

**TEXTILE PERIODS IN ANCIENT PERU: II
PARACAS CAVERNS AND THE
GRAND NECROPOLIS**

**BY
LILA M. O'NEALE**

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BIBLIOGRAPHICAL ABBREVIATIONS USED

- AA American Anthropologist
AMNH-AP American Museum of Natural History, Anthropological Papers
FMNH-AM Field Museum of Natural History, Anthropology, Memoirs
RMN Revista del Museo Nacional, Lima, Peru
UC-PAAE University of California Publications in American Archaeology and
Ethnology

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METHOD AND MATERIAL

A PRELIMINARY REPORT condensing the results of 650-odd analytic descriptions of archaeological fabrics has been published under the title *Textile Periods in Ancient Peru*.¹ Its authors had access to the Max Uhle collections from Moche, Supe, Lima, Chincha, Ica, and Nazca valleys, and to the Charlotte Uhle collections from Ancón and Chancay, all in the University of California Museum of Anthropology. Additional collections from Lima, Cañete, Pisco, and Nazca valleys, obtained by Professor A. L. Kroeber, were kindly made available by the Field Museum of Natural History. The material, in lots of various sizes, comes from sites along a 550-mile coast line and represents time periods from Early Nazca through Inca.

The Pisco Peninsula, about halfway between the Chincha and Ica valleys, was represented among the collections examined for Textile Periods I by a few purchased fragments from a site at Paracas subsequently excavated by Dr. Julio C. Tello. The present paper amplifies the preliminary survey in Textile Periods I by summarizing occurrences of technical processes and devices as recorded within the analytic descriptions of 375 additional specimens from two Paracas sites: the Caverns and the Grand Necropolis. Dr. Luis E. Valcarcel, director of the Museo Nacional in Lima, and his staff, especially the late Dr. E. Yacovleff, cooperated generously in permitting access to the desired collections and in providing space and facilities for work. The investigation was made possible by a Fellowship from the John Simon Guggenheim Foundation.

The Pisco Valley lots examined classify as follows:

Museo Nacional, Lima, Museum staff excavations in 1931 at Cerro Colorado, Paracas,² period probably antedating Early Nazca, 125 pieces.

Museo Nacional, Lima, Museum staff excavations in 1930 (†) at Caverns II and V of terrace II, Cerro Colorado, Paracas, period probably antedating Early Nazca, 4 pieces.

Museo Nacional, Lima, J. C. Tello by excavations between 1925 and 1930 at various sites in the Grand Necropolis, Paracas, period approximately Early Nazca, 246 pieces. The bulk of this material has been moved to the Museo de Antropología e Investigaciones Prehistoricas in Magdalena Vieja.

Field Museum of Natural History, A. L. Kroeber, by purchase, fragments from one of the Necropolis sites subsequently excavated by J. C. Tello at Paracas, period approximately

¹ Lila M. O'Neale and A. L. Kroeber, *Textile Periods in Ancient Peru*, UC-PAAE 28: 23-56, 1930. Herein cited as *Textile Periods I*.

² E. Yacovleff and J. C. Muelle, *Una exploración en Cerro Colorado*, RMN 2:31-59, Lima, 1932.

Early Nazca, 7 pieces. The techniques occurring within these pieces have been recorded in Textile Periods I under *"Early" Paracas.³ The counts stand as given, but they do not reappear in any of the Paracas Necropolis tabulations in the present study.

REVISIONS

The totals for the Early and Middle cultures recorded in Textile Periods I have been reexamined and revised. At this point such changes should be explained, since tables in this and subsequent studies will be based on the new counts.

The uncertain time position of the early Cañete culture was indicated in table 1 of Textile Periods I by a broken line extending from the latter half of the Pre-Tiahuanaco period to a short distance beyond the Tiahuanaco-Epigonal horizon. The textile techniques were entered as "Early" Cañete under Early-period classifications. Since that study appeared, Professor Kroeber has published his full report on the Cerro del Oro site⁴ and has "provisionally called Middle Cañete" the earlier of the two cultures found in the valley.⁵ Several additional textiles examined for this report increased to 23 the original number of 14 specimens on record in Textile Periods I.⁶

Kroeber says that "Middle Cañete culture fabrics from Cerro del Oro point strongly toward Early or Middle and toward Nazca-Ica affiliations."⁷ This statement is borne out by the results of adding to the Middle-period totals the occurrences of Cañete techniques previously included in the Early-period totals. For both Early and Middle periods the percentage frequencies are either left unchanged, or are lowered or raised only 1 or 2 per cent except for two occurrence totals. In these two instances the Cañete transfer from Early to Middle period and the added specimens affect the totals as much as 4 and 7 per cent. However, these increased percentages do not involve important techniques. It is much more significant that the Cañete group of fabrics lacks netting and gauze examples—both Early processes—and that it includes three techniques rare in any Peruvian period. Two of the latter are unrepresented among the analyzed materials from Early sites at Supe, Paracas, Ica, and Nazca.

The Cañete lot of 23 specimens contains two twill-weave fabrics to add to the previously recorded examples from Middle (Proto-) Lima⁸ and Late Nazca.

The Cañete lot also contains one tie-dyed fragment⁹—perhaps the earliest example yet found, according to Kroeber—to increase the total for the Middle period to three and the total for the nearly 600 textiles analyzed for Textile Periods I to five. The third rarity in the small Cañete collection is a bag in tubular, or "ring-weaving," construction to add to a previously recorded ex-

³ Throughout Textile Periods I the asterisk designates lots or specimens whose age is not determined by pottery associated in the same graves. The asterisk is omitted in this paper.

⁴ A. L. Kroeber, *Archaeological Explorations in Peru*, Pt. IV, Cañete Valley, FMNH-AM 2:221-273, Chicago, 1937. Herein cited as Cañete Valley.

⁵ *Ibid.*, 241.

⁶ *Ibid.*, Appendix 6 and pls. 88-90.

⁷ *Ibid.*, 241.

⁸ *Ibid.*, pl. 90, fig. 3.

⁹ *Ibid.*, pl. 88, fig. 4.

ample from Epigonal Nazca.¹⁰ This last technique is the only one of the three to find a counterpart among the Early-period fabrics. A fragment from Cahuachi, Nazca (FM 171180c), is similar to the Cañete bag in effect, but the Nazca piece shows a different method of construction and is less like the true "ring" type than is the bag.

No one of the three techniques, twill, tie-dyeing, ring weaving, are present among the Paracas collections from the Caverns and the Necropolis.

A revision of the totals for Early Nazca has also been made. In Textile Periods I, 117 specimen numbers were recorded; in a later monograph,¹¹ the total was increased by 46 specimens, partly through more detailed analysis, but mainly by differentiating on the basis of color and texture between several technically identical Cahuachi pieces catalogued under the same specimen number. Thus, Field Museum 171321a, b was counted as two specimens in Textile Periods I, whereas in Textiles of the Early Nazca Period it was listed as 171321a, b¹⁻⁵, and counted as six specimens. Table 30 in the latter publication records both the preliminary and the corrected or revised counts for each of the occurring processes.

The totals for specimens used in this paper are as follows:

Total Late period, 340. Late cultures include Chimú, at Chanchan and Moche; Chancay; Ancón; Chincha; Ica; Nazca.

Total Middle period, 171. This comprises 148 as in Textile Periods I plus 14 Cañete specimens transferred from the Early group to the Middle period and 9 additional pieces analyzed for the Kroeber report. Middle cultures include Tiahuanacoid, Moche; "Early" Lima at Nievería and Aramburú, Middle Cañete ("Early" Cañete in Textile Periods I), Middle and Epigonal at Ica; Y and Epigonal at Nazca.

Total Early period, 574. This comprises 167 as in Textile Periods I minus 14 Cañete transferred specimens, plus 46 Cahuachi, Nazca, pieces—the result of revisions for Textiles of the Early Nazca Period—129 Paracas Caverns, and 246 Paracas Necropolis specimens. Early cultures include Primitive Supe; Early Paracas; Paracas Caverns and Paracas Necropolis; Early Nazca at Ica and Nazca. Approximately 4 per cent of the Paracas Caverns specimens are maguay, or of doubtful fiber content.

PARACAS TIME PERIODS: CAVERNS AND NECROPOLIS

The Caverns and the Grand Necropolis at Paracas are two of the most important archaeological sites of the Early period on the south-central Peruvian coast. Kroeber tentatively places the Necropolis remains within the same time period as Early Nazca sites at Ica and Nazca and with "Primitive" Supe.¹² Tello holds that both cultures on the peninsula were contemporary with the Early culture at Chavín and earlier than any culture in the Nazca Valley so far known.¹³ The rarity of certain patterning techniques, like tapestries and warp stripings, and the almost exclusive dependence upon embroidery for decoration might be cited in support of Tello's theory.

But granted that the chronological concordance of periods for the known

¹⁰ *Ibid.*, 271 and pl. 88, fig. 1.

¹¹ Lila M. O'Neale, Textiles of the Early Nazca Period, FMNH-AM 2:119-218, 1937. Herein cited by title.

¹² Textile Periods I, 25 and table 1, Chronological Concordance of Periods.

¹³ J. C. Tello, *Antiguo Peru*, Lima, 1929.

Paracas sites and those in the several other valleys is in question, there is no least doubt concerning the status of the textile art on the peninsula. It was fully established even in Caverns times, as proved by elaborate gauzes and lacelike fabrics of a quality not surpassed by those of the Late-period craftsmen.

As between these two cultures, the Caverns must be reckoned the older since graves of the Necropolis period are found within rubbish left by the Caverns' population. Time lapse between the two is also implied in the clearly identifiable stylistic and technical differences in their textiles, despite undoubted relationships (pls. 2, 3).

The Necropolis textiles are familiar through many references in the literature.¹⁴ Writers have commented particularly upon the excellent workmanship exhibited by the solid embroidery which often completely covers the base fabrics and upon the rich color harmonies in the design motives. All have likewise agreed that the pieces represent one of the earliest-known archaeological periods on the coast.

As a whole, the textile motives are either typically Early Nazca in style or they bear strong likeness to those on Ica and Nazca pottery. Because of this fact the cloths were usually attributed to sites in those valleys. Tello was successful in tracing back the known fine "Nazca" textiles to the Pisco Peninsula, and his excavations at Paracas since 1925 have established that site as the true provenience.

The most celebrated single piece among the Necropolis embroideries is the so-called "Paracas textile," which originally belonged to Señor Rafael Larco y Herrera, of Peru. This textile was for several years exhibited at the Musée d'Ethnographie du Trocadéro in Paris and has now been acquired by the Brooklyn Museum. Mme Jean Levillier's fine description of this piece, amply illustrated, was the first to give due prominence to the textile art of the Paracas embroiderers.¹⁵ D'Harcourt in his monumental work on Peruvian textiles presents a large collection of photographic reproductions of this and other Paracas cloths.¹⁶ Plates 80 through 96 in D'Harcourt's work show in detail various portions of the Larco y Herrera mantle; plates 97-103 illustrate ornamental borders, enlarged details, and whole garments. Among the latter are two (pl. 97) from the Museum of Fine Arts, Boston.

Mead¹⁷ and Crawford¹⁸ both show design details of Paracas Necropolis embroideries with the Ica label. Means¹⁹ includes over a dozen reproductions of garments or enlargements of single embroidered motives in his study of the collection at the Museum of Fine Arts, Boston. Where proveniences are given, they read "said to come from the Nazca Valley," or "from Pisco," or "from near Pisco."

¹⁴ Textile Periods I, fn. 13.

¹⁵ Mme Jean Levillier, *Paracas, A Contribution to the Study of Pre-Incaic Textiles in Ancient Peru*, Paris, 1928.

¹⁶ Raoul d'Harcourt, *Les Textiles anciens du Pérou et leurs techniques*, Paris, 1934.

¹⁷ Charles W. Mead, *Old Civilizations of Inca Land*, fig. 37, 1924.

¹⁸ M. D. C. Crawford, *Peruvian Fabrics*, AMNH-AP 12, figs. 13, 15, 25, New York, 1916.

¹⁹ Philip A. Means, *A Study of Peruvian Textiles*, figs. 42-55, Boston, 1932; *Ancient Civilizations of the Andes*, figs. 190, 209, New York, 1931.

The Museum of Fine Arts (Boston) specimen, which is illustrated by D'Harcourt and in both studies by Means, is an excellent example from the aesthetic and technical aspects. The embroidery is at several stages of completion, and in addition the woven rectangle lacks the separately embroidered side bands which always match in color and design the oblong panels at the four corners of the main rectangle. One method of embroidery procedure is clearly shown by this mantle.

The most recent publication on Paracas textiles is devoted to a detailed analysis of pattern elements and color juxtapositions. Some fifty specimens, all from the Necropolis and representing collections in the museums of the eastern United States, form the basis of the study.²⁰

In striking contrast to textiles from the Paracas Necropolis, those from the Paracas Caverns have, up to the present, been mentioned very few times in the literature. Moreover, they are almost unknown through illustrations. Señorita Rebeca Carrión Cachot in a short section on the "textile art in the first period of Paracas" deals briefly with the Caverns costumes, ornamentation, and techniques.²¹ She states that there is a vast amount of material at the National Museum (Lima), but that it is composed for the most part of semicarbonized cloths. These had not been prepared for convenient examination at the time of her study.

A complete description and inventory of finds in three Caverns graves was published by two staff members of the National Museum (Lima) who were in charge of the expedition.²² My analysis of the textiles published in the same monograph supplemented the inventory.²³ The fabrics were too badly preserved to photograph satisfactorily with the available equipment, and doubtless much of the material examined by Carrión Cachot was in like condition judging by her only photographic reproduction. The state of preservation, which renders photographic reproduction almost valueless, explains, in large part, the line-drawing illustrations in this and the other papers.

The textile material from the Caverns described for this study comprises, with only four exceptions, cloths found in the three graves mentioned. My analysis was further limited to specimens in the lot which are wholly or in part made of cotton or wool (including hair) fibers. These 125 pieces come under the following classifications:

1. Woven cloths including fragments of garment materials; small squarish webs tied or sewn to form bags; belts, bands, and tapes, and small pads for effecting head deformation, 47 pieces.
2. Netted, knotted, and twined fabrics including headbands, bags, fish and carrying nets, 21 pieces.
3. Magney slings of which one small detail is cotton, 6 pieces.
4. Yarns and cords in balls, skeins, and on spindles, and loose cotton masses, 47 pieces.

²⁰ Cora E. Stafford, *Paracas Embroideries, A Study of Repeated Patterns*, New York, 1941.

²¹ Rebeca Carrión Cachot, *La indumentaria en la antigua cultura de Paracas, Wira Kocho* 1:37-46, Lima, 1931. Herein cited by author.

²² E. Yacovleff and J. C. Muelle, *op. cit.*

²³ Lila M. O'Neale, *Tejidos del período primitivo de Paracas*, RMN 1:60-80, Lima, 1932. Herein cited by title.

Carrión Cachot²⁴ speaks of the difficulty of identifying the functions of the different cloths found at the Caverns sites. The garments, few in number, are usually in a bad state of preservation. However, she gives measurements and brief descriptions of rectangular cotton cloths of the mantle type (2 m. long by 1.30 m. wide on the average); of three types of tunics differing in shape, size, and decoration (a large one, a second, shorter but about as wide as the first, and a third much shorter tunic, which scarcely covered the upper part of the body); of long narrow transparent scarves, probably turban cloths (2 m. long by 0.55 m. wide), embroidered in wools; and of embroidered ribbons and bands.

The textiles from the Grand Necropolis which appear in the tabulations to follow represent a very small part of the enormous quantity recovered since 1925 from various sites at Paracas. The 240-odd specimens analytically described provide, however, a fair sampling, since everything indicated, during their examination at the Museum, that additional efforts would simply result in piling up the totals of a few local specializations or favored techniques. Judging from the certainty with which published photographs of Paracas Necropolis fabrics can be recognized—regardless of plate legends allocating them to Ica or Nazca sites—striking designs and the ambitious use of complicated color sequences are the primary aesthetic accomplishments. Less often than might be expected, the analyst discovers, is there achievement of high craftsmanship through the mastery and employment of a wide range of techniques. This point can be made more specifically later on in the study.

The Necropolis materials classify under the following garment groupings: woven cloths identifiable as large mantles (78), small rectangular poncho-like garments (*esclavinas*) reaching to or just below the waist (59), short kilts of the wrap-around variety (27), aprons (12), tunics (8), turban and scarf lengths (31), veils (4), headgear, slings, utility wrappings, various accessories (27).

TRAITS COMMON TO ALL PERIODS

Two of the three inferences based upon the analytic descriptions of the cloths examined for Textile Periods I may well be repeated here:²⁵ the fundamental technologies and control of the art were already established at the beginning of the discovered record; and changes according to period manifested themselves in style rather than technology, or in the preference given to certain techniques rather than in new invention. These points hold for the Paracas material under discussion in this paper and are considered in the order given.

