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

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Title: **Towards a proposal to encode the Old South Arabian script in the SMP of the UCS**
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1. Introduction. The Old South Arabian script was first mooted 1992-10-20 in UTR#3 by Rick McGowan, and formally proposed to WG2 by Michael Everson in N1689 (1998-01-18); more recently Sultan Maktari and Kamal Mansour proposed the script again in L2/07-240 (2007-07-30). This document responds to Maktari and Mansour's contribution and makes recommendations for a character set that could be accepted for encoding in the UCS.

2. Processing. Old South Arabian is an alphabetic script consisting only of consonants; vowels are not indicated in any way in the script. It is typically written right-to-left, but boustrophedon writing is also known. Glyphs are mirrored in lines when they have left-to-right directionality.

3. Ordering and character names. Maktari and Mansour propose character names and ordering based on the Arabic script. While we do recognize that some scholars use Arabic characters for transliteration of Old South Arabian, it is also the case that some scholars use Hebrew and Latin for the same. We consider that, in the context of the UCS, the use of Arabic or Hebrew for character names or ordering would be much more anachronistic than the use of the much more closely-related Ethiopic would be.

Old South Arabian script is the ancestor of Ethiopic, and there is a close relation between the alphabetical order of the two scripts. A. M. Honeyman wrote in 1952 of the Old South Arabian alphabet that "the order of its letters is substantially that of the Ethiopic syllabary and the alphabetic archetype thereof". An inscription discovered at the Oasis of Al-ʿUla in 1914 was identified as an abecedary by Honeyman 1952. Ryckmans 1985 gives the order for Old South Arabian as follows (transliteration, Old South Arabian script, Old Gəʿəz script, and modern Ethiopic are shown):

h l ḥ m q w š r b t s k n ḫ ś f ʾ ʿ ḍ g d ġ ṭ z ḏ y ṯ ṣ ẓ

Modern scholars distinguish this "South Semitic" order from the "Levantine" order used for the descendants of Phoenician. The order of the Old South Arabian characters in the UCS code charts should follow the South Semitic alphabetical order because it is attested for Old South Arabian (see Figure 6). For comparison, here is same set in the modern Ethiopic variant of the South Semitic order:

h l ḥ m š r s q b t ḫ n ʼ k w ʻ z y d g ṭ ṣ ḍ f ś ġ ḏ ṭ ẓ

By the same token, Maktari and Mansour's application of Arabic letter-names to the Old South Arabian script is also anachronistic in the context of the UCS. Although we have inherited no formal letter-names for Old South Arabian, good letter-names can be devised on the basis of Ethiopic, its closest relative. There are two choices. Option A would use the syllable-value of the corresponding Ethiopic base letter, but Option B, which we prefer, would use the older inherited Semitic letter-names. In the table below, we give the Ethiopic first-order syllables, their IPA value in Gə'əz (following Gragg 2004), their transliteration (following Haile 1996), their Gə'əz names, the Old South Arabian letters, their IPA equivalents (following Nebes and Stein 2004), and the two options for UCS character names, re-spelling the consonant values according to the usual UCS conventions, and a reconstructed OSA spelling based on Option B.

