

EARLY COTTON NETWORK KNOTTED IN COLORED PATTERNS

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Since the beginning of fabric production on Peru's south coast, knotting and network have been integral to the body of textiles (Engel 1963: 30-51; Gayton 1967:6-9; King 1965:223-224, 236; O'Neale 1932:62-66, 1942:157-159; Yakovleff and Muelle 1932:34-50). When reporting on early textiles from Hacha, Gayton (1967:6) noted that netting techniques were considerably more advanced than those of weaving. While there are numerous types of early netting from Peru, this article seeks to bring only one of them to attention, network from the south coast that was knotted in colored cordage. With their advanced knowledge of dyeing yarn in an enormous range of colors (Gayton 1961: 115), it is little wonder that early coastal people of ancient Peru incorporated the colored patterning of knotted network into their artistic and practical endeavors.

The major focus of this report is on four ancient fishing nets of remarkable size, design, and coloration. All are close to six meters in length and are double-sided. That is, they are shaped like long sacks that open across the top and are closed along the sides and bottom. All are constructed of cotton cordage knotted in a meshwork of simple, overhand knots forming blocks (rectangles) of various colors. Irregular shaped appendages open into the bottom of the nets (Figures 1-4).

A colleague, Nanette Skov, and I first became aware of these extraordinary nets in June 1997 while working in textile conservation at the Museo Regional de Ica. Their owner, Sr.

Guillermo Cabada of Nazca, sought treatment for them through the museum and Skov was referred to him. A heavy encrustation of salt weighted and embrittled the net cordage, obscuring the patterns and endangering their fragile structure. Before treatment, Skov tested the dyes and determined that they were not fugitive. The only place large enough to contain the nets was a swimming pool at the home of a local hotel owner. There Skov immersed the nets in clean water to dissolve the salts, rinsed them, and laid them out on the deck to dry. When wet, the colors of the net patterns deepened significantly. Brilliant images of birds, fish, plants, animals, and other motifs, knotted in an array of contrasting purple, turquoise, cream, and orange cordage, entirely covered the surface of two of the nets. The other two had been knotted in large colored rectangles, without images. As the nets dried, the depth of their coloration rapidly disappeared.

While the nets were drying after treatment, I took photographs (Figures 5-11) and asked questions about their origin. They were so large it was impossible to capture the full scope of their appearance with the camera from close up. Not only was their size and coloration unique, but the fact that there were four of them was somewhat overwhelming. Having a previous acquaintance with ancient fishing nets from the Acarí Valley, I hoped to study how the knots were tied, how the colored images were created, and retrieve other pertinent technical information.

According to the owner, all four nets came from an isolated section of beach north of the mouth of the old Ica River. The Pan American Highway veers away from the coast through this region to pass through the cities of Ica and Nazca. Despite the lack of roadway through the rough coastal terrain, the region is a popular fishing area for local people and evidently the discovery of the nets took place during such an expedition.

Skov and others who visited the region with Cabada said that the site was about two kilometers south of a large cave near the water's edge (personal communication). Skove recalls walking south from the cave to an area with a large shell mound. Past it, she was shown the remains of a few walls in the sand. The area was fronted by a small natural inlet from the ocean where she watched a local fisherman catch fish by hand in the shallow water.

In a published report of the coastal region from the Pisco River on the north to the Ica River on the south, Frédéric Engel describes the area by the cave (1991:151-153) and includes a profile of it and the hill behind it in figure 126. He indicates the cave as Site VI-550 on his map in the end-fold places a cluster of sites about 1.5 to 2 km. south of the cave. These include the shell mound (VI-580) and two other sites (VI-560 and VI-565). Engel notes only shells or shells and ceramic fragments at these sites. Cabada did not know if the site where he found the nets was one Engel described, or a previously unknown site. While the Ica River seldom flows to the coast today, early settlements suggest that its lower regions were more fertile in the distant past.

Cabada has stated that three of the nets were stored together in a pit in the sand where they had been dropped, one on top of the other. The pit was about a meter and a half deep and lined with a dark tar-like substance that kept it

from caving inwards. An offering of three small gourds and the leg bone of a llama were placed on top of the last net. The dark stain from the decaying llama bone is visible in several places on the left side of Net 1. A niche in the side of the pit held pelican feathers, perhaps in homage to the bird's expert fishing abilities. The pit was adjacent to a series of rock-walled, oval-shaped rooms. Net 4, the most torn and faded, was found in a walkway adjoining the oval-shaped rooms. Many broken and faded pieces of similarly patterned netting lay discarded in the sand along the wall of a nearby plaza.

The following year, I arranged to take photographs of the nets from the second story balcony of a local school. Even at this distance, I experienced difficulty in covering their entire lengths and widths with a regular lens and the resulting photos are composites (Figures 1-4). At the time, Cabada was in the process of opening a small museum in Nazca that featured the nets and other marine related items and trade goods found in the same region of the south coast. He called it the Museo Arqueológico de Nazca. The enterprise was on the south side of the *ovalo* (traffic circle) on the Pan American Highway. It remained in operation only a few months.

DESCRIPTION OF THE NETS

Net 1. Net 1 measures 5.9 m in length and 2.64 m in width, including the half-circular appendage at bottom center (Figure 1). The appendage is actually a large rectangle, gathered along the sides to fit as it was knotted to the main section. The body of the net is composed of blocks (rectangles) of colored images so closely knotted that the tip of my little finger barely fitted inside the meshwork. A row of double-sided knotting in white cordage joins the perimeter of each block to its neighbors. This white cordage can be followed throughout the nets as it knots the sides of each block to adjoin-

ing ones (Figure 6). In addition, remnants of a heavier, wider-spaced mesh surrounds the tops of the nets (Figure 7), enlarging into a rectangular extension at each end (Figure 8).

The same images are repeated throughout the net many times in the same size and color scheme. Plants and seaweed, in orange or purple cordage on a white background (Figure 9) are the most numerous. Fish, in purple with orange eyes on a cream background, are also well represented (Figure 10), as are birds. The latter are turquoise with white outline and orange eyes on an orange background (Figure 11). The humpbacked animal (Figure 12) and the simplified sun-face (Figure 13), in purple with a cream outline on an orange background, are rarely represented. The fox (Figure 14), in purple with orange eyes on a white ground, is also rare. In comparison with charts in the *Munsell Book of Color* (1973), the coloration in the net (when dry) compares with the following range of hues: purple: 5RP-5/4 and 714; orange: 2.5YR-616, 6/8, and 7/4; turquoise: 2.5B-8/2; and cream: 2.5Y-8/2.

The smaller images are scaled to half, a fourth, or a third the size of the larger ones so that the various sizes of knotted images fit well together, like patchwork. For instance, the bird motif (Figure 6, upper right) is twice the length of the fish (Figure 6, lower right and left). The fox (Figure 14) is the same length as the bird, but half its width, and so forth. The images are not always easy to see in the black-and-white photographs because of the similarity of their grayscale values. Holding the photographs at arm's length allows better differentiation. For more clarity, Figures 12, 13 and 14 are drawings, rather than photographs, of the images. Not all images in the nets are represented in the illustrations or the photographs incorporated into this paper.

Net 2. Net 2, with a similar half-circular appendage at bottom center, is composed of the same knotted images that appear in Net 1. This net is 6.1 m long and 2.67 m wide, including the central bag. A check of the color hues with *Munsell Book of Color* provides the following comparisons: turquoise: 2.5B-7/2; purple: 5RP-5/4; orange: 10R6/6 and 5YR-6/6; and cream: 2.5Y-8/2. While all the nets show holes in the knotwork, only Net 2 shows repair to broken areas. The broken areas were not re-knotted with cotton cordage, but repaired with woolen yarn crudely looped a number of times over the edge of the breakage and pulled tight.

The colored cordage was pre-dyed before tying. The simple overhand knots that make up the nets were formed by the active end of the cordage being looped around the vacant spaces between the knots of the previous row (Figure 17a), passed through the loop (Figure 17b) and pulled tight (Figure 17c). In Nets 1 and 2, the knots are spaced from 0.8 to 1.0 cm apart. In Nets 3 and 4, the knots are distanced from 1.7 to 2.2 cm from one another.