Fundamental textile technologies depend to a great degree upon the available fibers from which yarns can be spun and also upon the quality of workmanship shown in the spinning. It is an incontestable fact that the ancient Peruvians were accomplished spinners of cotton, wool, and hair and that the smoothness of their yarns notably contributed to the production of fabrics excellent by any modern standard. Even the early Caverns material proves

²⁴ Carrión Cachot, 44, fig. 4.

²⁵ Textile Periods I, 25.

that yarn making had long since passed the formative stage. The Peruvians added to this ability to spin yarns for any purpose a like ability to choose yarns of various fiber content for the construction of both useful and purely decorative fabrics.

Also underlying their control of the textile art was a wide experience with the basic warp-weft techniques together with numbers of special methods for adapting them to specific uses. Most of these adaptations have offered no clues to the mechanical aids and devices used in their construction. What looms have been found seem to have been little more than adequate to hold the warps at the desired tension and spacing and to place some of them under a heddle control. Fortunately, the reconstructed account of ancient Peruvian textiles is just beginning to be written, and much that is doubtful at this time may be clarified through more investigations.

Still another fundamental textile technology has to do with knowledge of dyestuffs. This is so aesthetically important that a people who achieve mastery of spinning and weaving usually gain control over materials which will yield them a wide range of pigments. The Necropolis people did not lack a color scale or values or intensities for the most complicated embroideries. More will be said of this phase in a later section.

Whenever feasible, the entries for the 375 additional Paracas specimens considered in this paper are recorded under the major and minor headings set up for the "Basic Table" at the end of Textile Periods I.²⁶ No changes in the main classifications were required for, with a few minor exceptions, the textile processes of the Paracas weavers and embroiderers fit into the framework of techniques for which modern textile terms have already proved satisfactory. Frequently the tabulated counts indicate that the differences between the technological processes at Paracas and those at Early sites in the Nazca Valley are in the degree of emphasis on certain favorites rather than in kind. In order to interpolate comparisons and point out local specializations, the Basic Table is broken down into its main sections: the warp-weft techniques; the single- and multiple-element techniques, superstructural techniques, and devices to vary effect. The last two of these are presented by subsections.

PARACAS YARNS

Pisco Valley weavers during both the Caverns and Necropolis periods freely used cotton and wool yarns, as did the weavers in the several other coastal valleys so far investigated.²⁷ Representative collections from Paracas contain all-cotton fabrics and all-wool fabrics together with specimens in which both cotton and wool appear. Modern unions are of two general types: yarn and cloth. The yarn union is either a blend of different raw stocks before spinning; or it is a combination of two or more separately spun plies of different fibers. The most available Peruvian fibers for raw-stock blends were cotton and wool, but the two-fiber blended yarn is, so far as I know, undiscovered among the

²⁶ Textile Periods I, "Basic Table: Frequencies of Processes by Areas and Periods," following pl. 48.

²⁷ *Ibid.*, 26.

ancient yarns, and the ply combinations are so rare as to suggest they were expedients or accidents.

The cloth union is a material constructed of warps and wefts spun from different fibers. This two-yarn combination explains almost all the Middle-period unions because of the prevalence of tapestries among the finds. Practically all the patterned Peruvian tapestries of any period were woven of cotton warp and wool wefts.

In the group of Paracas garment materials neither yarn nor cloth unions of the types described are represented, and yet the completed specimens classify as unions of a type dependent entirely upon added decorative details. Because Necropolis embroidery yarns are invariably wool, and because fringes,

TABLE 1
FABRICS CLASSIFIED ACCORDING TO YARN CONTENT

Period	Total number of specimens	Cotton only (per cent)	Wool only (per cent)	Cotton and wool (per cent)
Late.....	340	45	19	36
Middle.....	171	30	26	43
Early.....	574	35	23	37

Source: table 2 of Textile Periods I, with revisions and additions as explained in a preceding section, p. 144.

tassels, and the like are wool with few exceptions, over three-fourths of the all-cotton weavings as they came from the looms later become union specimens upon their completion.

Necropolis all-wool weavings are likewise embroidered in wool yarns, yet even some of them require charting as unions. More than a fourth of the seemingly all-wool mantles are of types constructed by piecing together wide wool breadths and narrower cotton breadths. These all-cotton breadths are subsequently rendered completely invisible by solidly embroidered backgrounds and design motives. It is likely that the cotton cloth provided a better base fabric upon which to work the Paracas decorative stitchery.

Interpretation of the fiber-content percentages given for the Necropolis must take into consideration the factor of selection. Carrión Cachot's inventory of the articles comprising the contents of several of the mummy bundles included in this study refers to "coarse cotton cloths" (*pañños burdos*) of various sizes suitable for wrappings and for protective layers to alternate with the elaborately embroidered garments (pl. 3). Bundle 89 contained 3 utility cloths; others contained from 5 to 22; bundle 91 contained 25.²⁸ Most of these wrappings were not available for analysis, but certainly their inclusion in the fiber-content tabulation would appreciably raise the percentages of all-cotton specimens.

About 8 per cent of the 246 specimens from the Necropolis were constructed of fibers other than cotton and wool or are in the doubtful category for some

²⁸ Carrión Cachot, 49 *passim*.

reason. The tabulated percentages for the remaining 220-odd Necropolis specimens indicate the extent to which added decorative details required the transfer from an all-cotton or an all-wool classification to a union classification:

All-cotton weavings (or otherwise fabricated materials): 67 per cent. Of these 82 per cent are made union specimens through the addition of wool-yarn embroidery, and so forth.

All-wool weavings (or otherwise fabricated materials): 32 per cent. Of these 27 per cent are made union specimens through the addition of narrow cotton breadths for embroidery foundations.

The percentages for the specimens in the Caverns collection are quite different. The Caverns unions are all combinations of spun cotton and maguey or of spun cotton and human hair wound as skeins presumably for use in cords and slings of the types present among the finds.²⁹ If we subtract about 4 per cent of the group which are constructed of fibers other than cotton and wool or are in the doubtful category, the percentage ratio all-cotton to all-wool to union specimens is as 81 : 8 : 7.

PARACAS LOOM TYPES

All the direct evidence at hand points to the fact that the ancient Peruvian loom was the stick-loom or backstrap type. That it was a perfected loom with a heddle even in Paracas Caverns times is evidenced by National Museum (Lima) specimen 8465a, an unfinished cotton band warped to measure about 25 by 3 inches. Almost 7 inches of the weaving is completed; but the remainder of the warps are without wefting. Still in place on these bare warps, some 5 inches from the last throw of the weft there are a series of heddle loops. Each loop makes a simple turn around the particular warp it controls in the shedding.

The great majority of fabrics woven on ordinary stick looms are from 12 to 26 inches in width. In Textile Periods I there are recorded the measurements of fifteen single-breadth cloths with widths ranging from 32.5 to 47.5 inches.³⁰ Two of the Cahuachi, Nazca, fragments over 40 inches in width were subsequently found to be parts of the same specimen, an unseamed cloth woven 5 feet 5 inches wide. This discovery raised the question how such single breadths and others on record as measuring 7 feet 7 inches and 8 feet 3 inches³¹ could be woven on a belt-loom of the type attached to the weaver's waist. Suggested explanations include the use of large-size frames or a weaving procedure involving several persons seated side by side.³² Both means of constructing wide fabrics are in use today in various parts of the world. Theories of procedure, however, can successfully be supported only by the discovery of loom bars, or

²⁹ Carrión Cachot (39), comments that "wool is very rare and only appears in some coarse striped tunics, found in caverns and tombs which correspond to a later period to judge by the close similarity which they present to the tunics used by the Andeans of all epochs."

³⁰ Textile Periods I, fn. 14.

³¹ E. Yacovleff and J. C. Muelle, *Un fardo funerario de Paracas*, RMN 3:63-153, Lima, 1934.

³² Lila M. O'Neale, *The Wide-Loom Fabrics of Nazca*, in *Essays in Anthropology in Honor of Alfred Louis Kroeber*, 215-228, Berkeley, 1936.

heddle sticks, swords, bobbins, or other shaped tools. Knowledge of their lengths would aid materially in explaining widths over 30 inches, the usual upper limit for belt-loom weavings. It may be that long wooden artifacts of the type needed have been destroyed or have been ignored. Peruvian weaving tools are almost never decorated and might easily lose their identity, once the yarns are off them.

The Necropolis cloths again raise the question of the loom but add a new factor: some of the mummy bundle wrappings are not only wide, but much too long to be considered in terms of belt-loom weavings. They could be more satisfactorily explained by a fixed horizontal frame. Single breadths among the Paracas garments considered in this paper measure up to 4 yards in length and up to 46 inches in width. Carrión Cachot gives the dimensions for two wrappings from bundles 157 and 290 as 12.55 m. long by 2.75 m. wide and 20.70 m. long by 4.89 m. wide respectively. A recent Peabody Museum report mentions a textile "47 feet long and 12 feet wide."³³ Regardless of whether or not the cloths are single breadths or are two or more breadths seamed together, the lengths in themselves require some form of supported front beam. The mere bulkiness precludes the stick loom with a lower bar resting across the weaver's lap.

TECHNICAL PROCESSES AT PARACAS

WARP-WEFT TECHNIQUES

Plain weaves.—It was found in tabulating techniques for Early Nazca sites in the several valleys that nearly all the fundamental weaves were represented in a standard or a variant form by at least one specimen. No such statement can be made for the Caverns or Necropolis lots. Interlacing of the simplest over-one-under-one type occurs in 46 of the 49 Caverns plain weaves, and in all of the 218 Necropolis plain-weave specimens. Moreover, introduced supplementary techniques within the basic plain weaves are almost nonexistent.

One technique, brought to a high development in the Peruvian Early periods is based on interlocking warps and wefts.³⁴ By the use of skeleton or scaffold wefts at various needed points it was possible for the weaver to construct small and large areas of a multicolored pattern with the warps and wefts of each individual area in a solid color. The Early Nazca multicolored patchworks constructed by warp-and-weft interlocking are extremely complicated³⁵ as are also two Middle-period specimens from Cañete Valley.³⁶ The only Necropolis specimen in the analyzed group has a simple motive, much like several among Late-period cloths, but the point is that the method of achieving patterns must have been well understood to account for the expertness shown in the handling of the yarns (fig. 1).

Tapestries.—Tapestry technique, seemingly weakly developed in the known

³³ Seventy-third Report on the Peabody Museum of Archaeology and Ethnology, Harvard University, 1938-39, Cambridge, 1940.

³⁴ Lila M. O'Neale, A Peruvian Multicolored Patchwork, AA 35:87-94, 1933; Textile Periods I, 39-41, 49-51.

³⁵ Textile Periods I, pl. 19.

³⁶ Kroeber, Cañete Valley, pl. 89, fig. 2, a, b, c.

TABLE 2
EARLY WARP-WEFT TECHNIQUES
Percentage of Occurrence

Techniques	Primi- tive Supe (16 spec.)	Early Nazca, Ica (13 spec.)	Early Nazca, Nazca (163 spec.) ^a	Early Paracas (7 spec.)	Paracas		
					Necropolis (246 spec.)	Caverns (129 spec.)	Total (375 spec.)
Plain weave ^b	81	54	70	86	89	38	70
1. 1 warp, 1 weft	13	54	68	86	89	38	70
1a. 2 warps, 1 weft	25	.. ^c	..	..	..	+^d	+
1b. 1 warp, 2 wefts	44	..	..	..	..	+	+
1+ Interlocking warps, wefts . . . . .	..	..	2	..	+	..	+
Basket type . . . . .	..	..	..	..	..	..	..
Tapestry ^b	6	8	7	..	1	..	+
Monochrome	6	..	2	..	..	..	..
Kelim . . . . .	..	8	3	..	1 ^e	..	+
Eccentric . . . . .	..	..	2	..	..	..	..
Interlocking weft . . . . .	..	..	+	..	..	..	..
Underfloat weft . . . . .	..	..	..	..	..	..	..
Single warp wound . . . . .	..	..	+	..	..	..	..
Figure-8 . . . . .	..	..	2	..	..	..	..
Twill types . . . . .	..	..	..	..	..	..	..
Double cloth . . . . .	..	..	+	..	+	+	+
2 warps, 2 wefts; variants	..	..	+	..	..	..	..
2 warps, 1 weft . . . . .	..	..	..	..	..	..	..
Pattern weave ^b . . . . .	..	..	6	..	+	+	+
Single-face, underfloat warps . . . . .	..	..	2	..	+	+	+
Single-face warp-and-weft floats . . . . .	..	..	2	..	..	..	..
Double-face, 1 warp, 2 wefts . . . . .	..	..	+	..	..	..	..
Double-face, 2 warps, 1 weft . . . . .	..	..	+	..	..	..	..
Wrapped weave . . . . .	..	..	+	..	..	..	..
Single weft . . . . .	..	..	+	..	..	..	..
Multiple weft . . . . .	..	..	..	..	..	..	..
Gauze weave . . . . .	..	..	2	..	+	3	1

NOTE.—In this and succeeding tables the divisions correspond to similarly titled divisions of the "Basic Table" following plate 48 in Textile Periods I.

^a Total includes 46 Cahuachi, Nazca, additions to the number entered in Textile Periods I, as explained on p. 145.

^b Percentage frequencies of subvarieties of a process may total higher than the figure given for the process because of co-occurrences in one specimen of several subvarieties.

^c The ellipses indicate the nonoccurrences in the Early period of techniques found in textiles of the Middle and Late periods.

^d The + sign indicates occurrences in fewer than 1 per cent of the total number of specimens from a site.

^e Examples of Kelim technique employed for salvaged neck openings are entered under table 9, "Devices to Vary Effects: Weaving Techniques."

Early-period localities, is nevertheless present in a sufficient number of specimens to prove it was known. Among the 12 Cahuachi, Nazca, tapestries there are practically all types. The only Paracas Necropolis examples are in slot, or Kelim, technique, but an important point should be made regarding the Necropolis Kelims: more than 80 per cent of the *esclavinas*—small poncho-like upper garments—have selvaged neck openings woven Kelim fashion.

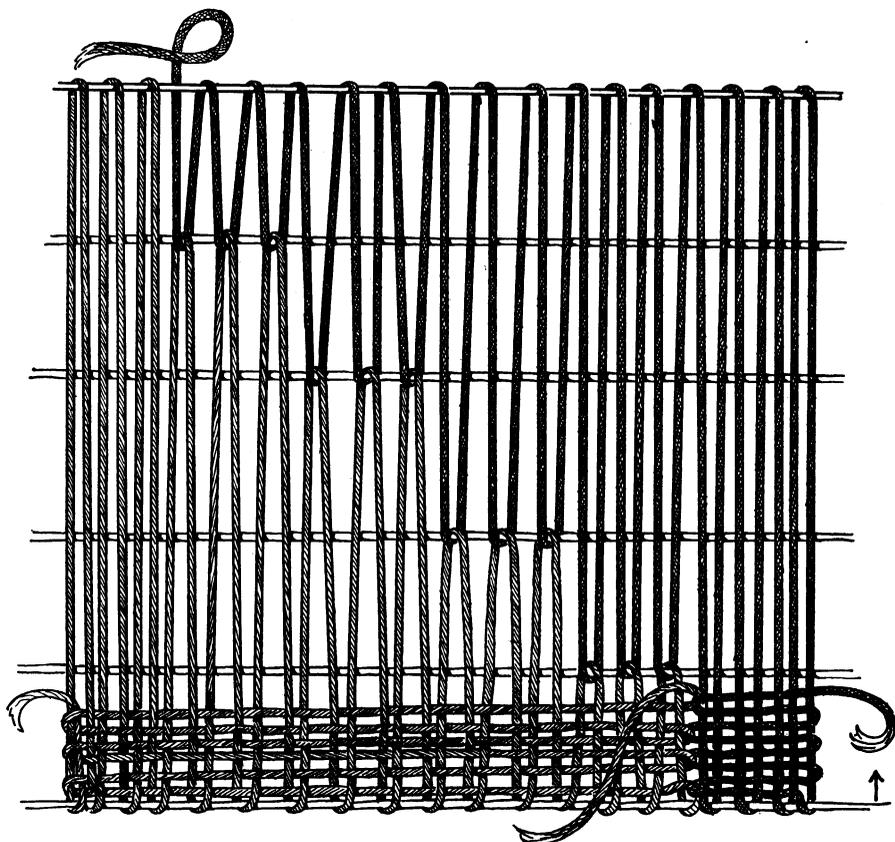


Fig. 1. Paracas Necropolis. MN 378-8 (23777). Detail of mantle in multicolored patchwork technique, a variant of the plain weave; approximately 6 in. square. Skeleton wefts necessary for the end-to-end interlocking may or may not be withdrawn upon completion of the weaving.

