Proto-Elamite Sign Frequencies[1]

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§1. Efforts to decipher the proto-Elamite writing system have long been hampered by the absence of basic tools such as a reliable sign list. Recently, the CDLI team has transliterated all known proto-Elamite texts using the sign list of P. Meriggi.[2] We currently count approximately 1,600 texts and more than 10,000 lines of text.[3] From this raw data set we have produced a sign list with ca. 1,900 non-numerical signs.[4] This number is deceptively high, as discussed below. Except for the fact that some of the proto-Elamite texts appear to be numero-ideographic, while others appear to have a more developed structure, we have found no internal development in the writing system.[5] The sign repertoire of the much later so-called linear Elamite shows no resemblance to that of the proto-Elamite; the few similar ideograms—the linear inscriptions lack numerical notations entirely—are graphically as close to the signs of the ancient Chinese oracle bone inscriptions as they are to the much older proto-Elamite signs.[6]

attested one time	attested two times	attested a maximum of 9 times
1050 signs	300 signs	1700 signs

Table 1: Frequency 1-9

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1 The creation of the proto-Elamite writing system followed rapidly upon that of the proto-cuneiform writing system of neighboring Southern Mesopotamia. Proto-Elamite exhibits a few ideographic loans from proto-cuneiform and a nearly complete adoption of its metrological systems and numerical signs. Proto-Elamite was used over a wide geographical area comparable to the extent of modern day Iran, stretching from Susa in the west — in close proximity to Mesopotamia — to Shahr-i Sokhta in the east — closer to the Indus valley than to Susa.

2 P. Meriggi, *La scrittura proto-elamica. Parte II^a: Catalogo dei segni* (Roma: Accademia nazionale dei Lincei, 1974). The problems faced in using this sign list have been commented upon in recent publications [P. Damerow and R. Englund; *The Proto-Elamite Texts from Tepe Yahya*, 1989. And again R. Englund, The State of Decipherment of Proto-Elamite, forthcoming (preprint no. 183 at the Max Planck Institute for the History of Science web-server: http://www.mpiwg-berlin.mpg.de/Preprints/P183.PDF)]

3 Compare this to the 6,000 proto-cuneiform texts with ca. 50,000 occurrences of non-numerical signs.

4 Although generated electronically this sign list follows that of P. Meriggi, see footnote no. 2.

§2. In a recent publication, P. Damerow presented statistics of proto-cuneiform sign frequencies[7] and concluded that the rapid development in sign forms visible in the corpus indicated the way in which writing

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5 Proto-cuneiform, on the other hand has yielded evidence for an evolution in the repertoire of signs, see R. K. Englund, "Texts From The Late Uruk Period," in P. Attinger et al., eds., *Mesopotamien, Späturuk-Zeit und Frühdynastische Zeit* (=*OBO* 160/1: Freiburg 1998), p. 67.

6 The Chinese oracle bones from Anyang are traditionally dated to the Shang period ca. 1200 to 1050 BC. However, precursors predate these inscriptions by several centuries. I do not suggest any relationship between the two except for a purely graphic similarity.

7 P. Damerow, "The Origins of Writing as a Problem of Historical Epistemology" (1999), p.11 - 13. [Preprint no. 114 at the Max Planck Institute for the History of Science web-server: http://www.mpiwg-berlin.mpg.de/Preprints/P114.PDF]. See also R. Englund, 1998, p. 68 fn. 131, for a comparable survey, and see p. 70-71 for a list of the most frequent proto-cuneiform signs.

began.[8] Initially proto-writing featured a large body of signs and variants which later progressed into a system made up of a limited number of signs in a standardized repertoire. An investigation of the frequency of the proto-Elamite signs suggests a statistical distribution of signs resembling that of proto-cuneiform. In both writing systems, a multitude of signs occur only once, and a small core of signs were used regularly throughout the entire body of texts.[9]

§4. A number of signs are attested more frequently (table 2).

§5. If we exclude the variants or group them together we see changes in the statistical distribution of signs as indicated by the example M36 as shown by table 2. It is clear that in some, and possibly in most cases the variants can be discounted.[11] In table 2, M36[12] has been highlighted and appears twice: in the group of

100+	200+	400+	500+	700+
M305 (107)	M387 (206)	M218 (453)	M388 (528)	M288 (709)
M36 (128)	M9 (213)			
M32 (132)	M297 (222)			
M66 (139)	M157 (247)			
M1 (152)	M346 (253)			
M263 (164)	M54 (266)			
M376 (172)	M36-A-Z (221)			
M96 (194)	M371 (290)			

Table 2: Frequency 100+[10]

§3. Of the approximately 1,900 non-numerical signs, ca. 1,050 appear only once, ca. 300 signs appear twice. Approximately 1,700 signs are represented a maximum of 9 times.

