

A guide to numerals in Syriac

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1 Syriac alphabetic numerals

Syriac numerals are traditionally written with the letters of the alphabet. The system is very similar to the alphabetic numerals traditionally used in Hebrew, Arabic (the *abjadi* numerals), Armenian, Greek and Cyrillic. Where it is necessary to make sure that the reader does not try to read them as words they are written overlined. Thus, the numeral for 35 is written $\overline{\text{ܕܗ}}$, and the overline tells us not to read it as *leh* ‘to him’ or *lah/loh* ‘to her’. The overline is often omitted where the context means it can only be read as a numeral, when it is a page number in the header or footer, or when it is followed by the name of a month (e.g. $\overline{\text{ܕܗ}} \text{ܩܘܢܝܢ}$ is 25 December).

The appendix to Theodor Nöldeke’s *Kurzgefaßte syrische Grammatik* offers a short introduction to the use the letters of the Syriac alphabet as numerals. After briefly noting how the letters from } to ܠ suffice for the numerals 1–499, he goes on to describe how the decades from ܥ to ܘ are recycled to provide the numerals for 500–900, taking the raised point to distinguish them as centuries rather than their usual decade values. Therefore, the letter ܘ, which is usually

conjunction ‘and’. Likewise other inseparable particles can be written before numerals and may look like they are to be interpreted as numerals, but are to be read grammatically. The letter , in front of a numeral signifies that it is to be understood as an ordinal — ܦܘܘܩܝܐ = the fortieth.

1.1 Higher numerals: thousands, myriads and beyond

The numeral 1000 is written with the letter ܕܠܝܘܢܝܐ. Seeing as ܕܠܝܘܢܝܐ read as a numeral and standing before any other letter cannot be read as 1, it must be read as 1000. Thus, ܕܠܝܘܢܝܐܘܢܝܐ can only be read as 1002. Likewise, the other units can be used as thousands, so the year 2010 is ܕܠܝܘܢܝܐܘܢܝܐܘܢܝܐ.

Nöldeke remarks that a small oblique stroke is sometimes placed below a unit when it stands for a thousand. Thus, 1002 can be written ܕܠܝܘܢܝܐܘܢܝܐ, and 2010 as ܕܠܝܘܢܝܐܘܢܝܐ. Another system is to use the same raised point used to create higher centuries as above — ܕܠܝܘܢܝܐ and ܕܠܝܘܢܝܐ.

Robert Payne Smith’s *Thesaurus Syriacus* explains some variant signs used for creating higher numerals in its entry for ܕܠܝܘܢܝܐ. The entry outlines three higher numerals using ܕܠܝܘܢܝܐ: ܕܠܝܘܢܝܐ is 1000, ܕܠܝܘܢܝܐ is 10,000 (a myriad) and ܕܠܝܘܢܝܐ is 10,000,000 (a thousand myriads).

Payne Smith cites Georgius Michael Amira’s *Grammatica Syriaca, siue Chaldaica* as his source for this information. However, that old grammar actually gives ܕܠܝܘܢܝܐ as the numeral for 1000, with an oblique stroke below; ܕܠܝܘܢܝܐ as the numeral for 10,000, a myriad; two oblique strokes below — thus ܕܠܝܘܢܝܐ — represents a thousand myriads, or 10,000,000; two oblique strokes, one above and one below — thus ܕܠܝܘܢܝܐ — represents a thousand thousand myriads, or 10,000,000,000.

Just to confuse things, Louis Costaz’s *Dictionnaire syriaque-français* notes the symbols ܕܠܝܘܢܝܐ and ܕܠܝܘܢܝܐ with the same values as Payne Smith, but gives Georgius Michael Amira’s ܕܠܝܘܢܝܐ as an alternative for 1000, and uses ܕܠܝܘܢܝܐ (or is it ܕܠܝܘܢܝܐ?) for the smaller value of 100,000.

We can compound these systems thus:

Table 2: Higher numerals with ܕܠܝܘܢܝܐ						
1	1000	10,000	100,000	1,000,000	10,000,000	10,000,000,000
10 ⁰	10 ³	10 ⁴	10 ⁵	10 ⁶	10 ⁷	10 ¹⁰
ܕܠܝܘܢܝܐ	ܕܠܝܘܢܝܐ or ܕܠܝܘܢܝܐ or ܕܠܝܘܢܝܐ	ܕܠܝܘܢܝܐ	ܕܠܝܘܢܝܐ or ܕܠܝܘܢܝܐ	wanting	ܕܠܝܘܢܝܐ or ܕܠܝܘܢܝܐ	ܕܠܝܘܢܝܐ

However, it should be remembered that no unified system is in place and writers are wont to develop systems to mark higher numerals as the need presents itself.