Ethiopic	IPA (Gə'əz)	Transl.	Name	OSA	IPA (OSA)	Option A	Option B	Spelling
ሀ	[h]	ha	hoy		[h]	HA	HOY	hj
ለ	[l]	la	lawe		[l]	LA	LAWE	lw
ሐ	[ħ]	ḥa	ḥawt		[ħ]	HHA	HAWT	ḥwt
መ	[m]	ma	māy		[m]	MA	MAAY	mj
ቀ	[q]	qa	qāf		[q]	QA	QAAF	qf
ወ	[w]	wa	wawe		[w]	WA	WAWE	ww
ሠ	[ʃ]	śa	śawt		[ɬ]	HLA	HLAWT	ɬwt
ረ	[r]	ra	rə's		[r]	RA	RES	rʔs
በ	[b]	ba	bet		[b]	BA	BET	bt
ተ	[t]	ta	tawe		[t]	TA	TAWE	tw
ሰ	[s]	sa	sāt		[s]	SA	SAAT	st
ከ	[k]	ka	kāf		[k]	KA	KAAF	kf
ነ	[n]	na	nahās		[n]	NA	NAHAAS	nḥs
ኀ	[x]	ḫa	ḫarm		[x]	KHA	KHARM	xrm
—	—	—	—		[ṣ]	SSA	SAWT	ṣwt
ፈ	[f]	fa	af		[f]	FA	AF	ʔf
አ	[ʔ]	'a	'alf		[ʔ]	ALF	ALF	ʔlf
ዐ	[ʕ]	'a	'ayn		[ʕ]	AYN	AYN	ʕjn
ፀ	[x']	ḍa	ḍaṗṗā		[ɬ']	HLLA	HLAFFAA	ɬ'f
ገ	[g]	ga	gaml		[g]	GA	GAML	gml
ደ	[d]	da	dant		[d]	DA	DANT	dnt
—	—	—	—		[ɣ]	GHA	GHAAF	ɣf
ጠ	[t']	ṭa	ṭayt		[t']	TTA	TAYT	t'jt
ዘ	[z]	za	zay		[z]	ZA	ZAY	zj
—	—	—	—		[ð]	DHA	DHAY	ðj
የ	[j]	ya	yaman		[j]	YA	YAMAN	jmn
—	—	—	—		[θ]	THA	THAY	θj
ጸ	[s']	ṣa	ṣaday		[tsʼ]	TSSA	TSADAY	t'dj
—	—	—	—		[θ']	THHA	THADAY	θ'dj

Maktari and Mansour also suggest that the script be named "Musnad", a term by which the script is known in the Arabic language. Since the normal name for the script in English is "Old South Arabian", that term ought to be preferred. (Compare Höfner's "Altsüdarabisch".)

5. Numbers. Old South Arabian uses four of its letters with a numeric value, supplementing these with two explicit numbers. It builds up numbers out of 1 (⸾, a unit), 5 (KHARM for ⸾⸾⸾ ḫms '5'), 10 (AYN for ⸾⸾⸾ 'šr '10'), 50 (⸾, half of ⸾ m), 100 (MAAY for ⸾⸾X m't '100'), and 1000 (ALF for ⸾⸾⸾ 'lf '1000'). Numbers are flanked on either side by the OLD SOUTH ARABIAN NUMERATOR BRACKET. When 10, 50, or 100 occur before 1000 they serve to indicate multiples of 1000. The numbers have right-to-left directionality. In the chart below, the third column is displayed in visual order.

1	⸾	1 ←	11	⸾	1 + 10 ←
2	⸾	1 + 1 ←	12	⸾	2 + 10 ←
3	⸾	1 + 1 + 1 ←	13	⸾	3 + 10 ←
4	⸾	1 + 1 + 1 + 1 ←	14	⸾	1 + 3 + 10 ←
5	⸾	5 ←	15	⸾	2 + 3 + 10 ←
6	⸾	1 + 5 ←	16	⸾	3 + 3 + 10 ←
7	⸾	1 + 1 + 5 ←	17	⸾	1 + 3 + 3 + 10 ←
8	⸾	1 + 1 + 1 + 5 ←	18	⸾	2 + 3 + 3 + 10 ←
9	⸾	1 + 1 + 1 + 1 + 5 ←	19	⸾	3 + 3 + 3 + 10 ←
10	⸾	10 ←	100	⸾	100 ←
20	⸾	10 + 10 ←	200	⸾	100 + 100 ←
30	⸾	10 + 10 + 10 ←	300	⸾	100 + 100 + 100 ←
40	⸾	10 + 10 + 10 + 10 ←	400	⸾	100 (x 4) ←
50	⸾	50 ←	500	⸾	100 (x 5) ←
60	⸾	10 + 50 ←	600	⸾	100 (x 6) ←
70	⸾	10 + 10 + 50 ←	700	⸾	100 (x 7) ←
80	⸾	10 + 10 + 10 + 50 ←	800	⸾	100 (x 8) ←
90	⸾	10 + 10 + 10 + 10 + 50 ←	900	⸾	100 (x 9) ←
1,000	⸾	1,000 ←	3,000	⸾	1,000 (x 3) ←
16,000	⸾	1,000 (x 6) + 10 ←	31,000	⸾	1,000 + 10 (x 3) ←
253,000	⸾	1,000 (x 6) + 10 ←			