100+ and in the group 200+. M36 is one of the most productive signs of the proto-Elamite sign repertoire, but many of its variants occur only very rarely. When all the variants are added together the frequency of M36 jumps from 128 to 221 occurrences. The same holds true for certain other signs such as M387, but not for all signs.

8   P. Damerow, 1999, p.11-12.

9   No attempts have been made to investigate a possible regional or institutional variation in the sign repertoire.

10   M36 is highlighted to compare its frequency when computing each variant alone as a unique sign and when counting all variants together.

11   In P. Meriggi's sign list of ca. 400 entries, the signs are grouped together based on graphic similarity. The same was the case with the first sign list of the archaic texts from Uruk. A. Falkenstein's sign list of the archaic signs, *ATU* 1, included ca. 890 ideographic signs. The sign list of H. Nissen and W. Green, *ATU* 2, brought this number down to ca. 770 ideograms. These numbers were achieved based in many instances only on graphic similarities of the signs (R. Englund, 1998, p. 66-67). The sign list of the archaic signs was later expanded to cover all variants and the number reached 1,900. Note that this agrees

well with our result for the proto- Elamite sign list. The archaic sign list may be reduced to less than 900 entries by removing sign-combinations and derivations (Englund, 1998, p. 68), and may be reduced even further with continuing contextual analysis. We hope to achieve the same reduction in numbers of signs in the proto-Elamite sign repertoire once the semantic grouping and exclusion of variants proceeds. The proto-Elamite sign list of J. de Morgan published with V. Scheil's *MDP* 6, pp. 85-114, contains 989 signs (pp. 83-85 is a sign list of 62 linear Elamite signs). A sign list with 1,582 entries was prepared for Scheil's *MDP* 17 by Mlle. M.-M. de Mecquenem (pp. 31-66). *MDP* 26 has no sign list. The sign list in *MDP* 31 (by MM. R. De Mecquenem) pp. 44-146 contains 5,529 signs (pp. 147-150 is a sign concordance between proto-Elamite and cuneiform signs!).

12   See table 3 for images of the signs discussed here.

Name	Drawing	Name	Drawing	Name	Drawing
M1		M54		M305	
M9		M66		M346	
M32		M157		M371	
M36		M218		M387	
M36-AD		M288		M388	
M36-TA		M297			

Table 3: Drawings of the most frequent proto-Elamite signs

§6. Except for M157[13] and M346[14], all of the most frequent signs[15] in our statistical analysis are signs of either grain products, containers[16] or persons.[17]

§7. The primary objective of this brief investigation is to indicate how we are working on our data set, as well as to facilitate the creation of a new sign list. The new sign list will be electronic, and it will feature sorting possibilities according to both graphic and semantic value, hopefully aiding the further study of proto-Elamite.

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13 A common header in the proto-Elamite corpus, M157 has been interpreted by the editors of MDP as either a granary (De Mecquenem in *MDP* 31), or as a proto-Elamite version of the Mesopotamian sign DUB (tablet) (V. Scheil *MDP* 6 and following). In his "Essai de déchiffrement de textes en écriture proto-Élamite" (*MDP* 6 pp. 119ff.), V. Scheil translated the proto-Elamite texts according to a system of transliteration values adopted from cuneiform. In his notes to *MDP* 17, 1 in *MDP* 17 p. 1 V. Scheil wrote: "Le premier signe de la tablette est préliminaire et indique un compte. Comme en babylonien (?), il figurerait la tablette elle-même. Deux autres signes (dont le premier est composé) seraient les noms de personnes." The question mark is Sheil's own. The first sign in this text is M157.

14 Although M346 is graphically closest to the proto-cuneiform sign MAŠ, it seems to have had the same meaning as the proto-cuneiform sign UDU_a.

15 Leaving aside M1 (one horizontal stroke) and M9 (two horizontal strokes), which are both assumed to be signs pertaining to the structure of the document rather than to the semantics.

16 M32, M36, M66, M218, M288, M297, and M305.

17 M54, M371, M387, and M388.