MacDonald P. Jackson

STRUCTURAL PARALLELISM ON THE PHAISTOS DISC: A STATISTICAL ANALYSIS

In a recent article I sought, with the aid of some simple statistical tests, to assess Benjamin Schwarz's argument for believing that the pictorial signs stamped on the Phaistos Disc record, by means of a syllabary of the Cypro-Minoan kind, a language closely related to the proto-Greek of Linear B.[1] The analyses were found to support Schwarz's basic claims. In this sequel, I employ a range of mathematical tests to demonstrate the significance of certain symmetries between the disc's two sides and of patterns in the grouping of signs. The investigation confirms some old hypotheses, adds fresh observations, and includes one innovative suggestion. I postpone till the latter part of the article a discussion of the ways in which my conclusions differ from those of other scholars who have sought to analyse the structural features of the Phaistos Disc's text.

Sir Arthur Evans, struck by the neatness with which the inscription fits each side of the disc, by certain parallelisms between the two sides, and by the repetition of series of sign-groups within Side A, concluded that the text was "a metrical composition divided into two equal staves" – possibly a victory chant or incantation in honour of the Great Mother.[2] This romantic proposal satisfies the sense

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[1] MacDonald P. Jackson, A Statistical Study of the Phaistos Disc, Kadmos 38 (1999), pp. 19–30. Basic information about the disc is given within the body of the article, and may be supplemented by reference to studies mentioned in the notes. Yves Duhoux offers a judicious summary of what is known about the disc in Le Disque de Phaestos: Archéologie, Épigraphie, Édition Critique, Index (Louvain 1977). Figures 1, 2, and 3 of the present article present Arthur Evans's line-drawings of the two sides of the disc (with the sign-groups renumbered) and his inventory of signs, as in Scripta Minoa (Oxford 1909), I, pp. 276–82. Besides the Phaistos Disc's 241 clearly readable signs, there is an erasure in sign-group A 8, read by Arnold Bradshaw as the dotted triangle, sign 43, The Missing Sign of the Phaistos Disk, Kadmos 15 (1976), p. 177.

[2] Scripta Minoa, I, p. 291.

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of wonder evoked by the picturesque nature of the Phaistos Disc and the mysteries surrounding it. Yet repetition and parallelism are properties not only of poems, chants, hymns, and prayers but also of the most dreary legal documents, and only a very short piece of writing, whatever the language and content, would not contain a few words wholly or partly repeated.

Repetitions occurring on one side of the disc can do little to support Evans's theory, but the indications of "an artificial arrangement, to a certain extent identical in both halves of the inscription"[3], are even more striking than Evans realized, and evidence that he over-looked does seem to favour his belief that the composition falls into some form of metre, or is at least, to a considerable degree, formulaic.

Evans drew attention to the use within the inscription of the thorn or virgule, a stroke generally sloping to the right, but sometimes nearly vertical, under certain signs to the left of sign-groups, when the text is read clockwise from rim to centre and with human figures upright. He noted that virgules (as I shall call these strokes) tended to separate series of sign-groups into threes or multiples of threes and to segment each side of the disc in similar ways. Side A contains thirty-one sign-groups, or words (as they have usually been called), Side B thirty, the "words" being marked off by vertical lines.[4] In Scripta Minoa Evans assumed that the inscription was to be read from the centre of the spiral outwards, and hence anticlockwise, and postulated that A 1, which exhibits the virgule under the sign nearest to A 2, represented an extra terminal word set off in this way from the rest of the inscription. The subtraction of this sign left thirty sign-groups on either side of the disc, somewhat similarly partitioned by virgules. By the time he wrote The Palace of Minos, Evans had been convinced, quite properly, by the arguments of Della Seta that the inscription began at the circumference and ran clockwise towards the centre. A 1, now seen to be the first sign-group on Side A, was explained as "a kind of exordium".[5]

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[3] Scripta Minoa, I, p. 291.

[4] Duhoux, Le Disque, pp. 40–41, assesses the evidence for supposing that Sides A and B are correctly so designated; he concludes that Side A was printed, and is to be read, before Side B.

