

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

Doc Type: Working Group Document**Title: Second revised proposal for encoding the Manichaean script in the SMP of the UCS****Source: UC Berkeley Script Encoding Initiative (Universal Scripts Project)****Authors: Michael Everson, Desmond Durkin-Meisterernst, Roozbeh Pournader, and Shervin Afshar****Status: Liaison Contribution****Action: For consideration by JTC1/SC2/WG2 and UTC****Replaces: N2544, N3378, N3644R****Date: 2011-05-02**

1. Introduction. Manichaeism is a dualistic religion founded by Mani (216–274 or 277 CE) which flourished for a number of centuries and finally petered out sometime after the 14th century. Mani grew up in Babylonia and his religious system was designed to combine and bring to completion the various major religious systems (Judaeo-Christianity, Gnosticism, Zoroastrianism and even Buddhism) living side by side but opposed to each other in Mesopotamia and surrounding areas much of which was part of the vast Sasanian Empire. The main features of Manichaeism are dualism—the cosmic opposition of the good principle, light, and the evil principle, darkness—the gnostic awakening of the individual soul to its divine origins and the need to free the light trapped in matter in order to return it to its proper place in paradise. A particular feature of Manichaeism is Mani’s decision to spread his teachings in any language available. This resulted in a body of Manichaean literature in many languages as Manichaeism spread eastwards and westwards. Since Manichaeism faced persecution in most places, much of its literature was destroyed, though significant Coptic and Greek Manichean sources have survived. Manichaeism became an official state religion in the Uighur kingdom in Central Asia (from from 762 until the beginning of the 11th century CE) and it is here, in the Turfan oasis on the Silk Road in Central Asia that the most significant Manichaean texts in the east were found. These are written in Manichaean script in the Iranian languages Middle and Early Modern Persian, Parthian, Sogdian, and Bactrian, as well as in the Turkic language Uighur and, to a lesser extent, the Indo-European language Tocharian.

2. Structure. Manichaean is an alphabetic script written right-to-left, with spaces between words. Like Syriac, with which Manichaean shares some glyph shapes, the Manichaean script evolved from Aramaic. Because of its use by Manichaeans in Central Asia, the script has been called “Manichaean” by modern scholars. A number of consonants are distinguished from base consonants by the use of one or two dots; these ten letters (seven with two dots and three with one dot) are encoded explicitly. These letters do not have decompositions. Five characters have variant forms which are significant but unpredictable; a variation selector is specified to invoke this special shaping behaviour. There are two diacritical marks which indicate abbreviation, plurality, or the conjunction *ud*.

3. Names and ordering. Letter names for Manichaean not attested. For this encoding, the names used for the Manichaean characters are based on their Imperial Aramaic analogues. Since Manichaean makes use a number of characters which are derived from Aramaic base-letters, new names based on the Aramaic letter-names have been devised in accordance with the usual UCS conventions, so that naming scheme is mnemonic and useful. For example, spirant letters using a double-dot diacritic are typically named using the letter -H-, so for 𐎠 BETH *b*, 𐎡 KAPH *k*, 𐎣 ZAYIN *z*, 𐎤 JAYIN *j*, 𐎧 QOPH *q*, the marked forms are 𐎠𐎡

BHETH β, KHAPH k̄, ZHAYIN ž, JHAYIN j̄, QHOPH q̄. For the letters AYIN ‘, and SHIN š, where -H- does not make sense, the initial letter has been doubled, AAYIN ʿ, SSHIN š. The -H- is used in some other letters, such as GHIMEL γ, DHAMEDH δ, THAMEDH θ ~ δδ (from GIMEL g, LAMEDH l); in letters with a single dot a letter is simply changed, as in FE f, XAPH k, XOPH q (from PE p, KAPH k, QOPH q). The order of the letters in the code chart is the alphabetical order; dotted letters are considered separate letters and are not interfiled with the base characters.

4. Shaping. The Manichaean script as proposed for encoding has fully-developed joining behaviour. The table below shows the joining forms as well as noting which characters do not have joining behaviour. The glyphs shown are X_n nominal, X_r right-joining, X_m dual-joining, and X_l left-joining. Note that Manichaean has two characters of Joining_Type=Left_Joining—the first characters to be encoded with this property value. Although this property value is foreseen in *The Unicode Standard*, section 8.2, some implementations of the Arabic/Syriac/N’Ko/Mandaic joining may have been using some optimizations without considering that such property values may exist. Such implementations may need to change in order to be able to handle Manichaean properly. (This is somewhat comparable to old implementations not supporting non-BMP characters until graphical characters were encoded outside the BMP.)

Dual-joining Manichaean Characters

Character	X _n	X _r	X _m	X _l
ALEPH	Ⲁ	Ⲁ	Ⲁ	Ⲁ
BETH	Ⲁⲁ	Ⲁⲁ	Ⲁⲁ	Ⲁⲁ
BHETH	Ⲁⲁⲏ	Ⲁⲁⲏ	Ⲁⲁⲏ	Ⲁⲁⲏ
GIMEL	ⲀⲂ	ⲀⲂ	ⲀⲂ	ⲀⲂ
GHIMEL	ⲀⲂⲏ	ⲀⲂⲏ	ⲀⲂⲏ	ⲀⲂⲏ
LAMEDH	Ⲁⲃ	Ⲁⲃ	Ⲁⲃ	Ⲁⲃ
DHAMEDH	Ⲁⲃⲏ	Ⲁⲃⲏ	Ⲁⲃⲏ	Ⲁⲃⲏ
THAMEDH	Ⲁⲃⲏⲏ	Ⲁⲃⲏⲏ	Ⲁⲃⲏⲏ	Ⲁⲃⲏⲏ
MEM	ⲀⲄ/ⲀⲄ	ⲀⲄ/ⲀⲄ	ⲀⲄ	ⲀⲄ
SAMEKH	Ⲁⲅ	Ⲁⲅ	Ⲁⲅ	Ⲁⲅ
AYIN	ⲀⲆ	ⲀⲆ	ⲀⲆ	ⲀⲆ
AAYIN	ⲀⲆⲏ	ⲀⲆⲏ	ⲀⲆⲏ	ⲀⲆⲏ
PE	Ⲁⲇ	Ⲁⲇ	Ⲁⲇ	Ⲁⲇ
FE	Ⲁⲇⲏ	Ⲁⲇⲏ	Ⲁⲇ	Ⲁⲇ
QOPH	ⲀⲈ	ⲀⲈ	ⲀⲈ	ⲀⲈ
XOPH	ⲀⲈⲏ	ⲀⲈⲏ	ⲀⲈ	ⲀⲈ
QHOPH	ⲀⲈⲏⲏ	ⲀⲈⲏⲏ	ⲀⲈ	ⲀⲈ