This proves that a basic tapestry technique was perfectly familiar to the Paracas weavers even if they did neglect to develop its pattern possibilities. Cahuachi cloths are embroidered and tapestry patterned; Paracas cloths are embroidered, almost exclusively, a fact which argues for their greater age. There is not the least suggestion of tapestry in any form among the 120 Caverns cloths, although Carrión Cachot speaks of it as only "relatively rare." She says it is found in a limited number of examples of ribbons, headbands, and belts.³⁷

³⁷ Carrión Cachot, 40.

Twills, double cloths, and pattern weaves.—Twill, unrepresented by specimens from any of the Early sites, are exceedingly rare even among the Middle and Late textiles. That fact always strikes a modern weaver as strange, since the technique appears so constantly in basketry. One might think that baskets, merely because they are easily copied, would have had some influence on the cloth weavers.

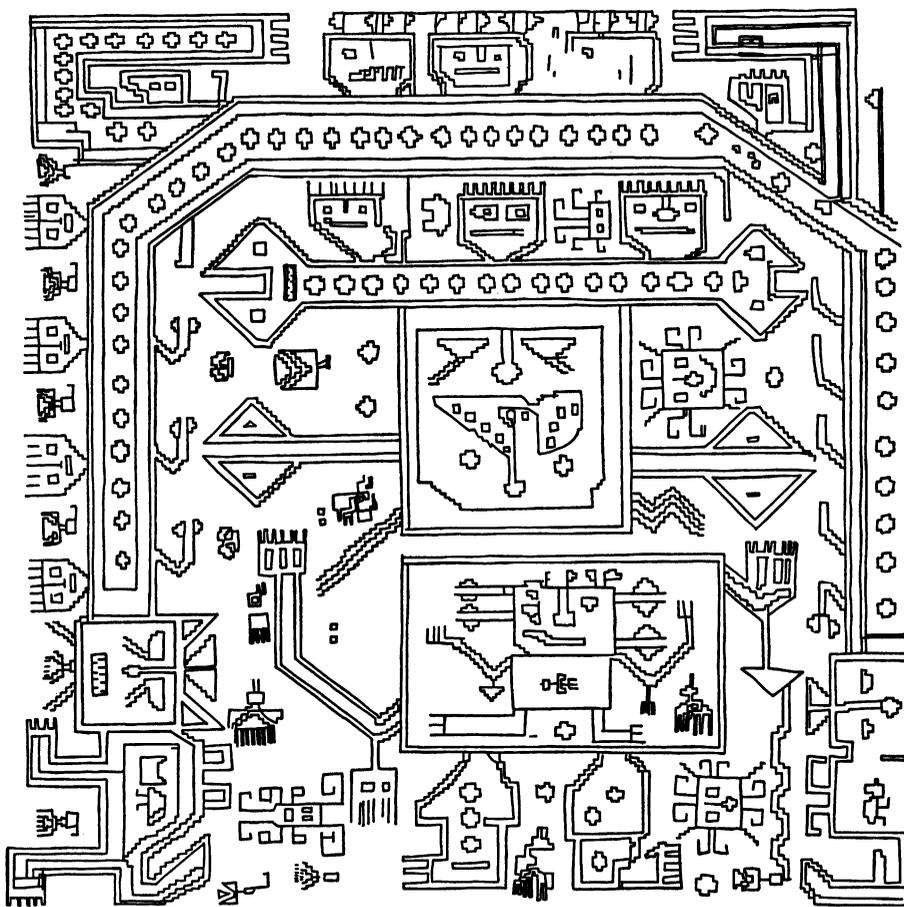


Fig. 2. Paracas Caverns. MN 11-1. One of six motives, three to each of the two breadths, in a double-cloth mantle; approximately 22 in. square. Each motive is centered by a cat form; serpents, faces, and geometric shapes are space fillers.

Double cloth appears once among the Early Nazca cloths examined in a wool fragment unusual both in appearance and quality of workmanship.³⁸ Each of the two Paracas lots includes an all-cotton example (figs. 2, 3). All three Early double cloths are of standard construction, an interweaving of two warp sets and two weft sets at intervals between the independent weaving of each set.

³⁸ Textiles of the Early Nazca Period, 193 and pl. 42, *a*.

These few examples of a technique which lasted into Late times must be considered the representatives of many other specimens. Carrión Cachot mentions Blue and White, Coffee-Brown and White, and Brown and Brick-Red cotton double-cloth mantles among Caverns lots, and speaks of the large woven designs.³⁹ Figure 1 in her study is a photograph of the specimen from which the tracing for figure 2 in the present study was made. The piece (Cav. 11-1)

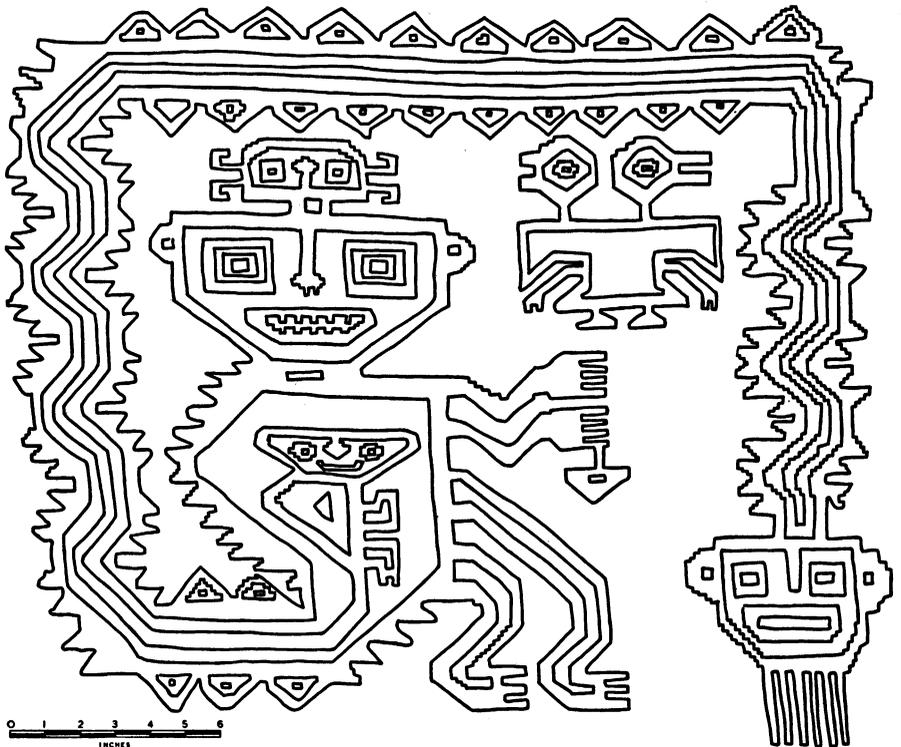


Fig. 3. Paracas Necropolis. MN 349-1 (23630). One motive of the eleven in a two-breadth mantle woven in double-cloth technique; 21×24 in. The central figure in each rectangle is a cat-warrior carrying trophy-head and weapon.

is Brown and White, and although the weaving is medium coarse (20 warps by 20 wefts per inch), the work is fairly uniform and displays no struggles with technique.

The Early Nazca total for pattern weaves is increased by two significant examples, one each from the Caverns and the Necropolis (fig. 4).⁴⁰ Both are narrow weavings under 3 inches in width, both single-face pattern weaves with warp floats. Warp-made patterns of any sort usually indicate more foresight, preparation, and skill than do weft-made patterns. Wherever warps are set up in a series of colors as for striped cloths, the evidence of a plan is clear. To

³⁹ Carrión Cachot, 39.

⁴⁰ Text figures showing details of Caverns textiles are from illustrations made by Dr. Jorge C. Muelle for the author's paper, *Tejidos del período primitivo de Paracas*.

choose to develop a pattern by means of warp floats rather than with weft floats indicates knowledge of the possibilities of warp manipulation, the visualization of a complete design, and control of the means of accomplishing it. Modern stick-loom weavers in the Andes regard warp patterns based on the raising and lowering of individual warps a proof of their expertness.

Gauzes.—The gauze weaves, especially those among the Caverns specimens, show the most skillful interlacing of warps and wefts to be found among the Early textiles.⁴¹ The fundamental technique in itself is not a problem unless the tedious insertion of the weft through individually made twists in the warp be counted difficult (fig. 5), but the allover designs are complicated and develop through the massing of single twists which are reciprocal or interlocking. No Middle-period or Late-period gauzes examined to date can compare



Fig. 4. Paracas Caverns. MN 8440a. Narrow cotton tape in a single-face pattern weave with warp floats; $\frac{3}{4}$ in. wide.

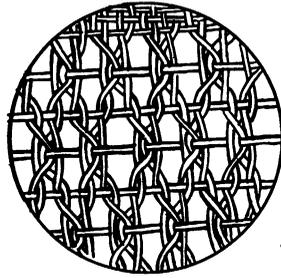


Fig. 5. Paracas Caverns and Necropolis. Detail of gauze technique of the type known from many sites and all known Peruvian periods.

with three of the examples from Cavern V on terrace II at Paracas. Their style of patterning is similar to that of the Necropolis embroideries, but the manipulation of the yarns to achieve it is a sign of a much more fully developed expression of technical mastery (pl. 1 and fig. 6).

SINGLE- AND MULTIPLE-ELEMENT TECHNIQUES

Netting.—Netting, represented by three fragments in the Necropolis and 18 in the Caverns collection, seems to have been used not only for fish and carrying nets, but also for headdresses. Those of the Caverns people are interesting in design as well as in technique. Simple "finger" knots, tied row on row as in standard netting, were so closely set as to make unnecessary any form of mesh gauge (fig. 7).

By this laborious procedure the netmaker constructed compact fabrics varied in two ways: by the introduction of colored yarns and, texturally, by the alternation of single knots and pairs of knots or by the alternation of throws of the cord to right, then to left, during the tying (fig. 8).

A white cotton bag in the Caverns collection (fig. 9) is constructed of a square-mesh fabric similar to our filet lace. The pattern and base material were built up at the same time by carrying along parallel to certain of the

⁴¹ Carrión Cachot, 40.

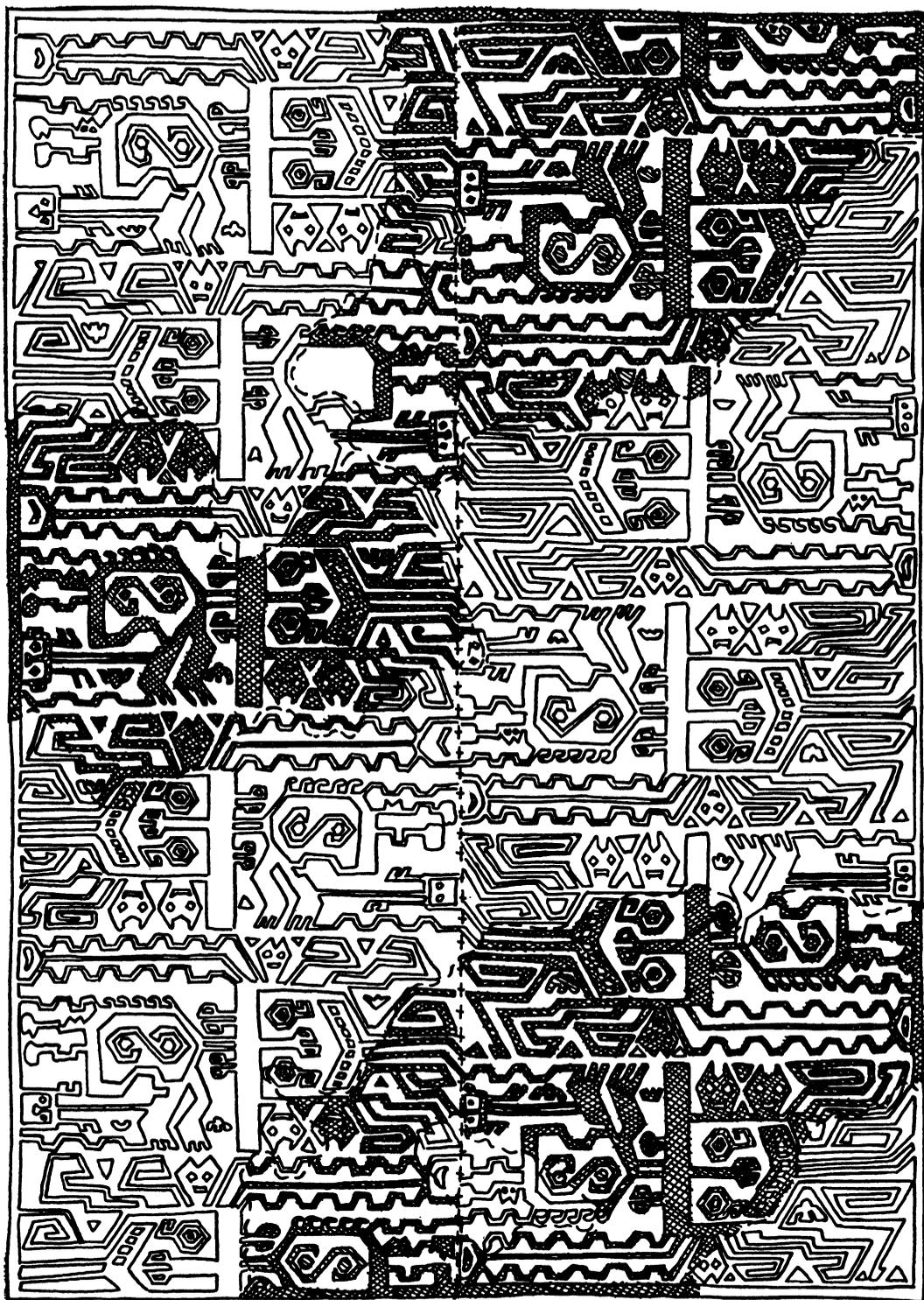


Fig. 6. Paracas Caverns. MN 8457a. Cotton mantle constructed of two breadths in gauze technique; 54x75 in. The piece is fragmentary, but the

TABLE 3
EARLY SINGLE- AND MULTIPLE-ELEMENT TECHNIQUES
Percentage of Occurrence

Techniques	Primi- tive Supe (16 spec.)	Early Nazca, Ica (13 spec.)	Early Nazca, Nazca (163 spec.)	Early Paracas (7 spec.)	Paracas		
					Necropolis (246 spec.)	Caverns (129 spec.)	Total (375 spec.)
Half-hitching, coil without foundation.....	..	8	1	..	..	..	..
Netting, with knots.....	..	8	+ ^a	14	1	14	6
Knitting ^b	15	..	6	..	..	..
Twining.....	1	+
Plaiting: braids ^c	8	9	..	13	4	10
Round.....	4	..	..	..	..
Flat.....	7	..	14	4	10
Square.....	..	8	..	..	..	..	..
Plaited finish of warps, basketry type.....
Twine-plaiting, "lace".....	2	..	..	+	+
Weave-plaiting, cords.....

^a For symbols used, see notes to table 2.

^b Reclassified under "Needleknitting," table 6.

^c See table 2, note b.

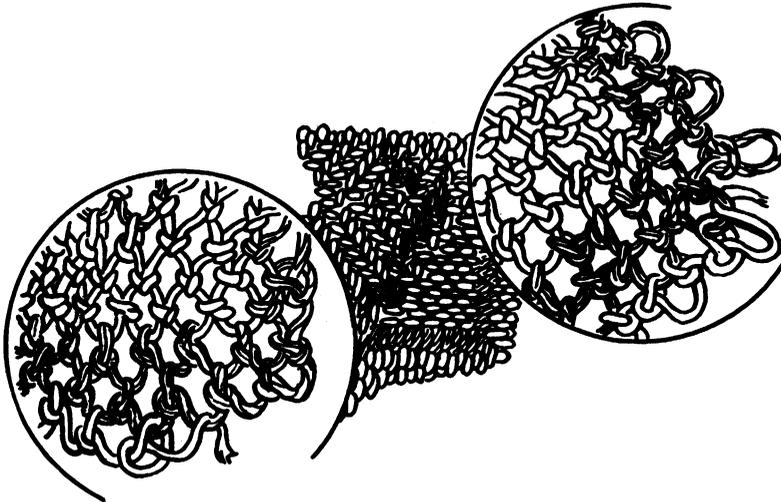


Fig. 7. Paracas Caverns. MN 8420. Detail showing construction of close-mesh knotted fabrics. Pattern is effected through adding colored yarns and varying the number of knots.