[5] The Palace of Minos (London 1921–36), I, p. 661. For Evans's account of Della Seta's arguments see Palace, I, pp. 649–51. That Evans was right to accept them was demonstrated by Duhoux, Le Disque, pp. 22–31, and independently by Arnold

My own suggestion is that the sign-group to be dropped in the interests of symmetry is A 13, which is intermediate between the twelve sign-groups on the circumference and the eighteen in the inner coils of the spiral. It consists of only two signs, one of which occurs nowhere else on the disc, and because of its position is enclosed by doubly long vertical lines on either side. Evans speculated on "the possibility that the Disk itself was only one of a continuous series containing further verses of a longer metrical composition, imprinted with stamps from the same beautiful fount . . . But in that case we should have expected some visible sign of numeration whereby its place in such a series might be determined."[6] It seems to me possible that A 13 is a mark of identification of such a kind.[7] Omitting it from the text proper would leave each side with a dozen sign-groups on the circumference and one-and-a-half dozen sign-groups along the inner coils.

Let us provisionally assume that A 13 is, in a sense, detachable and see what symmetries ensue. In Table 1, sign-groups are listed in order for Side A in the left hand column and for Side B in the right. Signs are given the code numbers first used by Evans, but the groups are renumbered (1–30/31 rather than 31/30–1) as in the edition by Duhoux. The virgule is indicated by an asterisk, while a double slash indicates the long line that ends the last sign-group on the circumference.[8] A 13 is bracketed and given a line to itself.

Some elements of parallelism between the two sides are immediately apparent. Thus A 19 is repeated in A 22, the sign-group each time being followed by the virgule, which also ends A 21. B 18, which is aligned with A 19, is likewise repeated in B 21, the sign-

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Bradshaw, The Overcuts on the Phaistos Disc, Kadmos, 16 (1978), pp. 99–110; see also Jean Faucounau, Le sens de l'écriture du Disque de Phaistos, Kretologia 12–13 (1981), pp. 245–50.

6 Scripta Minoa, I, p. 293.

7 An account of such identifying marks in ancient Babylonian and Assyrian writings is provided by Hermann Hunger, Babylonische und Assyrische Kolophone (Neukirchen–Vluyn 1968), Band 2 in the Alter Orient und Altes Testament series.

8 Doubts have persisted as to how many virgules occur, with commentators giving figures that range from eleven to twenty-four. In Scripta Minoa, I, p. 288, Evans states that there are "15 in all – 9 on Face A and 7 on Face B". This curious piece of arithmetic is accompanied by confusion over what sign is to the right of the virgule in A 22, which is Evans's A 10 (see p. 288, notes 2 and 6). Evans specifically rejects as an "accidental scratch" the apparent virgule in B 30). Duhoux has cleared up the confusion: there are seventeen virgules, including the mark after B 30, which is authentic and intentional (Le Disque, pp. 36–39).

group each time being followed by the virgule, which also ends B 20.[9]

Does a statistical test support the view that the virgule tends to divide Sides A and B into similar sections? In Table 1, Side A five times has a virgule in the same row as Side B, four times Side A has one where Side B does not, and twice Side B has one where Side A does not, while in nineteen rows neither side has a virgule. When these figures are arranged in a 2 x 2 contingency table and tested by chi-square (with Yates's correction) against chance expectation, the tendency for virgules on Side A to be paired with virgules on Side B is found to be statistically significant well beyond the 5 per cent level (*chi-square* = 4.884, 1 df, $p < 0.05$).[10] The parallelism can hardly, therefore, be due to chance.

One notices further, reading down the parallel columns of Table 1, a slight tendency – it is no more than that – for long words (sign-groups) on Side A to be matched with long words on Side B, and shorter words with shorter words. This impression can be checked by calculating the Pearson product moment correlation coefficient for word length between the thirty Side A and thirty Side B sign-groups.[11] The result is $r = 0.373$, 28 df, $p < 0.05$, which implies that this parallelism also is not due to chance.[12] Correlation is not high, accounting for only 14 per cent of the total variance, but it does suggest that the two sides are built upon much the same phrase and sentence structure.

Even more interesting is the fact that a disproportionate number of virgules fall after every third sign-group. This is most readily apparent when, for each side, the sign-groups are arranged in "lines" of three sign-groups each, as in Table 2. In Table 2 the virgule ends a line eleven times, and comes within the line six times. Thus eleven of the twenty final positions, but only six of the forty internal positions, are occupied by the virgule. Assessing this discrepancy by Yates's chi-square, we obtain *chi-square* = 8.627, 1 df, $p < 0.005$, which

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[9] The sign-groups noted are, of course, part of a larger parallelism within the two sides (but not between them): B 18, B 21, B 26; A 14–16, A 20–22.

[10] All probabilities in this article are two-tailed. Descriptions of the various statistical tests used can be found in Anthony Kenny, The Computation of Style: An Introduction to Statistics for Students of Literature and Humanities (Oxford 1982).

