QUIPU AS47

Museum identification: No. 3882 (Museo Nacional, Lima, Peru)

Main cord: color YB:MB

    $10.0 cm: group of 8 pendant cords (1-8), then space of 0.5 cm.

    12.0 cm: group of 8 pendant cords (9-16), then space of 0.5 cm.

    13.5 cm: group of 8 pendant cords (17-24), then space of 0.5 cm.

    15.0 cm: group of 8 pendant cords (25-32), then space of 0.5 cm.

    17.0 cm: group of 9 pendant cords (33-41), then space of 1.0 cm.

    19.5 cm: group of 8 pendant cords (42-49), then space of 0.5 cm.

    21.0 cm: group of 8 pendant cords (50-57), then space of 0.5 cm.

    22.5 cm: group of 8 pendant cords (58-65)

    24.0 cm: group of 7 pendant cords (66-72), then space of 0.5 cm.

    26.0 cm: group of 8 pendant cords (73-80), then space of 19.0 cm.

    46.5 cm: end ¢

Cord	Knot (no., type, position)	Length	Color	Value	Subsidiaries (no., position)
1	1s(7.0);1s(8.5);3L(18.0)	32.0	W	113	4:3.0-4.0
1s1	3s(4.5);3L(13.0)	23.0¢	MB	33	
1s2	5L(13.5)	21.5¢	YB	5	
1s3	1E(9.0)	13.0b	YB	1	
1s4	1s(4.0);6L(8.5)	20.5¢	MB:W	6	
2	2s(14.0);9L(19.5)	33.5¢	MB	29	
2s1	5L(9.5)	18.5¢	LA:W	5	
3	3s(14.5);2L(20.0)	35.5¢	YB	32	2:10.0-10.5

Cord	Knot (no., type, position)	Length	Color	Value	Subsidiaries (no., position)
3s1	4L(10.0)	20.0¢	YB:LA	4	
3s2	6L(9.5)	12.5¢	W	6	
4	1s(16.5);7L(21.0)	40.0¢	W	17	2:11.0-11.5
4s1	—	1.0b	CB	?	
4s2	5L(7.5)	10.5¢	LA	5	
5	1s(14.5);2L(21.0)	39.0¢	W	12	1:10.5
5s1	5L(4.5)	9.5¢	LA:W	5	
6	2s(16.5);1E(24.0)	40.0¢	MB	21	1:11.5
6s1	1s(5.0)	16.0¢	B:LA:W	10	
7	2s(16.0);9L(21.5)	32.5¢	ØG	29	2:10.0-10.5
7s1	4L(7.0)	15.0¢	YB	4	
7s2	1E(7.0)	13.0¢	YB	1	
8	1s(17.0);2L(21.0)	25.0¢	YB	12	1:12.0
8s1	4L(9.0)	18.0¢	LA:W	4	
9	1s(6.5);9L(21.5)	40.5¢	W	109	4:5.5-6.0, 9.0
9s1	5(6.5)	15.0¢	MB:W	5	
9s2	6L(7.0)	12.0¢	YB	6	
9s3	5L(7.5)	11.5¢	YB	5	
9s4	2s(4.5);1E(8.5)	26.5¢	MB	21	
10	3s(15.0);3L(20.0)	40.5¢	MB	33	1:11.5
10s1	1E(6.5)	12.5¢	LA	1	

Cord	Knot (no., type, position)	Length	Color	Value	Subsidiaries (no., position)
11	2s(14.5);8L(18.5)	35.5¢	YB	28	2:11.5–12.0
11s1	2L(10.0)	21.5¢	LA	2	
11s2	3L(10.5)	27.5¢	W	3	
12	2s(15.0);1E(19.5)	41.5¢	YB	21	1:12.5
12s1	3L(8.5)	14.5¢	MB:W	3	
13	5s(14.0);9L(21.0)	31.0¢	MB	59	
14	3s(13.0);7L(18.0)	22.0	YB	37	
15	3s(15.5)	37.5¢	∅G	30	1:12.0
15s1	7L(8.0)	23.0¢	W	7	
16	8L(15.0)	37.0¢	YB	8	
17	7s(17.5);5L(26.0)	38.0¢	W	75	4:13.5–14.0
17s1	2L(11.0)	25.0¢	YB	2	
17s2	--	0.5b	CB	?	
17s3	3L(7.5)	14.5¢	MB	3	
17s4	2s(2.5);5L(11.0)	23.0¢	MB	25	
18	3s(15.0);5L(24.0)	34.0¢	MB	35	2:11.0–11.5
18s1	2L(5.0)	14.0¢	MB	2	
18s2	1s(4.0);8L(6.5)	9.5b	MB	8	
19	2s(16.5);7L(24.5)	40.0¢	CB:W	27	
20	1s(17.0);3L(24.5)	36.0¢	YB:W	13	
21	1s(17.0);6L(22.0)	36.0¢	YB	16	3:13.0–13.5
21s1	4L(8.0)	23.0¢	LA	4	
21s2	2L(8.5)	17.5¢	LA:W	2	
21s3	1E(8.0)	17.0¢	YB	1	

