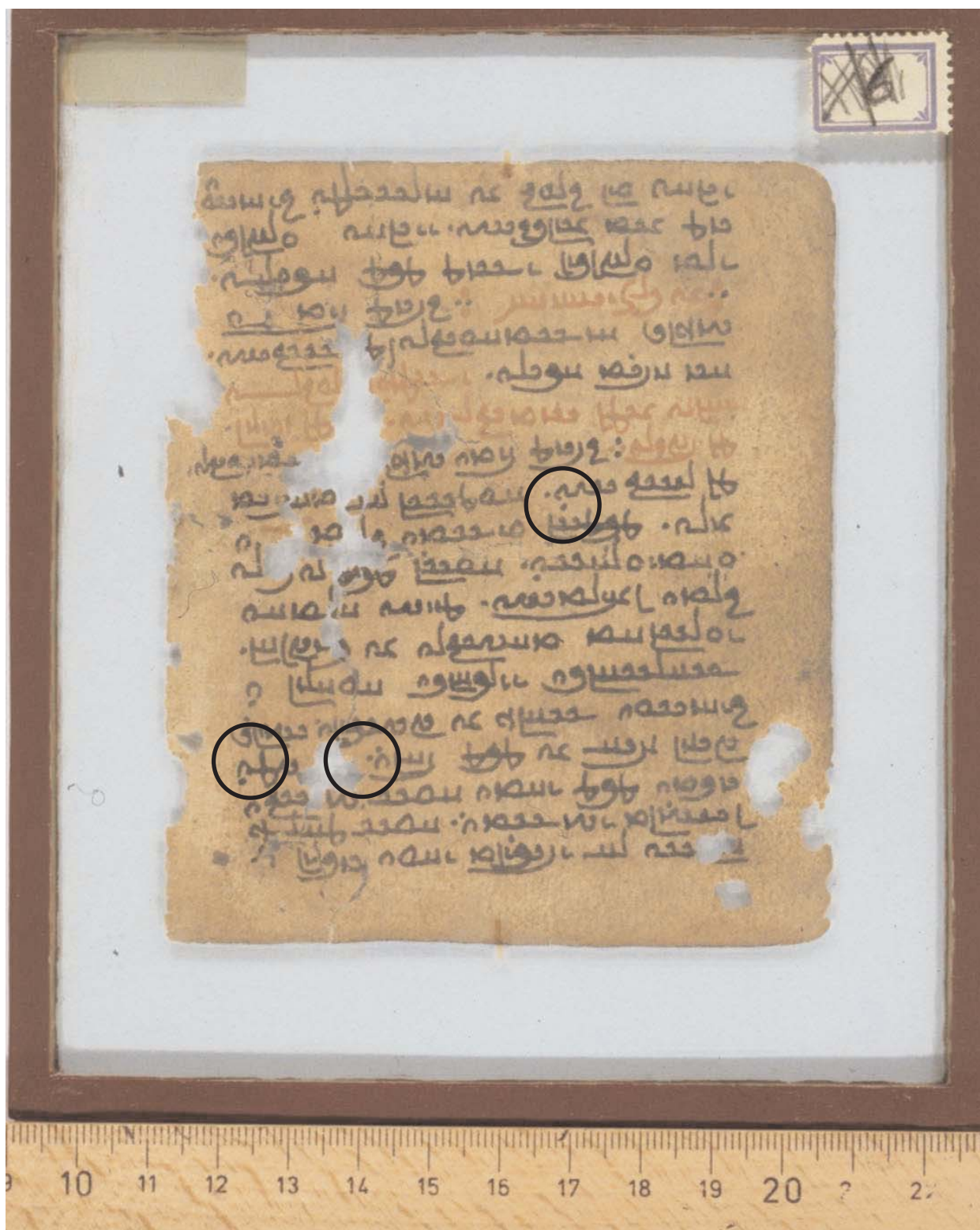
Figure 9. Inscription from Hajjiabad in Inscriptional Pahlavi script, from Nyberg 1964. The text is as written by Nyberg.

Psalm CXXVIII.