[11] A 13 is regarded as separable and so is omitted from this and subsequent computations.

[12] The probability is less than one in twenty. However, the correlation falls short of the $p = 0.01$ (one in a hundred) level of confidence.

means that the probability is less than one in two hundred that the result is due to chance.

Fifteen of the twenty lines in Table 2 have eleven to thirteen signs, the average being twelve. Table 3 places the figures for the numbers of signs in the twenty lines of Table 2 beside figures for ten twenty-line samples in which the order of sign-groups had been randomized.[13] Numbers of signs per three-word line in the actual Phaistos Disc, in the arrangement of Table 2, are clearly more uniform than the randomly constituted threesomes, for which the variance is always greater. These results are consistent with the Table 2's reflecting metrical organization, but they may simply register the distinction between meaningful, consecutive utterance and a haphazard scattering of unconnected words.

However, two further features suggest very strongly that sign-groups are, in some sense, to be grouped in threes. In Table 2, in seven out of a possible eighteen cases, a line ends with the same sign as the line immediately above.[14] In contrast, of sign-groups beginning lines, only one out of eighteen ends in the same sign as the sign-group beginning the preceding line, and, of sign-groups in the middle of lines, none ends in the same sign as the sign-group in the middle of the preceding line. This difference between Table 2's final sign-groups (seven out of eighteen "rhyming" with a counterpart in the line above) and its initial and medial sign-groups (one out of thirty-six "rhyming" with its counterpart in the line above) is, statistically, highly significant (Yates's *chi-square* = 9.7, 1 df, $p < 0.002$) and most unlikely to be due to chance.[15]

No less remarkable is the tendency for the first sign-group in each "line" to be the longest. Twelve times out of twenty the first sign-group has more signs than either the second or the third. The second sign-group has the largest number of signs thrice, and the third sign-group once. On three occasions two sign-groups have more signs than one of the others, and once all have the same number. The sign-

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[13] Each sign-group was written on a plastic counter, and sixty of the sixty-one counters were drawn, one at a time, from a bowl in which they had been thoroughly mixed.

[14] The figures are for the two sides treated independently.

[15] On Side A, in particular, the tendency for ends of lines to "rhyme" extends to whole or partial sign-groups. Thus the last sign-groups of lines 1 and 2 include 45-07, 31-26 appears within the last sign-group of lines 3, 5, 6, 7, and 8 (lines 5-7 having the identical 02-12-31-26 combination), while the sign-group 10-03-38 ends lines 9 and 10. On Side B, lines 6 and 7 have the combination 29-36-07-08.

groups on Side B are more uniform in length than those on Side A, but even on Side B, five times the first sign-group in the line is the outright longest, while each of the second and third sign-groups is the outright longest only once. The difference between the three sets of sign-groups is shown in Table 4. The appropriate statistical test to determine whether the discrepancy between the three sets of sign-groups – the twenty constituting the first of a triad, the twenty constituting the second of a triad, and the twenty constituting the third of a triad – can be dismissed as a merely random phenomenon is an analysis of variance. The variance *between* the three sub-sets of figures is calculated and divided by the variance *within* them, to give an "F ratio", whose significance can be ascertained from standard statistical tables. The test is sensitive and powerful, and the result for these data is $F = 12.78$, 2/57 *df*, $p < 0.001$. The probability is much less than one in a thousand that the difference between the three sets of sign-groups is due to chance.

Most of these hints at pattern would be less striking if no sign-group were dropped from Side A. The dropping of A 13 leads to a more decisive set of correspondences than the dropping of A 1, as proposed by Evans in The Palace of Minos. Thus, if A 1 is dropped, the virgules after B 3 and A 3 are no longer in matching positions, and the chi-square test of the tendency for virgules on Side A to be paired with virgules on Side B yields an insignificant value of 1.629 (1 *df*, $p > 0.05$). Similarly, with the dropping of A 1, rather than A 13, the correlation between Side A and Side B word length reduces to an insignificant $r = 0.222$ (28 *df*, $p > 0.05$). The reason is, of course, that dropping A 13 keeps synchronized not only the eighteen inner-coil sign-groups but also the twelve outer-rim sign-groups of each side. Dropping A 1 loses the outer-rim parallelism. The inner-coil parallelism is also important. Dropping A 31, instead of either A 13 or A 1, would upset it, and result in an insignificant negative correlation between Side A and Side B word length ($r = -0.111$), and an amount of pairing of Side A and B virgules which almost exactly matches chance expectation (*chi-square* = 0.117).