Cord	Knot (no., type, position)	Length	Color	Value	Subsidiaries (no., position)
22	3s(18.0);5L(24.5)	39.5¢	YB	35	1:13.0
22s1	3L(14.0)	26.0¢	YB	3	
23	2s(16.0);9L(24.0)	34.0¢	ØG	29	2:13.0-13.5
23s1	3L(15.0)	26.0¢	MB	3	
23s2	1E(10.0)	15.0¢	LA:W	1	
24	1s(16.0);4L(23.5)	40.5¢	YB	14	
25	1s(4.5);8L(22.5)	27.0¢	W	108	4:11.5-12.0
25s1	8L(6.5)	9.5	MB:W	8	
25s2	3L(10.0)	31.0¢	YB	3	
25s3	4L(10.0)	25.0¢	YB	4	
25s4	4s(1.0);1E(10.5)	21.5¢	MB	41	
26	1s(11.5);1E(24.5)	33.5¢	MB	11	1:11.0
26s1	2s(0.5);3L(12.5)	29.5¢	MB	23	
27	4s(11.5)	33.5¢	LA:W	40	1:8.5
27s1	1E(4.5)	16.5¢	MB:LA	1	
28	2s(12.5)	40.5¢	YB:W	20	
29	2s(13.0);1E(20.0)	40.0¢	MB	21	
30	3s(13.5);8L(21.0)	36.0¢	MB	38	1:12.0
30s1	10L(8.5)	14.5¢	W	10(?)	
31	8L(20.5)	41.5¢	ØG	8	
32	9L(21.0)	41.0¢	MB	9	
33	9L(15.5)	35.5¢	W	9	4:11.0-11.5

Cord	Knot (no., type, position)	Length	Color	Value	Subsidiaries (no., position)
33s1	4L(7.5)	21.5¢	MB:LA	4	
33s2	4L(8.5)	17.5¢	MB	4	
33s3	1E(8.0)	27.5¢	MB	1	
33s4	3s(3.0);4L(8.5)	21.0¢	MB	34	
34	2s(13.0);1E(21.5)	37.5¢	MB	21	
35	2s(12.5);3L(21.5)	29.5¢	YB:W	23	2:10.5-11.0
35s1	5L(10.5)	19.5¢	MB	5	
35s2	2L(10.5)	21.0¢	W	2	
36	2s(12.0);4L(18.0)	29.0¢	MB	24	1:9.5
36s1	1E(4.5)	20.5¢	YB	1	
37	9L(19.5)	31.0¢	MB	9	
38	2s(13.0)	37.0¢	W	20	1:10.5
38s1	7L(5.5)	16.5¢	MB	7	
39	2s(12.5);5L(20.0)	36.0¢	MB	25	2:10.5-11.0
39s1	1E(9.0)	20.5¢	MB	1	
39s2	2L(10.5)	23.5¢	W	2	
40	1s(11.5);8L(21.0)	33.0¢	ØG	18	
41	--	40.0¢	MB	0	
42	1s(7.0);1s(16.5);5L(25.0)	40.5¢	W	115	4:9.5-10.0
42s1	1s(8.0);5L(18.0)	29.5¢	LA	15	
42s2	4L(17.5)	27.0¢	YB	4	
42s3	6L(17.0)	25.0¢	MB	6	
42s4	3L(15.0)	19.0¢	YB	3	

Cord	Knot (no., type, position)	Length	Color	Value	Subsidiaries (no., position)
43	1s(18.0);2L(24.5)	38.5¢	MB	12	
44	3s(14.5);9L(22.0)	26.0¢	YB:W	39	2:9.0-9.5
44s1	2L(11.0)	18.0¢	LA	2	
44s2	6L(10.5)	25.0¢	W	6	
45	1s(14.0)	19.5b	YB:W	1?	
46	2s(15.5);2L(22.5)	36.0¢	MB	22	1:8.5
46s1	9L(19.5)	29.5¢	W	9	
47	3s(16.5)	38.5¢	MB	30	2:9.0-9.5
47s1	3L(15.0)	20.0¢	LA:W	3	
47s2	2s(9.5);2L(17.0)	25.5¢	W	22	
48	3s(14.0);2L(21.5)	37.5¢	ØG	32	2:9.0-9.5
48s1	2L(15.0)	23.0¢	LA:W	2	
48s2	1s(6.5);7L(15.0)	23.0¢	DB	17	
49	1s(15.0);3L(23.5)	42.5¢	MB	13	
50	1s(7.0);4L(23.0)	36.0¢	W	104	5:10.0-11.0
50s1	4L(15.0)	27.0¢	MB	4	
50s2	—	0.5b	CB	?	
50s3	8L(9.0)	15.5¢	LA	8	
50s4	4L(8.0)	11.0¢	MB	4	
50s5	6L(8.0)	9.0¢	MB	6	
51	1s(19.0);5L(23.0)	43.0¢	YB	15	
52	3s(16.0);3L(20.5)	24.5¢	YB:W	33	