Right-joining Manichaean Characters

Character	X _n	X _r
DALETH	Ⲁⲉ/Ⲁⲉ	Ⲁⲉ
WAW	Ⲁⲉ	Ⲁⲉ
ZAYIN	Ⲁⲉⲏ	Ⲁⲉⲏ
ZHAYIN	Ⲁⲉⲏⲏ	Ⲁⲉⲏⲏ
TETH	Ⲁⲉ	Ⲁⲉ
YODH	Ⲁⲉ	Ⲁⲉ
KAPH	Ⲁⲉⲏ	Ⲁⲉⲏ
XAPH	Ⲁⲉⲏⲏ	Ⲁⲉⲏⲏ
KHAPH	Ⲁⲉⲏⲏⲏ	Ⲁⲉⲏⲏⲏ
SADHE	Ⲁⲉⲏⲏ/Ⲁⲉⲏⲏ	Ⲁⲉⲏⲏ
RESH	Ⲁⲉⲏⲏ/Ⲁⲉⲏⲏ	Ⲁⲉⲏⲏ
TAW	Ⲁⲉⲏⲏ	Ⲁⲉⲏⲏ

Left-joining Manichaean Characters

Character	X_n	X₁
HETH	𐎡	𐎢
NUN	𐎣/𐎤	𐎥

Although ALEPH is dual joining, it usually joins on the right *only* to BETH or BHETH (though sometimes also GIMEL). It does not usually join to the right to other dual-joining or left-joining letters; in order to break this joining, U+200C ZERO WIDTH NON-JOINER should be used to break the connection. It is likely that ZERO WIDTH NON-JOINER will be a fairly common character in Manichaean texts, similar to the frequent use of the same character in various languages written in the Arabic script, like Persian, Urdu, Kurdish, etc. This will simplify the implementation of Manichaean script in computers. In this way, Manichean will follow the exact same joining and shaping algorithm as specified in the standard for scripts such as Arabic, Syriac, N'Ko, and Mandaic. It might be appropriate for intelligent user-friendly keyboards for entering Manichaean data to automate the insertion of some ZERO WIDTH NON-JOINER characters, for example when ALEPH follows a right join-causing character other than BETH, BHETH, or TATWEEL.

Similarly, where occasional “touching” between a joining character and a non-joining characters is desired, U+200C ZERO WIDTH JOINER should be used to change the shape of the joining character. Although this will not change the shape of the non-joining character or make the two characters ligate, it could simulate the desired behavior.

Non-joining Manichaean Characters

Character	X_n
HE	𐎦/𐎧
JAYIN	𐎨
JHAYIN	𐎩
SHIN	𐎪
SSHIN	𐎫
UD	𐎬

4.1 Five Manichaean characters have special alternate forms that occur in text.

<i>Character</i>	<i>Normal form</i>	<i>Alternate form</i>
DALETH isolate	𐎡	𐎢
HE isolate	𐎦	𐎧
MEM isolate	𐎨	𐎩
MEM final	𐎪	𐎫
NUN isolate	𐎣	𐎤
RESH isolate	𐎥	𐎦

These alternate forms tend to occur at the end of lines, though their occurrence is not predictable—occurrence is not conditioned by line ending, word position or other character contexts. Since they can co-occur in text with the corresponding “normal” forms, they cannot be considered font variants; both the normal and alternate forms need to be supported in a single font.

These variants are considered significant to Manichaean researchers involved in digitizing historic texts. For this reason, distinct encoded representations in plain text is required. Font rendering mechanisms (for example, discretionary OpenType features or other layout mechanisms) are not considered adequate for their needs. While this could be achieved by encoding these as distinct characters, that would break

recognized character unity. A variation-selector mechanism is preferred. For this reason, the following variation sequences using U+FE00 VARIATION SELECTOR-1 are proposed:

- DALETH + VS-1 = *alternate-form daleth*
- HE + VS-1 = *alternate-form he*
- MEM + VS-1 = *alternate-form mem*
- NUN + VS-1 = *alternate-form nun*
- RESH + VS-1 = *alternate-form resh*

The various shaping behaviours of these five characters was described above (DALETH is right-joining, HE is non-joining, etc.). The variation sequences interact with shaping behaviours in that alternate variant forms occur only in certain word-position contexts. Details of the shaping behaviour for these five characters is repeated here, only now clarifying the interaction with VS-1:

Character	X _n	X _r	X _m	X _f
DALETH	◌	◌		
DALETH + VS-1	◌	◌		
HE	◌			
HE + VS-1	◌			
MEM	◌	◌	◌	◌
MEM + VS-1	◌	◌	◌	◌
NUN	◌			◌
NUN + VS-1	◌			◌
RESH	◌	◌		
RESH + VS-1	◌	◌		

Note that the variation sequences do not change the basic shaping behaviours (joining type and joining group) of the characters; only the specific glyphs for particular contexts is changed.

The use of U+FE00 has data implications for the UCD: additions will be required for the files StandardizedVariants.txt and StandardizedVariants.html. The lines for StandardizedVariants.txt are as follows:

```
10AC5 FE00; alternate form; isolate # MANICHAEAN LETTER DALETH
10AC6 FE00; alternate form; isolate # MANICHAEAN LETTER HE
10AD6 FE00; alternate form; isolate final # MANICHAEAN LETTER MEM
10AD7 FE00; alternate form; isolate # MANICHAEAN LETTER NUN
10AE1 FE00; alternate form; isolate # MANICHAEAN LETTER RESH
```

The text for StandardizedVariants.html is as follows:

Rep Glyph	Character Sequence	Context	Alt Glyph	Description of variant appearance
◌	10AC5 FE00	isolate	◌	MANICHAEAN LETTER DALETH alternate form
◌	10AC6 FE00	isolate	◌	MANICHAEAN LETTER HE alternate form
◌	10AD6 FE00	isolate final	◌ ◌	MANICHAEAN LETTER MEM alternate form
◌	10AD7 FE00	isolate	◌	MANICHAEAN LETTER NUN alternate form
◌	10AE1 FE00	isolate	◌	MANICHAEAN LETTER RESH alternate form

We have briefly considered, and quickly rejected, the idea of encoding alternate forms of MEM, DALETH, HE, NUN, and RESH; these standard variants are glyph variants only.













4.2. Manichaean makes use of two standard obligatory ligatures; this means that the combinations SADHE + YODH and SADHE + NUN always results in a ligature.

SADHE _n Ⲥ	+	YODH ●	=	čy _n Ⲥ
SADHE _r Ⲥ	+	YODH ●	=	čy _r Ⲥ
SADHE _n Ⲥ	+	NUN ⲥ	=	čn _n Ⲥ
SADHE _r Ⲥ	+	NUN ⲥ	=	čn _r Ⲥ

4.3. Manichaean makes use of a *kashida* to extend a word. The character U+ 0640 ARABIC TATWEEL is proposed to be used for this function. Mandaic also has a similar requirement. The data file ScriptExtensions.txt would need to be changed to say:

















```
0640 ; Arab Mand Mani Syrc # Lm ARABIC TATWEEL
```

5. Manichaean numbers. Manichaean has its own numbers, which have right-to-left directionality. Numbers are built up out of 1, 5, 10, 20, and 100. Unfortunately very few Manichaean numbers are attested. The numbers 10, 20, and 100 are similar in shape to Manichaean letters (10 HE, 20 PE, 100 MEM) but are different in behaviour; their glyphs were re-analysed from the original Aramaic prototypes. The following is an exhaustive list of numbers attested in Manichaean. The third column is displayed in visual order; the fourth column is the manuscript source.