6. Issue: Punctuation. A vertical word separator is usually used between words in Old South Arabian. In form it is typically identical to OLD SOUTH ARABIAN NUMBER ONE, although in some contexts the word separator is represented as part of the text layout (see Figure 8). For this reason (and that of word-breaking) it is probably inappropriate to try to disunify the word separator from the NUMBER ONE. (Doing so would also add another column to the Old South Arabian block.) One option would be to encode a generic WORD SEPARATOR WHITE SPACE VERTICAL BAR in the Supplemental Punctuation block at U+2E32 alongside a WORD SEPARATOR WHITE SPACE DOT since ancient scripts tend to use either a dot or bar and a generic character is wanting. On the other hand, it may not be possible to avoid a third column for Old South Arabian (see §7 below).

7. Issue: "Divine symbols". Beeston 1962 describes some "divine symbols", saying that these:

> … have a tendency to become formalized into patterns which resemble alphabetic letters. Thus the "lightning" symbol develops into a form resembling the letter *h* [i.e. ⸾ HAWT], the "Doppelgriffel" into one resembling *ḏ* [i.e. 'double slate-pencil', ⸾ DHAY]. These symbolic "letters" are often placed at the beginning and/or end of texts (e.g. C 634), but have no phonetic significance.

C 634 can evidently be found in the *Corpus Incriptionum Semiticarum* IV; the other source cited in Beeston is: "Adolf Grohmann, 'Göttersymbole und Symboltiere', *Denkschr. d. Akad. d. Wiss. in Wien* Bd. 58 (1914), Abh. 1." We have not yet seen either source.

8. Glyph shapes. Old South Arabian was fairly regular and well-standardized in antiquity. One problem is what the representative glyph shapes should be used in the code charts. In addition to the font shown in Maktari and Mansour's contribution, we show three additional fonts in the table below for consideration.

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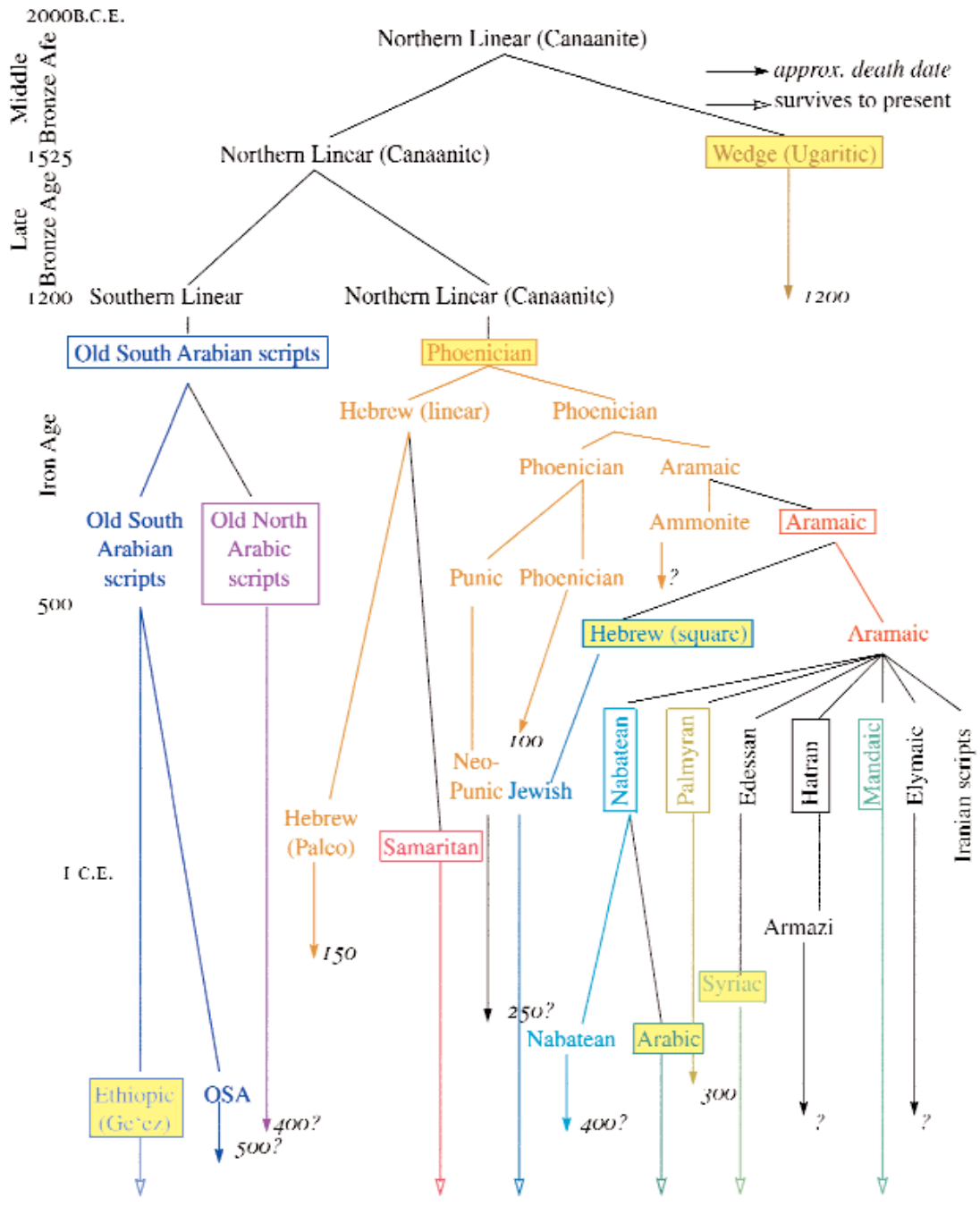
Figures