Simply reading through the entries for the letters of the alphabet in Robert Payne Smith’s *Thesaurus Syriacus* and Jessie Payne Smith’s *A Compendious Syriac Dictionary* show a range of inconsistencies in how the higher numerals are marked. See the appendix on p. 5 for the full text of each entry.

For example, the population of Iraq is around 31,234,000, which can be written

- ܕܠܝܘܢܝܐܘܢܝܐܘܢܝܐ or ܕܠܝܘܢܝܐܘܢܝܐܘܢܝܐ, for 3 thousand-myriads, 123 myriads, 4 thousand
- ܕܠܝܘܢܝܐܘܢܝܐܘܢܝܐ, for 31-thousand-and-234 thousands

1.2 Fractions

There is little documentation on the use of Syriac letters to represent fractions. However, a simple system of reciprocal fractions (that is fractions in which the numerator is 1) is formed by placing an oblique stroke above the letter representing the denominator. Thus, ܘܘܐ represents $\frac{1}{2}$, and ܘܘܐܘܘܐ represents $\frac{1}{100}$. These are discussed in Amira’s grammar, but can also be found in George Phillips’s *Syriac Grammar* and Rubens Duval’s *Traité de Grammaire syriaque*.

2 Eastern Arabic numerals

Syriac has regularly also used Eastern Arabic numerals, the numerals commonly used with Arabic, over the last millennium. These numerals are commonly found on manuscripts to mark page numbers. Although they have different shapes to Western Arabic numerals (the 1,2,3... we use in English) the system works in exactly the same way.

Western Arabic numerals	0	1	2	3	4	5	6	7	8	9
Eastern Arabic numerals	⋅	١	٢	٣	٤/٥	٥/٥	٦/٦	٧	٨	٩

For example

- 12 = ١٢
- 20 = ٢٠
- 365 = ٣٦٥ or ٣٦٥
- 2010 = ٢٠١٠

Just like our Western numerals, the Eastern Arabic numerals arrange high to low figures from left to right on a purely decimal system. The alternative forms ٦, ٥, ٤ are used in Iran.

3 Aramaic sign–value numerals

At the close of Nöldeke’s Appendix on numerals, he offers the reader a rather cryptic statement,

„In gewissen Handschriften findet sich noch ein sehr altes, auf einem ganz andern Princip beruhendes Ziffernsystem.“

This system is described in the introduction to Duval’s *Traité de Grammaire syriaque*. The ancient varieties of Aramaic employ a numeral system similar to that of the ancient Egyptians, to which it is likely related; it is also somewhat similar to Roman numerals. It is a mostly additive system of tally marks that employs special signs for certain ‘round’ numbers. Variations of this system are evidenced in Elephantine, Nabataean, Palmyrene, Hatran and early Syriac. The Syriac variant has signs for 1= ܘܘܐ, 2= ܘܘܒ, 5= ܘܘܘܘܐ, 10= ܘܘܘܘܘܐ, 20= ܘܘܘܘܘܘܐ and 100= ܘܘܘܘܘܘܘܘܐ (the latter being a multiplicative

sign rather than additive). The numerals are written with the highest on the right and lowest on the left, with the exception that the sign for 1 is always written before 2, and so 8 is written 𐤠𐤁=5+1+2. The number 365 is written as 𐤁𐤐𐤐𐤒𐤓=(1+2)×100+20+20+20+5.

Table 3: System of old Syriac sign–value numerals

1	2	3	4	5	6	7	8	9	10	11	12	15	19	20	30
𐤀	𐤁	𐤂	𐤃	𐤄	𐤅	𐤆	𐤇	𐤈	𐤉	𐤊	𐤋	𐤌	𐤍	𐤎	𐤏
					40	100	101	200	203		697				
					𐤐	𐤑	𐤒	𐤓	𐤔	𐤕	𐤖	𐤗	𐤘	𐤙	𐤚

Two other signs exist in the system, but they are not always used. The symbol 𐤛 stands for the number 500. Thus, the numeral for 697 above could be written as 𐤛𐤗𐤐𐤐𐤒𐤓. The symbol 𐤓𐤓 or 𐤓 is an oddity as it either represents the number 300 or 800; the understanding of it as 800 obviously includes an implied 𐤛.

There is no evidence for how thousands or higher numerals should be written in this system. Only the Aramaic numerals at Elephantine witness to a thousands sign, which operates as a multiplier in the same manner as the hundreds sign.