1		1 ←	M283 II V 4
2		1 + 1 ←	
3		1 + 1 + 1 ←	M67 R ii 11
4		1 + 1 + 1 + 1 ←	M74 II R 18
7		1 + 1 + 5 ←	
8		1 + 1 + 1 + 5 ←	
12		1 + 1 + 10 ←	M14 R 1, 2, 4, 9, 10
15		5 + 10 ←	M5750 R ii 21
68		1 + 1 + 1 + 5 + 20 + 20 + 20 ←	M1 390
77		1 + 1 + 5 + 10 + 20 + 20 + 20 ←	M1 321
162		1 + 1 SPACE 20 + 20 + 20 SPACE 100 ←	M1 167
546		1 + 5 + 20 + 20 [linebreak] 100 + 5 ←	M1 160–161

Note that the height at which 1 and 5 are drawn is different when following 10 from the way they are drawn when following 20: compare 17 (which shows the 7 drawn high) and 27 (which shows the 7 drawn on the baseline with 20); *17 is incorrect for 17. (A font could use higher glyph shapes or technologies like OpenType GPOS tables for these numbers: 11, 12, 13, 14, 15, 16, 17, 18, and 19.)





Dual-joining Manichaean Numbers

Character	X _n	X _r	X _m	X _l
ONE				
FIVE				
TEN				
TWENTY				





Right-joining Manichaean Number

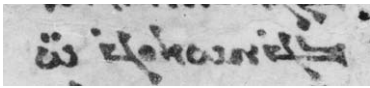
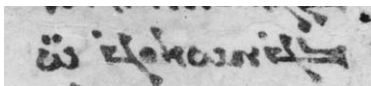
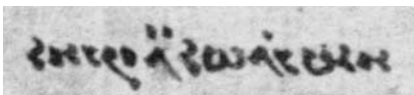
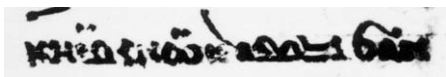


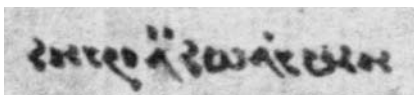
Character	X_n	X_r
ONE HUNDRED		



Note that some of the glyphs in the table above have not been attested in the historical corpus of Manichaean. These are


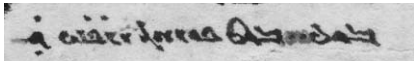

Character	X_n	X_r	X_m	X_l
FIVE				
TEN				
TWENTY				

The reconstructed forms here of TEN_n and TEN_r are based on reasonable expectations given the similarity of the base number and the letter HE. Note also that, while 100 is currently right-joining based on the limited evidence of the historical corpus, there is some chance that it could be dual joining, in which case its medial and left-joining forms could look something like the analogous forms for MEM.




6. Diacritical marks. U+10AE5  MANICHAEAN ABBREVIATION MARK ABOVE is used with  SHIN *š* and  WAW *w*, in the combinations *š*, *š'n* and *w*. The dots indicate an abbreviation of the normal spellings *'wš*, *'wš'n* and *'wd*. The common factor here is the conjunction *ud* 'and' on its own or with the enclitic pronouns *-š* 'his, her, its' and *-šān* 'theirs' attached. As will be seen below, this character can also serve to indicate plurality, as a substitute for U+10AE6  MANICHAEAN ABBREVIATION MARK BELOW. The references before the transliterations (such as "M5/R/ii/18/") are to Manichaean scriptures and fragments.

- š*   M5/R/ii/18/ *bgr'štygr š*
- š'n*   M2/II/R/ii/34/ *'wš bst  š'n frh'*
- w*   M7/III/V/i/27/ *'c rwšn w yzd'n*

U+10AC8  MANICHAEAN LETTER UD is a particular spelling for the word *ud* 'and'. This character is not used when enclitic pronouns other than *-š* and *-šān* are attached to it (in which case U+10AE5  MANICHAEAN ABBREVIATION MARK ABOVE is used as described above). An imperfect analogy might be English *'n*, *an'*, and *&*, all of which mean *and*).

- w*   M39/R/i/7/ *bwj  bwš pyd'g drfš w*

A combining diacritic has not been proposed because it would be used only with one character.

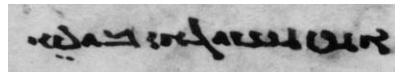
U+10AE6  MANICHAEAN ABBREVIATION MARK BELOW is also used to indicate that a spelling has been shortened; it is frequently used at the end of the manuscript line to indicate that the scribe has shortened a word to fit it in. The shortening frequently involves the plural ending in  -'n which is reduced to *n* with dots placed below it. It is this usage from which the name for this character has been derived. Although the shortening very often involves leaving out an  ALEF ' , the dots cannot be taken to signify a missing ALEF because shortening occasionally involves leaving out other letters.

shortening -y' 𐭮𐭩 to 𐭮̇ 𐭩̇



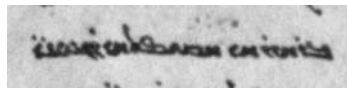
M39/R/i/18/ wrc 'wt 'zgd 'yy
hwfṙyd for hwfry'd

shortening of -j' to 𐭮̇ 𐭩̇



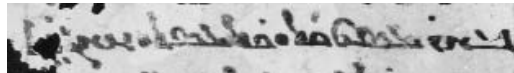
M42/V/i/5/ 'c hndwg'n bwj̇d for bwj'd

shortening of -'n to 𐭮̇ 𐭩̇



M1/368/ br'dr'n 'mwst'n rwṧṅn for rwšn'n

shortening other than of -'



M34/V/7/ b'r 'sṫftyft ° 'styh'g(̇ft)
for 'styh'gyft

The illustrations here are taken from W. Sundermann, *Iranian Manichaean Turfan texts in early publications (1904-1934): Photo Edition*. London: School of Oriental and African Studies 1996 (CII Supplementary Series Vol. III).

7. Punctuation. A variety of punctuation marks is used: 𐭮̇-𐭩̇, 𐭮̇𐭩̇, 𐭮̇𐭩̇, 𐭮̇𐭩̇, 𐭮̇𐭩̇. Often part of the punctuation is written in red; this behaviour is outside the scope of character encoding. The punctuation system was elaborated quite clearly by the Manichaeans. The size and shape of dots was significant, and this has been taken over into Manichaean typography. The punctuation forms a *coherent set*. This set is unrelated to the punctuation which developed in the European typographic tradition. We can see no benefit to trying to unify some of these with existing characters (since others will certainly remain un-unified) and have a very strong preference for a single script-specific set to be encoded.

U+10AF0 𐭮̇-𐭩̇ MANICHAEAN PUNCTUATION STAR is used to mark the beginning and end of headlines.