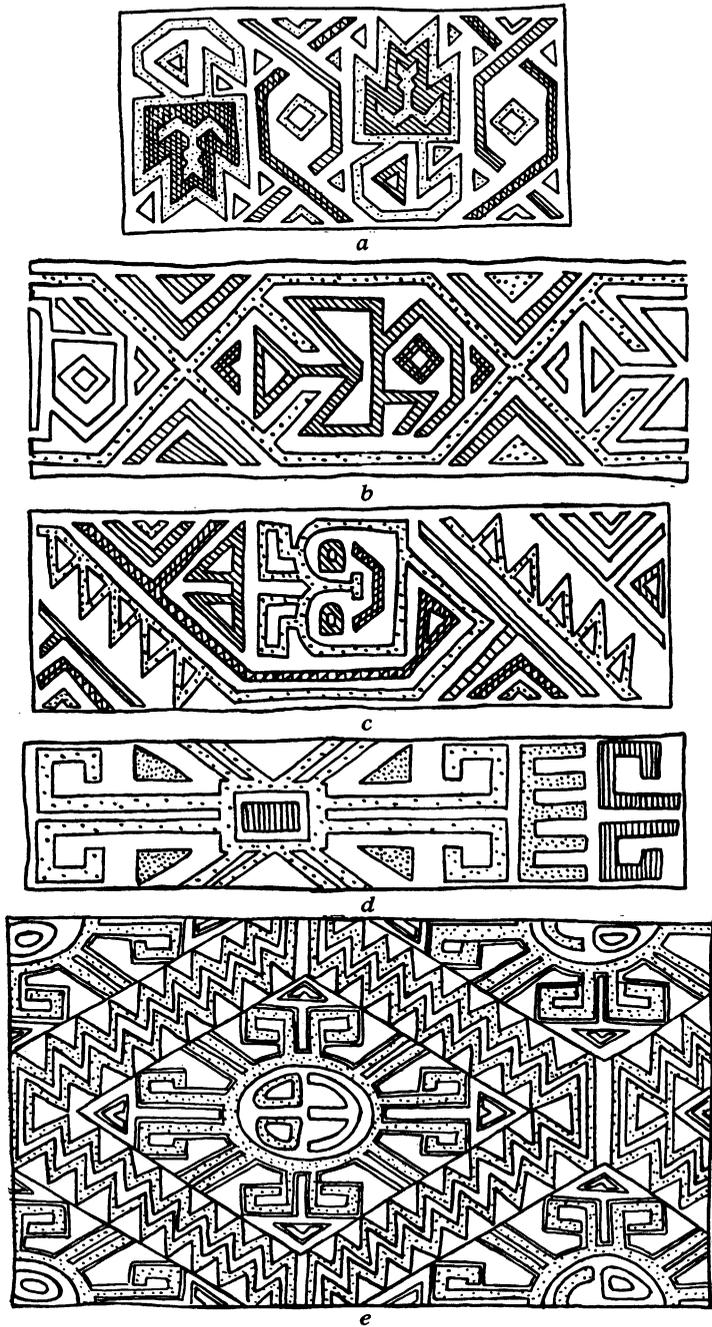


Fig. 8. Paracas Caverns. Motives from narrow wool (*a, d, e*) and cotton (*b, c*) headbands, all in knotting techniques. Widths $1\frac{1}{2}$ to 3 in. *a*, MN 8420; *b*, MN 8502a, bird motives showing conventional Peruvian reversals of position; *c*, MN 8502, cat (?) face on serpent body; *d*, MN 8425b, human (?) or cat (?) figure, highly stylized, but bearing resemblances to *e*; *e*, MN 8442, face element surrounded by headdress finials, arms, and legs.

foundation lines the yarns necessary to widen them. The rigidly geometric serpent heads stand out clearly.

Twining.—Two orange wool headdresses among the Caverns specimens illustrate the twining technique of a type similar in effect to our torchon lace

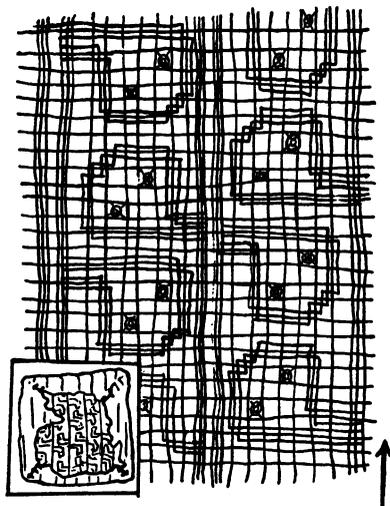


Fig. 9. Paracas Caverns. MN 8455a. Detail of a netted bag similar in appearance to modern filet lace. Unlike filet technique the foundation meshes and pattern of serpent heads were fabricated at the same time.

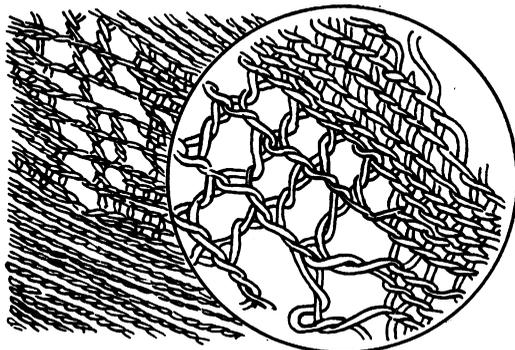


Fig. 10. Paracas Caverns. MN 8430. Detail of headdress in twining technique showing pairs of elements separating to form new units.

(fig. 10). Twining with multiple elements is superficially like the gauze weave but with the very important technical difference that twined yarns twist completely about each other by contrast with gauze-weave yarns, which merely cross each other from right to left and back again. Passages of the weft element secure each gauze cross. Pattern in the twined headdresses is a matter of manipulating the elements to form diamond-shaped and hexagonal meshes

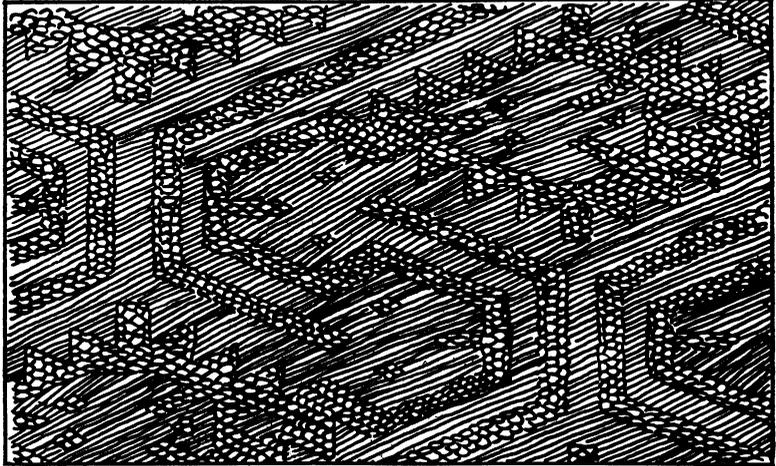


Fig. 11. Paracas Caverns. MN 8430. Wool headdress in twining technique resembling modern torchon lace. Serpent and fish motives show against ground meshes of a different size.

of various sizes. To do this pairs of elements twist about each other for a number of times, separate to become units of new pairs, make several twists in this new position, and then return to their original places.⁴² The Caverns specimens show complicated all-over patternings of interlocking serpent forms, fish, and birds (fig. 11).

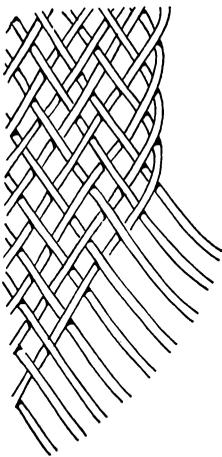


Fig. 12. Paracas Necropolis. MN 319-69 (23824). Detail of multiple-strand plaiting of the type used for kilt and apron ties.

Plaiting.—Two techniques not based on warp-weft interlacing stand out among the Paracas fabrications: netting with knots and plaiting. The percentages for each reflect the styles characteristic of different time periods and also the conventional treatments of certain garment details. For instance, the plaiting technique owes two-thirds of its occurrences among the Necropolis fabrics to its use for the ties of wrap-around kilts and aprons (fig. 12). Quite unlike flat braids from any other Early, Middle, or Late sites, the Necropolis specimens approximate the appearance of woven cloth. If plaiting was really the forerunner of weaving, these fabrics constructed with multiple strands ranging from 3 to 154 units provide some basis for the theory. As shown by unfinished specimens in the Necropolis group, the higher numbers of strands were held between supports

devised to keep them in the same plane. When this can be accomplished, a large number in itself is no handicap to the production of uniformly even widths. There is an advantage in having plaiting strands held between supports: element manipulation at one end is simultaneously duplicated in reverse at the other.

⁴² Textiles of the Early Nazca Period, 197.

SUPERSTRUCTURAL TECHNIQUES

Brocade weaves.—Brocading and pile weaving classify as forms of superstructural patterning because designs in each develop through the use of supplementary decorative yarns and because each requires that a basic fabric

TABLE 4
EARLY SUPERSTRUCTURAL TECHNIQUES: WEAVES
Percentage of Occurrence

Techniques	Primi- tive Supe (16 spec.)	Early Nazca, Ica (13 spec.)	Early Nazca, Nazca (163 spec.)	Early Paracas (7 spec.)	Paracas		
					Necropolis (246 spec.)	Caverns (129 spec.)	Total (375 spec.)
Brocades . . . . .	..*	..	2	..	..	3	1
Single face
Double face	2	..	..	3	1
Pile weaves

* For symbols used, see notes to table 2.

TABLE 5
EARLY SUPERSTRUCTURAL TECHNIQUES: EDGE FINISHES
Percentage of Occurrence

Techniques	Primi- tive Supe (16 spec.)	Early Nazca, Ica (13 spec.)	Early Nazca, Nazca (163 spec.)	Early Paracas (7 spec.)	Paracas		
					Necropolis (246 spec.)	Caverns (129 spec.)	Total (375 spec.)
Edge finishes	19	31	28	..	52	2	35
Fringes . . . . .	..	..	..	..	13	..	9
Applied, woven . . . . .	..	15	..	..	27	+*	18
Applied, needlemade . . . . .	..	..	4	..	+	..	+
Warps left unwoven	13	15	4	..	+	..	+
Extra-length weft to skeleton warp . . . . .	..	..	3	..	+	..	+
Tassels	6	..	1	..	6	1	5
Cords, needleknitted, etc. . . . .	..	..	2	..	+	..	+
Tabs, woven . . . . .	..	..	1	..	3	..	2
Tabs, needlemade . . . . .	..	..	4	..	4	..	3
Scallops, woven or needlemade . . . . .	..	..	2	..	5	..	3
Needleknitting; 3-dimen- sional Edge trims, etc. . . . .	..	..	7	..	..	..	..

* For symbols used, see notes to table 2.

develop coincidentally with the pattern. The decorative weft or the pile weft usually alternates with the basic.

Brocading, especially, is today considered a very simple process; its complete absence among the Necropolis cloths and its presence in only 3 per cent of the Caverns pieces should therefore not be explained by any difficulty

inherent in the technique (fig. 13). The Textile Period I tabulations showed that counts for both pile weaves and brocades fell with techniques characteristic of Middle and Late textiles.⁴³

Edge finishes.—The Early-period edge finishes are wholly without functional value; they represent favored, or perhaps conventional, treatments for corners or sides or ends of garments. But the various fringe types, tabs, tassels, and minute scallops on the Paracas Necropolis weavings must have seemed important to the weavers to have justified the prodigious amount of time consumed in the making.

Decorative details classified under this heading are needlemade, for the most part, and as such testify to embroiderers' rather than to weavers' standards and skills.

The three-dimensional bird-flower fringes on Early Nazca textiles do not find a single counterpart among the 240-odd Paracas Necropolis specimens, but it is unreasonable to suppose that the superlatively fine piece, the so-called

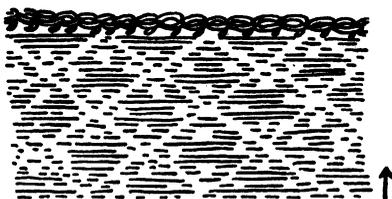


Fig. 13. Paracas Caverns. MN 8422. Cotton cloth with brocaded motives within which the warps make a secondary design. Needleknitted edge binding.

Paracas mantle,⁴⁴ is a solitary example of the needleknitting technique from that area. Needleknitting there is, in abundance, as the stitchery occurrences show, but its function, general appearance, and the individual design motives differ markedly from those of the characteristic Cahuachi, Nazca, examples.⁴⁵ More is said of needleknitting in commenting upon the embroidery techniques.

Construction stitchery.—Seaming stitches on Peruvian textiles have two main uses: to join separately woven breadths in the construction of rectangles of suitable dimensions for garments; and to join the various types of decorative finishes to edges and corners. Tunics and shirts obviously require stitched seams and sleeve additions, but these specimens are few by contrast with the plain draped or supported rectangles, which apparently comprised the greater part of the ancient wardrobes.

The whipping stitch used by Caverns and Necropolis seamstresses is the identical stitch chosen today to join firmly and often invisibly two pieces of cloth. As a matter of fact, the percentage given for the number of occurrences includes some thirty examples which might as logically be interpreted as loom joinings.⁴⁶ Reasons for both interpretations must be deferred to a more detailed study of techniques.

Embroidery.—Embroidery is feebly represented in the fabrics from the three Caverns graves, on fewer than 3 per cent of the lot,⁴⁷ but it is the chief

⁴³ Textile Periods I, 33.

⁴⁴ Mme Jean Levillier, *op. cit.*

⁴⁵ Textiles of the Early Nazca Period, 172.

⁴⁶ Textile Periods I, fn. 15.

⁴⁷ Carrión Cachot, 41, says that the embroidery in a limited number of colored yarns is applied to simple cloths, generally white cotton. Ribbons, borders, and wide bands in outline stitchery are the decoration on the greater number of the garments.

means of identifying garments from the Necropolis. There are numberless embroidery stitches and hundreds of geographical, descriptive, and fanciful names for them. Too often the accepted names are meaningless and serve only as tags, as is true of the "stem" or "outline" stitch. Almost any series of stitch

TABLE 6
EARLY SUPERSTRUCTURAL TECHNIQUES: STITCHERY
Percentage of Occurrence

Techniques	Primi- tive Supe (16 spec.)	Early Nazca, Ica (13 spec.)	Early Nazca, Nazca (163 spec.)	Early Paracas (7 spec.)	Paracas		
					Necropolis (246 spec.)	Caverns (129 spec.)	Total (375 spec.)
Seaming*	..	..	17	..	43 ^b	6	31
Whipping; variants	31	8	13	..	42	6	31
Saddler's; lacing	..	8	3	..	1	..	+ ^c
Running	13	..	1	..	2	+	2
Hemming	..	..	1	..	..	..	..
Wrapping of core	6	..	..	..	..	..	..
"Warp" added to edge	..	..	1	..	..	..	..
Embroidery*	6	..	30	57	81	4	54
Blanket stitch; variants	..	..	+	..	12	..	8
Stem, outline; variants	6	..	9	57	82	1	54
Needleknitting	..	15	22	57	45	1	31
Paracas stitch	..	..	..	14	14	+	9
Couching	..	..	..	..	+	..	+
Chain	..	..	..	..	+	..	+
Figure-8 stitch	..	..	..	..	+	..	+
Seaming stitches for em- broidery	..	..	3	..	6	1	5
Double running	..	..	2	..	..	..	..
Tent hemming	..	..	+	..	..	..	..
Whipping	..	..	3	..	6	1	5
Twined stitches	..	..	+	..	..	..	..
Guide lines for em- broidery	..	..	..	..	1	..	+

* See table 2, note b.

^b This percentage includes 29 possible loom joins identical in appearance to whipping stitches. See table 8.

^c For symbols used, see notes to table 2.

units takes the form of a line. The stem stitch of embroidery travels under different names: it is the wrapped-weave unit in basketry and the Soumak technique in rugmaking. Necropolis variants of outline embroidery result from the direction taken by the line of work, the fall of the thread above or below the needle on alternate rows or on alternate stitches in the same row, and the hatchings, stripings, and solid effects produced through ingenious manipulations of individual stitch units.

Several Necropolis mummy bundles contain cloths on which design stylization has been carried even further than is recognized as characteristic for Paracas. This type of patterning is usually developed in cordlike straight and

slanting lines and is accomplished by working the plain whipping stitch on the surface of the fabric (fig. 14).

From the technical viewpoint the Necropolis mass embroidery is childishly simple, and the apparent complexities largely an illusion. Whether coarse or fine, the workmanship is generally flawless, as perhaps it should be, considering the emphasis on practice through endless repetitions of a few elemental stitches (fig. 15).

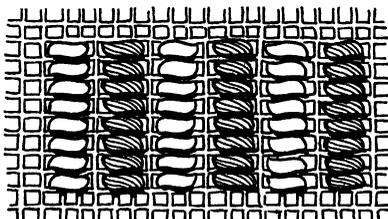


Fig. 14. Paracas Necropolis. MN 400-7 (23634). Detail of an embroidery motive developed through the use of the ordinary whipping stitch.

