

OBSERVATIONS ON SOME MATERIAL ASPECTS OF THE CODEX COLOMBINO¹

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This paper will present a number of measurements made on the original manuscript of the Codex Colombino in the Museo Nacional de Antropología, México, together with a brief discussion of some of the problems raised by these measurements. Unless otherwise specifically noted, all measurements of length were made along the long axis of the manuscript through the approximate middle of a page or series of pages, while those for height were made at right angles to this long axis at about the center of each page. The terms "left" and "right" refer to those directions as the reader faces the painted scenes on the obverse face of the codex. The page numbers used herein are the same as those found in both the color photographic version of this codex recently published by the Sociedad Mexicana de Antropología² and in the earlier color lithographic version of the Junta Colombina.³ However, in order to facilitate references within this paper, the sequential band numbering system employed in these two publications will be replaced by the well-known and simpler system in which the uppermost band of each page is numbered as band I, the middle one as band II, and the lowest as band III.

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² Caso, Alfonso. *Interpretación del Códice Colombino*. Sociedad Mexicana de Antropología, México, 1966.

³ Junta Colombina de México. *Antigüedades Mexicanas publicadas en homenaje á la memoria de Cristóbal Colón*. México, 1892.

In order to avoid any confusion between these band numbers and the page numbers, these latter will be given in Arabic numerals.

The overall reading direction of the Colombino is from left to right. Its extant pages are divided among four different fragments: Fragment I contains pages 1-15; Fragment II, pages 16-16A; Fragment III, pages 17a-19; and Fragment IV, pages 20-24. Fragments I and II have been joined together and now form a single strip of slightly more than sixteen pages. Fragments III and IV are sewn together and form a second strip which contains the remaining eighth pages of the codex. The pictorial data of the Colombino are painted on ten skins, Fragment I being composed of Skins Nos. 1-4; Fragment II, Skins Nos. 5-6; Fragment III, Skins Nos. 7-8; and Fragment IV, Skins Nos. 9-10. In addition there are two skin patches, Skins A and B, visible only on the reverse face of the manuscript. The following paragraphs give the measurements of each skin in the codex, and describe how the skins are joined together. The length figure which is given represents only that portion of each skin which may be seen on the obverse face of the manuscript. The distance by which a skin may be overlapped at a joint is given as a separate figure and is not included in the total length measurements. At lapped joints, the height figure for the underlying skin was measured on the obverse side of the manuscript immediately adjacent to the overlying skin. All measurements are given in centimeters.

Fragment I

Skin No. 1 is 100.8 cm. long and extends from the beginning of the manuscript on page 1 to the right

side of page 4, ending 0.3 cm. to the left of the fold shared between pages 4 and 5. This skin is 18.15 cm. high at its right end, where it is glued on top of the second skin.

Skin No. 2 runs from the right side of page 4 to the right part of page 8, and on the obverse side of the codex is visible for 99.2 cm. (measured just above the arc in its right end on page 8, band III). Its left end is glued under the first skin for about 2.4 cm. and underlies a hole in that latter skin on page 4, band I. At its joint with the first skin, Skin No. 2 is 18.2 cm. high on its obverse face; at its right end it is 18.8 cm. in height and is glued on top of the third skin with no visible sign of sewing.

Skin No. 3 begins in the right part of page 8 and extends to the right part of page 12; on the obverse face of the codex it is visible for 99.8 cm. Its left end lies under the second skin for a distance of 1.9 cm. measured along the bottom edge of page 8, and for about 1.5 cm. measured at the top edge of that page. At this joint it is 18.55 cm. high on its obverse side. Clearly visible on the reverse side of the manuscript are a series of sewing holes along this left end of the skin. The impression left between some of these holes by a heavy thread can also be seen, although the thread itself has now disappeared. The right end of Skin No. 3 is somewhat irregularly shaped (see page 12, band I), but measured from the left side of the arc in the top edge of page 12, it is 18.85 cm. high. This end is glued on top of the fourth skin, and in addition the upper part of this joint is also sewn with a heavy, coarse thread.

Skin No. 4 extends from the right part of page 12 to the right side of page 15. This skin is approximately

rectangular in shape from page 12 to the fold shared between pages 14 and 15, but beginning at this latter fold the remaining page slants slightly downward; the height of this page also decreases from left to right. Measured on the obverse of the codex through the middle of band II, 83.1 cm. of Skin No. 4 are visible (this straight-line measurement crosses page 15 in the upper part of band II due to the slant of that page). The left end of this skin is overlapped by the third skin for a distance of 2.2 cm. measured at the bottom edge of page 12; at this joint Skin No. 4 is 18.45 cm. high on the obverse side of the manuscript. The right end of this skin (measured just to the left of the V-shaped wear area at the bottom of the right side of page 15) is 18.15 cm. in height and is glued on top of Skin A, where it meets the fifth skin butt to butt, without overlap, in an artificial joint that unites Fragments I and II.