U+10AF1 𐭮̇𐭩̇ MANICHAEAN PUNCTUATION FLEURON (a black dot surrounded by petals often in red or blue) is used to mark the beginning and end of headlines and captions.

U+10AF2 𐭮̇𐭩̇ MANICHAEAN PUNCTUATION DOUBLE DOT WITHIN DOT (two black dots surrounded by red circles) is used to indicate larger units of text in a prose text or the end of a strophe in a verse text. This kind of division can *also* be indicated by using a sequence 𐭮̇𐭩̇ of U+10AF3 𐭮̇ MANICHAEAN PUNCTUATION DOT WITHIN DOT; we prefer to have the DOUBLE DOT WITHIN DOT ENCODED uniquely because without an explicit character one would have to resort to a ligation mechanism like ZWJ to form the joined pair—but this kind of ligation of punctuation would be unprecedented in the UCS. The user should be able to choose between 𐭮̇𐭩̇ and 𐭮̇𐭩̇.

U+10AF3 𐭮̇ MANICHAEAN PUNCTUATION DOT WITHIN DOT (one black dot surrounded by a red circle) is used to indicate smaller units of text in a prose text or the end of a half-verse in a verse text.

U+10AF4 𐭮̇ MANICHAEAN PUNCTUATION DOT is used to indicate sub-units of text, logical parts of a sentence or units in a list. It is not a word separator. It can be used in pairs 𐭮̇𐭮̇ as well as singly.

U+10AF5 𐭮̇; MANICHAEAN PUNCTUATION TWO DOTS is similar to U+10AF1 𐭮̇𐭩̇ MANICHAEAN PUNCTUATION FLEURON, just placed vertically, usually with red circles. It is used to mark the beginning and end of headlines and captions.

U+10AF6 **MANICHAEAN PUNCTUATION LINE FILLER** is used as a sort of ellipsis to fill out a line. See Figures 6 and 7.

8. Line-Breaking. The letters and digits behave like letters, and will be the line breaking class AL (Alphabetic). The abbreviations marks will have the line breaking class CM (Combining Mark). The punctuations STAR, FLEURON, and TWO DOTS should have the line break class QU (Quotation), while DOUBLE DOT WITHIN DOT, DOT WITHIN DOT, and DOT should have the line break class EX (Exclamation/Interrogation). The LINE FILLER is a leader character, so it should have the property IN (Inseparable).

9. Unicode Character Properties

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10AC0;MANICHAEAN LETTER ALEPH;Lo;0;R;;;;N;;;;;
10AC1;MANICHAEAN LETTER BETH;Lo;0;R;;;;N;;;;;
10AC2;MANICHAEAN LETTER BHETH;Lo;0;R;;;;N;;;;;
10AC3;MANICHAEAN LETTER GIMEL;Lo;0;R;;;;N;;;;;
10AC4;MANICHAEAN LETTER GHIMEL;Lo;0;R;;;;N;;;;;
10AC5;MANICHAEAN LETTER DALETH;Lo;0;R;;;;N;;;;;
10AC6;MANICHAEAN LETTER HE;Lo;0;R;;;;N;;;;;
10AC7;MANICHAEAN LETTER WAW;Lo;0;R;;;;N;;;;;
10AC8;MANICHAEAN LETTER UD;Lo;0;R;;;;N;;;;;
10AC9;MANICHAEAN LETTER ZAYIN;Lo;0;R;;;;N;;;;;
10ACA;MANICHAEAN LETTER ZHAYIN;Lo;0;R;;;;N;;;;;
10ACB;MANICHAEAN LETTER JAYIN;Lo;0;R;;;;N;;;;;
10ACC;MANICHAEAN LETTER JHAYIN;Lo;0;R;;;;N;;;;;
10ACD;MANICHAEAN LETTER HETH;Lo;0;R;;;;N;;;;;
10ACE;MANICHAEAN LETTER TETH;Lo;0;R;;;;N;;;;;
10ACF;MANICHAEAN LETTER YODH;Lo;0;R;;;;N;;;;;
10AD0;MANICHAEAN LETTER KAPH;Lo;0;R;;;;N;;;;;
10AD1;MANICHAEAN LETTER XAPH;Lo;0;R;;;;N;;;;;
10AD2;MANICHAEAN LETTER KHAPH;Lo;0;R;;;;N;;;;;
10AD3;MANICHAEAN LETTER LAMEDH;Lo;0;R;;;;N;;;;;
10AD4;MANICHAEAN LETTER DHAMEDH;Lo;0;R;;;;N;;;;;
10AD5;MANICHAEAN LETTER THAMEDH;Lo;0;R;;;;N;;;;;
10AD6;MANICHAEAN LETTER MEM;Lo;0;R;;;;N;;;;;
10AD7;MANICHAEAN LETTER NUN;Lo;0;R;;;;N;;;;;
10AD8;MANICHAEAN LETTER SAMEKH;Lo;0;R;;;;N;;;;;
10AD9;MANICHAEAN LETTER AYIN;Lo;0;R;;;;N;;;;;
10ADA;MANICHAEAN LETTER AAYIN;Lo;0;R;;;;N;;;;;
10ADB;MANICHAEAN LETTER PE;Lo;0;R;;;;N;;;;;
10ADC;MANICHAEAN LETTER FE;Lo;0;R;;;;N;;;;;
10ADD;MANICHAEAN LETTER SADHE;Lo;0;R;;;;N;;;;;
10ADE;MANICHAEAN LETTER QOPH;Lo;0;R;;;;N;;;;;
10ADF;MANICHAEAN LETTER XOPH;Lo;0;R;;;;N;;;;;
10AE0;MANICHAEAN LETTER QHOPH;Lo;0;R;;;;N;;;;;
10AE1;MANICHAEAN LETTER RESH;Lo;0;R;;;;N;;;;;
10AE2;MANICHAEAN LETTER SHIN;Lo;0;R;;;;N;;;;;
10AE3;MANICHAEAN LETTER SSHIN;Lo;0;R;;;;N;;;;;
10AE4;MANICHAEAN LETTER TAW;Lo;0;R;;;;N;;;;;
10AE5;MANICHAEAN ABBREVIATION MARK ABOVE;Mn;230;NSM;;;;N;;;;;
10AE6;MANICHAEAN ABBREVIATION MARK BELOW;Mn;220;NSM;;;;N;;;;;
10AEB;MANICHAEAN NUMBER ONE;No;0;R;;;;1;N;;;;;
10AEC;MANICHAEAN NUMBER FIVE;No;0;R;;;;5;N;;;;;
10AED;MANICHAEAN NUMBER TEN;No;0;R;;;;10;N;;;;;
10AEE;MANICHAEAN NUMBER TWENTY;No;0;R;;;;20;N;;;;;
10AEF;MANICHAEAN NUMBER ONE HUNDRED;No;0;R;;;;100;N;;;;;
10AF0;MANICHAEAN PUNCTUATION STAR;Po;0;R;;;;N;;;;;
10AF1;MANICHAEAN PUNCTUATION FLEURON;Po;0;R;;;;N;;;;;
10AF2;MANICHAEAN PUNCTUATION DOUBLE DOT WITHIN DOT;Po;0;R;;;;N;;;;;
10AF3;MANICHAEAN PUNCTUATION DOT WITHIN DOT;Po;0;R;;;;N;;;;;
10AF4;MANICHAEAN PUNCTUATION DOT;Po;0;R;;;;N;;;;;
10AF5;MANICHAEAN PUNCTUATION TWO DOTS;Po;0;R;;;;N;;;;;
10AF6;MANICHAEAN PUNCTUATION LINE FILLER;Po;0;R;;;;N;;;;;

```

10. Unicode Joining Types and Groups. Note that although the basic structure of RESH looks very much like DALETH, they are not considered part of the same joining group because they look very different in their alternate form (when followed by VS-1).