Dropping A 1, rather than A 13, would diminish the tendency for virgules to divide sign-groups into threesomes. If the text of Side A were to begin with A 2, the virgules following A 3 and A 12 would no longer fall at line endings in an arrangement of three sign-groups to the line, such as that of Table 2. Isolating A 1 as "a kind of exordium" would have little effect on the tendency for three-word lines to begin with their longest word: Side A would have six instead of

seven cases. Dropping A 31 instead would shift the long words on Side A from the initial position in each threesome to the middle position, and thus destroy the partial symmetry with Side B. Interpreting A 13 as an identifying marker or "imprint", detachable from the text itself, allows the disc to yield fascinating groupings and symmetries.

What inferences can be drawn from the patterns observed? It seems possible that the inscription does indeed consist of two ten-line stanzas of a metrical composition in which a twelve-syllabogram line is the norm and some form of end-of-line assonance or rhyme is an organizing principle – the metre would be roughly analogous to the Lydian metre described by Martin L. West.[16] In an Aegean syllabary of vowels and open syllables, which the writing system used on the disc almost certainly is,[17] signs could of course differ and yet still have the same final vowel, so that end-of-line assonance in Table 2 may be quite extensive. Alternatively, the disc may preserve a chant, song, or spell: the grouping of words in threes is a time-honoured feature of such genres, so that it can be found, together with syntactic and phonological parallelism, even in funeral songs of contemporary Ghana.[18] At the very least, the utterance must incline to the formulaic. Yet formulae are not confined to "poetic" texts. On Linear B tablets listing military personnel at Pylos, for example, a three-word line is often the norm, and there is a clear tendency for the first word to be longer than the second.[19]

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[16] Lydian Metre, Kadmos 11 (1972), pp. 165–75, and The Lydian Accent, Kadmos 13 (1974), pp. 133–36.

[17] See Alan Mackay, On the Type-Fount of the Phaistos Disc, Statistical Methods in Linguistics 4 (1965), pp. 15–25; Yves Duhoux, L'écriture et le texte du Disque de Phaestos, Acts of the Fourth International Cretological Congress (Athens, 1980), 112–36. Gelb (Visible Language, 8, p. 301) can be regarded as representative of competent authorities on this point.

[18] Akosua Anyidoho, Stylistic Features on *nnwonkoro*, an Akan Female Song Tradition, Text: An Interdisciplinary Journal for the Study of Discourse 15 (1995), pp. 317–36. The pertintent features are exhibited by the refrain on pp. 325–26, in particular.

[19] See the tablets numbered 55-60 in John Chadwick, Documents in Mycenaean Greek (Cambridge 1973), pp. 187–94; the pattern tends to appear in lines where all sign-groups are complete and there is no ideogram; in the twenty-six such lines the mean number of syllabograms is 10.5 and the variance is 1.6. The "oka" tablets are also discussed by J. T. Hooker, Linear B: An Introduction (Bristol 1980), pp. 123–26.

Two conclusions seem well supported: (1) correlation in word length and correspondence in the positioning of virgules independently confirm an hypothesis that the physical characteristics of the disc would encourage – that a close structural parallelism obtains between Side A and Side B; and (2) the placement of virgules, of sign-groups of differing lengths, and of identical signs definitely tends to organize sign-groups into threes; the organization may be syntactical, rhythmical, or both.

Yves Duhoux reached conclusions which, though in some ways similar to mine, differ over major points of detail.[20] He deduced that the disc contains a hymn or prayer, which continues without a break from Side A to Side B, reading from rim to centre in each case. He believed that the virgules serve to divide this single religious poem into lines or verses varying from one to twelve words in length, and that the whole text thus consists of three introductory unrhymed lines, a strophe of five lines rhyming abbab, three more unrhymed lines, and a concluding strophe of six lines rhyming cdcdcd. Duhoux has been among the most clear-thinking and resourceful analysts of the disc, and his is an interesting suggestion. But "lines" or "verses" of such extremely irregular length might be simply syntactical units: the "rhymes" all repeat whole sign-groups, so that parallelism in the use of certain verbal formulae may be the relevant factor, the virgules serving primarily as punctuation. Moreover, Duhoux's description of the conjectured poem's structure ignores the features with which the present article has been especially concerned – the apparent parallelism between the two sides and the strong tendency of sign-groups to be organized into threes.[21]

Taking issue with Duhoux, Hans-Joachim Haecker has given an alternative account of the structural features of the Phaistos Disc

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[20] Yves Duhoux, La langue du Disque de Phaestos: Essai de typologie, Colloquium Mycenaeum (Neuchâtel 1979), pp. 373–86 (374–75); also Duhoux, L'écriture et le texte.