Duval shows a couple of examples of hybrid numerals that combine these sign–value numerals with alphabetic numerals: 820 𐤁𐤓𐤓, 824 𐤁𐤓𐤓, 840 𐤁𐤓𐤓, 563 𐤛𐤗𐤐𐤐𐤒𐤓.

4 Appendix: on numerals in the Payne Smiths’ dictionaries

Below are the collected entries for the numerical utility of each letter of the Syriac alphabet from the two great dictionaries of the Payne Smiths, father and daughter (tables 4 and 5, pp. 7–8). I have included them as they witness a few irregularities of the system of alphabetic numerals outlined above. While many of the entries are straightforward, I shall first excerpt the oddities.

Robert Payne Smith’s entry for 𐤁 gives the numeral for 2000 as 𐤁. However, Jessie Payne Smith suggests that the higher numerals created with 𐤁 are different in East- and West-Syriac tradition: the West Syriac having 𐤁 for 2000, while the East Syriac has 𐤁 for 2000 and 𐤁 for 20,000.

Again, with the letter 𐤂, the two differ over the marking of the numeral 7000. Robert gives 𐤂, which is in keeping with the system described above, while Jessie gives 𐤂.

For 𐤃, Robert gives the unexpected value of 800 for the sign 𐤃, rather than 8000.

For 𐤄, Robert gives the unusual mark of 𐤄 for 300, rather than the expected 𐤄. Jessie gives the latter sign but values it at 3000!

For 𐤅, both Payne Smiths give 𐤅 as the sign for 700.

For 𐤆, both agree that the underline marks myriads, and thus 𐤆 is 200 myriads, or 2,000,000.

Then they both change their minds by making 𐤆 value just 4000!

5 Bibliography

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Table 4: Numerical descriptions of letters ܘ-ܝ in dictionaries

letter	Robert Payne Smith's <i>Thesaurus Syriacus</i>	Jessie Payne Smith's <i>Compendious Syriac Dictionary</i>
ܘ	Quae ut nota numeralis valet <i>unus, a</i> ; cum ܘ praefixa <i>primus, a</i> ; cum lineola subscripta in hunc modum ܘ 1,000, ܘ 10,000, ܘ 10,000,000, teste Amira, Gr.Syr. pp. 16–21.	Used as the cardinal numeral 1; with ܘ prefixed the ordinal, <i>the first</i> ; with a point beneath ܘ it stands for 1,000; with a line beneath ܘ 10,000; with two points beneath ܘ 10,000,000.
ܝ	Ut nota numeralis valet <i>duo</i> , cum ܝ praefixa <i>secundus, -a</i> cum lineola subscripta ܝ <i>duo millia</i> , ib. 16.	The number 2; with ܝ <i>the second</i> ; with a line beneath ܝ 2,000, E-Syr. ܝ 2,000, ܝ 20,000.
ܚ	Ut nota numeri valet <i>tres</i> ; it. cum ܚ <i>tertius</i> .	The cardinal number 3; with ܚ the ordinal, <i>the third</i> .
ܛ	In numerando valet ܛ <i>quatuor</i> , Amir. 13; it. ܛ <i>quatuor millia</i> , ib. 16; it. ܛ <i>quadraginta millia</i> , ib. 17. Cum ܛ praefixa <i>quartus</i> , ܛܚ ܛ, BHSchol. in Job. ix. 7.	The number 4; with another ܛ <i>the fourth</i> , ܛܛ; ܛ 4000; ܛ 40,000.
ܠ	In numerando valet ܠ <i>quinque</i> , Amir. 12, et ܠܚ <i>quintus</i> , BHSchol. in Job. xii. 18.	The cardinal number 5; ܠܚ ordinal <i>the fifth</i> .
ܡ	In numerando valet <i>sex</i> , et ܡܚ <i>sextus</i> .	The number 6; ܡܚ <i>the sixth</i> .
ܢ	In numerando valet <i>septem</i> , et ܢܚ <i>septem millia</i> , Amir. 12, 16.	The number 7; ܢܚ <i>the seventh</i> ; ܢܚ 7000.
ܥ	In numerando valet <i>octo</i> , cum ܥ praef. <i>octavus</i> ; it. ܥܚ <i>octingenti</i> , Amir. 13, 16.	The numeral 8, with ܥ prefixed <i>the eighth</i> .
ܦ	In numerando valet <i>novum</i> ; it. cum ܦ praef. <i>novus</i> .	The number 9, with ܦ <i>the ninth</i> .
ܩ	In numerando valet <i>decem</i> , cum puncto supra posito ܩ, <i>centum</i> , Amir. 13, 15; cum ܩ praef. <i>decimus, a, um</i> , BHSchol. in Job. xxvii. 2.	The number 10; with a point above, ܩ, 100; with ܩ prefixed, ܩܦ, <i>the tenth</i> .
ܩܘܢ	In numerando valet 20, et ܩܘܢ 200, et duplici scribitur Coph, initiali et finali, sic tamen ut finalis tollatur, quum numero crescit, ut ܩܘܢ 21, ܩܘܢܘܢ 22, ܩܘܢܘܢܘܢ 201, ܩܘܢܘܢܘܢܘܢ 202, etc., cf. Lud. de Dieu, Heb. Gr.	The numeral 20, ܩܘܢ 21, ܩܘܢܘܢ 22, with a point ܩܘܢ 200, ܩܘܢܘܢ 201, ܩܘܢܘܢܘܢ 202 &c.