```

10AC0; MANICHAEAN ALEPH; D; MANICHAEAN ALEPH
10AC1; MANICHAEAN BETH; D; MANICHAEAN BETH
10AC2; MANICHAEAN BETH WITH 2 DOTS ABOVE; D; MANICHAEAN BETH

```


10AC3; MANICHAEAN GIMEL; D; MANICHAEAN GIMEL
 10AC4; MANICHAEAN GIMEL WITH ATTACHED RING BELOW; D; MANICHAEAN GIMEL
 10AC5; MANICHAEAN DALETH; R; MANICHAEAN DALETH
 10AC6; MANICHAEAN HE; U; No_Joining_Group
 10AC7; MANICHAEAN WAW; R; MANICHAEAN WAW
 10AC8; MANICHAEAN UD; U; No_Joining_Group
 10AC9; MANICHAEAN ZAYIN; R; MANICHAEAN ZAYIN
 10ACA; MANICHAEAN ZAYIN WITH 2 DOTS ABOVE; R; MANICHAEAN ZAYIN
 10ACB; MANICHAEAN JAYIN; U; No_Joining_Group
 10ACC; MANICHAEAN JAYIN WITH 2 DOTS ABOVE; U; No_Joining_Group
 10ACD; MANICHAEAN HETH; L; MANICHAEAN HETH
 10ACE; MANICHAEAN TETH; R; MANICHAEAN TETH
 10ACF; MANICHAEAN YODH; R; MANICHAEAN YODH
 10AD0; MANICHAEAN KAPH; R; MANICHAEAN KAPH
 10AD1; MANICHAEAN KAPH WITH DOT ABOVE; R; MANICHAEAN KAPH
 10AD2; MANICHAEAN KAPH WITH 2 DOTS ABOVE; R; MANICHAEAN KAPH
 10AD3; MANICHAEAN LAMEDH; D; MANICHAEAN LAMEDH
 10AD4; MANICHAEAN DHAMEDH; D; MANICHAEAN DHAMEDH
 10AD5; MANICHAEAN THAMEDH; D; MANICHAEAN THAMEDH
 10AD6; MANICHAEAN MEM; D; MANICHAEAN MEM
 10AD7; MANICHAEAN NUN; L; MANICHAEAN NUN
 10AD8; MANICHAEAN SAMEKH; D; MANICHAEAN SAMEKH
 10AD9; MANICHAEAN AYIN; D; MANICHAEAN AYIN
 10ADA; MANICHAEAN AYIN WITH 2 DOTS ABOVE; D; MANICHAEAN AYIN
 10ADB; MANICHAEAN PE; D; MANICHAEAN PE
 10ADC; MANICHAEAN PE WITH DOT ABOVE; D; MANICHAEAN PE
 10ADD; MANICHAEAN SADHE; R; MANICHAEAN SADHE
 10ADE; MANICHAEAN QOPH; D; MANICHAEAN QOPH
 10ADF; MANICHAEAN QOPH WITH DOT ABOVE; D; MANICHAEAN QOPH
 10AE0; MANICHAEAN QOPH WITH 2 DOTS; D ABOVE; MANICHAEAN QOPH
 10AE1; MANICHAEAN RESH; R; MANICHAEAN RESH
 10AE2; MANICHAEAN SHIN; U; No_Joining_Group
 10AE3; MANICHAEAN SHIN WITH 2 DOTS ABOVE; U; No_Joining_Group
 10AE4; MANICHAEAN TAW; R; MANICHAEAN TAW
 10AEB; MANICHAEAN ONE; D; MANICHAEAN ONE
 10AEC; MANICHAEAN FIVE; D; MANICHAEAN FIVE
 10AED; MANICHAEAN TEN; D; MANICHAEAN TEN
 10AEE; MANICHAEAN TWENTY; D; MANICHAEAN TWENTY
 10AEF; MANICHAEAN HUNDRED; R; MANICHAEAN HUNDRED

11. “Confusability”. Roozbeh Pournader wrote this section and is responsible for its content.

In-script:

10AC2 ≈ 10AC1 10AE5
 10ACA ≈ 10AC9 10AE5
 10AC5 FE00 ≈ 10AC9 10AF4
 10ACC ≈ 10ACB 10AE5
 10AD2 ≈ 10AD0 10AE5
 10AD5 ≈ 10AD4 10AD4
 10AD8 ≈ 10ADB 10ADB
 10ADA ≈ 10AD9 10AE5
 10ADB ≈ 10AD3
 10AE0 ≈ 10ADE 10AE5
 10AE1 FE00 ≈ 10AE1 10AF4
 10AE3 ≈ 10AE2 10AE5
 10AED ≈ 10AC6 FE00
 10AEE ≈ 10ADB
 10AEF ≈ 10AD6 FE00
 10AF2 ≈ 10AF3 10AF3
 10AF4 ≈ 10ACF
 10AF6 ≈ 10AC5

Select similarities with other scripts:

10AD0 ≈ 06A1
 10AD0 ≈ 0726
 10AD1 ≈ 10AD0 0307
 10AD1 ≈ 0641
 10AD2 ≈ 0642
 10ADB ≈ 06A1
 10ADC ≈ 0641