1. 𐭩𐭥𐭮 𐭮𐭥𐭮 𐭮𐭥𐭮 𐭮𐭥𐭮 𐭮𐭥𐭮 𐭮𐭥𐭮 𐭮𐭥𐭮 𐭮𐭥𐭮 𐭮𐭥𐭮 𐭮𐭥𐭮  
 2. 𐭮𐭥𐭮 𐭮𐭥𐭮 𐭮𐭥𐭮 𐭮𐭥𐭮 𐭮𐭥𐭮 𐭮𐭥𐭮 𐭮𐭥𐭮 𐭮𐭥𐭮 𐭮𐭥𐭮 𐭮𐭥𐭮  
 3. 𐭮𐭥𐭮 𐭮𐭥𐭮 𐭮𐭥𐭮 𐭮𐭥𐭮 𐭮𐭥𐭮 𐭮𐭥𐭮 𐭮𐭥𐭮 𐭮𐭥𐭮 𐭮𐭥𐭮 𐭮𐭥𐭮  
 4. 𐭮𐭥𐭮 𐭮𐭥𐭮 𐭮𐭥𐭮 𐭮𐭥𐭮 𐭮𐭥𐭮 𐭮𐭥𐭮 𐭮𐭥𐭮 𐭮𐭥𐭮 𐭮𐭥𐭮 𐭮𐭥𐭮  
 5. 𐭮𐭥𐭮 𐭮𐭥𐭮 𐭮𐭥𐭮 𐭮𐭥𐭮 𐭮𐭥𐭮 𐭮𐭥𐭮 𐭮𐭥𐭮 𐭮𐭥𐭮 𐭮𐭥𐭮 𐭮𐭥𐭮  
 6. 𐭮𐭥𐭮 𐭮𐭥𐭮 𐭮𐭥𐭮 𐭮𐭥𐭮 𐭮𐭥𐭮 𐭮𐭥𐭮 𐭮𐭥𐭮 𐭮𐭥𐭮 𐭮𐭥𐭮 𐭮𐭥𐭮  
 7. 𐭮𐭥𐭮 𐭮𐭥𐭮 𐭮𐭥𐭮 𐭮𐭥𐭮 𐭮𐭥𐭮 𐭮𐭥𐭮 𐭮𐭥𐭮 𐭮𐭥𐭮 𐭮𐭥𐭮 𐭮𐭥𐭮  
 8. 𐭮𐭥𐭮 𐭮𐭥𐭮 𐭮𐭥𐭮 𐭮𐭥𐭮 𐭮𐭥𐭮 𐭮𐭥𐭮 𐭮𐭥𐭮 𐭮𐭥𐭮 𐭮𐭥𐭮 𐭮𐭥𐭮  
 9. 𐭮𐭥𐭮 𐭮𐭥𐭮 𐭮𐭥𐭮 𐭮𐭥𐭮 𐭮𐭥𐭮 𐭮𐭥𐭮 𐭮𐭥𐭮 𐭮𐭥𐭮 𐭮𐭥𐭮 𐭮𐭥𐭮  
 10. 𐭮𐭥𐭮 𐭮𐭥𐭮 𐭮𐭥𐭮 𐭮𐭥𐭮 𐭮𐭥𐭮 𐭮𐭥𐭮 𐭮𐭥𐭮 𐭮𐭥𐭮 𐭮𐭥𐭮 𐭮𐭥𐭮  