The heavy, wider-spaced mesh (3.5 to 4.0 mm) that appears around the tops of the nets (Figure 7) and enlarges into rectangular extensions at the corners (Figure 8), is knotted from 4.5 to 5.0 cm apart. Here the cordage is 4z-s, replied Z. Local fishermen suggested that during use, a heavy throwing rope, termed *el tiro*, would most likely have been laced through the heavier network at the top as a handling device. The fishermen also told me that there would be problems catching fish with such large nets knotted in small mesh. The weight of the soaked cordage alone would make the nets difficult to control in the water. The small mesh would inhibit the flow of the ocean current, causing them to be caught up and pulled along. Such close network would be appropriate only for very small fish like anchovies, or crustaceans such as shrimp. They suggested that better

handling was most likely the reason for the leg and bag extensions on the bottom. Instead of the fish heading into one corner and throwing a net off balance, the appendages would provide places for them to run, keeping the net in balance. They also suggested that rocks placed in the bottom extensions would help overcome the natural buoyancy cotton has when first introduced into the water. Even small rocks would cause the lower extremities to sink, help position them upright and steady them against the ocean current.

Blocks of Plain Color. Nets 3 and 4, with extensions resembling legs, were entirely composed of blocks of plain orange, turquoise and purple cordage pre-dyed before knotting. The directionality of the knotting sequence of a block of colored netting can be determined by noting which rows of knots were tied onto previous rows. Knotted mesh has a natural tautness in the direction the cordage was tied, but it will stretch or collapse in the opposite direction when pulled. Taking these two factors into account, it is possible to determine the sequence of knot tying by locating the finishing knot and following the directionality of the knotting sequence backwards.

The knotting of the colored blocks usually began and ended in the same place. In other words, the blocks of network were knotted in such a way that the two ends of the cordage met one another at the finish to be tied off together. The first row of knots began close to the tail end with 15 or 20 cm left passively dangling. Figure 17a shows the beginning of the knotting process, with the tail end marked with hatching. Knotting with the opposite, open end continued, one row after the other, until the appropriate size of knotted rectangle was almost achieved (Figure 17b). To form the last row, the net maker would turn the block of network, knot around the corner and continue the last row of knots along the side, working toward the corner with the

dangling tail end. This means that the last row of knots on the plain blocks was knotted perpendicular to the other rows of network. Two or three knots away from the corner, the net maker would drop the main cordage and pick up the tail end, knot it over to the main cordage and join the two together in the final knot (Figure 17c). The tail end of the knot was secure, but the open end required an additional knot to keep it from unraveling before it was cut off. The end knot was generally close to, but never exactly at the corner of a block of network. The corner space was reserved for the two additional knots scheduled to be tied there when the blocks were joined to one another by the double-sided row of knotting in white cordage.

Patterned blocks of color. The knotting of the colored images involved a technique somewhat more complicated than that of the plain blocks of network. Two or three colors of cordage were utilized in a design. Again, the tying of one color of cordage onto another indicates that the tie-ons were the later addition. Taking this into account, along with the directionality of the knots and the location of the end and beginning knots (as discussed above), the tying sequence of the various colors of cordage can be followed from knot to knot throughout an image (Figure 18). A description of the knotting sequence of a plant image, tied in two colors, follows.

The plant image was so constructed that a beginning knot on the upper left side tied the two colors together and a finishing knot on the bottom right side, tied them off. Each color of cordage, in this case, turquoise and orange, was carried uncut throughout the entire sequence in a skillful synchronization of the placement of the knots of each color. The tying of the turquoise knots onto orange cordage where the colors meet indicated that the orange cordage was knotted first. Figure 18a shows the configuration of the orange cordage (in black) with the turquoise cordage (in white) tied on at the top

and the beginning row of knots worked across. Figure 18b shows the appearance of the complete block of network once the knotting of the turquoise cordage was completed. In studying the knotting process, it was intriguing to see how an experienced net maker would have known the knotting sequence for the orange cordage to follow, leaving vacant spaces for the turquoise cordage to enter, fill in with knots, exit, and continue onward in perfect alignment with the knotting sequence laid down in orange cordage. The complicated colored patterns in the nets are the products of skilled craftsmen well experienced in tying the circuitous sequences required to make them.

Sometimes the direction of knot tying was reversed in a series of images to give variation. Repeats of the fish motif, for example, were sometimes knotted from the top downward (Figure 10, lower half) and other times from side to side (Figure 10, right). While the same number of knots was used in both instances, fish tied from side to side are thinner than those tied top to bottom. The difference in configuration results from the network being more elastic in the direction opposite to that in which it was tied.

A SEARCH FOR IDENTITY

In a search for the cultural identity of the four nets, several approaches seemed worthy of pursuit. The first involved the identification of cultural influences known to exist in the region of their discovery. The second pursuit centered on the similarities in the presentation and arrangement of iconographic features in the images in the nets that suggest cultural affiliations with known south coastal cultures. Lastly, a search for similar examples of early coastal netting worked in colored cordage seemed in order. For various reasons, radiocarbon dates could not be provided.

The region of discovery. Although traces of a number of small ancient settlements dot the desert area of the discovery of the nets by the mouth of the old Ica River (Engel 1991:153-158 and end-fold map), no strong cultural impact has been reported for the region. Similar to most of the Peruvian coastline, this area is a veritable desert, although it was most likely wetter in the distant past. In the Callango Basin, about 15 km inland from the mouth of the old Ica River, evidence of former cultivated areas accompany habitation sites dating to the Paracas occupation (Massey 1991:319). A few kilometers further inland, the Ocucaje region developed a strong local component of Early Paracas culture (King 1965:259-276; Sawyer 1961) that lasted through late Paracas into the early Nasca period (DeLeonardis 2000:364; Massey 1991:320-329). Ocucaje played an important role in the determination and spread of cultural forms and ideas in the area. Types of weaving, embroidery styles, and iconographic images found there (Kajitani 1982: plates 11, 12, 20-23, 42) are similar to those found on the Paracas Peninsula, indicating cultural contact between the two regions. The contact was most likely by sea, with the entry into the Ica Valley through the area at the mouth of the Ica River, close to the area where the four large nets were found.

The Paracas occupation extended into more fertile areas further up the Ica River as well as along the inland tributaries of the Nasca River to the south, and the valleys that surround the Pisco and Canete Rivers to the north (DeLeonardis 2000:365-367, figure 3; Paul 1991:2-8, figure 111). The most significant manifestations of the Paracas people, however, are the elegant burial garments recovered from several cemeteries on the Paracas Peninsula, approximately 120 kilometers up the coast from the mouth of the old Ica River bed. Tello and Mejía (1979) and Yacovleff and Muelle (1932) subdivided the Paracas culture according to the two burial styles they found there. The earlier

cemetery style is called Paracas Cavernas, and the style with later, more culturally advanced burials, is known as Paracas Necropolis. Later Menzel, Rowe, and Dawson (1964) utilized ceramics from the Ica Valley to develop a chronological framework for the Paracas culture that they termed the Ocucaje Sequence.

The images in the nets. It is interesting to note that, except for the open, longitudinal side view of the mouth, the fish (Figure 10) and the bird (Figure 11) are represented in a naturalistic and recognizable manner, as if viewed from above. The inclusion of a longitudinal mouth in an otherwise dorsal view of the head of a creature has a lengthy tradition in Peruvian motifs. It became a conventionalized presentation in both textile and ceramic portrayals by the Paracas Cavernas period. Articles concerning the iconography of the period by Carrión Cachot (1931:7, figure 2), Engel (1966:187, 195, figures 51B and 55D), King (1965:215, figure 37b), O'Neale (1942:162, figure 11 and plate 1), and Paul (1990, plate 21) all include the longitudinal mouth in images in an otherwise dorsal view of the creatures.

Like the bird and fish, the image of the fox (Figure 14) also has a realistic portrayal, but viewed from the side, rather than the top. The eyes, however, are paired, as if viewed from the front and placed slightly off center behind the open mouth, similar to the conventionalized arrangement of the facial features of the bird and fish. Of further interest is the strange arrangement of the fox's legs. They point outward in opposing right angles to one another. This awkward, but eye catching, symmetry was perhaps intended to provide visual stability to the lower part of the figure.