[21] Duhoux notes the lack of a virgule at the end of Side A, but A 31 is so cramped that there is scarcely room for one. In De l'emploi des 'virgules' sur le disque de Phaestos, Revue des Études Anciennes 13 (1911), pp. 296–312, A. Cuny argued that the virgules marked an elaborate parallelism between the two sides, but in his eagerness to detect pattern he ignored the virgule in A 12, rejected those at A 21, A 16, and B 24 as misprints, dismissed the whole sign-group A 19 as an erroneous interpolation, transferring its virgule to A 18, and read the sign-groups of Side B in a scrambled sequence. In short, he created a pattern of his own.

text.[22] His analysis is, in my view, vitiated by his insistence on reading the text from centre to rim, despite the demonstrations of Duhoux and others that this is the wrong direction. Haecker makes none of the new observations or suggestions offered here.

Ernst Doblhofer makes a valid observation on the Phaistos Disc when he writes: "The two sides which never fail to attract the eye, and not only invite new attempts at decipherment but also afford the layman a visual pleasure exempt from all speculation, remain mute but eloquent, as they must have appeared to the discoverer."[23] The disc is undoubtedly "eloquent", communicating something of the ambience of a distant age, even though we cannot yet translate its signs into meaningful sounds. Part of the pleasure it affords is aesthetic, arising from that combination of symmetry and asymmetry which the poet Gerard Manley Hopkins saw as the essence of beauty.[24] I have tried to show that the same beguiling combination is inherent in the "message" itself.

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[22] Hans-Joachim Haecker, Neue Überlegungen zu Schriftrichtung und Textstruktur des Diskos von Phaistos, Kadmos 25 (1986), pp. 89–96.

[23] Voices in Stone: The Decipherment of Ancient Scripts and Writings (New York 1961), p. 269.

[24] On the Origin of Beauty: A Platonic Dialogue, reprinted in Poems and Prose of Gerard Manley Hopkins (Harmondsworth 1953), ed. W. H. Gardner, pp. 94–106.

TABLE 1

SIDE A		SIDE B	
A 1	02-12-13-01-18 *	B 1	02-12-22-40-07
A 2	24-40-12	B 2	27-45-07-35
A 3	29-45-07 *	B 3	02-37-23-05 *
A 4	29-29-34	B 4	22-25-27
A 5	02-12-04-40-33	B 5	33-24-20-12
A 6	27-45-07-12	B 6	16-23-18-43 *
A 7	27-44-08	B 7	13-01-39-33
A 8	02-12-06-18-(43?)	B 8	15-07-13-01-18
A 9	31-26-35	B 9	22-37-42-25
A 10	02-12-41-19-35	B 10	07-24-40-35
A 11	01-41-40-07	B 11	02-26-36-40
A 12	02-12-32-23-38 * //	B 12	27-25-38-01 //
[A 13	39-11]		
A 14	02-27-25-10-23-18	B 13	29-24-24-20-35
A 15	28-01 *	B 14	16-14-18
A 16	02-12-31-26 *	B 15	29-33-01
A 17	02-12-27-27-35-37-21	B 16	06-35-32-39-33
A 18	33-23	B 17	02-09-27-01
A 19	02-12-31-26 *	B 18	29-36-07-08 *
A 20	02-27-25-10-23-18	B 19	29-08-13
A 21	28-01 *	B 20	29-47-07 *
A 22	01-12-31-26 *	B 21	22-29-36-07-08 *
A 23	02-12-27-14-32-18-27	B 22	27-34-23-25
A 24	06-18-17-19	B 23	17-18-35
A 25	31-26-12	B 24	07-45-07 *
A 26	02-12-13-01	B 25	07-23-18-24
A 27	23-19-35 *	B 26	22-29-36-07-08 *
A 28	10-03-38	B 27	09-30-39-18-07
A 29	02-12-27-27-35-37-21	B 28	02-06-35-23-07
A 30	13-01	B 29	29-34-23-25
A 31	10-03-38	B 30	45-07 *

Table 1: Sign-groups on each side of the Phaistos Disc, symbols and groups given numerical coding as in Duhoux' editions; asterisks indicate a "virgule", and // the end of the outer rim. Columns are aligned to show the parallelism between sides when A 13 is regarded as a "marker" and separated from the text. Numbers for signs are as first established by Evans, but the numbering of groups reverses his order. Identification of the rasure at A 8 as sign 43 is Bradshaw's, but is highly problematical.