 11. 𐭮𐭥𐭮 𐭮𐭥𐭮 𐭮𐭥𐭮 𐭮𐭥𐭮 𐭮𐭥𐭮 𐭮𐭥𐭮 𐭮𐭥𐭮 𐭮𐭥𐭮 𐭮𐭥𐭮 𐭮𐭥𐭮  
 12. 𐭮𐭥𐭮 𐭮𐭥𐭮 𐭮𐭥𐭮 𐭮𐭥𐭮 𐭮𐭥𐭮 𐭮𐭥𐭮 𐭮𐭥𐭮 𐭮𐭥𐭮 𐭮𐭥𐭮 𐭮𐭥𐭮  
 13. 𐭮𐭥𐭮 𐭮𐭥𐭮 𐭮𐭥𐭮 𐭮𐭥𐭮 𐭮𐭥𐭮 𐭮𐭥𐭮 𐭮𐭥𐭮 𐭮𐭥𐭮 𐭮𐭥𐭮 𐭮𐭥𐭮  
 14. 𐭮𐭥𐭮 𐭮𐭥𐭮 𐭮𐭥𐭮 𐭮𐭥𐭮 𐭮𐭥𐭮 𐭮𐭥𐭮 𐭮𐭥𐭮 𐭮𐭥𐭮 𐭮𐭥𐭮 𐭮𐭥𐭮  
 15. 𐭮𐭥𐭮 𐭮𐭥𐭮 𐭮𐭥𐭮 𐭮𐭥𐭮 𐭮𐭥𐭮 𐭮𐭥𐭮 𐭮𐭥𐭮 𐭮𐭥𐭮 𐭮𐭥𐭮 𐭮𐭥𐭮  
 16. 𐭮𐭥𐭮 𐭮𐭥𐭮 𐭮𐭥𐭮 𐭮𐭥𐭮 𐭮𐭥𐭮 𐭮𐭥𐭮 𐭮𐭥𐭮 𐭮𐭥𐭮 𐭮𐭥𐭮 𐭮𐭥𐭮  
 17. 𐭮𐭥𐭮 𐭮𐭥𐭮 𐭮𐭥𐭮 𐭮𐭥𐭮 𐭮𐭥𐭮 𐭮𐭥𐭮 𐭮𐭥𐭮 𐭮𐭥𐭮 𐭮𐭥𐭮 𐭮𐭥𐭮  
 18. 𐭮𐭥𐭮 𐭮𐭥𐭮 𐭮𐭥𐭮 𐭮𐭥𐭮 𐭮𐭥𐭮 𐭮𐭥𐭮 𐭮𐭥𐭮 𐭮𐭥𐭮 𐭮𐭥𐭮 𐭮𐭥𐭮  
 19. 𐭮𐭥𐭮 𐭮𐭥𐭮 𐭮𐭥𐭮 𐭮𐭥𐭮 𐭮𐭥𐭮 𐭮𐭥𐭮 𐭮𐭥𐭮 𐭮𐭥𐭮 𐭮𐭥𐭮 𐭮𐭥𐭮  
 20. 𐭮𐭥𐭮 𐭮𐭥𐭮 𐭮𐭥𐭮 𐭮𐭥𐭮 𐭮𐭥𐭮 𐭮𐭥𐭮 𐭮𐭥𐭮 𐭮𐭥𐭮 𐭮𐭥𐭮 𐭮𐭥𐭮