In his study of the iconography of early Paracas ceramics, Sawyer included two examples of foxes from the middle Paracas period with a similar arrangement of the facial features (1961:

289-292, figures 8i and 8j.) He notes that earlier Paracas foxes show Chavín influence, while later ones are more naturalistic. He makes the point that images of the fox were presented with the head in side view while the head of the feline was shown frontally. In the ceramic art of the Ica Valley, foxes were presented in profile with paired eyes, and/or paired ears, facing forward only after Chavín influence waned, and before the more naturalistic representations of early Nazca became popular. The fox image in the nets seems to agree with the portrayal of foxes in stylized form after the waning of Chavín influence that Sawyer relates for the Ica Valley. The time periods of Sawyer's sequence have been superseded by more recent work (Paul 1991: 8-15), but the coverage and directionality of his iconographic study remains the most thorough for the representation of animals from early Paracas through early Nazca time.

Another creature depicted in the nets, a humpbacked animal in profile (Figure 12), has been stylized to the point that it is no longer identifiable. The crested head and linear proportions of similar widths that form the limbs and body suggest that this animal comes from the realm of myth rather than from the natural world. Similar to the fox, its head is in profile, with both eyes presented in front view, above the longitudinal mouth. The front and back legs are also positioned outward in opposite directions, a stance that most likely originated in the Chavín presentations of supernatural felines in profile (Figure 19).

The stance became well enough accepted to influence the representation of animals in the emerging Paracas culture. By Paracas Cavernas times, the opposing right-angled stance became conventionalized in the representations of a humpbacked animal tied in close-knotting, the favored multi-colored technique for the production of the center section of turbans and headband at Ocucaje (King 1965:343, figures 81a, b,

c, h). The technique of close-knotting involves simple overhand knots like those in fish-netting, but spaced so closely together that a needle is required to accomplish the task. The results are so tightly knotted that it no longer resembles netting, but becomes a type of heavy, solid fabric (see O'Neale 1942 figure 7; Paul 1990: plate 9). Another example of a humpbacked animal with the legs at opposing right angles comes from a close-knotted headband from the Cavernas Cemetery that is on display in the Julio C. Tello Museum in the Paracas Reserve (Figure 20). The Museo Nacional de Arqueología, Antropología y Historia (MNAAH) in Lima also has two close-knotted headbands from Cavernas with a similar presentation of feline-like figures (Tello and Mejía 1979:185-187, figure 47-1, 2).

Felines with a humpback and legs at right angles to one another were also included in linear style images embroidered on the large mantles from the Paracas Peninsula (Figure 21; Kajitani 1982: figure 29). They appear as secondary figures or fillers relegated to corner positions accompanying rows of long serpents ending in feline heads (Anton 1972: figure 46; Carrión Cachot 1931: figures 9I and 9J). Smaller felines with humpbacks and right angled legs also appear within the bellies of embroidered felines in the Paracas mantles (Anton 1972: 25-26, figures 7E, 8A) and the interior of linear style Occulate Felines and other mythological beings (*ibid.*: 26, figure 8E; O'Neale 1942:156, figure 3).

Other images in the nets present more rectilinear arrangements. One motif shows a stepped center with pairs of rays, ending in volutes, extending from the top and bottom (Figure 13). The purple image, outlined in white, contrasts strongly with the orange ground it is set against. This motif, paired in the nets, is most likely an abbreviated rendition of the sun-face motif. In its most recognizable form, the Paracas sun-face consists of two eyes and a

mouth within a rectangular or diamond shaped face. Long paired rays, ending in volutes, emit from its top, bottom, and sides (Engel 1966: figures 51B and 61, top; King 1965: 227, figures 22b, 76a, 76c; O'Neale 1942:160, figure 8e). Sometimes the facial features were abbreviated to a pair of eyes (King 1965:332, figure 76b) or left out entirely (O'Neale 1942:160, figure 8d) in a manner similar to the representation of the rayed image in the nets.

Other network. While the small-sized mesh in the nets seems impracticable to local fishermen today, Sandweiss (1992:79-85) reports finding similar network fragments with mesh measuring 1.0-1.7 cm on a side in his excavations of Inca period ruins near Tambo de Moro and at other sites in the Chíncha area. Sandweiss cites Coker (1908:99-115) who investigated fishing and network from the Pisco, Chilca, Malla, and Cerro Azul regions, among other places.

In twentieth century Peru fish-nets were classified by mesh size and named for the common fish species each size was best suited to catch. Those with very small mesh, 0.75 cm on a side or *cuadrado*, were called *anchoveteras* for the anchovy they gathered, and nets from 1.5 to 2.0 cm on a side were called *pejerreyeras* for the *pejerrey*, a slightly larger fish (*ibid.*:105; Sandweiss 1992: Table 15). These are very close to the sizes of the meshes of the nets discussed above. Mesh size in Peru is commonly measured by the distance between knots or the number of fingers that can be inserted into a section of mesh (*ibid.*: 180).

The investigation of traditional fishing and fishing culture of the Muchik by Victor Antonio Rodríguez Suy Suy (1997:43-65) provides an account of how such large nets with the central bag extensions were utilized throughout time by coastal fishermen in northern Peru. According to Rodríguez, they were a type of *chinchorro de*

orilla or shore net used when the fish were running in great numbers and could easily be caught close to the edge of the ocean. To be put to use, the heavier mesh surrounding the top of the nets (Figures 7 and 8) was laced with a large rope, weighted with rocks on the bottom, and secured to a pole at each end. Two fishermen, one at each pole, carried the net into the water until it became waist deep (Figure 22). Meanwhile, two other fishermen remained on shore holding long ropes attached to the poles on the sides that studied and guided the net. Once the net was opened by positioning the poles upright, the men on shore slowly tugged on their ropes while those at the poles pushed the net toward shore as they kept the poles vertical. As the net was slowly brought to shore, the fish were gathered into the bag in the bottom. The use of this kind of net for fishing further out in the ocean required three fishermen, each in his own totora raft (Figure 23). The fisherman furthest out in the ocean took care of the net, while the others at the ends of the ropes slowly pulled the net toward shore, trapping the fish as they moved toward land.

Rodríguez names and explains the utility of several other types of nets that were used through time on the north coast, but a type of net with the leg-like extensions, found in Nets 3 and 4, was not among them. Nor does he mention any sort of color or design knotted into the nets from the north coast. A net with two leg extensions, however, is on display at the Julio C. Tello Museum in the Paracas Reserve (Figure 24). It comes from the Cavernas area of the Paracas Peninsula. While this net is much smaller than those discussed here, its overall shape with the leg-shaped extensions indicates that such nets were utilized by the fishermen of the early Paracas culture.

Also on exhibit at Julio C. Tello Museum is a well preserved net tied in colored cordage (Figure 25). This oval net (MP-689) is from the

Cavernas Cemetery area of the Paracas Peninsula. It measures 1.99 m in length and .43 m in width and is knotted throughout in simple overhand knots. A detail of the colorful pattern (Figure 26) presents repeats of a double-headed serpent and sun-face motif integrated into a flowing rhomboidal design across the surface of the net. The design arrangement pairs horizontally opposing serpent heads with linear bodies zigzagging between white, serrated diamonds containing the sun-face image in orange. A neutral ocher color forms the background knotwork. The heads of the serpents, in black, white, or orange cordage, are presented dorsally, from above, with a pair of eyes in between an open mouth. While the rhomboidal arrangement of the serpent and sun-face motifs in the Julio C. Tello Museum net is considerably more sophisticated than the individualized motifs in Nets 1 and 2, the serpent and fish heads and the sun-face motif are presented in a similar conventionalized manner. Engel includes a drawing of a portion of the net pattern in his book on Paracas (1966: 187, figure 51B).

An almost identical arrangement of the serpent and sun-face pattern within the serrated diamond is depicted by Dwyer (1979: figure 11) in a woven double cloth from the Cavernas Cemetery on the Paracas Peninsula. King also shows the serpent and sun-face pattern (minus the facial features) in a tunic from the site of Ocucaje in the lower Ica valley (1965:215, figure 37b). While the colorful tunic was closely looped rather than knotted, the appearance of a similar pattern arrangement in the tunic from the site of Ocucaje, and the Julio C. Tello Museum net and double cloth from the Cavernas area of the Paracas Peninsula, 120 km up the coast, indicate that the two areas were in contact with one another. The contact would most likely have been by sea, and if so, it would have involved entrance into the Ica Valley at the mouth of the old Ica River bed close to where the four large patterned nets were found.