FIGURE 4. Family tree of ancient Semitic scripts

Figure 1. Family tree of ancient Semitic scripts, from O'Connor 1996, to which an "Iranian scripts" node has been added. Boxes have been drawn around nodes which have been or are expected to be encoded. Colour indicates familial unifications. Note the close relationship of Ethiopic and Old South Arabian which use South Semitic ordering, and their distance fom Arabic, Syriac, and Hebrew scripts which use Levantine ordering deriving from Phoenician. While we recognize that scholars who use Arabic script are concerned with Old South Arabian materials, we believe that in the context of the UCS it would be consistent with the practice of our committees to give preference to the genetic relationships when it comes to question of character names and ordering presentation in the code chart.

Zeichen		Wert	Zeichen		Wert	Ziffern	Wert
schwarz	relief		schwarz	relief			
		'a			l		1
		b			m		2
		dž			n		3
		d			s		4
		ᵭ			ᵌ		5
		h			ᶜ		6
		w			f, p		10
		z			ṣ		11
		h'			ẓ		12
		χ			q		20
		ḏ			r		50
		ô			š		100
		y			t		1000
		k			ṯ		?

Die himyarische Schrift wurde im südlichen Arabien gebraucht, bis sie durch die mohammedanische Nesχi verdrängt wurde; sie ist hier unter die afrikanischen Schriften einbezogen worden, weil sie die Wurzel der äthiopischen ist und der Schrift der Berber nahe steht.

Die arabischen Schriftsteller nennen sie *Musnad*, welcher Name zu mancherlei Vermuthungen Anlass gegeben hat, indem er durch *sanad* „stützen" erklärt wird und daher „Säulenschrift" oder auch „gestützte Schrift" bedeuten würde, man hat ihn ferner auf Sindh zurückgeführt, und demnach „indische Schrift" übersetzt; endlich wurde darauf hingewiesen, dass *musnad* auch *spurius* bedeutet, danach wäre sie die „sündhafte Schrift der Ungläubigen". Jedenfalls war sie die Schrift des Sabäismus und ging mit diesem unter.

Himyarisch wurde von rechts nach links, aber auch in wechselnden Furchen (*Bustrophedon*) geschrieben; es kommt nur auf Inschriften vor, theils einfach eingegraben, theils erhaben ausgemeiselt. Die Lautwerte sind nach den Angaben HALEVY's (Inschriften von San'a), welcher den Zeichen das neu-arabische Lautsystem zu Grunde legte, beigefügt.