**Figure 10.** Psalm 128 of David in Psalter Pahlavi script, from Nyberg 1964. In line 8 (= f. 7v l. 11) YODH can be seen with a PSALTER PAHLAVI COMBINING STOP BELOW and a FULL STOP following. In line 13 (= f. 7v l. 16) YODH can be seen with a PSALTER PAHLAVI COMBINING STOP ABOVE and a FULL STOP following and also with a PSALTER PAHLAVI COMBINING STOP BELOW. In line 19 (= f. 8r l. 3) HE can be seen with a PSALTER PAHLAVI COMBINING STOP BELOW. There are several examples of the PSALTER PAHLAVI SECTION MARK. The text is as written by Nyberg.





**Figure 11.** Psalm 128 of David in Psalter Pahlavi script. In line 8 (= f. 7v l. 11) YODH can be seen with a dot below and a FULL STOP following. In line 13 (= f. 7v l. 16) YODH can be seen with a dot above and a FULL STOP following and also with a dot below. (The folio is from the Depositum der Berlin-Brandenburgischen Akademie der Wissenschaften in der Staatsbibliothek zu Berlin – Preussischer Kulturbesitz Orientabteilung.)

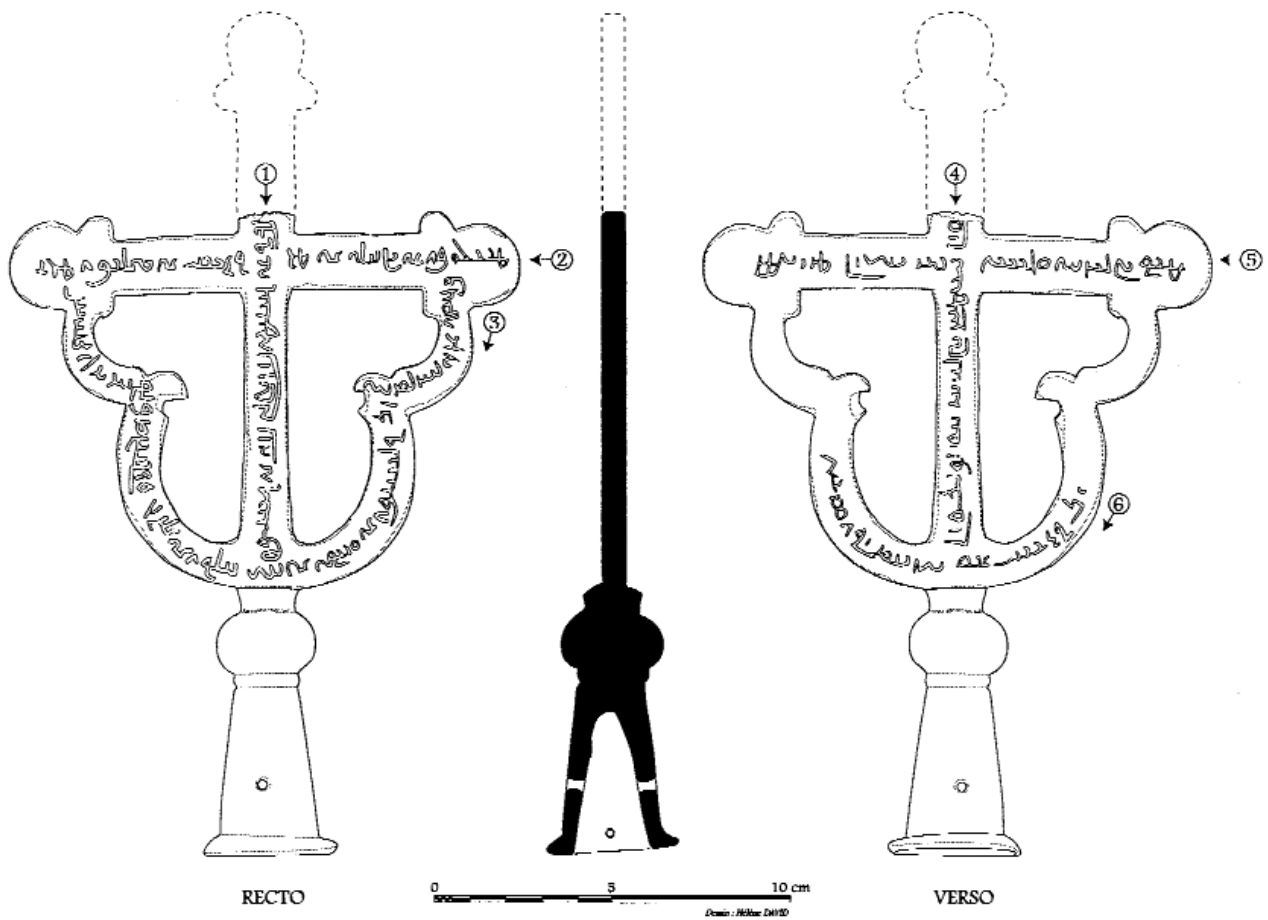


Figure 12. Psalter Pahlavi text on the Cross of Herat, from Gignoux 2001. Gignoux’s transliteration and the text of the cross, normalized to the transliteration, is given here.