Fragment II

Skin A is visible only on the reverse side of the codex and serves as a patching piece to which both the fourth and fifth skins are glued; no sewing is used for either joint. It is considerably lighter in color than the skins on which the pictorial data are painted, and also has a different surface texture from them. Since it joins together the ends of two different fragments, forming an artificial union which did not exist in the original form of the manuscript, it could not have been added until after the codex had already become separated into several pieces.

Skin No. 5 consists of a small piece only 7.3 cm. in length which makes up the left part of page 16. Its left end is glued on top of Skin A and abuts di-

rectly against Skin No. 4 without overlap; the joint between the fourth and fifth skins is an artificial one. The height at the left end of Skin No. 5 is only 17.7 cm. due to a V-shaped wear zone at its bottom edge. Its right end is 18.1 cm. high and is glued on top of the sixth skin, the joint also being sewn with a coarse, heavy thread.

Skin No. 6 consists only of the right part of page 16 and the fragmentary page 16A which follows; on the obverse face of the manuscript its length is 19.7 cm. Its left end is glued and sewn under the fifth skin for 1.7 cm. measured along the bottom edge of page 16, and for about 1.5 cm. measured at the top edge of the page. From the upper right corner of page 16A a piece of the skin about 1 cm. long and 2 cm. high has been removed; the height of the right end of this skin up to this cut is 15.85 cm., so that its total height would have been approximately 17.85 cm. The right end of this sixth skin (which marks the end of the first of the two strips into which the codex is now divided) contains a row of sewing holes to which a few threads are still clinging on the reverse side of the manuscript. The only pictorial content which now remains visible on the fragmentary page 16A is the red band line between bands I and II, which is a direct continuation of the same band line on page 16.

Skin B is an irregularly shaped patching piece which is visible only on the reverse face of the codex; it is glued across the upper part of the fold shared between pages 16 and 16A. To the unaided eye it appears very similar to Skin A, and like that skin it is noticeably lighter colored and different in surface texture from those skins on which the pictorials are painted. Skin B lacks about 0.4 cm. of reaching to the end of page

16A. A portion of its upper part was removed by the cut made in page 16A.

Some of the problems associated with Fragment II, including those raised by additional measurements, will be discussed later.

Fragment III

Skin No. 7 is a very irregularly shaped piece at the upper left part of page 17. Measured along the left fold of page 17 it is 12.7 cm. high; at the top edge of the page it is 4.5 cm. long, while at the band line between bands I and II it is 2.8 cm. long. It is glued on top of the eighth skin to cover an irregular hole in the upper left corner of the latter, and in addition the two skins are also sewn together with a coarse thread at the right side of Skin No. 7. Along the left side of this skin there are rows of sewing holes which continue down into the eighth skin along the left fold of page 17.

Skin No. 8 begins with page 17a and ends at the right side of page 19. Its left end slants in an irregular diagonal from lower left to upper right, the lower part of it lying to the left of page 17 and forming the incomplete, wedge-shaped page 17a. From the lower left corner of this fragmentary page 17a a piece of skin about 2 cm. long and 1 cm. high has been removed. Measured along the left fold of page 17, the skin remaining above this cut is about 11.0 cm. high; at the top of the cut, the width across page 17a to the left fold of page 17 is about 2 cm. The upper part of this wedge-shaped area projects slightly to the left of the lower part of the seventh skin. Measuring from the left end of page 17a along the top of the cut area and through the lower part of band III,

Skin No. 8 is 77.7 cm. in length. Several rows of sewing holes are found through this skin along the left fold of page 17 and extending upward along the left side of the seventh skin; their relation to Fragment II will be discussed below. Because the right part of page 19 tapers inward, the right end of the skin is 17.9 cm. high; it is sewn on top of the ninth skin with a heavy, coarse thread, forming an artificial joint.

Fragment IV

Skin No. 9 extends from the right side of page 19 to the right part of page 22; the greatest extension of this skin which can be seen on the obverse surface of the codex is 70.1 cm., measured through the lower part of band II to the deepest arc in the left end of the tenth skin. Its left end is sewn under the eighth skin, the distance being 0.6 cm. measured at the bottom edge of page 19, and 0.8 cm. measured at the top edge of that page; at this joint the skin is only 18.0 cm. high on its obverse face due to V-shaped zones of wear at both the top and bottom of the folded area between pages 19 and 20. This joint between Skins Nos. 8 and 9 is an artificial one resulting from two separate fragments having been sewn together, and at the present time it is not known whether the original length of page 20 included that portion of it now lying under page 19. The right end of Skin No. 9 is glued and sewn under the tenth skin so that it underlies the latter for a distance of 1.8 cm. measured at the bottom edge of page 22, and for 2.3 cm. measured at the top edge of the page. Measuring this joint at a slight diagonal due to the irregular shape of the overlapping tenth skin, on its obverse face it is 17.65 cm. high.