Die Ziffern sind stets eingeklammert, die Zeichen 1—4 werden auch verbunden, z. B. ∏ oder ❏ 2, die Zeichen 5, 10, 100, 1000 sind Sigel, indem die Anfangsbuchstaben (*χamaš, ᵌašar, mat, eleph*) die Zahlen vertreten.

Figure 2. Chart of Old South Arabian, from Faulmann 1990 (1880). The numbers are shown flanked with the OLD SOUTH ARABIAN NUMERATOR BRACKET. Faulmann calls the script "Himyaric" and says: "The Arab writers call it *Musnad*, which name has been the cause of much disputed supposition, in that it is explained by *sanad* 'support' and therefore would also mean 'column writing' or also 'supported writing', furthermore some have attributed it to Sindh, and translated it as 'Indic writing'; finally it was pointed out that *musnad* also meant *spurius*, and accordingly it would be the 'sinful script of the unbelievers.'"

TABLE 5.7: *Monumental Scripts of Yemen and Ethiopia (Garbini 1979, fig. 10)*[a]

	XXVII	XXVIII	XXIX	XXX
ʾ				
b				
g				
d				
ḏ				
h				
w				
z				
ḥ				
ḫ				
ṭ				
ẓ				
y				
k				
l				
m				
n				
s¹				
ʿ				
ġ				
p				
ṣ				
ḍ				
q				
r				
s²				
s³				
t				
ṯ				

a. Col. XXVII, Epigraphic South Arabian script (forms in parentheses are of the North Arabic type, found in some older inscriptions); col. XXVIII, Later South Arabian script; col. XXIX, "Thamudic" type of Ethiopic script; col. XXX, Ethiopic consonantal script. The order of letters in this table is artificially based on the North Semitic order; for the ancient South Semitic order, see SECTION 68.

Figure 3. Table of South Arabian scripts, from O'Connor 1996. O'Connor draws specific attention to the fact that the presentation here is in the Levantine order rather than in the South Semitic order.

	I. Ground-form pronounced with ă	II. With ŭ	III. With ī	IV. With ā	V. With ē	VI. With ĕ or without any Vowel	VII. With ō	Minao-Sabaic	Phonetic Value and Transcription	Corresponding Hebrew or Arabic Letters
1.									h	
2.									l	
3.									Originally strong h (ḥ); pronounced later like No. 1	
4.									m	
5.									Originally sh (š); pronounced later like No. 7	
6.									r	
7.									s	
8.									Guttural k (q)	
9.									b	
10.									t	
11.									Originally ch hard (ḫ); pronounced later like No. 1	
12.									n	
13.									Spiritus Lenis (')	
14.									k	
15.									w	
16.									Peculiar Aspirate-Guttural ('); pron. later like No. 13	
17.									Soft s (z)	
18.									y	
19.									d	
20.									g hard	
21.									Emphatic t (ṭ)	
22.									Emphatic p (p)	—
23.									Emphatic, explosive Sibilant, ts (ṣ)	
24.									Originally a Mute (ḍ); pronounced later like No. 23	
25.									f	
26.								—	Slightly assibilated p (p')	—

Fig. 42. Characters of the Ethiopic Alphabet

Figure 4. Comparison of Old South Arabian and Ethiopic, from Dillmann 1907 (1974).

〈表 1〉 古代南アラビア文字

翻字　h l ḥ m q w s² r b t s¹ k n ḫ ṣ ṣ³ f ' ' ḍ g ḏ ġ ṭ z ḏ y ṭ z

モニュメンタル体

草書体

出典：Robin (1991), p. 130.

Figure 5. Old South Arabian alphabet alongside its cursive form, from Kōno 2001.

8

Figure 6. Old South Arabian abecedary in South Semitic order, from Küster 2006. The text reads:

q s s
h l ḥ m q w š r b t s k n ḫ ś/ẓ
h l ḥ m q w š ' b t s k n ḫ
f ' ' ḍ g d ġ ṭ z
ḏ y ṯ ṣ

Figure 7. Fragment from a limestone slab with Sabaean dedicatory inscription, first century CE.