1r: [...] bdk ZY nšyymy bwrclý BRE ZY nyšydc  
 2r: m’lydy ZY gn’ly ZY MN knyšy ZY hlydy MNW  
 3r: d’ty ZNH ’ywlmýh ‘L klssdy ZY p’ky ZY h’lky ZY zln(y)n P(W)N ŠNTdyk 2 3 100 4 3  
 1v: PWN ’sm’nc L’ 3 ’prydgI PWN  
 2v: zmykc lywyh plsh ’y YHWWN myyhm[’]n  
 3v: ‘L knšyy ZYm hw ’mwk

1r: روو عه لحهصعه رابعه رايه عه لحهصوع  
 2r: هسلعوه عه بايله عه باا لحهعه عه صلعهه باا  
 3r: ويصه عامه سخالهعه ا و لحهصوع عه صلعه عه صلعه عه لاله عه ا لحهصوع سرور سسر  
 1v: هه سعههعه لسه سر سمعويط هه  
 2v: لعهوع لعهه هعهعه هه هعهه هعهه هعهه هعهه  
 3v: ا و لحهعه عه هه هه

Row 10B: INSCRIPTIONAL PARTHIAN

	10B4	10B5
0	𐭠	𐭡
1	𐭢	𐭣
2	𐭤	𐭥
3	𐭦	𐭧
4	𐭨	𐭩
5	𐭪	𐭫
6	𐭬	
7	𐭮	
8	𐭰	𐭱
9	𐭳	𐭴
A	𐭶	𐭷
B	𐭹	𐭺
C	𐭼	𐭽
D	𐭿	𐮀
E	𐮃	𐮄
F	𐮇	𐮈

hex	Name
40	INSCRIPTIONAL PARTHIAN LETTER ALEPH
51	INSCRIPTIONAL PARTHIAN LETTER BETH
52	INSCRIPTIONAL PARTHIAN LETTER GIMEL
53	INSCRIPTIONAL PARTHIAN LETTER DALETH
54	INSCRIPTIONAL PARTHIAN LETTER HE
55	INSCRIPTIONAL PARTHIAN LETTER WAW
56	INSCRIPTIONAL PARTHIAN LETTER ZAYIN
57	INSCRIPTIONAL PARTHIAN LETTER HETH
58	INSCRIPTIONAL PARTHIAN LETTER TETH
59	INSCRIPTIONAL PARTHIAN LETTER YODH
5A	INSCRIPTIONAL PARTHIAN LETTER KAPH
5B	INSCRIPTIONAL PARTHIAN LETTER LAMEDH
5C	INSCRIPTIONAL PARTHIAN LETTER MEM
5D	INSCRIPTIONAL PARTHIAN LETTER NUN
5E	INSCRIPTIONAL PARTHIAN LETTER SAMEKH
5F	INSCRIPTIONAL PARTHIAN LETTER AYIN
60	INSCRIPTIONAL PARTHIAN LETTER PE
61	INSCRIPTIONAL PARTHIAN LETTER SADHE
62	INSCRIPTIONAL PARTHIAN LETTER QOPH
63	INSCRIPTIONAL PARTHIAN LETTER RESH
64	INSCRIPTIONAL PARTHIAN LETTER SHIN
65	INSCRIPTIONAL PARTHIAN LETTER TAW
66	(This position shall not be used)
67	(This position shall not be used)
68	INSCRIPTIONAL PARTHIAN NUMBER ONE
69	INSCRIPTIONAL PARTHIAN NUMBER TWO
6A	INSCRIPTIONAL PARTHIAN NUMBER THREE
6B	INSCRIPTIONAL PARTHIAN NUMBER FOUR
6C	INSCRIPTIONAL PARTHIAN NUMBER TEN
6D	INSCRIPTIONAL PARTHIAN NUMBER TWENTY
6E	INSCRIPTIONAL PARTHIAN NUMBER ONE HUNDRED
6F	INSCRIPTIONAL PARTHIAN NUMBER ONE THOUSAND

**Row 10B: INSCRIPTIONAL PAHLAVI**

	10B6	10B7
0	𐭠	𐭡
1	𐭢	𐭣
2	𐭤	𐭥
3	𐭦	
4	𐭧	
5	𐭨	
6	𐭩	
7	𐭪	
8	𐭫	𐭬
9	𐭭	𐭮
A	𐭯	𐭰
B	𐭱	𐭲
C	𐭳	𐭴
D	𐭵	𐭶
E	𐭷	𐭸
F	𐭹	𐭺