Skin No. 10 extends from the right part of page 22 to the termination of the Colombino on page 24, a length of 54.2 cm. measured from the deepest penetration of the arc into its left end. This left end is irregularly shaped and measures 18.1 cm. in height from tip to tip, measured at a slight diagonal across page 22; it is glued on top of the ninth skin, and the joint is also sewn with a coarse thread. The right end of the skin is only 17.55 cm. high due to a ragged, worn area at the bottom edge of page 24; measured slightly to the left of the zone of wear, however, the height is 18.0 cm.

These ten skins, which form the pictorial surface of the Colombino, still retain six of the original joints: those between Skins Nos. 1 and 2, 2 and 3, 3 and 4, 5 and 6, 7 and 8, and 9 and 10. For the first four of these joints, the left skin is placed on top of the right one; only between Skins Nos. 9 and 10 is the left skin glued under the right one. The relationship between Skins Nos. 7 and 8 is unique in the manuscript, the seventh skin being at present only a small piece glued over a hole in the eighth skin. All these joints appear to have been originally joined together by some type of glue, the sewing being a later addition to insure that the joints did not separate. Artificial joints exist between Skins Nos. 4 and 5, and 8 and 9. In the former, each skin is glued to a patch piece, Skin A, while in the latter case the two skins have simply been sewn together.

The length and height of each page in the codex was individually measured; these figures are presented in Table 1.

TABLE 1

Length and Height of Each Page in Codex Colombino

Page No.	Length	Height	Page No.	Length	Height
<i>Fragment I:</i>			<i>Fragment II:</i>		
1	(24.4) ⁴	18.8	16	(25.1) ⁵	18.3
2	25.4	18.8	16A	(1.9) ⁶	(17.85) ⁷
3	25.75	18.9	<i>Fragment III:</i>		
4	25.4	18.75	17a	(2.0) ⁸	—
5	25.6	18.65	17	25.3	18.4
6	25.7	18.7	18	25.3	18.4
7	25.8	18.9	19	(25.1) ⁹	18.45
8	25.7	18.8	<i>Fragment IV:</i>		
9	25.7	18.65	20	(25.25) ¹⁰	18.5
10	25.65	18.75	21	24.75	18.45
11	25.75	18.65	22	24.8	18.35
12	25.7	18.8	23	24.65	18.25
13	25.3	18.4	24	24.9	18.25
14	25.35	18.4			
15	25.1	18.35			

While these measurements were carefully made, the nature of the manuscript is such that somewhat different figures would have been obtained had these measurements been made in only slightly different places on each page. Space does not permit a discussion of the data in this table, but a study of these figures

⁴ Page 1 is incomplete at its left side. Parentheses will be used to enclose the figures for fragmentary or irregular pages.

⁵ Because of factors to be discussed below, the original size of page 16 is not known at present.

⁶ Page 16A is fragmentary.

⁷ This figure is only an approximation; see the discussion of Skin No. 6.

⁸ This measurement refers to the length of that part of Skin No. 8 lying to the left of the left fold of page 17.

⁹ This measurement extends only to the right end of Skin No. 8.

¹⁰ Measured from the right end of Skin No. 8. In addition, the left side of page 20 is sewn under page 19; see the discussion of Skin No. 9.

will reveal various trends within the codex. To cite only a single example, the reduction in both page length and height occurring between pages 12 and 13 may be noted.

The average size of the pages of the Colombino may be calculated from the figures given in Table 1. In order to do so, however, incomplete or irregular pages must be excluded; these include the length figure for pages 1, 16, 16A, 17a, 19, and 20, and the height figure for pages 16A and 17a. As a result, there are only twenty pages for which the length figure appears to be complete; these yield an average page length of 25.38 cm. From the twenty-four pages for which there are valid height figures, an average page height of 18.57 cm. is obtained.

In order to determine the present length of the codex, measurements were made of each of the two separate strips in which it is now found. The first strip, containing Fragments I and II (pages 1-16A), was 409.8 cm. in length; the second, formed by Fragments III and IV (pages 17a-24), was 201.6 cm. long. Together these total to 611.4 cm. The figure for the total length of the codex obtained by adding together the lengths of the skins which comprise the obverse face of the manuscript is 611.9 cm., while the individual page-length figures given in Table 1 total to 611.35 cm. Thus these three figures, arrived at on the basis of three separate sets of measurements, agree within 0.55 cm., or approximately one-half a centimeter.