TABLE 2

SIDE A

02-12-13-01-18 * 24-40-12 29-45-07 *
29-29-34 02-12-04-40-33 27-45-07-12
27-44-08 02-12-06-18-(43?) 31-26-35
02-12-41-19-35 01-41-40-07 02-12-32-23-38 * // [39-11]
02-27-25-10-23-18 28-01 * 02-12-31-26 *
02-12-27-27-35-37-21 33-23 02-12-31-26 *
02-27-25-10-23-18 28-01 * 02-12-31-26 *
02-12-27-14-32-18-27 06-18-17-19 31-26-12
02-12-13-01 23-19-35 * 10-03-38
02-12-27-27-35-37-21 13-01 10-03-38

SIDE B

02-12-22-40-07 27-45-07-35 02-37-23-05 *
22-25-27 33-24-20-12 16-23-18-43 *
13-01-39-33 15-07-13-01-18 22-37-42-25
07-24-40-35 02-26-36-40 27-25-38-01 //
29-24-24-20-35 16-14-18 29-33-01
06-35-32-39-33 02-09-27-01 29-36-07-08 *
29-08-13 29-45-07 * 22-29-36-07-08 *
27-34-23-25 07-18-35 07-45-07 *
07-23-18-24 22-29-36-07-08 * 09-30-39-18-07
02-06-35-23-07 29-34-23-25 45-07 *

Table 2: Phaistos Disc sign-groups, encoded as in Table 1 but arranged in "lines" of three sign-groups each.

TABLE 3

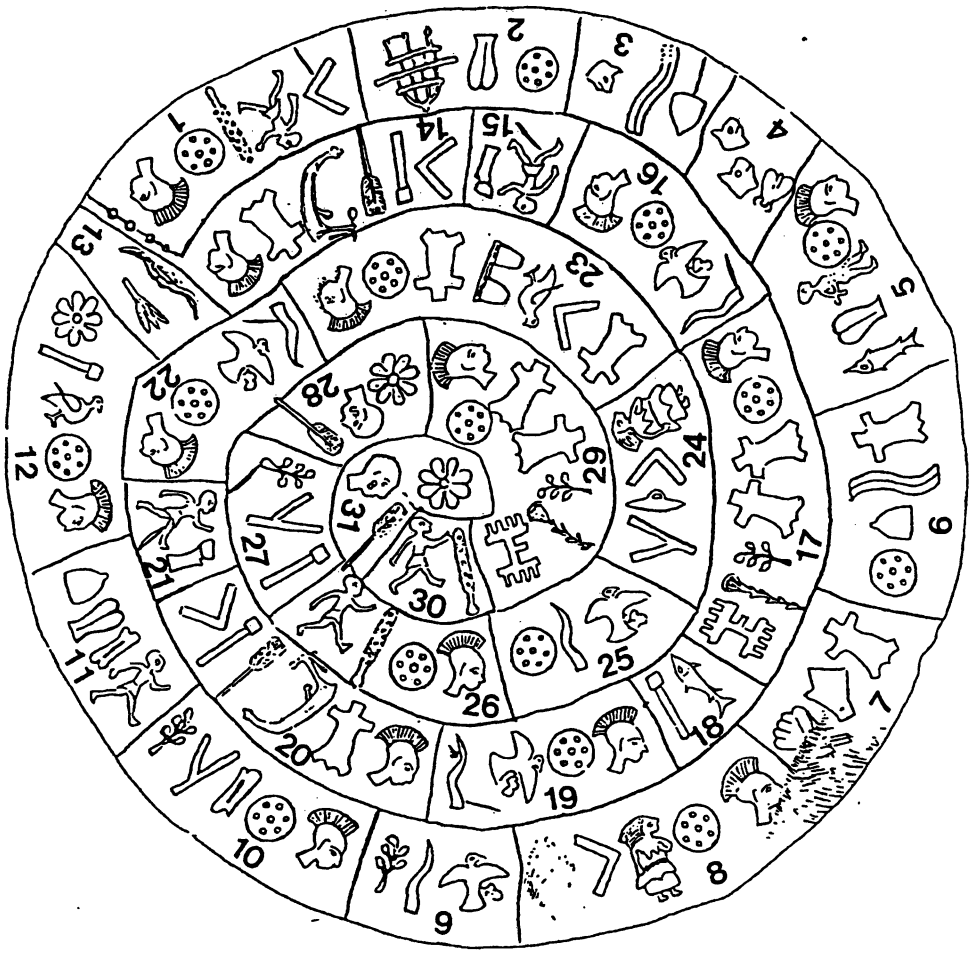
Number of signs	Actual	Random samples									
7	0	0	2	0	0	0	0	0	0	0	0
8	0	0	1	0	2	0	1	0	1	1	1
9	0	0	0	3	1	0	2	1	1	1	0
10	2	6	3	2	3	7	3	5	2	4	5
11	6	4	4	4	3	3	2	3	5	4	3
12	5	3	3	4	5	3	4	3	3	3	4
13	4	2	2	6	1	4	4	4	3	1	3
14	3	4	3	2	1	0	1	3	4	1	0
15	0	0	3	1	2	3	1	1	1	2	2
16	0	1	0	0	1	0	2	0	0	1	2
17	0	0	0	0	1	0	0	0	0	0	0
18	0	0	0	0	0	0	0	0	0	1	0
Variance:	1.3	1.8	2.3	1.8	3.8	1.8	2.3	1.7	1.9	2.6	2.2