Needleknitting⁴⁸—one form of which has been called by a modern embroiderer the “close-plaited or encroaching long-legged cross-stitch”⁴⁹—is the most frequently occurring unit type after the line stitches. On Necropolis garments it is found in the form of very narrow flat bands covering the seam joins of decorative edge finishes and the main fabrics (fig. 16). The “Paracas stitch” is a variant.⁵⁰ I gave it that name because, to my knowledge, it does not occur on

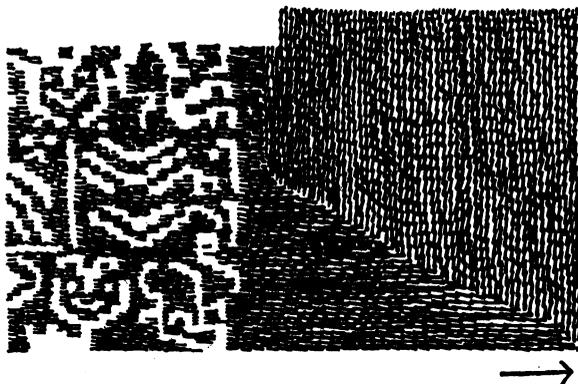


Fig. 15. Paracas Necropolis. MN 421-53 (23789). Detail of unfinished turban cloth showing solidly worked field and spaces left for the subsequent embroidering of design motives.

cloths from other coastal sites. At first glance, the Paracas stitch appears to be identical with the familiar, needleknitting stitch, and perhaps it does represent a local variation (fig. 17). Both forms are old in the Pisco Valley judging from the fact that the lot from the three Caverns graves contains one example of each. On Necropolis cloths needleknitting and Paracas stitch are in the ratio of 3 to 1.

In addition to the flat needleknitted bands, both Caverns and Necropolis collections contain the three-dimensional type of needleknitting. The Caverns example is a headband, or *llauto*, of excellent workmanship and live coloring

⁴⁸ Lila M. O’Neale, Peruvian “Needleknitting,” AA 36:405-430, 1934.

⁴⁹ L. F. Pesel, Portfolio No. 3, Stitches from Western Embroiderers, pl. 111, London, 1913.

⁵⁰ Tejidos del período primitivo de Paracas, 75.

(fig. 18). The technique is identical with that of the seam-covered bands, but the shape differs. The main portion of the *llauto* is patterned with interlocking double-headed serpent forms. The tubular ends have been slightly flattened. A long red line, brown edged, zigzags the length of the upper half of the tube; the entire lower half is light yellow like a snake's belly. Two fingerlike pro-

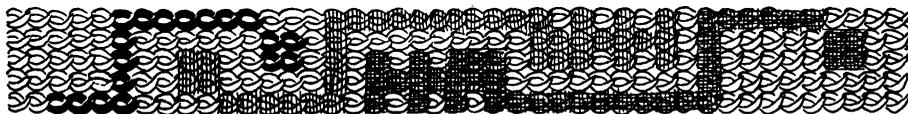


Fig. 16. Paracas Necropolis. MN 421-37 (23742). A characteristic section of the needleknitted bands, usually from $\frac{1}{4}$ to $\frac{3}{8}$ in. wide, which cover the seams joining garment edges to borders, tabs, fringes, or other decorative details.

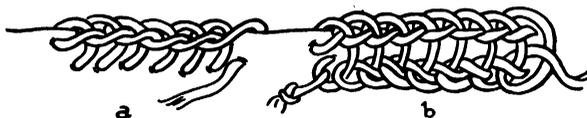


Fig. 17. Paracas Caverns and Necropolis. Details of needleknitted edge finishes; approximately $\frac{1}{8}$ in. wide; *a*, needleknitting, a plaited crosstitch; *b*, a needleknitting variant to which has been given the name "Paracas stitch."

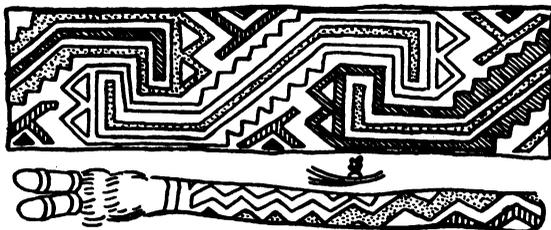


Fig. 18. Paracas Caverns. MN 8462a, b. Wool head-dress with fingerlike ends to stand up in front, all in needleknitting technique of the three-dimensional type; approximately 2 in. wide. Serpent form in realistic colors, Red and dark Brown on top, light Yellows on underside.

jections extend from one end forming a decorative finial to stand up from the turbanlike folds above the wearer's forehead.

The Necropolis three-dimensional objects constructed by needleknitting technique are of two types, both of them parts of the kilt ties or supports. These ties, already mentioned for their close-plaited texture, are finished with a kind of tubular slide or by a very long tassel (20-24 in.) at the head of which is a cone-shaped cover. Of the twenty-eight kilts examined about half had one or the other needleknitted accessory to the tie ends. The tubes or slides are sufficiently large (approximately 3 by 3 in.) and the cones concealing the rather bulky join of plait and tassel are sufficiently deep (2-3 in.) to permit of design motives matching those of the kilt border. The borders are embroidered in stem stitch, and the slides and tassel heads are needleknitted, but the designs used are almost identical in style.

The entry "guide lines for embroidery" (table 6) records a few rare occurrences among the Necropolis cloths. Embroidery threads pulled through the fabric and knotted and yarns inwoven during the construction of the basic material served to indicate color sequences and design boundaries to the worker. These devices are quite different from the clues to embroidery procedure. A much larger group of partly finished garments show some motives merely blocked in, in readiness for the solid fillings. As yet we do not know how pattern motives were evenly spaced on the cloths, how motive outlines were marked for the preliminary stem stitchery, or how the cloths were held taut during the months, or possibly years, of working on them.

TABLE 7
EARLY DEVICES TO VARY EFFECT: YARN SPINNING
Percentage of Occurrence

Technical processes	Primi- tive Supe (16 spec.)	Early Nazca, Ica (13 spec.)	Early Nazca, Nazca (163 spec.)	Early Paracas (7 spec.)	Paracas		
					Necropolis (246 spec.)	Caverns (129 spec.)	Total (375 spec.)
Yarn spinning							
Slack twist.....	25	.. *	..	..	..	..	..
Crepe twist.....	56	15	6	..	16	2	12
Two-tone yarns.....	..	23	1	..	12	..	8

* For symbols used, see notes to table 2.

TECHNICAL DEVICES TO VARY EFFECT

Yarn spinning.—It may be said of most Peruvian cloths that both warp and weft yarns are medium-to-hard spun. When twisting is stopped at what is called the slack stage, the product is usually destined for weft or filling. Spinning beyond the hard stage results in a yarn which crepes more or less if not kept taut.

The total entered for examples of supertwisted Paracas yarns consists of approximately equal numbers of one- and two-ply yarns. But although two-ply yarns represent different degrees of spinning from slack to crepe, all the single-element yarns fall in the crepe classification. The added strengthening twist compensates for the fineness of the one-ply yarn and makes doubling or trebling unnecessary. Over 15 per cent of Necropolis wool and cotton cloths have single-ply warps and wefts.

One of the most subtle methods of introducing color into cloth is through the use of two-tone yarns. Whether the Early-period spinners were aware of the aesthetic quality of a color blend arrived at either through mixing dyed fibers or combining contrastingly dyed plies, or whether the ancient Peruvians made use of all their supplies and the color blend was one way of doing this, will never be answered. At least, Necropolis craftsmen practiced both methods deliberately, and perhaps they did so with appreciation for the results.

Most, but not all, of the two-tones and mixtures are found among the embroidery yarns. Mantle 15 from mummy bundle 38, for example, has at least five blended yarns: two-ply Gray made of mixed Black and White fibers; two-ply yarns composed of Rose and Black singles, Rose and White singles, Rose and Gray singles (the Gray a fiber blend), Orange and White singles. These are in addition to a dozen or more monochrome yarns covering a wide range of colors, all in the same garment.

TABLE 8
EARLY DEVICES TO VARY EFFECT: STRUCTURAL, LOOM SETUP
Percentage of Occurrence

Technical processes	Primi- tive Supe (16 spec.)	Early Nazca, Ica (13 spec.)	Early Nazca, Nazca (163 spec.)	Early Paracas (7 spec.)	Paracas		
					Necropolis (246 spec.)	Caverns (129 spec.)	Total (375 spec.)
Setup of the loom for:							
Warp face, plain weave...	..	23	48	14	47	23	39
Drawing in for stripes, patterns.....	6	8	30	14	2	4	2
Scaffolding weft for inter- locking plain weave....	2	..	+ ^a	..	+
Scaffolding weft for shaping.....
End-to-end warp locking..	2	..	+	..	+
Tab formation by weave ^b	1	..	3	..	2
Loom joining of widths...	1	..	13 ^c	..	8
Spaced warps.....	1	..	..	..	..
Tubular construction.....	+	..	+	..	+

^a For symbols used, see notes to table 2.

^b Entered also under "Edge Finishes," table 5.

^c This percentage includes 29 possible whipping-stitch joins. See table 6.

Loom setup.—The texture of the fabric is partly the result of the size of the weaving yarns, their uniform smoothness or lack of it, and their balance in the cloth as indicated by yarn counts per unit of measurement. The number of warps and wefts approximately balance each other in square-count materials, and the texture of the cloth has the appearance and feel of cotton—muslin or canvas—or of homespun wools, depending upon the fineness of the weaving yarns employed.

The warps perceptibly outnumber the wefts in warp-face materials, and the cloth tends to have a "face" as in satins, or it may even be weft-ribbed if the weaving yarns greatly differ in size. In weft-face materials the weft yarns appreciably outnumber the warps forming in the higher counts rib weaves like tapestries.

Some impression of the appearance of the Paracas weavings may be gained from the tabulation of the count comparisons which follows. In this connection differentiations between cottons and wools are ignored. In general, Necropolis cottons are usually fine-to-medium in weight; there are fewer fine wools than

fine cottons, and many of the wool textures compare closely to those of various modern homespun fabrics.

Each of the counts recorded for the warp-face and weft-face groups represents two points: the lowest, the median, or the highest warp count in its group combined with approximately the least, the median, or the greatest difference between the number of warps and wefts per inch.

Except under close scrutiny, small variations in the yarn counts—4, 6, or 8 per inch—make very little textural difference. The Necropolis weavers, probably with the embroidery in mind, seem to have aimed at producing square-

WARP-WEFT COUNT COMPARISONS OF PARACAS CLOTHS

Caverns (44 specimens)		Necropolis (206 specimens)
Square-count group	30 per cent	33 per cent
Low count	10 × 10 per inch	18 × 18 per inch
Median	18 × 18 per inch	36 × 36 per inch
High	48 × 48 per inch	56 × 56 per inch
Warp-face group	70 per cent	56 per cent
Low count	12 × 8 per inch	18 × 14 per inch
Median	24 × 16 per inch	44 × 34 per inch
High	90 × 12 per inch	80 × 60 per inch
Weft-face group	lacking	10 per cent
Low count	lacking	16 × 20 per inch
Median	lacking	36 × 40 per inch
High	lacking	56 × 60 per inch

count fabrics. A number of reasons support this inference, most of them based on analysis of the stitchery with which the embroiderers literally veneered the designed areas of the base fabrics.

Whatever the reasons, the fact remains that to the Caverns square-count weavings, totaling almost 33 per cent of the lot, might reasonably be added more than 50 per cent of the Caverns warp-face weavings in which the count differences are 4, 6, or 8 yarns per inch; also, that to the Necropolis square-count weavings, totaling 33 per cent of the whole, might reasonably be added over 75 per cent of the combined warp-face and weft-face materials in which the count differences are between 4 and 8 yarns per inch.

If their appearances rather than their actual yarn counts were to be taken as the criteria, about 80 per cent of Necropolis cloths might be classified as cotton muslin and wool homespun types.

a) Warp stripes. The Early-period weavers at Nazca gained varied effects through the introduction of colored warps and wefts.⁵¹ By comparison, both Caverns and Necropolis collections make a weak showing. Stripings among the Necropolis garments number four: three separately woven borders and one plaided mantle. The obsessing interest in embroidery apparently crowded out a fundamental structural decoration. Striped materials, too, may have been considered unsuitable base fabrics for embroidery. At any rate, their

⁵¹ Textiles of the Early Nazca Period, pls. 36, 37.

conspicuous absence from 98 per cent of almost 400 Paracas cloths cannot be the result of technical inexperience in formulating plans before setting up the warp or of inability to hold the attention to a color sequence during the drawing-in process.

The Caverns lot contains five examples of stripings: two- and three-color pin stripings, and two- and three-color plaids. In this last type occurs a feature common to the textiles of all the known Peruvian periods: permutation of color and position. In the Caverns three-color plaids, for example, the permutations of colors 1 and 2, of 1 and 3, and of 2 and 3 both warpwise and weftwise create an illusion of a wider range than is in actual use.⁵² Add to this device differences in amounts of the two or three colors, and the illusion becomes stronger.

b) Scaffolding wefts. The entries made under scaffolding weft and end-to-end warp locking are in connection with the interlocking plain weave briefly described under the warp-weft techniques (fig. 1, p. 153). For most specimens all three entries are required by the analysis of the multicolored patchwork type of textile.⁵³

c) Tabs. The woven tabs have already been mentioned under "Edge Finishes." In this summary no difference is made between the tabs needle-constructed by weaving techniques and those made on the loom as part of the weaving procedure. In appearance the two are identical, but each type is developed by special manipulation of the yarns.

d) Loom joins. The loom-joining entry has already been mentioned in the paragraphs on seaming stitches since there is no absolute proof that the perfect joins were not done with the needle or that they were the result of a technique accomplished while one breadth of the garment was on the loom (fig. 19). This last seems the more likely explanation, but whether or not supporting evidence later becomes available, the Paracas specimens illustrate two joining processes, one obviously needlemade and the other probably loom joined.⁵⁴

e) Tubular constructions. Tubular or ring weaving is extremely rare among Peruvian textiles of any period, but three specimens from as many valleys suggest that more weavers knew the technique than is apparent from the finds. The Cañete example is a small bag,⁵⁵ the Cahuachi fragment is a flattened band less than a half-inch wide,⁵⁶ and the Necropolis example is an unpatterned

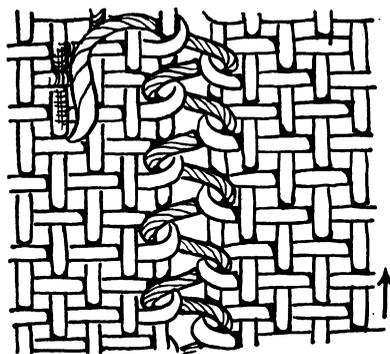


Fig. 19. Paracas Necropolis. MN 28-5. Detail showing loom join (?) or whipping stitch (?) drawing together two breadths of fabric.

⁵² Carrión Cachot, 39, mentions Blue, Yellow, and Brownish Black stripes in cotton and wool tunics.

⁵³ See fn. 25, p. 148.

⁵⁴ Textile Periods I, fn. 15.

⁵⁵ Kroeber, Cañete Valley, 271 and pl. 88, fig. 1.

⁵⁶ Textiles of the Early Nazca Period, 200 and pl. 60, d.

tubular slide about 2 inches square when flat. Except for this one ring—the conventional finish for the plaited skirt ties—all the slides are needleknitted.

Warp-and-weft manipulation.—Only one point under this subheading needs to be noted for the Paracas material, since the introduction of colored

TABLE 9
EARLY DEVICES TO VARY EFFECT: ELEMENT MANIPULATION, WEAVING TECHNIQUES
Percentage of Occurrence

Technical processes	Primi- tive Supe (16 spec.)	Early Nazca, Ica (13 spec.)	Early Nazca, Nazca (163 spec.)	Early Paracas (7 spec.)	Paracas		
					Necropolis (246 spec.)	Caverns (129 spec.)	Total (375 spec.)
Warp-element manipulation							
Crossing against slip . . . . .	..	..	+^a	..	..	..	..
Grouping for tapestry	6	8	2	..	..	..	..
Weft-element manipulation							
Color changes, cross stripes	13	..	7	..	2	1	2
Weft grouping for size	44	..	+	..	..	..	..
Weft lock, as in tapestry . . . . .	..	..	1	..	+	..	+
Warp lock, as in tapestry . . . . .	..	..	..	..	..	..	..
Warp-weft lock, as in tapestry . . . . .	..	..	+	..	..	..	..
Counterpairing . . . . .	..	..	1	..	..	..	..
"Facing" one color with another . . . . .	..	..	..	..	+	..	+
Double set of weft, plain weave . . . . .	..	..	1	..	..	..	..
Weaving techniques							
Loose beating up	31	31	4	..	..	..	..
Weft-to-warp change . . . . .	..	..	+	..	+	..	+
Padding yarns introduced . . . . .	..	8	..	..	..	..	..
Kelim slot for neck opening . . . . .	..	..	2	..	20	..	13

^a For symbols used, see notes to table 2.

cross stripes has already been mentioned in connection with setting up warp colors: the Caverns material is totally lacking in weft-element devices to vary effect other than color changes in the weft, and the Necropolis material is very little richer in that respect.

The solitary example of weft locking occurs in one of the two tapestry-woven headbands in which an occasional lock closes an otherwise very long Kelim slot.