In continuing the search for further information about nets tied in colored patterns, I visited several museums in Lima. The Peruvian Gold Museum (el Museo del Oro del Perú) had a small net on display (Exhibit 5131) composed of rectangular sections of network tied in simple, overhand knots. Each section was knotted in a different shade of brown: medium brown, dark brown, orange-brown, gray-brown, and light brown (tan). The net was made of *cabuya* (maguey fiber) and measured 52 cm in length by 25 cm across the top. Photography of the net was not allowed, but a sketch of it appears as Figure 27. Like the nets discussed here, a row of double-sided knotting (this time in dark brown cordage) joined the perimeter of each colored block to those of its neighbors. While no provenience or other information about this net is available from the museum, it was gratifying to locate another net tied in blocks of colored network joined together in the same manner as the nets discussed here. *Cabuya*, cactus, and other plant fibers were utilized for net making before cotton became readily available (Rostkowski 1981:102). The existence of the *cabuya* net indicates that network tied in blocks of various colors was indeed a very old form of artistic expression.

In 2002, conservator Elba Manrique Pereyra and her assistant, Maribel Medina, at the Museo Nacional de Antropología, Archaeología y Historia in Lima graciously allowed me to study their network collection from the Paracas area. I was shown specimens of fishing nets included in the report of the Cavernas burials by Yacovleff and Muelle (1932:32-40). These nets were further studied and described by O'Neale (1932: 62-63). All but one were plain fishing nets knotted in cream or whitish cotton. The one exception, MN85610, had been knotted in cordage with a blue tinge at one end, but no pattern was involved.

In addition to the Cavernas nets, the staff showed me 21 other nets in their collection from "south coastal areas". Of these, three fragments of network had been knotted with sections of dyed cordage. Specimen 5303U, measuring 12.5 by 13.5 cm, was knotted of vegetal fiber, possibly maguey. Only bits of a stepped design in green cordage remained along the right side. The provenience was not known. Another specimen, EU/773, from "region sur", measures 53 cm long and about half as wide across its fragmented side. A design of small rectangular blocks, knotted in orange, green, and brown camelid cordage, aligned vertically as crosses on a white ground (Figure 28). A third specimen, 74427, showed bits of beige, dark green, and orange cordage knotted along one side, but not enough remained to discern a pattern. No provenience was listed. All three of the specimens with colored sections were knotted in simple, overhand knots ranging from 0.6 to 1.3 cm on a side, or close to the spacing of the other nets with colored yarn discussed above.

I was also shown other examples of network from the south coast that had been knotted in diagonal arrangements of plain white cordage to form attractive chevron or diamond-shaped patterns. These were not fishing nets but fancy headdresses or "hoods" like the ones King (1965: 230- 232) describes in her assessment of different kinds of nets from Ocucaje. While none of the examples in MNAAH had been knotted in colored cordage, King describes a hood from Ocucaje with diamond shapes containing the image of a skull knotted in contrasting arrangements of red with dark blue cordage and blue-green with cream cordage (Figure 29). In her summary of network found at Ocucaje, King mentions that "elaborate multi-colored patterning is also found," but the hood with the skull pattern is the only specimen of spaced knotwork in colored cordage that she includes in her catalogue.

When I returned to MNAAH the following year, the museum staff informed me that they had located another example of network knotted in colored cotton cordage (27154). The knots were tied at distances of 0.45 to 0.5 cm on a side of the mesh. The cordage could not be analyzed beyond determining that the final ply was in the Z direction with a diameter of 0.7 to 0.8 cm. The net was from the site of Cabeza Larga, a well known Cavernas Cemetery on the Paracas Peninsula. Although all of the upper end and parts of the lower end were missing, the intact sides suggested that the net had originally been rectangular in shape (Figure 30). It measured 24 cm from side to side and 49 cm along what remained of its length. The mesh had been tied in simple overhand knots forming the familiar image of the serpent and sun-face design in dark brown on yellow-ocher background. This time, the quadruple lines of the body of a pair of double-headed snakes define a large central diamond filled with the image of the sun-face. The serrated inner lines of the snake's body angle into smaller half-diamond shapes on the sides where they end in the head of a serpent. The image of a fish with a similar head, next to the serpent head, faces the opposite direction. Both heads are presented dorsally, from above, with a pair of eyes above an open mouth in the same conventionalized arrangement discussed above in the oval net from the Julio C. Tello Museum and the images in Nets 1 and 2. The inclusion of similar iconographic images in the same technique of knotting colored cordage seems to provide a link between all the nets discussed above.

DISCUSSION

The four large fishing nets discussed here, the oval net from Julio C. Tello Museum in the Paracas Reserve, the hood from Ocucaje (King 1965:235), the *cabuya* net from the Peruvian Gold Museum, one rectangular piece, and several fragments of netting in the NMAAH

represent the examples of patterned nets tied in dyed cordage that I could locate. Although few in number, these examples are sufficient to define the technique and highlight its artistic attributes. While there is no certainty as to the cultural affinity of the four nets, the knotting technique and iconography indicate that they most likely pertain to the Paracas Cavernas era.

Very little is known about the ancient south coastal fishing cultures of Peru that produced colorfully patterned nets like these. Those who have studied these cultures point out that they dwelt apart in coastal villages (Sandweiss 1992) more connected to one another than to other communities further inland (Rostworowski 1981:82-103). They were never well integrated into the mainstream cultural events, and their lifestyle, language, ceremonies, and beliefs were essentially their own.

The utility of the production of such large colored nets comes into question. Considerably more labor would have been expended in the construction of the knotted patterns than was required for knotting ordinary fishing nets. The knotting of the colored patterns would have required a group of skilled craftsmen with shared knowledge of the intricate tying sequences. Their production and utilization indicates community involvement on several social levels. In addition to the many individuals needed to work on their construction, significant planning and coordination would have been required to fit all the pieces together to make the nets. The fact that all four nets are close to six meters in length, varying only a few centimeters from one another, suggests that specific measurements guided their construction.

Cooperative involvement would also have been required in their use. In describing the traditional use of similar large nets on the north coast, Rodríguez (1997:43-64) indicated that

three or four men would have worked together to position the nets offshore and gather in the catch. The utility of such large nets was evidently reserved for times of abundant running of the fish close to the shore. When great numbers of fish appeared, the call to service of the nets would have been a time of excitement and celebration. It is easy to imagine the delight of the ancient fishing villagers when they witnessed the color of the images in the nets magically deepen as they were immersed in the water. Perhaps the colored patterns attracted the fish. An abundant catch would likely have been followed by feasting and thanksgiving, commemorated in a ceremonial manner. In terms of such rewards, the tying of the complicated colored patterns seems worthy of the labor expended.

The storage of the nets in a specially prepared pit under an offering of gourds and llama bones implies they were not being used every day, but were ritually put away until a subsequent event of consequence called for their unearthing. The ritual care of the nets suggests the elevation of normally utilitarian fishing gear to ceremonial status. The status, in turn, indicates an organized homage to fishing, the sea, and creatures within it. Certainly the effort expended to knot the patterns and assemble the nets went far beyond that needed simply to catch fish to sustain the local economy. The nets were more than ceremonial showpieces, however. They display signs of extensive use. One indication of the unusual status of the nets in a socially stratified context is the unskilled repair done to broken sections. Woolen yarn was very crudely looped around the sides of the holes in Net 2, tightly pulled and knotted. This type of repair caused unsightly bunching of the surrounding network, and makes sense only if quick action had to be taken, such as that required during an ongoing ceremony. Had real fishermen been in charge of the ceremony, good repairs would most likely have been made to

broken areas at a later date, but this never occurred. (For a description of traditional net repair by fishermen, see Sandweiss 1991:83-84.) This suggests that the ones in charge of the nets during ceremonial use were not the ones who made them or the holes would have been repaired correctly, or, possibly, there may have been a prohibition against repair of a ceremonial object.