Table 3: Number of signs in lines of three sign-groups, as arranged in Table 2. The actual distribution is compared with ten samples in which twenty lines of three sign-groups have been randomly constructed from the disc's sign-groups.

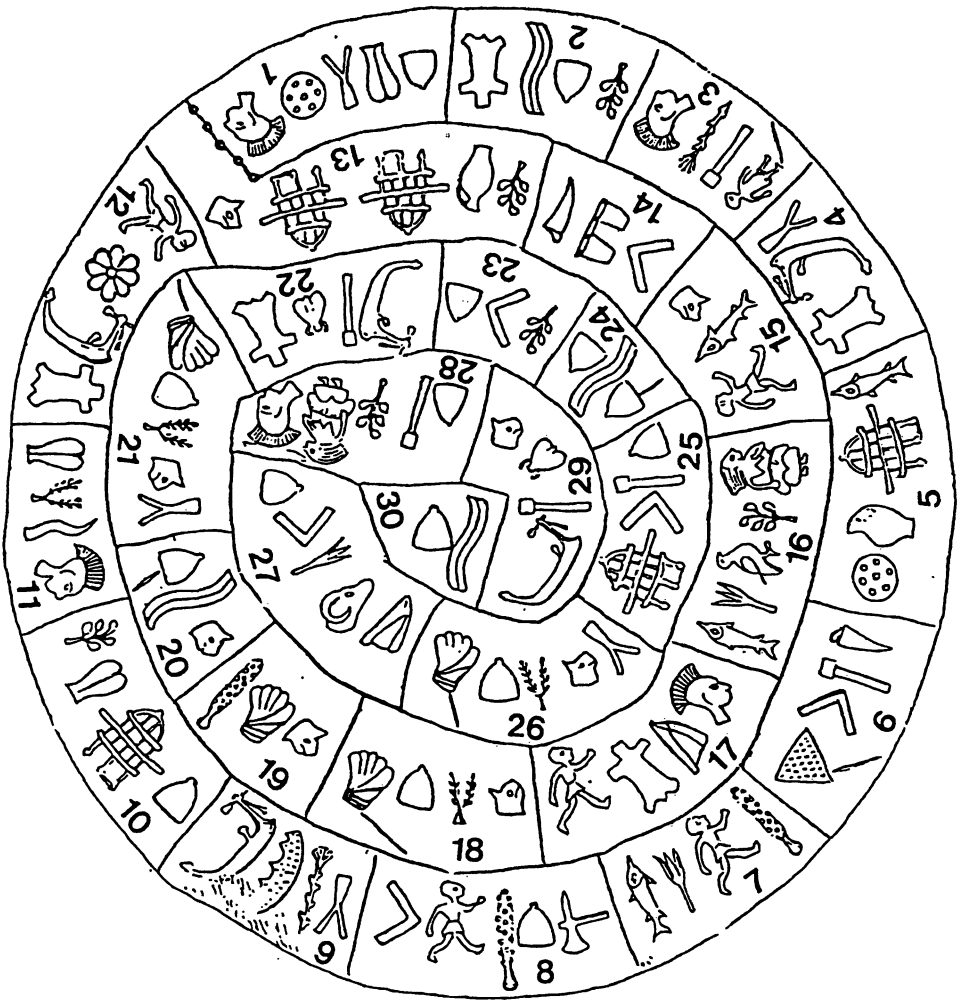
TABLE 4

	Sign-group position in line		
	1	2	3
Number of signs in group			
7	3	0	0
6	2	0	0
5	6	4	3
4	5	7	9
3	4	5	7
2	0	4	1