"Facing," or veneering one color yarn with another, is a device found in Late-period slings. It is a true facing device, very successfully accomplished in designs of the check and block type. The Paracas examples of facing entered in the chart are materials for head nets (?). The base is finely spun maguey yarn which is wound at intervals with short lengths of variously colored unspun wools. Simple knots hold in place the little patches of wool to give the

effect of tiny colored knobs on the maguey strings. The separate lengths are not joined, but the whole lot is gathered together at one end with a coarser string.

Weaving techniques.—Tapestry in the characteristic Peruvian forms, as has been noted, is lacking in both the Caverns and Necropolis collections, but one of its most important techniques, slot weaving, is strongly represented. The Necropolis weavers had so thoroughly mastered Kelim weaving that they seemingly preferred to construct selvage neck openings by that method rather than to cut the cloth (fig. 20). This is pure inference, but the fact remains that among the rectangular poncho-like upper garments (*esclavinas*) there are 49 Kelim-slot neck openings to 6 cut openings. Cahuachi, Nazca, weavers also used the Kelim technique in three of the four tunics in that collection. Naturally, if the small poncho was a two-breadth garment, the opening came in the seam, possibly the original suggestion for a woven slit to the inventive weavers of the day.

The weft-to-warp change entered for the Necropolis collection is a device used in the construction of tabs. In one shirt (MN 421-125 [24775]), the basic wefts were extended, probably to skeleton warps set at various distances from the edge warp. These extended wefts in turn became warps of graduated lengths upon small groups of which the weaver constructed tabs.

Single- and multiple-element manipulation.—The entries for possible variations in embroidery and plaiting through element manipulation show weak development among all the Early-period textiles so far examined. It is surprising to find so few occurrences for Paracas of the two traits recorded: counterpairing in embroidery and color in braids. Over 80 per cent of the analyzed Necropolis cloths are decorated with outline stitchery. Now, one of the simplest and most effective methods of changing either the appearance of the embroidered surface or of relieving the monotony of working endless series of lines is to alternate throwing the thread above and below the needle. But explanation of 190 strict conformations to the standard technique with only 9 occurrences of simple deviations from it would depend upon a knowledge of ancient motor habits or of local predilections or tastes—knowledge we have no way of achieving.

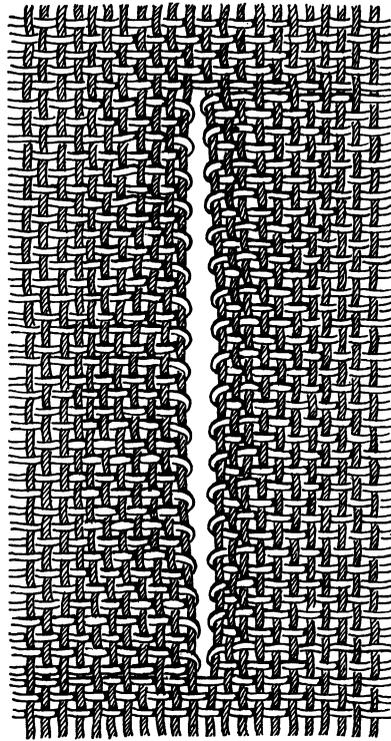


Fig. 20. Paracas Necropolis. MN 319-106 (23691). Detail of garment neck opening in Kelim or slot tapestry technique; approximately 12 in. long.

The Necropolis people were exceedingly skillful at plaiting. They braided shoulder straps (or ties?) for their wrap-around kilts of 60, 84, 126, 148 strands seemingly with no difficulty, to judge by the uniform widths and strand tensions; but no kilt ties on any of the 28 specimens, and only two headbands, have

TABLE 10
EARLY DEVICES TO VARY EFFECT: SINGLE- AND MULTIPLE-ELEMENT MANIPULATION
Percentage of Occurrence

Technical processes	Primitive Supe (16 spec.)	Early Nazca, Ica (13 spec.)	Early Nazca, Nazca (163 spec.)	Early Paracas (7 spec.)	Paracas		
					Necropolis (246 spec.)	Caverns (129 spec.)	Total (375 spec.)
Single-element manipulation							
Three-dimensional							
knitting	8	..*	..	..	..	..
Counterpairing in em- broidery	2	..	4	..	3
Interlocking of em- broidery yarns	2	..	..	..	..
Multiple-element manipu- lation							
Color variations in plaits	8	7	..	+ ^b	1	+

* Reclassified under "Needleknitting," table 6.

^b For symbols used, see notes to table 2.

TABLE 11
EARLY DEVICES TO VARY EFFECT: SURFACE DECORATION
Percentage of Occurrence

Technical processes	Primitive Supe (16 spec.)	Early Nazca, Ica (13 spec.)	Early Nazca, Nazca (163 spec.)	Early Paracas (7 spec.)	Paracas		
					Necropolis (246 spec.)	Caverns (129 spec.)	Total (375 spec.)
Painting	15	+*	..	..	1	+
Tie-dyeing
Feathers, applied	1	..	1	..	+

* For symbols used, see notes to table 2.

plaits into which colors enter for the sake of design. The Caverns example is a sling with two-color plaited ends.

Surface decoration.—The two Caverns specimens entered under this sub-heading may not be rightly classified. They are cotton nets found with a third cloth which had been woven with Red-purple wefts, and these show some evidence of color "bleeding." The nets, however, give the appearance of having been brushed over on both sides with the same purplish paint or dye used for the weaving yarns. The color is unevenly applied, and the knots are little affected.

The Cahuachi, Nazca, painted fabric⁵⁷—the earliest known from Peru—is also a material which seems to have been washed over with an indeterminate ground color. But here the similarity to the Paracas nets ends. The Nazca piece has an all-over pattern of birds with seeds, plants, or leaves in their beaks. In general, despite the dull colors and the close-set horizontal rows of birds, the forms are reminiscent of those on the pottery of the period.

Analysis of feathered garments and accessories from both Early and Late sites establishes an interesting technical detail: the methods of application were practically the same in all localities. Among the most widely practiced methods is the preparation of a feather cord. This required tying in each feather at proper spacings along a cord by one or another simple knot. Prepared feather strings were then couched down to the cloth, sometimes completely surfacing portions of it, or the strings were wound around garment accessories.

The recorded Paracas examples are like specimens from most other sites.

STYLISTIC VARIATIONS OF PERIODS

It seems clear from the preceding sections that the Peruvian weavers of Early, Middle, and Late times were familiar with about the same range of technical processes. So far as the present data go, there is complete lack of evidence for occurrences of a major technique in any single period; and there are very few instances of such occurrences during any two periods. But for this inference there is a corollary: each time did have its favorite style or technique, or a combination of the two, and in consequence the main decorative features of each period identify it.⁵⁸

It is clear, for example, that Early Nazca depended largely upon single-element techniques, especially surface embroidery and various forms of needleknitting, with which to render its characteristic curvilinear demons and ceremonially attired men. The Middle and Late periods developed stylized and geometric motives through structural techniques, especially tapestry, brocades, pattern weaves, double cloths and their variants.

Table 3 in *Textile Periods I* lists counts and percentage variations in technique types with special reference to tapestry, surface embroidery, and needleknitting. Additional classifications of techniques have been selected for this paper to show: (1) techniques characteristic of Early-period sites compared with processes of the Middle and Late periods (table 12); and (2) those techniques conspicuously lacking among the other textiles from Early localities but present in cloths from Middle and Late sites (table 13).

Tabulations of occurrences are not wholly satisfactory since numerical frequencies cannot indicate qualitative differences. The occurrences of embroidery techniques provide an illustration (table 13). The percentage ratio for Late, Middle, Early periods is 16:8:45 respectively. These figures testify to the greater interest in, or the conventional use of, stitchery in Early times,

⁵⁷ *Textile Periods I*, pl. 7, *b*; *Textiles of the Early Nazca Period*, 135, 181 and pl. facing p. 134.

⁵⁸ *Textile Periods I*, 32 ff.

TABLE 12
EARLY-PERIOD SIMILARITIES TO MIDDLE AND LATE TECHNIQUE TYPES
Percentage of Occurrence

Techniques and processes	Late (340 spec.)	Middle (171 spec.)	Early (574 spec.)
Early and Late period			
Plain weave, all types.....	62	51	70
Edge finishes, all types.....	26	14	32
Drawing in; stripes.....	15	20	11
Kelim slot for neck opening.....	3	1	9
Early and Middle period			
Twine plaiting, "lace".....	..	4	1
Creped yarns.....	44	12	11
Color changes; cross stripes.....	9	4	3
Early, Middle, and Late periods			
Twill types.....	+ ^a	2	..
Gauze weaves.....	3	1	2
Plaiting, all types.....	15	12	10
Scaffold weft for interlocking plain weave.....	1	4	1
Tab formation by weave.....	1	+	2
Plaiting element manipulation.....	2	4	3
Surface decoration.....	4	2	2

^a For symbols used, see notes to table 2.

TABLE 13
EARLY-PERIOD VARIATIONS FROM MIDDLE AND LATE TECHNIQUE TYPES
Percentage of Occurrence

Techniques and processes	Late (340 spec.)	Middle (171 spec.)	Early (574 spec.)
Tapestry, all types ^a	29	37	3
Double cloth.....	3	6	+ ^b
Pattern weave, all types.....	8	12	2
Wrapped weave.....	7	4	+
Netting, with knots.....	+	..	4
Brocades.....	12	7	1
Embroidery.....	16	8	45
Two-tone yarns.....	1	2	6
Plain weave, warp face.....	17	28	40
Loom joining.....	1	1	6

^a Table 2, n. b. Figure-8 weave, technically a tapestry, is not counted as tapestry for purposes of this table when it is the sole form of tapestry used in a piece, as happens especially in Late-period slings.

^b For symbols used, see notes to table 2.

but percentages cannot show the obvious differences between the products of two areas or two periods. The Early-period embroidery, almost completely veneering the basic fabric wherever it occurs on Necropolis garments, is technically identical with, but stylistically quite different from, that of the Middle and Late periods, when decorative lines at edges and sketchy motives were the rule.

In like manner the aesthetic emphasis differs with respect to other techniques occurring in a few or in many textiles from Early, Middle, and Late sites. Except for the fundamental plain weaves—almost without exception the base fabrics for both superstructurally decorated and embroidered pieces and likewise important as component parts of the gauzes and pattern weaves—no important technique has equal stylistic dominance or importance in the textiles of all the known periods. Not only is the list of techniques that do appear throughout Early, Middle, and Late periods a short one, but the percentage frequencies of these techniques, except for plaiting, are significantly low (table 12).

DESIGN IN THE CAVERNS-PERIOD TEXTILES

The Caverns collection numbers 129 pieces, all but four of them from three graves. These limitations in quantity and distribution hamper an attempt to characterize the designs and colors of the Caverns period on the Pisco Peninsula. My first impression of the Caverns textile material was not only that it consisted of fragments in a bad state of preservation, but that the quality of the cloths was inferior, the designs lacked variety, and the colors were few. This impression was strengthened by comparisons with the Necropolis cloths. However, once the Caverns fragments were put in order for analysis, they were found to offer a number of interesting features absent or weakly represented in the examined cloths from the Necropolis sites.

A study of the woven pieces—the group comprising almost 40 per cent of the available collection—also made clear several important differences between a Caverns group of Early-period textiles and those from other sites. Plain weaves are dominant, but whereas other collections illustrate superadded features, or at least color changes in the form of stripes, checks, and plaids, the Caverns cloths reveal only a moderate interest in such patterning devices. The textures do show great variations. There are fine transparent cotton cloths among the plain weaves, and there are strong coarse cloths for practical uses. Some of these latter are two- and three-color stripes and plaids as already noted, but these represent fewer than 12 per cent of the total of loom-made materials.

The true gauzes, most typical of the Caverns period, are very handsome pieces (pl. 1). Gauze technique might be characterized as a flexible technique. It requires no extra yarn for pattern, nor need it in every instance interrupt the rhythm of the weaving process in effecting a change from plain-cloth ground to gauze-weave design area. Gauze weaving does require a comprehension of the completed pattern and an experience with devices and variations by which to develop the desired shapes within it.

The Caverns lot contains four gauze fragments large enough to have been mantles originally. One of them as reconstructed from bits of fabric shows the principal design motive to be repeated across each of the two breadths of the material.⁵⁹ It is quite evident that the gauze technique plus the division of the field into patterned rectangles enforced limitations upon the weaver and

⁵⁹ E. Yacovleff and J. C. Muelle, *Estilo de Cerro Colorado*, RMN 1, No. 2, fig. 36, Lima, 1932.

that the extreme angularity of the stylized humans (?) with cats' (?) heads is the result of those limitations (fig. 6). But a very noteworthy feature in Peruvian textile designing found even in this earlier of the Paracas periods has no connection with technical processes. Again and again throughout the collections we find an upright figure alternated with that same figure in reversed position. In other words, a line of figures progresses with heads up, heads down, heads up, etc. When the rectangles in the various courses are slightly out of line with each other, as in the Caverns gauze illustrated, the whole effect is one of seeming intricacy.

The other three gauze specimens in the collection are similar in appearance. The motives are large cat heads (5 by 9 in.), interlocking fish, and serpents. Each element is very much simplified in line, but at the same time the whole motive is rendered complex in effect through the addition of exaggerated appendages, small geometric fillers, and meaningless finials.

Like the gauze mantle, the double-cloth mantle (76 by 46 in.) illustrated in figure 2 consists of two breadths seamed, each breadth patterned with design motives alternating heads up, heads down, etc., along the length of the piece. The figure is a cat-human. What astonishes a modern craftsman is the quantity of detail included in the development of the whole motive. Double-cloth weaving is laborious at best, since designs develop through the exchange of small groups of warps of one color from the lower layer with those of a contrasting color from the upper layer of the setup. To simulate hair, whiskers, and small decorations within larger ones—all extra elements—demands both a complete mastery of the technique and also a willingness to attempt difficult details.

Without going into the technical differentiations between the netted, knotted, twined, and plaited fabrications,⁶⁰ it may be said here that all of them are patterned much after the manner of the gauzes and the double-cloth specimen described above, but with design motives on a greatly reduced scale. The simplest of the patternings among this group is based on the lozenge form; the others have all-over designs of serpent heads, serpent bodies with cat or human heads, and complete animals or humans formalized in sizes and shapes to fit the space or to adjust their lines to the techniques used.

COLOR

Caverns-period colors are within a narrow range on the color circle. White and Brown of natural cotton and the natural wools are the backbone of the group. In addition there are at least two Reds, Brick and a Purple-Red or Maroon, and also a Reddish Purple; there are both Yellow-Orange and Red-Orange wools and Browns varying in value to almost Black; there are Yellows and Bluish Greens. Counting each color name once, the list totals about ten or a dozen. Two and three colors appear in both the cotton and wool stripes and plaids; as many as four, five, and six colors appear in the wool headdresses.

One color blend should be recorded. In the Paracas Caverns times Gray was made just as in later periods by mixing Brown and Cream wool fibers prior to spinning.

⁶⁰ Tejidos del período primitivo de Paracas, 62 *passim*.

DESIGN IN NECROPOLIS-PERIOD TEXTILES

Necropolis-period fabrics are associated with lavish embroidery, intricate and detailed design motives, and splendid color harmonies.

The characterizing technique has already been described under the name of the principal stitch used, the outline or stem stitch. Endless repetitions of this simple unit produced large and small areas of solid colors which combined to develop free-standing motives set either against the background fabric or within specially embroidered rectangular fields of contrasting colors.

All types of garments were ornamented with solid embroidery to a greater or lesser degree. Many of them are parts of "sets" consisting usually of the mantle, the small shoulder poncho (*esclavina*), the short kilt, and the head-dress. Each garment of a set is formed of separately constructed lengths of wool or cotton base fabric all of the same color and quality; each garment in the set is ornamented with identical motives scaled to the appropriate size, and each is embroidered in wool yarns identical or similar in color.

The designs employed by the Necropolis embroiderers are indicative of the extensive repertoire from which they drew. Some of the motives, as one can appreciate from the freedom offered by the technique, are curvilinear, comparable to brushwork. Mythological personages, divinities, monsters, animals—especially the felines—birds, fish, and serpents are all rendered with a spirit seemingly bounded only by period or local conventions. A few of these motives are as realistic as the illustrations in a nature book, but many more of them are distorted, even grotesque.⁶¹ In strong contrast to the curvilinear motives are a second series, all extremely angular. The subjects chosen are the same, but the effects are completely formalized. In each of these two series composite beings—part human, part bird, or part bird, part animal—add variety but at the same time make for bewilderment.

An analysis of Paracas design arrangements, the bases governing their disposition within the garment rectangles, the scale relationships between free-standing motives and the elaborate borders, and other aspects of this strongly developed textile art must be left for the later detailed account. This study proposes only to indicate the obvious accomplishments of the Paracas embroiderers.