Cord	Knot (no., type, position)	Length	Color	Value	Subsidiaries (no., position)
53	2s(17.5);6L(22.0)	32.5¢	YB:W	26	1:11.0
53s1	6L(4.5)	7.0¢	LA:W	6	
54	2s(17.0);1E(23.0)	40.0¢	MB	21	1:10.0
54s1	3L(7.5)	16.0¢	LA	3	
55	1s(16.0);1E(21.0)	32.0¢	MB	11	1:10.0
55s1	1s(6.0);6L(11.5)	15.5¢	MB	16	
56	4s(17.0);5L(20.5)	40.5¢	MB	45	2:9.5-10.0
56s1	--	0.5b	CB	?	
56s2	1s(6.0);2L(10.0)	22.0¢	YB	12	
57	2s(11.0);8L(19.5)	34.5¢	YB	28	
58	8s(16.0);3L(19.5)	24.5¢	W	83	5:9.5-10.5
58s1	1E(8.5)	16.5	CB:YB	1	
58s2	2L(8.5)	16.0¢	CB	2	
58s3	3L(8.5)	14.0¢	W	3	
58s4	5L(9.5)	24.5¢	MB	5	
58s5	2L(8.0)	17.5¢	YB	2	
59	7L(20.5)	37.5¢	MB	7	
59s1	6L(7.0)	16.0¢	MB	6	
60	1s(16.0);9L(20.5)	23.5¢	YB:W	19	
61	1s(15.0);6L(19.0)	34.0¢	YB:W	16	
62	1s(14.5);5L(19.0)	38.0¢	YB	15	1:9.5
62s1	8L(5.5)	17.5¢	MB	8	
63	1s(16.5);8L(21.5)	38.5¢	MB	18	2:11.0-11.5

Cord	Knot (no., type, position)	Length	Color	Value	Subsidiaries (no., position)
63s1	--	2.0b	CB	?	
63s2	4L(3.0)	19.0¢	W	4	
64	1s(17.0);2L(20.5)	38.5¢	ØG	12	1:14.0
64s1	3L(6.0)	15.5¢	CB	3	
65	1s(17.0)	38.0¢	MB	10	
66	9s(15.0);6L(20.0)	30.5¢	W	96	4:10.0-10.5
66s1	2L(6.5)	17.0¢	YB	2	
66s2	5L(7.0)	14.0¢	YB	5	
66s3	9L(7.5)	10.0¢	MB	9	
66s4	5L(6.5)	9.5¢	LA	5	
67	1s(12.5);2L(17.0)	29.0¢	YB:LA	12	2:9.5-10.0
67s1	2L(5.0)	10.5b	CB	2	
67s2	2L(5.0)	13.0b	LA	2	
68	1s(13.0);3L(19.5)	30.5¢	YB:LA	13	
69	1s(12.5);7L(17.0)	28.0¢	YB	17	1:11.0
69s1	2s(2.5);1E(7.0)	28.0¢	YB	21	
70	1s(14.0);2L(18.5)	40.0¢	MB	12	1:10.5
70s1	1s(2.5);2L(7.0)	19.0¢	YB	12	
71	1s(14.0);5L(18.0)	36.0	YB	15	
72	8L(18.5)	30.0¢	YB	8	
73	8s(14.5);7L(20.5)	35.5¢	W	87	3:10.5-11.0
73s1	6L(7.5)	15.5¢	LA	6	
73s2	2L(7.0)	18.0¢	MB	2	
73s3	6L(8.0)	13.0¢	MB	6	

Cord	Knot (no., type, position)	Length	Color	Value	Subsidiaries (no., position)
74	7L(17.5)	26.5¢	MB	7	1:11.5
74s1	5L(2.5)	9.5¢	MB	5	
75	1s(12.5);4L(18.0)	26.0¢	YB:LA	14	1:10.5
75s1	3L(6.5)	16.5¢	LA	3	
76	8L(17.0)	23.0¢	YB:LA	8	
77	1s(12.5);2L(17.5)	30.5¢	MB	12	
78	1s(13.5);9L(18.0)	38.0¢	MB	19	2:10.5-11.0
78s1	—	4.5b	CB	?	
78s2	1s(3.0);6L(7.0)	17.0¢	MB	16	
79	1s(12.0);5L(17.0)	32.0¢	YB	15	
80	1s(12.5);2L(17.5)	32.5¢	YB	12	

Observations

1. By spacing there are 10 groups. Basically each has 8 pendant cords (group 5 has one additional pendant and group 9 has one less).