Figure 8. An inscription in limestone from the 4th century CE, taken from the Kunsthistorisches Museum in Vienna, **www.khm.at/system2E.html?/staticE/page1549.html**. On the left and right there are monogram ligatures. Here the vertical bar appears to be part of the text layout, rather than being represented by an individual character.
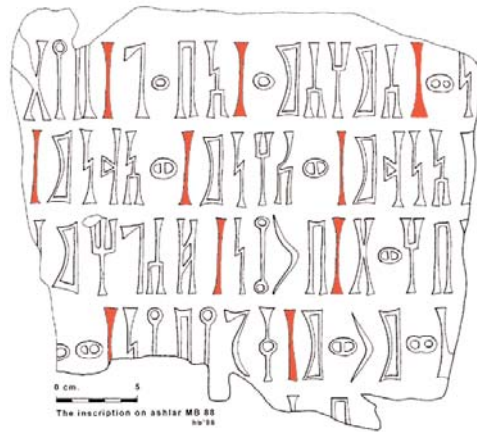
Figure 9. Copy of an Old South Arabian inscription. We have filled in the word separators to highlight them (they are red in the online version of the document). Note the distinctive shapes of the separator.

Figure 10a. A pre-Islamic inscription from the Smithsonian National Museum of Natural History, **www.mnh.si.edu/epigraphy/e_pre-islamic/fig25-musnad2.htm**.

Figure 10b. Transcription of the above. Again, note the distinctive serifs on the word separator.
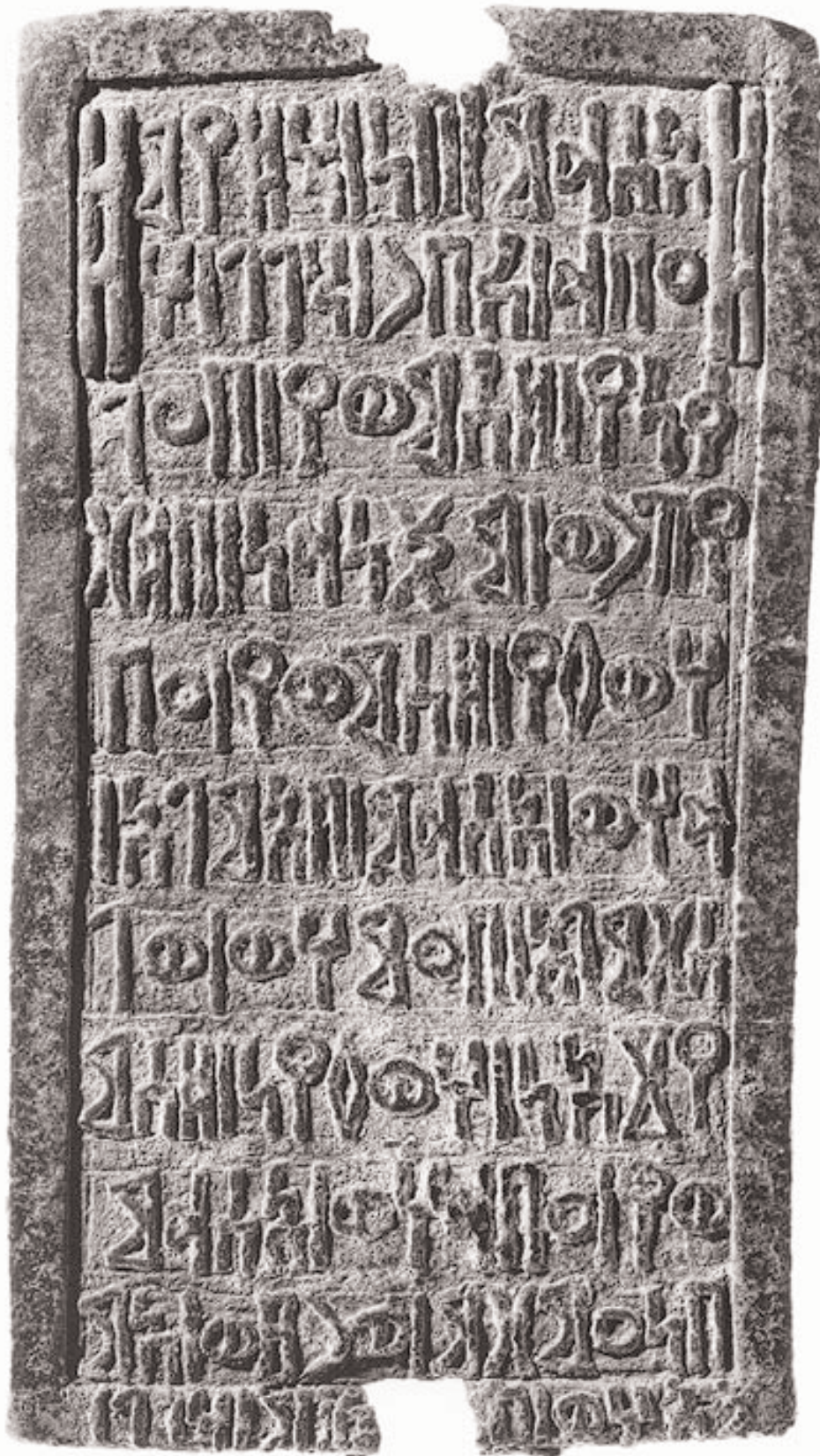
Figure 11. Votive plaque inscribed with Sabaean dedication, late first millennium BCE, from the Metropolitan Museum of Art, **www.metmuseum.org/toah/ho/04/wap/hob_1993.169.htm**