It has been pointed out a number of times that the embroidered motives on the Necropolis cloths and the painted decorations on the Early Nazca pottery are similar. The principal difference is one of style, a factor partly inherent in the restricted areas of globular pots and jars, surfaces requiring the solution of problems in rendering which are not present in design areas of flat rectangles. In style the embroidered cloths are unique, rarely to be confused with those from any other known site.

The largest garment, the rectangular mantle, may be centered with a band, or bordered with bands, or crosswise striped with solidly embroidered bands; or it may be blocked off like a checkerboard into large or small divisions. Re-

⁶¹ E. Yacovleff and J. C. Muelle, *Un fardo funerario de Paracas*, RMN 3:63-163, Lima, 1934.

ardless of the placing of the basic design zones, the uniform techniques, and distinctive motives, and the sumptuous colors identify a piece as coming from the Necropolis. So is it with the smaller garments in the wardrobe. A typical Paracas specimen conforms to a few standardized or locally adapted processes, and it remains within a fairly narrow range of possibilities governing design placement. And yet, although much about them seems stereotyped, the Necropolis weavings exemplify so much that is alive and spirited that they hold interest for the analyst as well as charm for the casual observer.

COLOR

The Paracas and Nazca dyers share honors in having developed a range of colors for weaving and embroidery yarns which went far beyond the point of being merely adequate. Matching 350 yarn swatches from cloths in the Cahuachi, Nazca, collection to the printed samples in a Dictionary of Color⁶² yielded the astonishing total of 190 hues.⁶³ A subsequent analysis of the color values and intensity differences took into account that the Nazca lot (163 specimens) is not a large one, that closely related hues might have been accidents rather than intentional achievements, and that all the yarns chosen for matching to the samples probably had not retained their original colors but might have faded or even changed to other colors.⁶⁴ However, since no verifications are possible, the tabulated results summarize numerical and percentage frequencies of hues corresponding to the printed samples within Maerz and Paul's seven color groups.

The summary tabulation⁶⁵ of hues represented and specimens matched demonstrates that light colors to medium-value colors to dark colors occurred among the 190 Nazca hues matched by yarn swatches in percentage ratios of 24:14:62; and that light, medium-value, and dark colors occurred among the 350 colored swatches in percentage ratios of 22:21:57.

Certain other color facts concerning Early-period weavings which also seem applicable to the Paracas cloths under consideration were established through the Nazca study. "White" cottons and wools test Creamy White, and true Blacks are almost nonexistent, although many yarns appear to be Black. Even the darkest yarns are more or less tinged with Blue or Brown or Green in the order given.

Cotton yarns in the Cahuachi collection were generally left natural White or Brown, but wherever dyed for striped weavings, the dark colors outnumbered the light and medium-value colors over three to one. The hue emphasis for the dyed cottons lay within the Red-to-Orange and Orange-to-Yellow groups. Among both cotton and wool yarns colors like the Blue-Greens and Blue-Purples, in which Blue is dominant, are either few in number or entirely lacking. This does not hold for Paracas Necropolis textiles, as the color counts show.

⁶² A. Maerz and M. Rea Paul, *A Dictionary of Color*, New York and London, 1930. Herein cited as Dictionary.

⁶³ *Textiles of the Early Nazca Period*, 136 ff.

⁶⁴ Carrión Cachot, 69.

⁶⁵ *Textiles of the Early Nazca Period*, table 19.

The Necropolis colored yarns fall into the same two classes as do the Nazca yarns: weaving cottons and wools, and embroidery wools. There is no cotton embroidery from this site, and very little from any other known Peruvian site. If the collection from the Necropolis is a fair sampling, it is worthy of comment that a much greater number of hues were used by the embroiderers than by the weavers. For example, about a fourth of the 70-odd mantles involved in this study are woven with natural White and Brown cotton yarns. Next in number rank the Blue wools, medium and dark values, then follow Red, Old Gold, and Yellow-Green wools, and finally a scattering of Blue-Green, Purple-Red, and Gray wools. Many a single embroidered specimen contains more colored wool yarns than occur in the total group of woven materials.

Wool embroidery developed in from 4 to 15 or more different colors is characteristic of the Necropolis garments. Plentiful evidence that a wide color

COLOR COMBINATIONS

Color counts	Percentage frequency (approximately 200 garments)
5-color	22
6-color	11
7-color	9
4-, 8-, 9-, or 10-color	6-7
2-, 11-, 12-, 13-, or 15-color	4-5
3-, 14-, 16-, 17-, 18-, 19-, or 22-color	1-2

range was available is supplied by counts made on almost 200 pieces, about 80 per cent of the total analyzed collection. The percentage represents that group of specimens sufficiently complete or well-preserved to permit fairly accurate color counts. The subpercentages to follow are only approximations, because unfinished embroideries also appear in the counts. Certainly each of the total numbers given is the least number of hues within any given specimen, and presumably several others might legitimately have been entered in the lists, if only on the basis of value gradations.

Two features are apparent from the tabulation: the use of many colors was not a general rule among the embroiderers, nor were the 2-, 3-, and 4-color harmonies favored. Over 40 per cent of the design motives in the color sequences, complicated though they seem, are developed through the use of from 5 to 7 colors. All possible permutations of a few colors was a device successfully practiced by weavers and embroiderers alike from Early to Late Peruvian times. The whole subject of color sequences justifies detailed study from the viewpoint of their share in contributing to the apparent complexities of the design motives.⁶⁶

Since the number of colors in almost a fourth of the Paracas embroideries can be reduced to 5, with 6- and 7-color harmonies poor seconds, the favoritism accorded some hues and the neglect or avoidance shown to others is interesting. Whenever color counts are recorded for "sets" of garments, each color occur-

⁶⁶ For this aspect Cora E. Stafford's *Paracas Embroideries* is especially valuable.

rence is multiplied by the number of garments in the set, because the color ranges for all are identical. Certain repeated combinations of colors, too, as in the Navy Blue–Yellow–Green–dull Orange trio on embroidered cloths from bundle 421, account for high frequencies of those colors. But personal predilections either of the wearer or of the embroiderers must have had some influence upon the color choices made.

The Paracas dyed yarns were not checked against printed color samples, and in consequence frequency counts must be based upon color names taken from analytic descriptions of the well-preserved cloths previously referred to. However, despite the handicap of less detailed data from the Necropolis than from Cahuachi, the Paracas and Early Nazca color ranges are sufficiently alike to afford valid comparisons.

Memory is of little use in determining which of the 36 color samples labeled Pink, and the even greater number labeled Rose, on different plates throughout Maerz and Paul's Dictionary are the exact values and intensities of the Necropolis wools mentioned in the analyses as being Salmon, Coral, Shell, etc. Undoubtedly some of the printed samples could be matched by yarns, as were several of the Nazca light Orange-Reds. In the following paragraphs occurrences of the principal colors appearing in my analytical descriptions of the Necropolis collection are interpreted in terms of their probable values and intensities based on the analysis of Cahuachi yarns.

1. The Red-to-Orange color group: Light Pinks of various intensities and values were found in 28 per cent of almost 200 Necropolis garments upon which color counts were made; medium and dark Reds and Rose hues were found in 53 per cent of the garments.

Among the Cahuachi test swatches 35 per cent matched 50 color samples within this group. The percentage ratio of light colors (Pinks, Rose, Coral, etc.) to medium-value colors (Cardinal, Brick, etc.) to dark colors (Ruby, Maroon, etc.) was 14:12:24.

2. The Orange-to-Yellow color group: Cream-White hues were found in 20 per cent of the Necropolis garments analyzed for color; Yellows in 27 per cent; Orange-Yellows in 36 per cent; Gold in 42 per cent; Browns in 58 per cent of the specimens. This color group comprises the widest range of hues found in any of the seven, and its representatives are found in the largest number of Necropolis embroidered garments.

About a third of the Cahuachi yarns matched 67 colors in this group. The percentage ratio of light colors (Straw, Tan, etc.) to medium-value colors (Khaki, Hazel, etc.) to dark colors (Old Gold, Russet, Olive, the Umbers, etc.) was 26:11:30. No other color group equals the Orange-to-Yellow group in number of different hues to which Nazca yarns correspond.

3, 4. The Yellow-to-Green and Green-to-Blue-Green color groups: Yellow-Greens of various intensities and values were found in 42 per cent of the Necropolis garments analyzed for color, Green in 53 per cent. A large number of the occurrences in these two color groups is due to the repeated use of the trio Blue, Green, Orange mentioned above. A third of the 70-odd mantles contained Green embroidery yarns, and almost a half contained Yellow-Green yarns. For the 59 *esclavinas* (small ponchos) the percentages are even greater: 70 per cent contained Green yarns; 40 per cent contained Yellow-Green yarns.

Among the 350 matched Nazca yarns only 28 matched 17 Yellow-to-Green color samples, 14 of them dark colors such as Reseda, Hunter, etc., and only 26 yarns matched 10 Green-to-Blue-Green color samples, all of them dark like Poplar and Jasper Green. In other words, a scant 15 per cent of the Cahuachi matched yarns fell within these two color groups.

5. The Blue-Green-to-Blue color group: Blues, of different values and intensities were found in 75 per cent of the Necropolis garments and analyzed for color; Blue-Greens in 37

per cent. Many repetitions of "Navy" and "Blackish Blue" in the analyses determine the position of the Necropolis colors in this group as below middle value. The same is true for the Nazca yarns matched to color samples in the Dictionary. Although the number of yarn specimens and the number of hues matched by them are small—9 per cent of the total matched to 22 hues—all but one in each category fall among the dark colors, Slate, Navy, etc.

6. The Blue-to-Red color group: Blue-Purples of varying degrees of value and intensity were found in 5 per cent of the Necropolis garments analyzed for color, Purples in 3 per cent.

A few of the Paracas Blues counted with the preceding group probably belong in this one. If it were possible to reallocate some of the occurrences, the count might be somewhat higher for the Purples.

Among the Cahuachi matched yarns 7 per cent corresponded to 21 colors in this group. Light colors (Heliotrope, etc.) to medium-value colors (Amethyst, Dove, etc.) to dark colors (Mauve, Gunmetal, Eggplant, etc.) are in the ratio 3:2:16. It was noted for the Nazca colors that occurrences of Mauve and like hues may prove significant because of their rarity among the textiles of any Peruvian period. Yarns which I described as "Blue-Violet" occur infrequently in the Paracas cloths, as at Cahuachi, but they are conspicuous and, as suggested in the latter study, may serve to identify Early-period textiles as surely as rich Blues confirm the age of textiles from the Tiahuanaco period.

7. The Purple-to-Red color group: Red-Violets of different values and intensities described as "Brownish" were found in 18 per cent of the Necropolis garments analyzed for color. The term used suggests the dark values of the hue, very likely not much different from the Black Reds and Burgundy shades found among the Cahuachi yarns. Only 1 per cent of the entire 350 tested swatches matched the three hues, all low values shown by color samples in Maerz and Paul.

"Black" yarns among the Paracas textiles are, as at Cahuachi, very dark Blues, Browns, Greens. Such values are found in 12 per cent of the embroidered specimens. "White" yarns paler than the usual Creamy White are found in the embroidery of 3 per cent of the group analyzed for color. The Grays, described earlier in this paper in connection with table 7 (Devices to Vary Effect: Yarn Spinning), are in a class by themselves. Paracas Grays are, so far as I know, fiber blends of White with Brown or Black wools. In the color count the various Grays represent a sizable fraction of the two-tone yarns found in 18 per cent of the embroidered specimens.

In summary, judging by the percentage frequencies, Paracas embroiderers showed strong preferences for some colors (Blues first, followed by Greens, Reds and Rose hues, Browns); somewhat less fondness for others (Yellow-Greens and Orange hues); a fair amount of interest in Blue-Greens and Orange-Yellows; an interest decreasing perceptibly in Yellows and Pinks. All of these names occur from 50 to almost 150 times in the analytic descriptions of about 200 Necropolis cloths. The colors appearing in the descriptions the fewest times are the Blacks, Blue-Purples, and Purples in the order given.

STYLISTIC VARIATIONS OF REGIONS

REGIONAL PECULIARITIES WITHIN THE EARLY PERIOD

With the exception of 16 specimens from "Primitive" Supe, the Early-period cloths examined for Textile Periods I are from southern coastal sites. The Caverns (129) and Necropolis (246) additions from the Pisco Peninsula make two contributions to the findings so far recorded for this Early group: Paracas techniques substantially increase the occurrence totals and thus confirm generalizations based on comparisons of Early with Middle and Early

with Late frequencies; and Paracas techniques also specifically illustrate certain Pisco Valley peculiarities. The first point has been demonstrated by tables 12 and 13 showing period variations.

The added Paracas frequencies of technical processes make a few unimportant changes in the recorded percentages, which are weighted heavily by the Cahuachi, Nazca, lot. One of these changes, however, shifts the position of the few Early-period gauzes from the Early-Middle affiliation to an Early-Middle-Late one⁶⁷ (table 12).

Adding 375 Caverns and Necropolis specimens to the previous totals for the Early-period textiles leaves the percentage frequencies of the following techniques practically unchanged from those based on counts for Supe, Ica,⁶⁸ and Nazca: plain weaves of all types, 70 per cent; gauzes, 2 per cent; plaiting, 8-10 per cent; brocades, 2 per cent; crepe weaving yarns, 11 per cent; warp-face materials, mostly plain weaves, 40 per cent; surface decorations of paint or feathers, 3 per cent.

The Paracas additions reduce the percentages for the Early-period totals as based on counts entered in Textile Periods I for the following technical processes:

	Percentage
Tapestries	6 to 3
Pattern weaves	5 to 2
Warp stripes	26 to 11
Cross or weft stripes.....	7 to 3
Color variation in braids.....	6 to 3

The 375 Paracas additions increase the percentage frequencies for the total lot of Early-period textiles for the following technical processes:

	Percentage
Netting with knots	2 to 4
Edge decorations	26 to 32
Embroidery techniques	27 to 45
Two-tone yarns	3 to 6
Loom joining of breadths.....	1 to 6
Kelim-slot neck openings.....	1 to 9

Each of the tabulated changes is a reflection of the favor accorded a technique or of the predilection for some process locally developed or very expertly accomplished in the Pisco, Ica, and Nazca valleys. The most pronounced increases are shown in the percentages of the purely decorative details developed through superstructural techniques.

The 163 specimens from Cahuachi, Nazca, not only constitute four-fifths of the Early-period lot but, by reason of their archaeological importance and aesthetic interest, form the logical group with which to compare the added Paracas material, especially that from the Necropolis. Detailed comparisons are beyond the length and scope of the present paper, but it is feasible at this time to point out the Early-period technical processes characteristic of Nazca

⁶⁷ Textile Periods I, 33.

⁶⁸ A misprint in the "Basic Table" following pl. 48 in Textile Periods I credits 13 specimens from Early Nazca sites F, A, and H to Nazca instead of to Ica.

Valley in the main, by way of showing similar or contrasting peculiarities of style occurring in the textiles from the Pisco Peninsula.⁶⁹

Techniques especially in favor or regarded, perhaps, as conventional methods of decoration and finish in the Ica and Nazca valleys are seen to be structural, the results of weaving processes. The percentage frequencies of the following techniques support this statement. The percentages are based on totals of 199 Early-period specimens (exclusive of Paracas) and 375 specimens from the Paracas Caverns and Necropolis.

	Early Period	Paracas Caverns and Necropolis
Tapestries	6	1
Pattern weaves	5	1
Warp stripes	26	2
Cross or weft stripes.....	7	2
Color variation in braids.....	6	1

Techniques of special interest in the Pisco Valley, as reflected by their frequencies among Paracas textiles as compared with other Early textiles from Ica and Nazca valleys are as follows. The percentages are based on totals as given in the preceding paragraph.

	Early Period	Paracas Caverns and Necropolis
Netting, with knots.....	2	6
Edge decorations	26	35
Embroidery, large area.....	27	54
Two-tone yarns	3	8
Loom joining of woven breadths.....	1	8
Kelim-slot neck opening.....	1	13

These processes are the same ones listed as being appreciably decreased or increased in percentage frequencies by inclusion of the Paracas specimens in the Early-period totals. One of the techniques, the Kelim slot, is a garment-construction device, but other techniques most characteristic of Paracas cloths—the edge finishes and embroidery—are surface decorations, super-added to fabrics already woven.

CONCLUSIONS

The Supe, Ica, and Nazca collections examined for Textile Periods I and for Textiles of the Early Nazca Period established two facts: that Early weaving and other types of fabrication, to the extent to which we know them from those localities, vary less from processes at Middle and Late sites than might be anticipated; and that high degrees of skill are evident in representative Peruvian textiles from all periods. Each of these statements is likewise true of the Early collections from the Pisco Peninsula.