hex	Name
60	INSCRIPTIONAL PAHLAVI LETTER ALEPH
61	INSCRIPTIONAL PAHLAVI LETTER BETH
62	INSCRIPTIONAL PAHLAVI LETTER GIMEL
63	INSCRIPTIONAL PAHLAVI LETTER DALETH
64	INSCRIPTIONAL PAHLAVI LETTER HE
65	INSCRIPTIONAL PAHLAVI LETTER WAW-AYIN-RESH
66	INSCRIPTIONAL PAHLAVI LETTER ZAYIN
67	INSCRIPTIONAL PAHLAVI LETTER HETH
68	INSCRIPTIONAL PAHLAVI LETTER TETH
69	INSCRIPTIONAL PAHLAVI LETTER YODH
6A	INSCRIPTIONAL PAHLAVI LETTER KAPH
6B	INSCRIPTIONAL PAHLAVI LETTER LAMEDH
6C	INSCRIPTIONAL PAHLAVI LETTER MEM-QOPH
6D	INSCRIPTIONAL PAHLAVI LETTER NUN
6E	INSCRIPTIONAL PAHLAVI LETTER SAMEKH
6F	INSCRIPTIONAL PAHLAVI LETTER PE
70	INSCRIPTIONAL PAHLAVI LETTER SADHE
71	INSCRIPTIONAL PAHLAVI LETTER SHIN
72	INSCRIPTIONAL PAHLAVI LETTER TAW
73	(This position shall not be used)
74	(This position shall not be used)
75	(This position shall not be used)
76	(This position shall not be used)
77	(This position shall not be used)
78	INSCRIPTIONAL PAHLAVI NUMBER ONE
79	INSCRIPTIONAL PAHLAVI NUMBER TWO
7A	INSCRIPTIONAL PAHLAVI NUMBER THREE
7B	INSCRIPTIONAL PAHLAVI NUMBER FOUR
7C	INSCRIPTIONAL PAHLAVI NUMBER TEN
7D	INSCRIPTIONAL PAHLAVI NUMBER TWENTY
7E	INSCRIPTIONAL PAHLAVI NUMBER ONE HUNDRED
7F	INSCRIPTIONAL PAHLAVI NUMBER ONE THOUSAND

Row 10B: PSALTER PAHLAVI

	10B8	10B9
0	𐭀	𐭁
1	𐭂	𐭃
2	𐭄	𐭅
3	𐭆	
4	𐭇	
5	𐭈	
6	𐭉	𐭊
7	𐭋	𐭌
8	𐭍	𐭎
9	𐭏	𐭐
A	𐭑	𐭒
B	𐭓	𐭔
C	𐭕	𐭖
D	𐭗	𐭘
E	𐭙	𐭚
F	𐭛	𐭜

hex	Name
80	PSALTER PAHLAVI LETTER ALEPH
81	PSALTER PAHLAVI LETTER BETH
82	PSALTER PAHLAVI LETTER GIMEL
83	PSALTER PAHLAVI LETTER DALETH
84	PSALTER PAHLAVI LETTER HE
85	PSALTER PAHLAVI LETTER WAW-AYIN-RESH
86	PSALTER PAHLAVI LETTER ZAYIN
87	PSALTER PAHLAVI LETTER HETH
88	PSALTER PAHLAVI LETTER YODH
89	PSALTER PAHLAVI LETTER KAPH
8A	PSALTER PAHLAVI LETTER LAMEDH
8B	PSALTER PAHLAVI LETTER MEM-QOPH
8C	PSALTER PAHLAVI LETTER NUN
8D	PSALTER PAHLAVI LETTER SAMEKH
8E	PSALTER PAHLAVI LETTER PE
8F	PSALTER PAHLAVI LETTER SADHE
90	PSALTER PAHLAVI LETTER SHIN
91	PSALTER PAHLAVI LETTER TAW
92	PSALTER PAHLAVI KASHIDA
93	(This position shall not be used)
94	(This position shall not be used)
95	(This position shall not be used)
96	PSALTER PAHLAVI COMBINING STOP BELOW
97	PSALTER PAHLAVI COMBINING STOP ABOVE
98	PSALTER PAHLAVI SECTION MARK
99	PSALTER PAHLAVI NUMBER ONE
9A	PSALTER PAHLAVI NUMBER TWO
9B	PSALTER PAHLAVI NUMBER THREE
9C	PSALTER PAHLAVI NUMBER FOUR
9D	PSALTER PAHLAVI NUMBER TEN
9E	PSALTER PAHLAVI NUMBER TWENTY
9F	PSALTER PAHLAVI NUMBER ONE HUNDRED