 10ADC ≈ 10ADB 0307
 10ADF ≈ 10ADE 0307
 10AE1 ≈ 10AC5 0307
 10AE2 ≈ 03C9
 10AE5 ≈ 0308
 10AE6 ≈ 0324
 10AF4 ≈ 002E
 10AF5 ≈ 003A

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13. 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) in respect of the Manichaean encoding. Any views, findings, conclusions or recommendations expressed in this publication do not necessarily reflect those of the National Endowment of the Humanities.

	10AC	10AD	10AE	10AF
0	10AC0	10AD0	10AE0	10AF0
1	10AC1	10AD1	10AE1	10AF1
2	10AC2	10AD2	10AE2	10AF2
3	10AC3	10AD3	10AE3	10AF3
4	10AC4	10AD4	10AE4	10AF4
5	10AC5	10AD5	10AE5	10AF5
6	10AC6	10AD6	10AE6	10AF6
7	10AC7	10AD7		
8	10AC8	10AD8		
9	10AC9	10AD9		
A	10ACA	10ADA		
B	10ACB	10ADB	10AEB	
C	10ACC	10ADC	10AEC	
D	10ACD	10ADD	10AED	
E	10ACE	10ADE	10AEE	
F	10ACF	10ADF	10AEF	

Letters

- 10AC0 MANICHAEAN LETTER ALEPH
- 10AC1 MANICHAEAN LETTER BETH
- 10AC2 MANICHAEAN LETTER BHETH
- 10AC3 MANICHAEAN LETTER GIMEL
- 10AC4 MANICHAEAN LETTER GHIMEL
- 10AC5 MANICHAEAN LETTER DALETH
- 10AC6 MANICHAEAN LETTER HE
- 10AC7 MANICHAEAN LETTER WAW
- 10AC8 MANICHAEAN LETTER UD
- 10AC9 MANICHAEAN LETTER ZAYIN
- 10ACA MANICHAEAN LETTER ZHAYIN
- 10ACB MANICHAEAN LETTER JAYIN
- 10ACC MANICHAEAN LETTER JHAYIN
- 10ACD MANICHAEAN LETTER HETH
- 10ACE MANICHAEAN LETTER TETH
- 10ACF MANICHAEAN LETTER YODH
- 10AD0 MANICHAEAN LETTER KAPH
- 10AD1 MANICHAEAN LETTER XAPH
- 10AD2 MANICHAEAN LETTER KHAPH
- 10AD3 MANICHAEAN LETTER LAMEDH
- 10AD4 MANICHAEAN LETTER DHAMEDH
- 10AD5 MANICHAEAN LETTER THAMEDH
- 10AD6 MANICHAEAN LETTER MEM
- 10AD7 MANICHAEAN LETTER NUN
- 10AD8 MANICHAEAN LETTER SAMEKH
- 10AD9 MANICHAEAN LETTER AYIN
- 10ADA MANICHAEAN LETTER AAYIN
- 10ADB MANICHAEAN LETTER PE
- 10ADC MANICHAEAN LETTER FE
- 10ADD MANICHAEAN LETTER SADHE
- 10ADE MANICHAEAN LETTER QOPH
- 10ADF MANICHAEAN LETTER XOPH
- 10AE0 MANICHAEAN LETTER QHOPH
- 10AE1 MANICHAEAN LETTER RESH
- 10AE2 MANICHAEAN LETTER SHIN
- 10AE3 MANICHAEAN LETTER SSHIN
- 10AE4 MANICHAEAN LETTER TAW

Combining marks

- 10AE5 MANICHAEAN ABBREVIATION MARK ABOVE
- 10AE6 MANICHAEAN ABBREVIATION MARK BELOW

Numbers

- 10AEB MANICHAEAN NUMBER ONE
- 10AEC MANICHAEAN NUMBER FIVE
- 10AED MANICHAEAN NUMBER TEN
- 10AEE MANICHAEAN NUMBER TWENTY
- 10AEF MANICHAEAN NUMBER ONE HUNDRED

Punctuation

- 10AF0 MANICHAEAN PUNCTUATION STAR
- 10AF1 MANICHAEAN PUNCTUATION FLEURON
- 10AF2 MANICHAEAN PUNCTUATION DOUBLE DOT WITHIN DOT
- 10AF3 MANICHAEAN PUNCTUATION DOT WITHIN DOT
- 10AF4 MANICHAEAN PUNCTUATION DOT
- 10AF5 MANICHAEAN PUNCTUATION TWO DOTS
- 10AF6 MANICHAEAN PUNCTUATION LINE FILLER

Figures

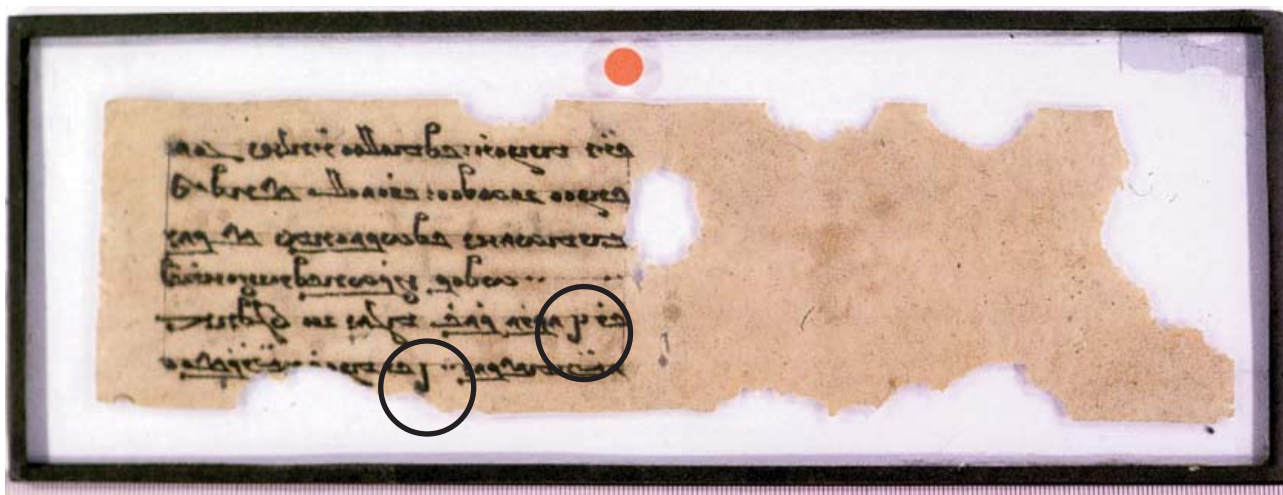


Figure 1. One side of the Manichaean manuscript page M113. The numbers 𐎂 1 and 𐎃 2 are circled.