2. The groups show similar color patterns: in all cases the first pendant is W; with two exceptions, the second is MB; positions 3 and 4 are inconsistant but are the only positions which contain the combined colors (YB:LA, YB:W, CB:W, LA:W); with one exception, pendants 5, 6, and 8 are YB or MB; and with two exceptions, the seventh pendant is ∅G. (This assumes that the extra pendant in group 5 is between the fifth and sixth pendant positions and that in group 9, position 7 is non-existant.)

3. Subsidiaries appear on all positions. There are 3 to 5 subsidiaries on the pendant in position 1; at most one subsidiary in position 8; at most 2 in positions 2,3,4,6,7; and at most 3 in position 5.

4. Assuming an error of 1s knot on pendant 1 in group 5 (i.e., the value should be 109 rather than 9), in all groups the value of position 1 is greater than the values in the other positions. Pendant 1 ranges from 83 to 115, while the rest of the values are from 0 to 59. If subsidiary values are added to pendant values, this relationship remains as the range of position 1 is increased from 101-158 while the range of the others remain 0-59.

5. There are some relationships based on the sums of adjacent pendants.

   (a) The sums of pendants 1 and 2 are equal for groups 1 and 2. Also the sums of pendants 3 and 4 are equal for both groups.

   (b) The sums of pendants 1 and 2 are equal for groups 4 and 7. Also, in group 4, the sum of pendants 1 and 2 equals the sum of pendants 3,4,5,6. This same value (119) is obtained by summing all pendants excluding 1 and 2 of group 5.

   (c) In group 8, the sum of pendants 1 and 2 equals the sum of the rest of the pendants in the group.

   (d) In group 10, pendant 1 equals the sum of the rest of the pendants in the group.

6. AS47 and AS68 are associated. They were labeled by the Museum with the same identification number. They are also similar in color, groupings, and values.

   (a) The colors W, MB, YB, CB, LA, $\emptyset$G appear individually or in combination on both quipus. No other color appears on either. (It is interesting to note that our recording of AS47 and AS68 were separated by more than a week and by travels within Peru. Our reidentification of the same colors, for what turned out to be related quipus, serves to support our constancy in color-name selection.)

(b) AS68 has 2 parts each containing sets of 1,5,10 groups of 7 pendants each, while AS47 is just one set of 10 groups of 8 pendants each. However, there is some similarity of color pattern. In both, for all groups, position 1 is W, position 2 primarily MB, and the last position is primarily YB. In AS47, and in the set of 10 groups in the first part of AS68, the next to last pendant is primarily ∅G.

(c) AS47 is further related to the sets of 10 groups of AS68 by order of magnitude of the pendant values. The center and extent of the range of values for each position in the 10 groups of AS47 and 20 groups (2 sets of 10 groups each) of AS67 are shown below. Note that in observation 2 above, positions 3 and 4 were identified as being similar to each other in that they both contain a variety of combined colors. If their values are added together, the range of sums corresponds to position 3 on AS68. It too is a combined color. All the relationships together suggest that the 8 positions of AS47 can be directly associated with the 7 positions of AS68 as follows: 1 to 1, 2 to 2, 3 & 4 to 3, 5 to 4, 6 to 5, 7 to 6, and 8 to 7.

AS47	Position	1	2	3	4	5	6	7	8
	Value range	95 ± 20	21 ± 14	27 ± 14	16 ± 8	34 ± 25	25 ± 14	27 ± 19	14 ± 14
				$41+19$					

AS68	position	1	2	3	4	5	6	7
	value range	86 ± 40	21 ± 14	43 ± 32	32 ± 22	31 ± 22	36 ± 21	11 ± 11

(d) One adjacent sum relationship similar to those noted in observation 5 above is found in the last group of the first part of AS68. In it the sum of pendants 1 and 2 equals the sum of the rest of the pendants in the group.

(e) AS68 has two parts each of which has the following form:

A: 1 group whose values, position by position, are the sums of the 5 groups in B, or whose values are the order of magnitude of the sums.

      B: 5 groups whose values, position by position, are the order of magnitude

         of the sums of the 10 groups in C.

      C: 10 groups.

Thus, C, the set of 10 groups is, in some sense, the data base from which the

rest of the values in B and A are constructed. AS47 is another such data base.

7. In keeping with the association of AS47 and section C of AS68, and in keeping

    with the association of position 5 in the groups of AS68 and position 6 in the

    groups of AS47, another sum relationship is seen: the position 5 sum of the

    10 groups of section C of Part I of AS68 equals the position 6 sum of the 10

    groups of AS47.