## A. Administrative

1. Title

**Proposal for encoding the Inscriptional Parthian, Inscriptional Pahlavi, and Psalter Pahlavi scripts in the SMP of the UCS**

2. Requester's name

**UC Berkeley Script Encoding Initiative (Universal Scripts Project); Authors: Michael Everson and Roozbeh Pournader**

3. Requester type (Member body/Liaison/Individual contribution)

**Liaison contribution.**

4. Submission date

**2007-08-24**

5. Requester's reference (if applicable)

6. Choose one of the following:

6a. This is a complete proposal

**No.**

6b. More information will be provided later

**Yes.**

## B. Technical – General

1. Choose one of the following:

1a. This proposal is for a new script (set of characters)

**Yes.**

1b. Proposed name of script

**Parthian, Inscriptional Pahlavi, and Psalter Pahlavi.**

1c. The proposal is for addition of character(s) to an existing block

**No.**

1d. Name of the existing block

2. Number of characters in proposal

**86 (30, 27, 29).**

3. Proposed category (A-Contemporary; B.1-Specialized (small collection); 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)

**Category C.**

4a. Is a repertoire including character names provided?

**Yes.**

4b. If YES, are the names in accordance with the "character naming guidelines" in Annex L of P&P document?

**Yes.**

4c. Are the character shapes attached in a legible form suitable for review?

**Yes.**

5a. Who will provide the appropriate computerized font (ordered preference: True Type, or PostScript format) for publishing the standard?

**Michael Everson.**

5b. If available now, identify source(s) for the font (include address, e-mail, ftp-site, etc.) and indicate the tools used:

**Michael Everson, Fontographer.**

6a. Are references (to other character sets, dictionaries, descriptive texts etc.) provided?

**Yes.**

6b. Are published examples of use (such as samples from newspapers, magazines, or other sources) of proposed characters attached?

**Yes.**

7. 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. 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.

**See above.**

## C. Technical – Justification

1. Has this proposal for addition of character(s) been submitted before? If YES, explain.

**No.**

2a. 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.**

2b. If YES, with whom?

**Desmond Durkin-Meisterernst, Jost Gippert, Chris Hopkins, Agnes Korn**

2c. 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?

**Iranianists and other scholars.**

4a. The context of use for the proposed characters (type of use; common or rare)

**Rare; historical use.**

4b. Reference

5a. Are the proposed characters in current use by the user community?

**Yes.**

5b. If YES, where?

**Scholarly and popular publications.**

6a. After giving due considerations to the principles in the P&P document must the proposed characters be entirely in the BMP?

**No.**

6b. If YES, is a rationale provided?

6c. If YES, reference

7. Should the proposed characters be kept together in a contiguous range (rather than being scattered)?

**Yes.**

8a. Can any of the proposed characters be considered a presentation form of an existing character or character sequence?

**No.**

8b. If YES, is a rationale for its inclusion provided?

8c. If YES, reference

9a. Can any of the proposed characters be encoded using a composed character sequence of either existing characters or other proposed characters?

**No.**

9b. If YES, is a rationale for its inclusion provided?

9c. If YES, reference

10a. Can any of the proposed character(s) be considered to be similar (in appearance or function) to an existing character?

**No.**

10b. If YES, is a rationale for its inclusion provided?

10c. If YES, reference

11a. 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.**

11b. If YES, is a rationale for such use provided?

11c. If YES, reference

11d. Is a list of composite sequences and their corresponding glyph images (graphic symbols) provided?

**No.**

11e. If YES, reference

12a. Does the proposal contain characters with any special properties such as control function or similar semantics?

**No.**

12b. If YES, describe in detail (include attachment if necessary)

13a. Does the proposal contain any Ideographic compatibility character(s)?

**No.**

13b. If YES, is the equivalent corresponding unified ideographic character(s) identified?