§ 1. 1. Das Alphabet.

Phönizisch	Äthiop.	Altsüdarabisch¹)	Umschrift	Nordarab.
		²⁾	ʾ	ا
			b	ب
			g	ج
			d	د
		²⁾	ḏ, ḏ	ذ
			h	ه
			w, u̯	و
			z	ز
		²⁾	ḥ	ح
		²⁾	ḫ	خ
		³⁾	ṭ	ط
		⁴⁾	ẓ	ظ
			j, i̯, y	ى
		⁵⁾	k	ك
			l	ل
			m	م
		²⁾	n	ن
			s	—

Phönizisch	Äthiop.	Altsüdarabisch¹)	Umschrift	Nordarab.
			ʿ	ع
		⁶⁾	ġ	غ
			f	ف
		⁷⁾	ṣ	ص
		⁹⁾	ḍ, ḏ	ض
			q, ḳ	ق
			r	ر
			š	ش
		²⁾	s	س
			t	ت
			t, ṯ	ث

Figure 12. Chart of the Old South Arabian alphabet from Höfner 1943. Phoenician letters are given for comparison. The close glyph relation between Ethiopic and Old South Arabian letterforms is clear. Latin and Arabic transliterations are also given.

1	I	8	IIIᎩ	60	oᎩ
2	II	9	IIIIᎩ	70	ooᎩ
3	III	10	o	80	oooᎩ
4	· II᎗I	20	oo	90	ooooᎩ
5	Ᏺ	30	ooo	100	ᖴ
6	Iᏺ	40	oooo	1000	ħ
7	IIᏺ	50	Ꭹ		

Zahlentrenner: 目 目

Figure 13. Chart of Old South Arabian numbers from Höfner 1943.

Beispiele für zusammengesetzte Zahlen:

IIᏺo	17
IIᏺoooo	47
ᖴᖴᖴᖴᖴ	500
ħħħħħħħħ	8000
ħħħħħħħħħħħħ	12000
oħħħħħħ	16000 (in rückläufiger Zeile)
oooħ	31000 (in rückläufiger Zeile)
oooo	40000
ooooħħħħħ	45000
oᎩħħħ	63000
ᗺᏢ	150000 (in rückläufiger Zeile)
ᖴᖴ	200000

Figure 14. Examples of Old South Arabian numbers from Höfner 1943.