For two of the fragments of the Colombino there are special aspects that merit further attention: the "extra" folds found in Fragment IV, and a variety of interrelated problems associated with Fragment II.

Each of the five pages of Fragment IV is characterized by the appearance of an "extra" fold in its left part, parallel to the regular left fold. The form of these "extra" folds is the same as that of the regular ones except that on the reverse face of the manuscript they appear to be somewhat less creased; they also lack the V-shaped zones of wear frequently found at the top and bottom of normal folds. The distance between the regular left fold and the "extra" fold on each page is: for page 20, 4.9 cm. (measured from the end of Skin No. 8); page 21, 5.3 cm.; page 22, 5.6 cm.; page 23, 6.3 cm.; and page 24, 6.8 cm. These figures show that the distance between the regular and "extra" folds increases with each successive page in the fragment. The "extra" folds appear in all the pages formed by Skins Nos. 9 and 10, which suggests that they were made after those two skins had already been joined together; however, for whatever reason, these folds apparently did not serve the purposes of the artists of the codex, and Fragment IV was folded into its present form before its pictorial contents were painted.

For Fragment II, one of the basic problems must be that of establishing its page size. The total length of this fragment is 27.0 cm., which is 1.62 cm. in excess of the average page length, and 1.2 cm. longer than the longest extant pages of the codex (pages 3 and 7). Therefore it seems clear that this fragment probably contains more than one page. In its present form there are two folds in Fragment II: the first of these is 1.3 cm. from the left end of Skin No. 5; the second is shared between pages 16 and 16A and lies 1.9 cm. from the right end of Skin No. 6. The distance between the two folds is 23.8 cm., which would

be 1.58 cm. less than the average page length and 0.85 cm. shorter than the shortest complete page in the present manuscript (page 23). While the possibility that the manuscript may have contained such an unusually short page cannot of course be ruled out, it seems more probable that the area now associated with one of the two folds formed a part of the original page. If to the 23.8 cm. distance between the folds there is added the 1.3 cm. that lie to the left of the first fold, a page 25.1 cm. in length would result; if instead the 1.9 cm. of page 16A is added, the page length would be 25.7 cm. Both page lengths fall within the range found in the extant pages of the codex (see Table 1). As a consequence, there are therefore three possible ways in which Fragment II might be paginated: as an unusually short but complete page flanked by small parts of both the preceding and succeeding pages; as a page some 25.1 cm. in length followed by a small part of the next page; or as a page about 25.7 cm. long which is preceded by the final part of another page.

The first fold in Fragment II, that falling 1.3 cm. from the left end of Skin No. 5, is completely covered over on the reverse side of the codex by Skin A, but it is still clearly visible through that skin. This fold has no V-shaped wear zones at either its top or bottom edge, which might be due either to its lack of use as an actual fold (as with the "extra" folds of Fragment IV) or to the reinforcing effect of Skin A in preventing wear. If this fold actually functioned as a fold, then Fragment II must have become separated from the remainder of the manuscript and been attached to the end of Fragment I at a time before appreciable wear had occurred along this fold.

The upper part of the fold between pages 16 and 16A is covered over on the reverse face of the manuscript by Skin B, but below this skin the crease of the fold is not strongly marked and, in fact, would hardly be noticeable if the area were flattened out. There is a V-shaped worn area at the bottom of the fold but not at the top, which would seem to indicate that Skin B was attached at a time before this area had received much wear as a fold. Skin B apparently serves to reinforce the upper part of this fold, although there is no obvious necessity for this since the fold is not torn. This skin ends 0.4 cm. short of the right end of page 16A and therefore in its present form could not have been used to attach page 16A to a following page.

At the right end of page 16A (Skin No. 6) there is a row of sewing holes, and there are similar holes along the left side of Skin No. 7 and through Skin No. 8 at the left side of page 17. When Fragments II and III were placed together, some of the holes were found to match, indicating that at one time the two separate pieces of the codex had been sewn together. The result must have been somewhat unsatisfactory, however, because regardless of whether the combined manuscript was folded between pages 16 and 16A or between pages 16A and 17, the material on one side of the fold would have been about 2 cm. longer than the normal page length. Therefore it is perhaps not surprising that the sewing at this point was not sufficient to prevent the codex from separating into two pieces. The presence of these matching sewing holes shows, however, that no additional pages have been lost between Fragments II and III in the time since they became separated.