Table 5: Numerical descriptions of letters 𐤌–𐤎 in dictionaries

letter	Robert Payne Smith's <i>Thesaurus Syriacus</i>	Jessie Payne Smith's <i>Compendious Syriac Dictionary</i>
𐤎	In numerando valet 𐤎 30, 𐤍 31, etc., 𐤎 300, 𐤍 301, etc., Amir. 15.	As a numeral, 𐤎 30, 𐤍 31, 𐤎 32 &c., 𐤎 3000.
𐤍	In numerando valet <i>quadraginta</i> , Amir. 13; 𐤎 𐤌𐤍𐤁𐤀𐤌 <i>carmen quadragesimum</i> , B.O. iii. i. 331; at 𐤍 <i>quadringenti</i> et 𐤍 <i>quadraginta millia</i> , Amir. 15, 19.	The numeral 40, 𐤍 𐤌𐤍𐤁𐤀𐤌 <i>Discourse</i> 40; 𐤍 400.
𐤌	In numerando valet <i>quingenta</i> , et 𐤌 <i>quingenti</i> , Amir. 13, 15; it. cum 𐤌, praef. <i>quingagesimus</i> .	The number 50, with 𐤌, <i>the fiftieth</i> .
𐤋	quae in numerando <i>sexaginta</i> valet, et cum puncto supra posito 𐤋 <i>sexcenti</i> , Amir. 13, 15.	The numeral 60; with a point, 𐤋, 600.
𐤊	Quae numerando valet <i>septuaginta</i> , et cum 𐤌, praef. <i>septuagesimus</i> ; it. cum linea supraducta 𐤊 <i>septingenti</i> .	As a numeral 70; with 𐤌, prefixed <i>the seventieth</i> ; with a line above, 𐤊, 700.
𐤉	Quae numerando <i>octoginta</i> valet, et cum 𐤌, praef., <i>octogesimus</i> , it. cum puncto supra posito 𐤉 <i>octingenti</i> , Amir. 6, 13, 15, BHGr. 36. 9, 11, BH-Schol. in Act. i. 2, Ephr. i. 308 B.	As a numeral <i>eighty</i> ; with 𐤌, prefixed <i>the eightieth</i> ; with a point above, 𐤉, 800.
𐤈	[?] In numerando valet <i>octoginta</i> , et cum puncto superscripto, 𐤈, <i>octingenti</i> , Amir. 13, 15.	The number 90, with a point above, 𐤈, 900.
𐤇	In numerando valet 𐤇 <i>centum</i> ; it. 𐤇, <i>centesimus</i> .	The numeral 100, 𐤇, <i>the one hundredth</i> .
𐤆	In numerando valet <i>ducenti</i> ; cum 𐤌, praefixa <i>ducentesimus</i> ; cum linea supposita 𐤆, 2,000,000, Amir. 14–20.	The numeral 200, 𐤆, <i>the two hundredth</i> ; with a line beneath, 𐤆, 2,000,000.
𐤅	In numerando valet <i>trecenti</i> , ib. 14; it. cum 𐤌, praefixa <i>trecentesimus</i> .	The number <i>three hundred</i> , with 𐤌, 𐤅, <i>the three hundredth</i> .
𐤄	In numerando valet <i>quadringenti</i> , cum 𐤌, praefixa <i>quadringentesimus</i> , cum lineola subscripta, 𐤄, <i>quatuor millia</i> , Amir. 14, 20.	The numeral 400; with 𐤌, 𐤄, <i>the four hundredth</i> ; with a line beneath, 𐤄, 4000.