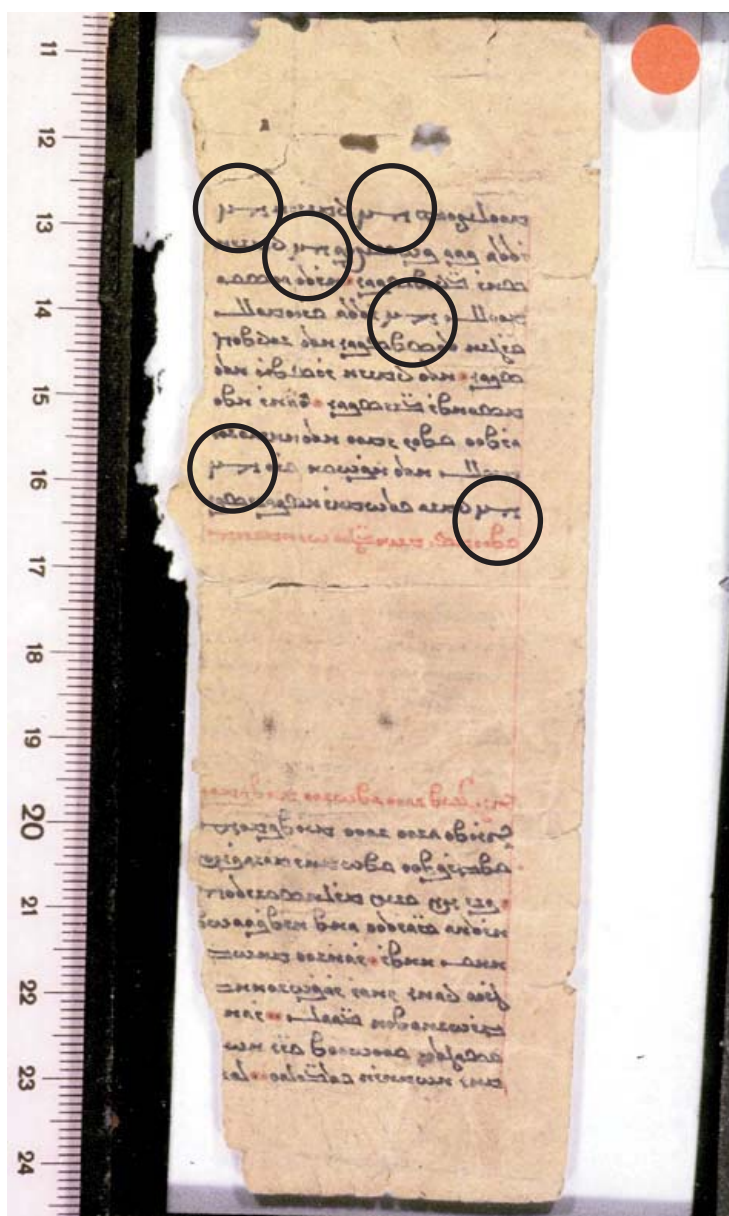


Figure 2. One side of the Manichaean manuscript page M14, showing the number 𐎂 12 in lines 1, 2, 4, 9, and 10.

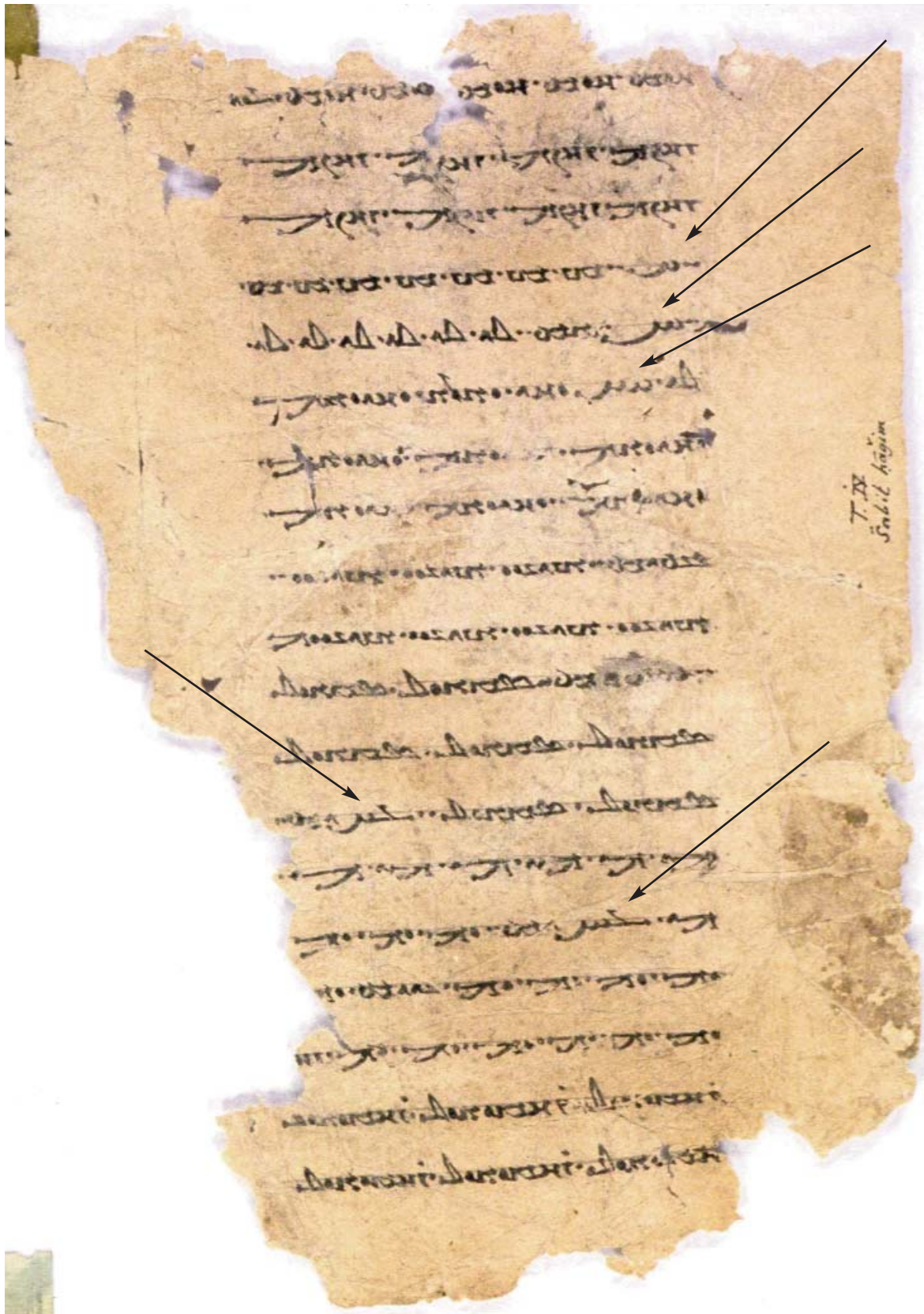


Figure 3. One side of the Manichaean manuscript page M8430, showing the numbers ۲ 2, ۳ 3, ۴ 4, ۷ 7, and ۸ 8.

shape	value	shape	value
	a		s
	b		r
	β		c
	g		q
	γ		q̇
	d		q̈
	h		ṙ
	w		s
	z		š
	ž		t
	j		w, u
	j̇ (z)		v
	h		·
	l		flower
	y		1
	k		5
	k̇		10
	k̈		20
	l		100
	δ		
	θ (δδ)		
	m		
	n		

Figure 4. Table of the Manichaean script by Desmond Durkin-Meisterernst. Note the transcriptions of LAMEDH *l*, DHAMEDH *δ*, and THAMEDH *θ* (*δδ*); THAMEDH is in origin a combination of two DHAMEDHS, but it is not a typographic or decomposable ligature.

Manichäisch

Isoliert	Ende	Mitte	Anfang	Umschrift	Isoliert	Ende	Mitte	Anfang	Umschrift
				a					l
				b					δ
				β					δδ
				g					m
				γ					n
				d					s
				h					·
				v					p
				ö					f
				z					} ē
				ž					
				h					čy
				t					čn
				y					q steht für k
				k					q̄
				} b, x					r
					k=q				
				t					t

Allgemeines: Unter der reichen Ansbeute der Expeditionen des Museums für Völkerkunde in Berlin nach Chinesisch-Turkistan in den Jahren 1903—14 unter Leitung der Herren Professoren Grünwedel und von Le Coq befanden sich auch zahlreiche Bücher und Bruchstücke in einer bis dahin unbekanntes Schrift, welche sich durch reiche Miniaturmalerei und schöne Ausführung auszeichneten. Die Schrift wurde von Herrn Prof. F. W. K. Müller zu Berlin entziffert, der in ihr eine Verwandte der syrischen Estrangelā vermutete und, da die Texte manichäisch-religiösen Inhalts waren, sie als manichäische Schrift bezeichnete. Sie ist aus einer späten Form des aramäischen Alphabets von Mani, dem Stifter der manichäischen Religionsgemeinschaft, zu einer ausgesprochenen Buchschrift entwickelt. Die in den Ruinen von Turfan (Chinesisch-Turkistan) und Umgebung gefundenen Handschriften enthalten Teile der bis dahin in Europa für verschollen gehaltenen Literatur der Manichäer. Bisher sind Handschriften mit Texten in mittelpersischer, parthischer, sogdischer, uigurisch-türkischer und tocharischer (B) Sprache bekannt geworden.

Die Typen wurden nach den Angaben des Herrn Professors von Le Coq in der Reichsdruckerei hergestellt. Die Schrift läuft von rechts nach links oder von oben nach unten; im letzteren Falle liest man die vertikalen Zeilenreihen von links nach rechts. Die Silben dürfen ebenso wie im Syrischen nicht getrennt werden. Läßt sich der überschüssige Raum nicht auf die einzelnen Wortzwischenräume verteilen, so ist er mit Hilfe schmaler Sperrstriche, welche zwischen die einzelnen Buchstaben gesetzt werden, auszusperren.