Decorative design styles in Peruvian cloths tend to follow more or less closely those in painted pottery. Period changes result, in some areas, in a greater emphasis upon one or another technical process which seems peculiarly adapted to the rendering of locally favored designs. For example, the garments from the Paracas Necropolis show clearly defined preferences for mo-

⁶⁹ The 7 surface fragments from Early Paracas already entered in the tables in Textile Periods I are not included in any of the generalizations to follow.

tives which do not lend themselves to weaving techniques. Stitchery is from every viewpoint the ideal medium through which to meet problems arising from a combination of design forms curvilinear and irregular in shape and often subdivided into small multicolored areas. Surprise comes with the discovery that these distinctive features of the Necropolis embroidery style depend for their accomplishment chiefly upon a few simple techniques skillfully manipulated.

Early-period cloths from other southern sites, particularly from Cahuachi, are also embroidered, but the percentage frequency for needle-decorated pieces in the Necropolis collection compares to the total for the analyzed groups from Ica and Nazca valleys as 80 to 27 (table 6).

Evidences of the predilection at Paracas for ornamental stitchery over structural decoration are also to be found in the percentage frequencies for edge finishes on Necropolis garments: 51 per cent as against 28 per cent on the examined Ica and Nazca specimens (table 5). Analyses prove that the elaborate fringes, tabs, and scallops were not devised through the use of techniques limited to these or similar garment details, but were developed through fundamental processes, perhaps especially adapted at Paracas yet undoubtedly known to other Early-period weavers.

By contrast with the emphasis on decorative needlework at Paracas, loom techniques and structurally woven designs have higher percentage frequencies among cloths from Early sites on the southern coast than from the Paracas Necropolis, as shown by the following comparisons.

Technique or process	Table	Percentage frequency from Ica and Nazca	Percentage frequency from Necropolis
Tapestry variations	2	7	1
Pattern weaves	2	6	4 ⁷⁰
Lengthwise-striped fabrics	8	28	2
Crosswise-striped fabrics	9	6	2

These ratios represent, as far as can be judged from the examined materials, expressions of local taste in ornamentation. I do not believe skills are involved. Literally speaking, textile techniques develop design forms by means of yarns, and it may require the same degree of manual dexterity to handle the yarns in the achievement of smooth surface embroidery as to interlace them with taut warps in the achievement of structural patterning.

Uniform well-spun cottons and wools, varied in size and degree of twist and in extensive ranges of hues, values, and intensities, were available at the Necropolis as well as at Cahuachi, Nazca. These prerequisites to a highly developed textile art indicate both adequate supplies and the experience to make skillful use of fibers and dyestuffs.

In general, the examined cloths in the Necropolis collection provide additional evidence of familiarity with techniques found more or less frequently among the weavings from Early-period Ica and Nazca Valley sites. On the other hand, the analyzed Caverns collection, although weak in embroidered

⁷⁰ See table 2, fn. d.

specimens and limited in color ranges, exhibits a thorough knowledge of certain processes less characteristic of other Early sites. Gauze weaves and single- and multiple-element fabrications occur among the various collections from Peruvian sites of all time periods, but neither the gauzes nor the fabrications distinguish the textiles of any site studied up to this time to the same degree as those from the Caverns. These gauzes were not only beautifully executed but rendered in a style as distinctive of the Caverns as the embroidery style is distinctive of the Necropolis culture.

We know from direct evidence that the weavers on the Pisco Peninsula, as at other Early sites, used a backstrap or belt loom provided with a heddle. We have indirect evidence in the coarse wrappings from both Paracas sites and from the Nazca Valley as well that a wider loom must also have existed. Explanation of its construction and auxiliary devices awaits the discovery, or recognition, of shaped wooden pieces used as supports, beams, heddle sticks, swords, bobbins. Until such finds are made, all that can be offered are tentative solutions based upon comparative knowledge of wide horizontal and upright looms at other weaving centers.⁷¹

If the Caverns culture is assumed to be the earliest yet known for ancient Peru, it is obvious that the foundations for the rich textile art so manifest in the finds from central and southern coastal sites were laid in still earlier time periods from which we have as yet no archaeological materials.

⁷¹ See fn. 32, p. 151.

GLOSSARY

Backstrap (or belt) loom: a loom attached to the weaver's belt.

Blanket stitch (also called *coil without foundation*, *half-hitching*, and *buttonhole stitch*): an embroidery stitch.

Bobbin: the slender rod upon which the weft yarn is wound.

Brocade: a form of superstructural patterning in which supplementary yarns develop design motives by means of floats. The extra yarns usually alternate with the basic yarns of the fabric. In double-face brocading the pattern floats are as important for the reverse side as for the surface side. Brocaded materials are often indistinguishable from embroideries.

Count: the number of warp and weft yarns per unit of measurement; in this paper, the inch. For closely woven materials, count indicates the quality of the fabric.

Crepe twist: an extra amount of twist given to yarn by spinning, which results in a pebbly surface of the woven fabric upon release from the loom.

Devices to vary effect: processes which result in changes in texture, color, form, etc.; for example, deviations from the usual amount of twist in the spinning, stripings, additions of tabs and scallops, element manipulation, and the like.

Double cloth: a reversible fabric requiring two sets of warps arranged one above the other, each with its own weft. Ordinarily, the sets are of different colors. To make the pattern, certain reverse-side warps are raised to replace surface-side warps, which are lowered. Colors are exchanged, and ties are formed between otherwise separate portions of the fabric. Since each set of warps, no matter what its position, is crossed only by its own weft of the same color, strongly contrasted design areas are produced.

Drawing in for stripes, patterns: setting up the loom with colored warp yarns.

End-to-end warp locking: see *Multicolored patchwork*.

Esclavinas: small, rectangular, poncho-like garments constructed of one or two breadths. The neck opening is formed during the weaving in the single-breadth esclavinas, and left in the seam in the two-breadth garments.

Figure-8 weave: tapestry, in structure, over two single or two groups of warps.

Finger knot: the simplest knot which may be tied with a single element; it gets its name from the method of turning the element around the left forefinger in order to make a loop.

Float: a warp or weft yarn free for a distance upon the surface of the fabric. Patterns are built up by means of floats.

Fringes: extra-length wefts to skeleton warps: the regular weft is carried around a scaffold warp set the desired distance from the setup. Upon completion of the weaving the scaffold warp is withdrawn, leaving loops. Some applied fringes consist of a narrow tapelike heading from which extend the loops.

Fringes: needlemade: loops made by drawing an extra yarn through stitches made over the edge of the fabric. If the yarn is tightly spun, the loops twist into a fringe.

Fringes: warps left unwoven: in this type the weaving begins and ends some distance from the ends of the warps, leaving these as fringe loops.

Gauze: an open, lacelike fabric made by crossing the odd-numbered warps over the even-numbered warps and securing the cross by a passage of the weft.

Heddle: a device, usually a slender rod, from which string loops depend to encircle alternate warps. When this rod is drawn up, the odd (or even) warps are separated from the other half of the setup.

Interlocking weaving yarns: (1) warps, usually of two colors, upon meeting at upper and lower edges of a pattern figure, loop about each other; (2) colored weft yarns similarly loop about each other at side edges. Interlocking presupposes scaffold or skeleton yarns.

Kelim: a tapestry distinguished by slots at the sides of pattern figures. Colored wefts of one motive turn on its edge warp; those of the adjoining motive turn on its edge warp. The length of the slot left is governed by the size of the color area.

Llauto: a headband found in various lengths and of various techniques.

Loom bars: the supports between which are stretched the warp yarns. One of the bars is fastened to a stake or post, the other to the weaver's belt.

Loom join: a technique in which an extra length of yarn independent of the weaving elements draws together a breadth of cloth already woven and a breadth on the loom by engaging corresponding weft turns on the adjacent edges.

Mantle: the largest rectangular garment in the wardrobe; usually formed of two breadths of separately woven material.

Multicolored patchwork: a multicolored plain-weave cloth patterned only in geometric design motives. It is a unique fabric in that, regardless of the size of the single-motive element, its warps and wefts are the same color. End-to-end locking with the neighbor warps and wefts and strong skeleton wefts which may or may not be withdrawn upon completion of the fabric are implied in the patchwork construction.

Paracas stitch: a local (?) variant of the frequently occurring needleknitting stitch.

Pattern weave, single face with warp floats: a technique in which the design is developed by warp floats, i.e., yarns left free for a distance on the surface.

Plain weave: the interlacing of a single weft yarn over and under single warps; sometimes called "tabby" or "cloth" weave.

Plain-weave types: 1a, the interlacing of a single weft yarn over and under paired warps; 1b, the interlacing of paired weft yarns over and under single warps; *Basket*, the interlacing of pairs or trios of weft yarns over and under pairs or trios of warps; the Peruvian basket weaves are usually woven of paired yarns; 1+, interlocking, warps of two colors, upon meeting at upper and lower edges of a pattern figure, loop about each other; colored weft yarns similarly loop about each other at side edges. Interlocking plain weave presupposes skeleton yarns.

Plaiting: in this paper synonymous with braiding.

Single-element techniques: techniques requiring an indefinite length of hard-twisted yarn or cord. The yarns may be knotted, looped as in coil without foundation, or netted.

Skeleton (or scaffold) yarns: warp or weft yarns forming temporary foundation elements for end-to-end warp locking, multicolored patchworks, and similar techniques.

Slings: Paracas slings of various types are alike in having slotted or netlike center portions, long cords from each end, finger loops and tassels as finials.

Stem stitch (also called *crewel*, *Kensington*, and *outline stitch*): a simple line embroidery stitch made similar to backstitch in seaming, wrapped weave in basketry, and Soumak stitch in rug work.

Stick loom: see *Backstrap loom*.

Superstructural techniques: those not functional to the making of the basic material. Purely decorative motives made by brocading, applied feathers, and embroidery are superstructural.

Sword (or batten): the shaped piece of wood by means of which the shed is kept open for the weft yarn and each inserted weft is driven down to the partially woven cloth.

Tapestry: plain weave in which wefts are battened together so closely as to cover warps completely. A Peruvian tapestry is with few exceptions wool weft over cotton warps relatively heavy or grouped for size.

Tubular (ring) weaving: the warps (in the Paracas type) are wound around an object, ring fashion. When the weaving is complete, the resultant fabric is in the form of a tube.

Tunic: a sleeveless shirt, seamed at the sides. An opening for the head is left in the center seam, or provided for by a Kelim slot.

Twill: a weave to be recognized by the diagonal lines of floats which extend across the fabric, usually at an angle of 45 degrees.

Warp: the yarns stretched on the loom preparatory to weaving. The completed warp series is called the setup.

Warp face: the appearance given to a fabric by a preponderance of warp yarns over the number of weft yarns per inch.

Warp locking, end-to-end: see *Multicolored patchwork*.

Warp-weft techniques: techniques requiring both warp and weft elements.

Weft (also called *woof*, *filling*, *pick*): the weaving yarn carried by a bobbin or shuttle from one side to the other across the warps.

Weft face: the appearance given to a fabric by a preponderance of weft yarns over the number of warp yarns per inch. Tapestry is an extreme example of a weft-face fabric.

Weft locking: see *Multicolored patchwork*.

Weft-to-warp change: basic wefts extended to a scaffolding weft become warps upon which to weave tab forms.

Whipping stitch: a very shallow wrapping stitch taken at right angles to two fabric edges. A whipped seam opens out flat. The stitch was most frequently used by the ancient weavers to fasten together separately woven or constructed parts of garments. In several specimens (possibly loom joined) it is found taken between the first and second edge warps and through each of the corresponding weft turns on the two breadths.

PLATES

All the specimens from the Paracas Caverns and the Grand Necropolis shown in plates 1 and 2 are in the Museo Nacional, Lima, and the Museo de Anthropología e Investigaciones Prehistóricas, Magdalena Vieja, Peru.

The specimens in plates 3, 4, and 5 are in the Field Museum of Natural History, Chicago. They were obtained by A. L. Kroeber from one of the sites subsequently excavated by J. C. Tello at Paracas.

PLATE 1

Paracas Caverns. Allover patterns of double-ended and stylized serpents with subdivided dentate bodies. Usually found in gauze, knotting, and twining techniques. After Carrión Cachot.

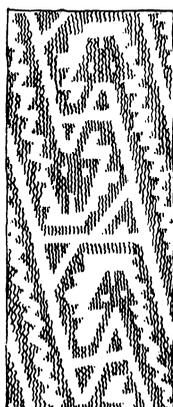
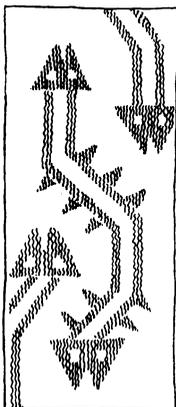
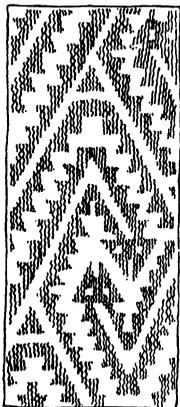
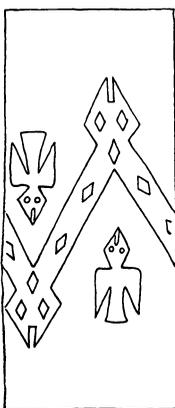
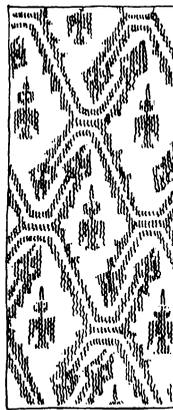
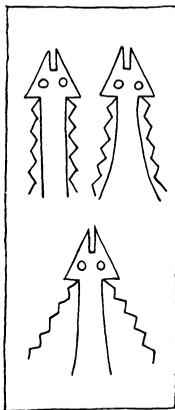
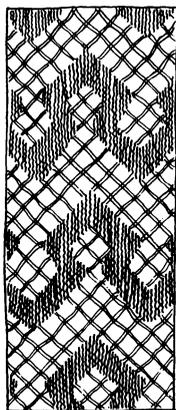


PLATE 2

Paracas Caverns. Feline and human figures found in textiles woven or fabricated by various single-element techniques. After Carrión Cachot.

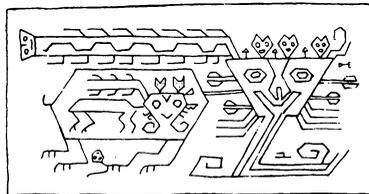
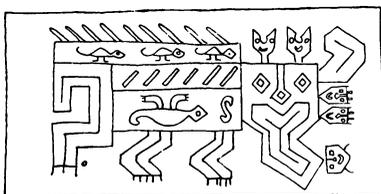
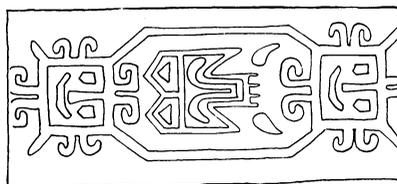
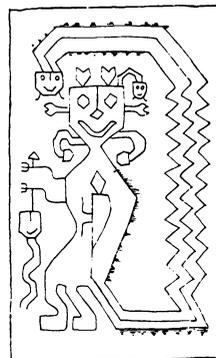
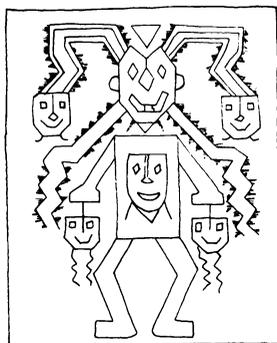
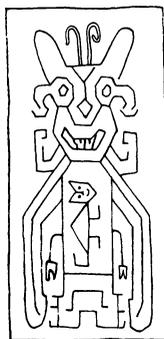
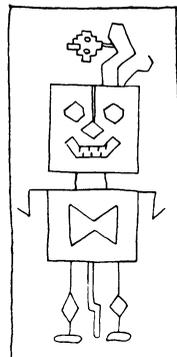
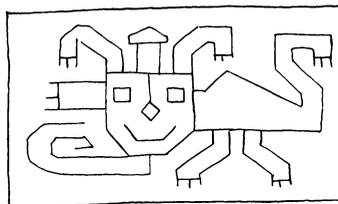
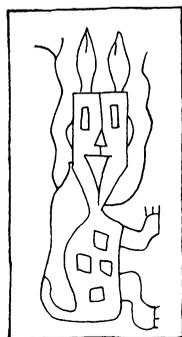


PLATE 3

Paracas Necropolis. FMNH 170095; corner of an all-cotton garment embroidered in multicolored wool yarns. Figures approximately $2\frac{1}{2}$ to $3\frac{1}{2}$ inches long.



PLATE 4

Paracas Necropolis. FMNH 170095; detail of garment in plate 3. Texture of all-cotton base material contrasts with the solidly embroidered fields and design motives. Rectangle approximately $2\frac{1}{2}$ by $1\frac{3}{4}$ inches.



PLATE 5

Paracas Necropolis, FMNH 170095; detail of garment in plate 3. Endless repetitions of an elemental stitch unit as in this fragment explain most of the seemingly intricate Paracas surface embroideries. Rectangle approximately $2\frac{1}{2}$ by $2\frac{1}{4}$ inches.