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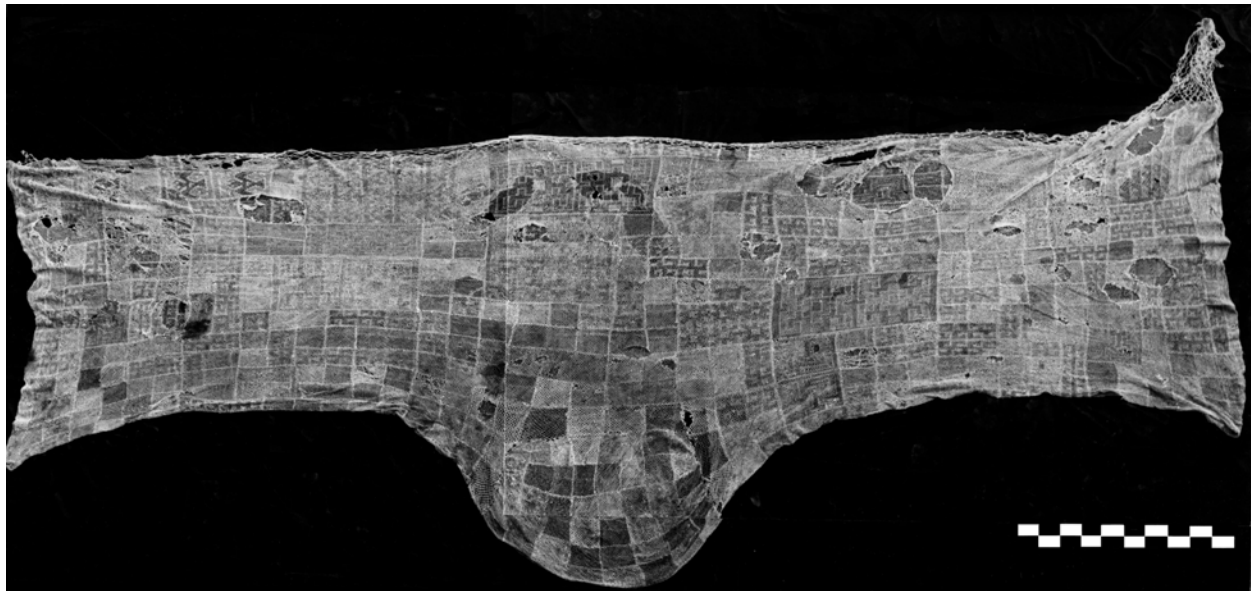


Figure 1: Net 1. Length 5.9 m, width 2.64 m. Cotton cordage (z-s--Z) knotted in blocks of turquoise, purple, orange, and natural cream color containing images of local flora and fauna.
Photo consists of multiple overlapping images.

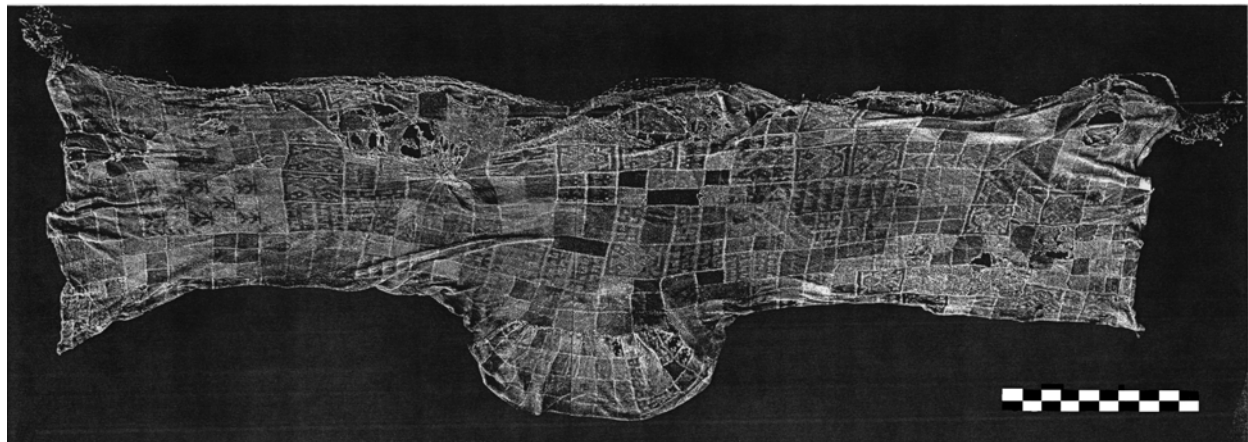


Figure 2: Net 2. Length: 6.1 m, width: 2.67 m. Cotton cordage (z-s-Z) knotted in blocks of turquoise, purple, orange, and natural cream color containing images of local flora and fauna.
Photo consists of overlapping images.

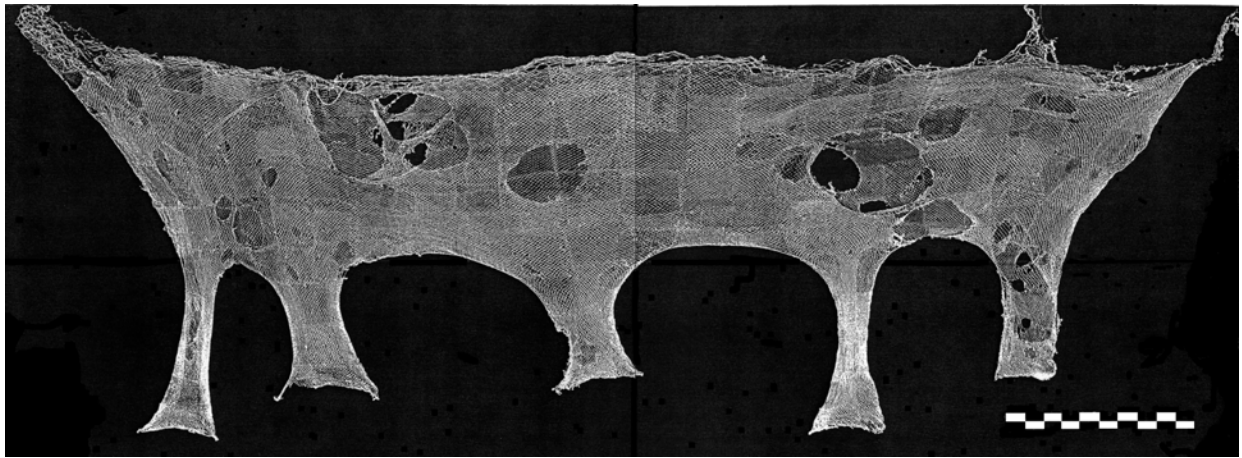


Figure 3: Net 3. Length 6.30 m, width 2.8-2.31 m. Cotton cordage (z-s-Z) knotted in blocks of plain, turquoise, purple, orange, and natural cream, without images. Photo consists of overlapping images.

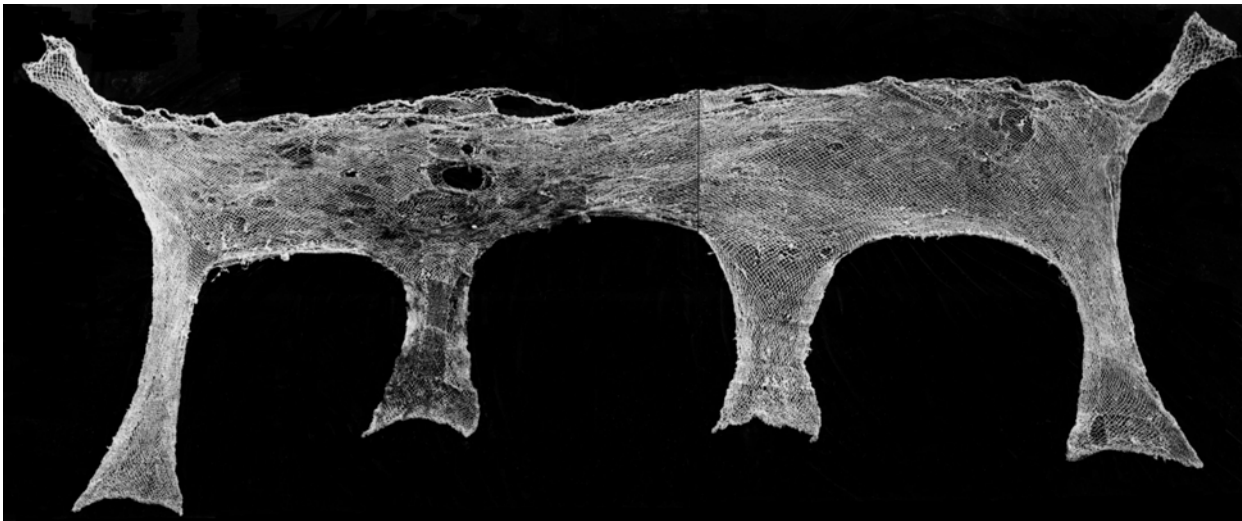


Figure 4: Net 4. Length 5.87 m, width: 2.24-2.4 m. Cotton cordage (z-s-Z) knotted in blocks of plain color, now mostly faded. Photo consists of overlapping images.