Abkürzungen: = v mit zwei Punkten, Abkürzung für ein Bindewort

Interpunktion: Es gibt folgende Interpunktionen: Die einfachen Punkte sind mit schwarzer Tinte (Tusche) geschrieben; oft sind sie rot umrandet; die blumenartigen Zeichen sind oft polychrom und dienen zur Einfassung von Titeln.

Literatur: H.-Ch. Puech, *Le Manichéisme*, Paris 1949 (Musée Guimet, Bibliothèque de diffusion, tome LVII, mit ausführlichen bibliographischen Angaben); Ausgaben von Handschriften in dieser Schrift besorgten außer F. W. K. Müller u. a. F. C. Andreas, Willy Bang, A. v. Gabain, W. B. Henning, W. Lentz, E. Waldschmidt, W. Winter; aus der Sammlung in Leningrad: C. Salemann

Figure 5. Description of Manichaean script from a German source.

In the description of the punctuation a pair of thick dots is shown; in encoding this would be a sequence (..) of two U+10AF4 • MANICHAEAN PUNCTUATION DOT characters.

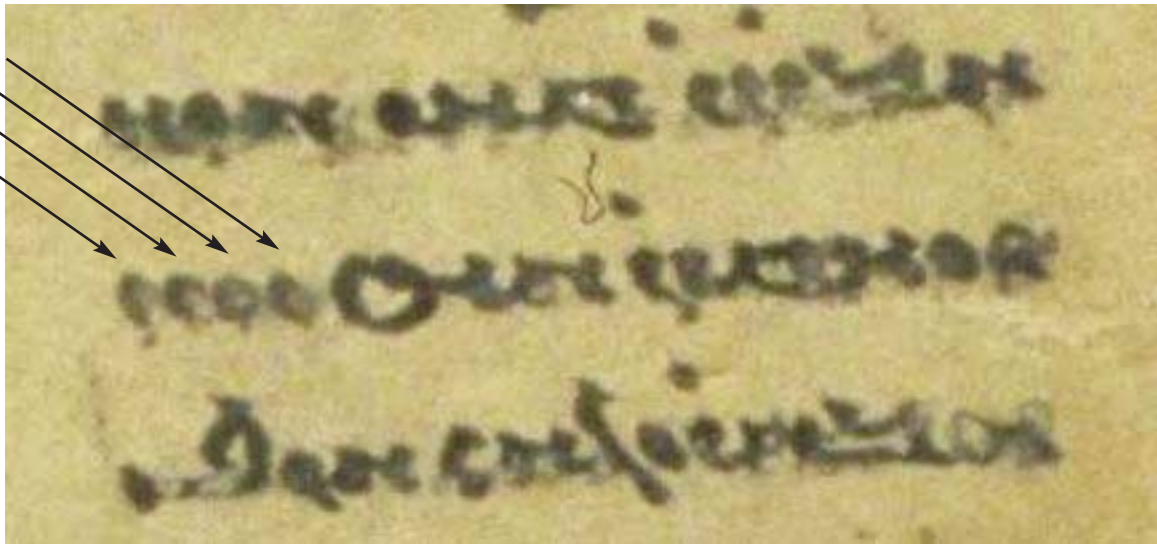


Figure 6. Example of the line filler in use in manuscript M7981/II/R/i/23/. The text reads
 ארר ררררר / ררר ררר רררר / ררר ררר ררר ←
 → 'brdr mhy 'wd / wyhmdr 'c **** / 'b'ryg'n 'wl

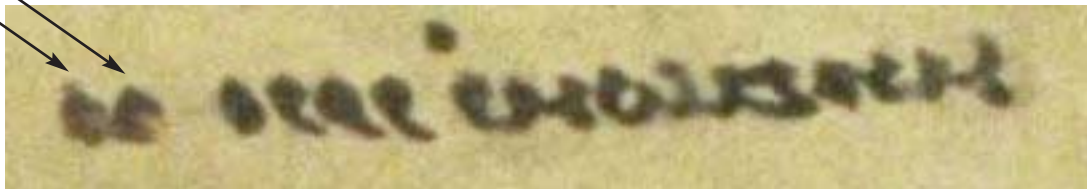


Figure 7. Examples of the line-filler in use in manuscript M7981/II/R/ii/29/. The text reads
 רר ררר רררר ←
 → h'mšhr dwdy **

A. Administrative

1. Title

Revised proposal for encoding the Manichaean script in the SMP of the UCS.

2. Requester's name

UC Berkeley Script Encoding Initiative (Universal Scripts Project)

(Authors: Michael Everson, Desmond Durkin-Meisterernst, Roozbeh Pournader, Shervin Afshar)

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

Liaison contribution.

4. Submission date

2011-05-02

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

Manichaean.

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

51.

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.

Yes. See N3644R, N2556, N1684.

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?

Jost Gippert, Desmond Durkin-Meisterernst

2c. If YES, available relevant documents

<http://titus.fkidg1.uni-frankfurt.de/unicode/iranian/3tagung.htm>

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)

Uncommon; the script is important for students of the Manichaean religion, as well as Middle and Early Modern Persian, Parthian, Sogdian, Bactrian, Uighur, and Tokharian.

4b. Reference

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

Yes.

5b. If YES, where?

Scholarly 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)?

No.

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)?

Yes.

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

No.

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?