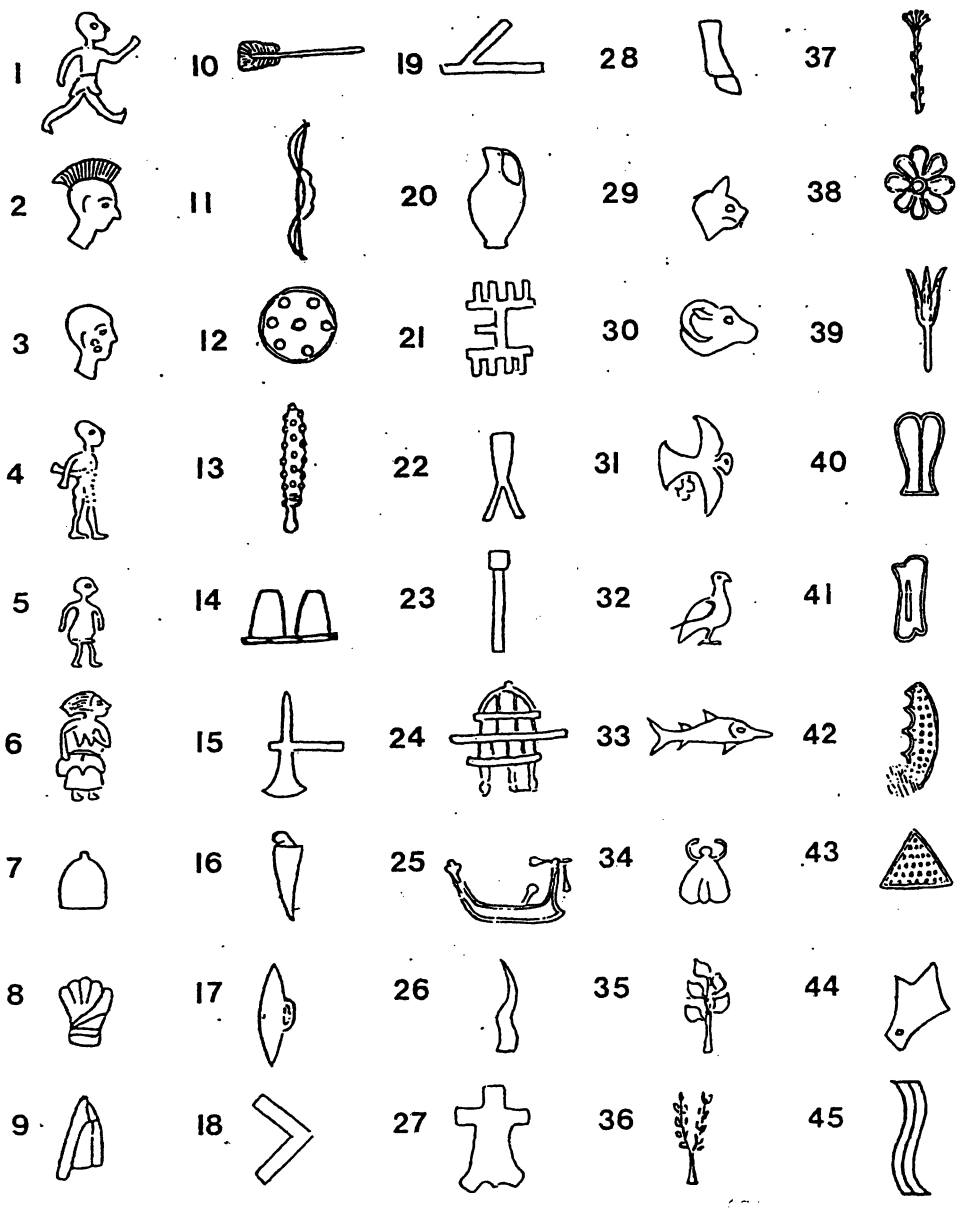
Table 4: Number of signs in sign-groups within the twenty triadic lines presented in Table 2. Larger numbers of signs are more prevalent, and fewer numbers less so, within the initial sign-groups in the lines.



Drawing of Phaistos Disc, Side A



Drawing of Phaistos Disc, Side B



Inventory of Phaistos Disc Signs