Figure 5: Net 2 being straightened by Nanette Skov.

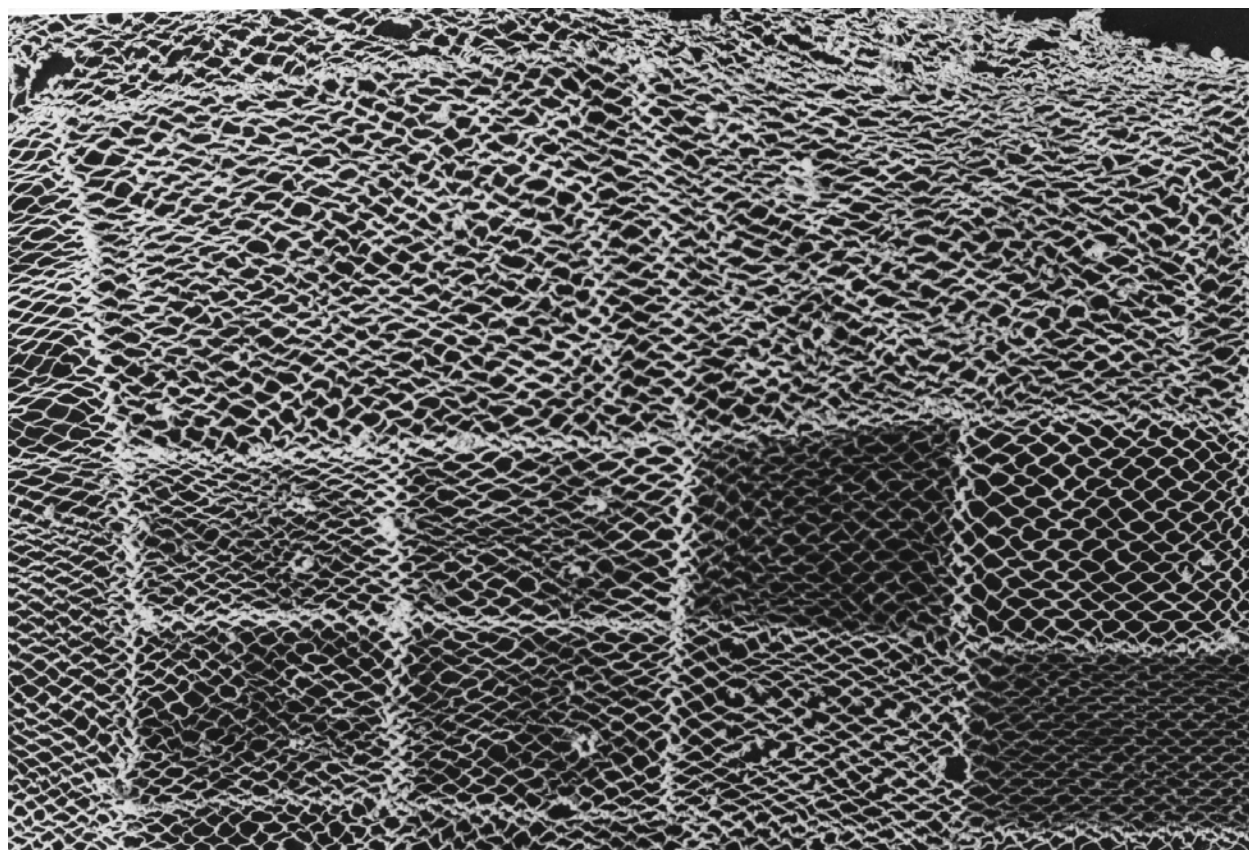


Figure 6: A section of Net 1 showing the outline of the white yarn used to knot the blocks of colored images together.

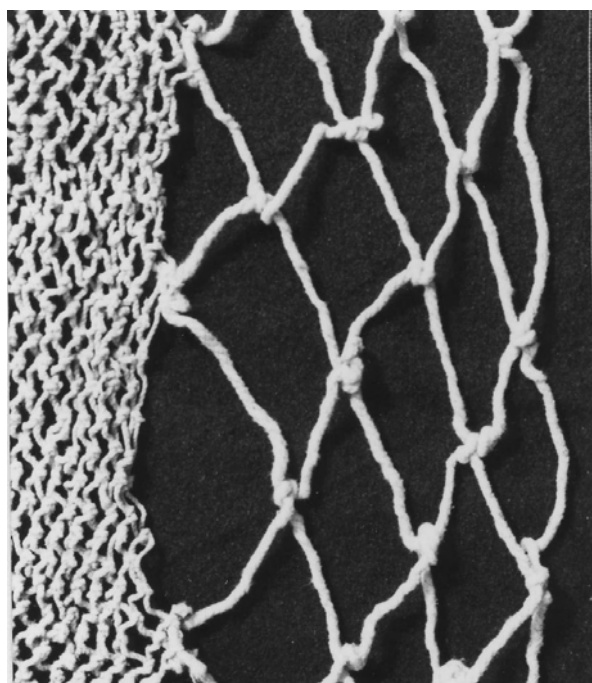


Figure 7: Mesh with knots 5.5cm apart surrounds the tops of the nets.

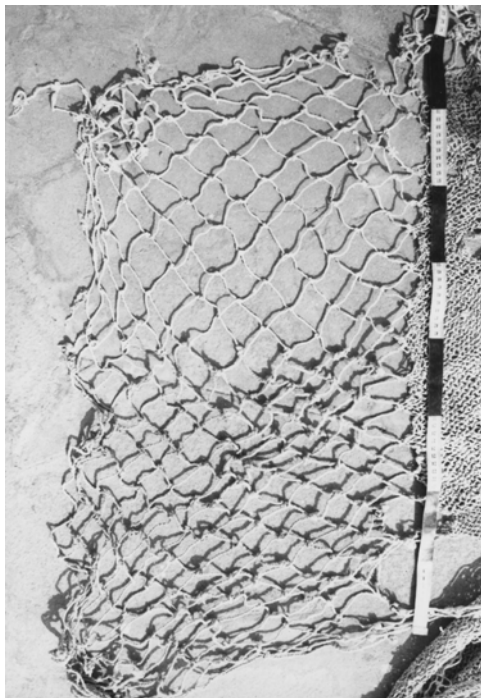


Figure 8: Wider section of mesh at the ends of net.

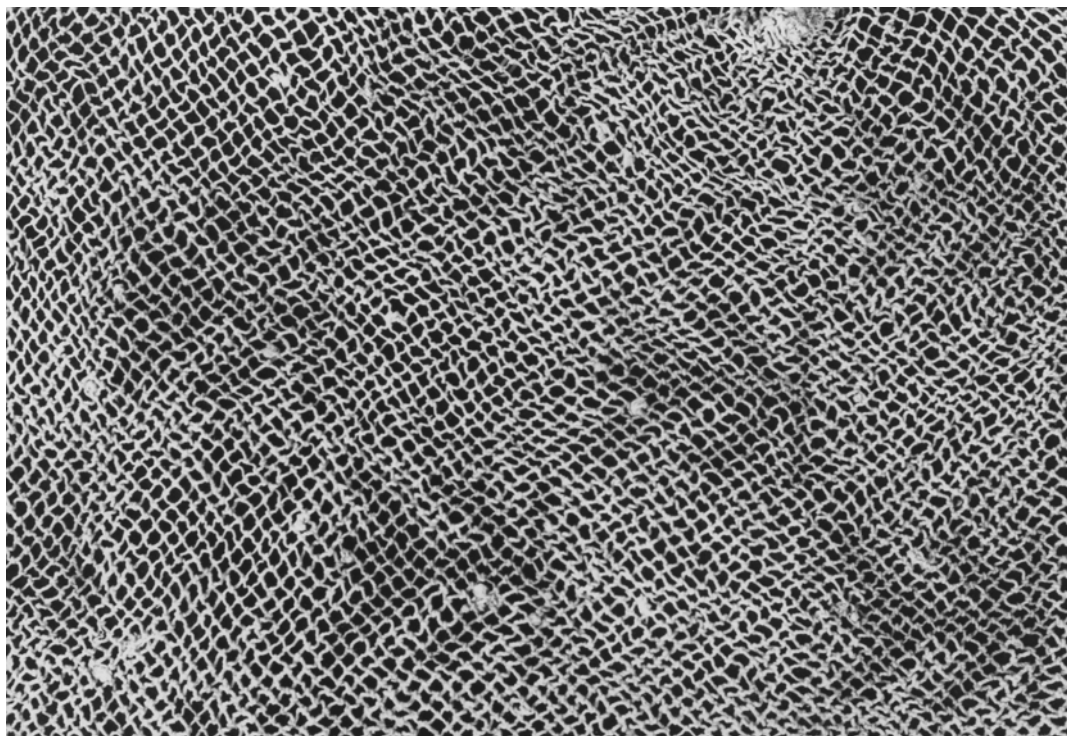


Figure 9: Section of plant images, Net 2.