Script Table

Pharyngals and Laryngals:	ħ	Ᏹ	o	Ψ
	ʾ	h	ɛ	ḫ
Velars:	Ᏹ	⑪	φ	
	ḥ	ʿ	q	
Palatals:	ŕ	⏋		
	k	g		
Dentals and Interdentals:	X	ⵋ	⑄	Ħ
	t	d	ṯ	ḏ
Sibilants:	⑄	⑄	X	⑄
	s¹	s²	s³	s
Emphatics:	⑪	⑪	⑄	⑄
	ṭ	ḏ̣	ṣ	ḍ
Labials:	◊	⊓		
	f	b		
Liquids and Nasals:	٦	)	⑄	⑄
	l	r	m	n
Semivowels:	⏁	⑄		
	w	y		
Numerals:	I Ᏹ o Ꭹ ᖴ ħ			
	1 5 10 50 100 1000			
Numerator bracket:	目			

Figure 15. Chart of the Old South Arabian alphabet and numbers from Beeston 1962.

Row 108: SOUTH ARABIAN DRAFT with three different fonts

	1086	1087	1086	1087	1086	1087
0	Ψ	ᚼ	Ψ	ᚼ	Ψ	ᚼ
1	ᚵ	○	ᚵ	○	ᚵ	○
2	Ψ	日	Ψ	日	Ψ	日
3	◁	ᚵ	◁	ᚵ	◁	ᚵ
4	♦	▷	♦	▷	♦	▷
5	⊕	ᐯ	⊕	ᐯ	⊕	ᐯ
6	≳	Ⅲ	≳	Ⅲ	≳	Ⅲ
7	⊃	⊠	⊃	⊠	⊃	⊠
8	⊓	ᚺ	⊓	ᚺ	⊓	ᚺ
9	✕	ꝯ	✕	ꝯ	✕	ꝯ
A	ᚻ	ᚖ	ᚻ	ᚖ	ᚻ	ᚖ
B	ᚼ	ꝯ	ᚼ	ꝯ	ᚼ	ꝯ
C	ᚴ	ꝯ	ᚴ	ꝯ	ᚴ	ꝯ
D	Ψ	ᚙ	Ψ	ᚙ	Ψ	ᚙ
E	✕	ǀ	✕	ǀ	✕	ǀ
F	◇	◁	◇	◁	◇	◁

hex	Name
60	OLD SOUTH ARABIAN LETTER HOY
61	OLD SOUTH ARABIAN LETTER LAWE
62	OLD SOUTH ARABIAN LETTER HAWT
63	OLD SOUTH ARABIAN LETTER MAAY
64	OLD SOUTH ARABIAN LETTER QAAF
65	OLD SOUTH ARABIAN LETTER WAWE
66	OLD SOUTH ARABIAN LETTER HLAWT
67	OLD SOUTH ARABIAN LETTER RES
68	OLD SOUTH ARABIAN LETTER BET
69	OLD SOUTH ARABIAN LETTER TAWE
6A	OLD SOUTH ARABIAN LETTER SAAT
6B	OLD SOUTH ARABIAN LETTER KAAF
6C	OLD SOUTH ARABIAN LETTER NAHAAS
6D	OLD SOUTH ARABIAN LETTER KHARM
6E	OLD SOUTH ARABIAN LETTER SAWT
6F	OLD SOUTH ARABIAN LETTER AF
70	OLD SOUTH ARABIAN LETTER ALF
71	OLD SOUTH ARABIAN LETTER AYN
72	OLD SOUTH ARABIAN LETTER HLAFFAA
73	OLD SOUTH ARABIAN LETTER GAML
74	OLD SOUTH ARABIAN LETTER DANT
75	OLD SOUTH ARABIAN LETTER GHAAF
76	OLD SOUTH ARABIAN LETTER TAYT
77	OLD SOUTH ARABIAN LETTER ZAY
78	OLD SOUTH ARABIAN LETTER DHAY
79	OLD SOUTH ARABIAN LETTER YAMAN
7A	OLD SOUTH ARABIAN LETTER THAY
7B	OLD SOUTH ARABIAN LETTER TSADAY
7C	OLD SOUTH ARABIAN LETTER THADAY
7D	OLD SOUTH ARABIAN NUMERATOR BRACKET
7E	OLD SOUTH ARABIAN NUMBER ONE
7F	OLD SOUTH ARABIAN NUMBER FIFTY