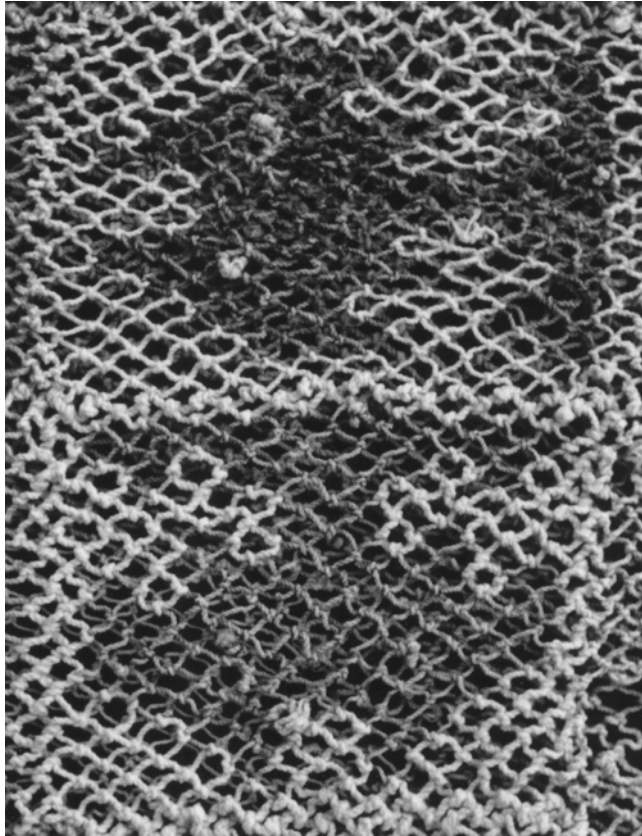


Figure 10: The fish image, Net 1.

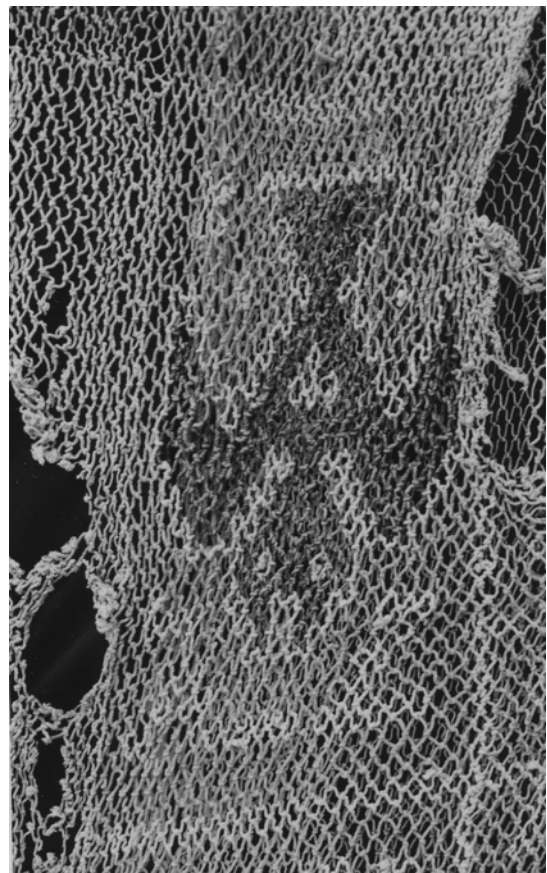


Figure 11: The bird image, Net 2.

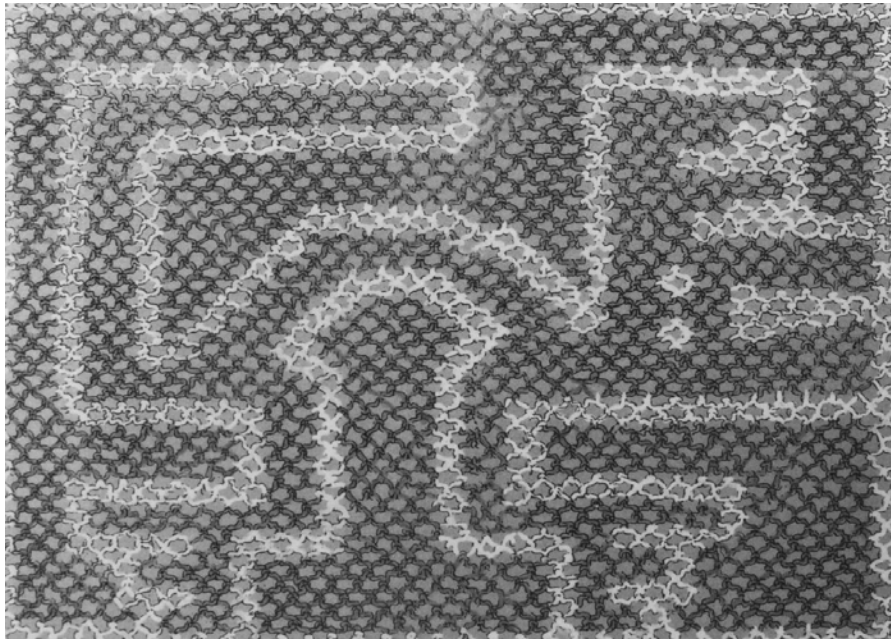


Figure 12: The humpbacked animal, Net 1.

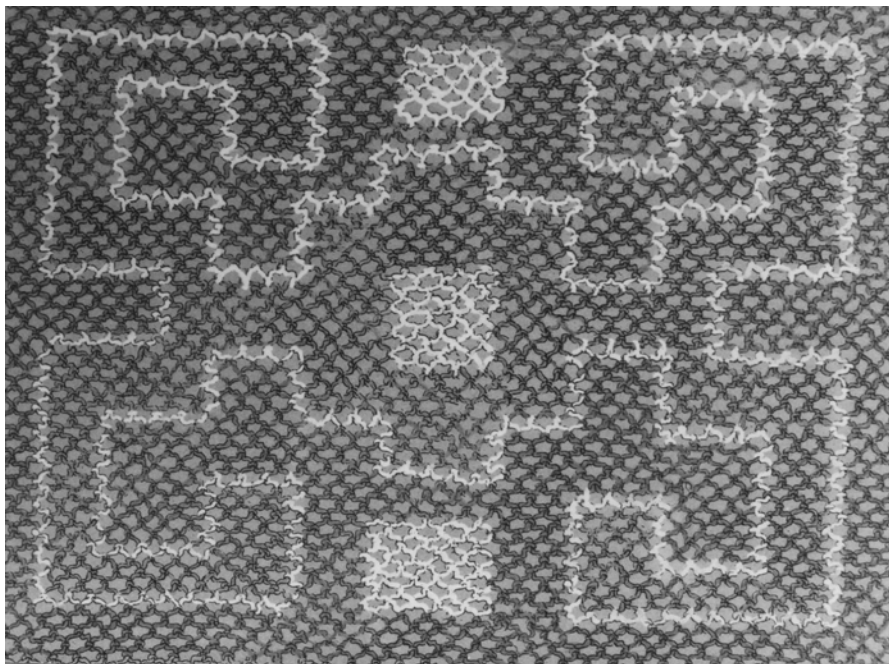


Figure 13: The sun-face image, Net 1.

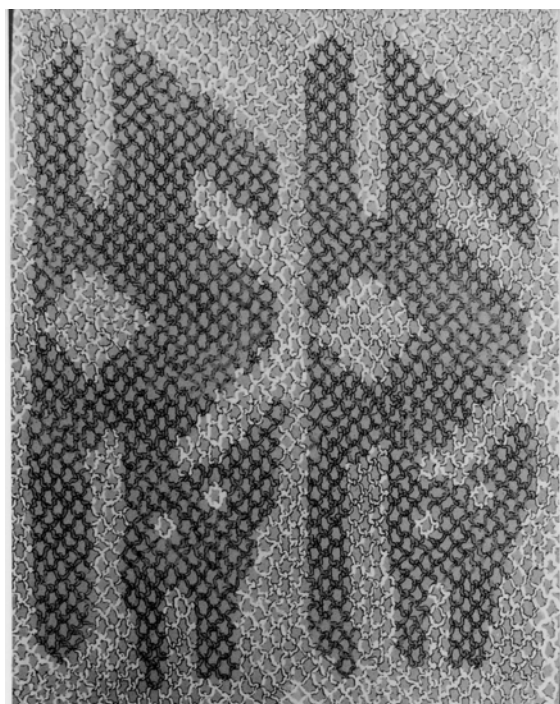


Figure 14: A pair of fox images, Net 1.

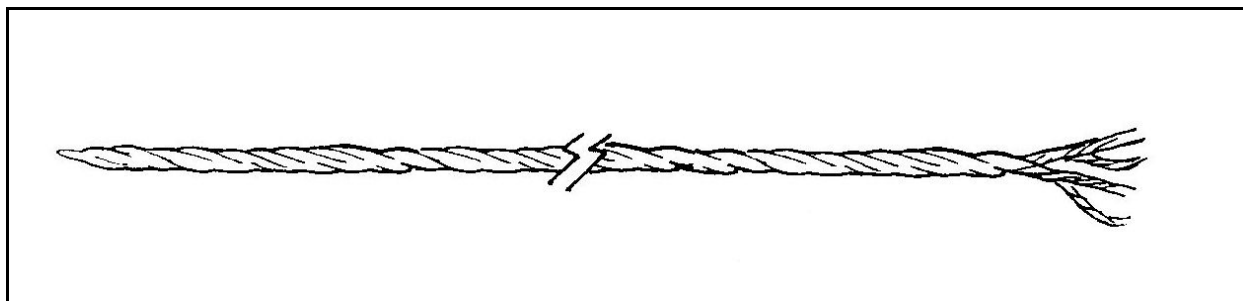


Figure 15: Replied cordage used to tie the nets.

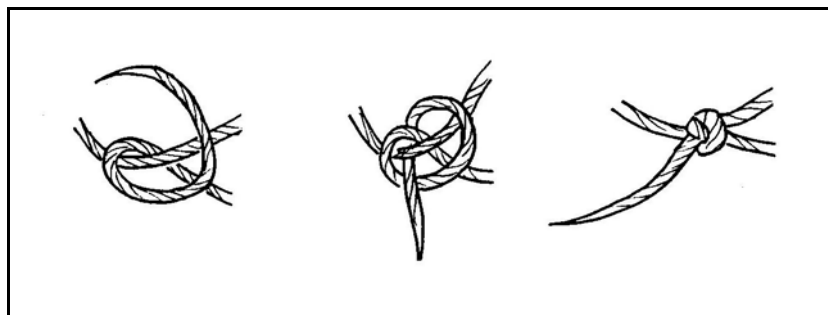


Figure 16: Steps involved in tying a simple overhand knot.

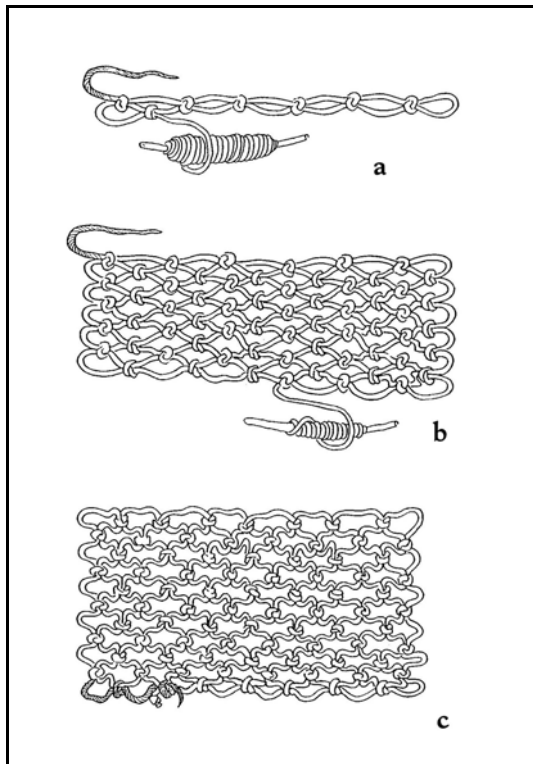
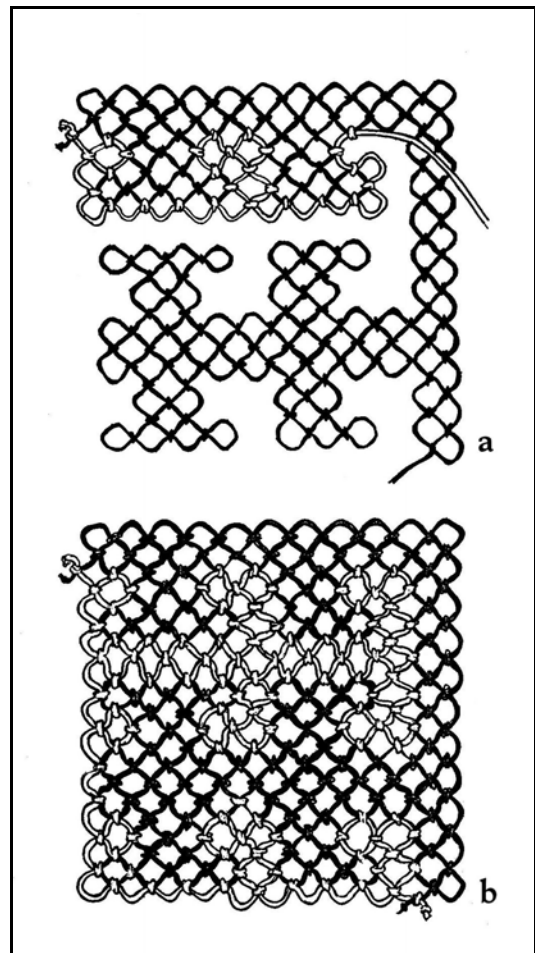


Figure 17: a) The first row of knot-work for a block of netting in colored cordage; b) the block of netting before completion of the last row of knot-work; c) the block of netting turned 180 degrees, the tail end knotted over to meet the final row of knot-work and the two ends of cordage tied together in the final knot.

Figure 18: a) The knotting of a plant image with the dark base color completed and the addition of the lighter second color beginning to be tied along the top; b) the completion of the knotting of the lighter color to the dark base color of the plant image.



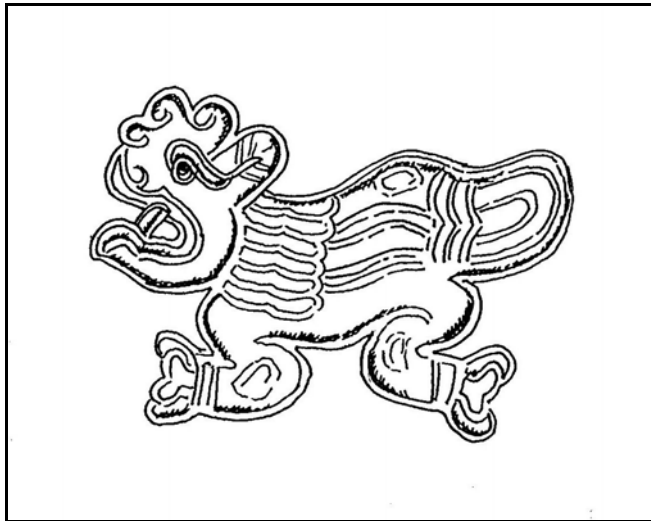


Figure 19: Chavín representation of a supernatural feline in profile (after Lumbreras 1974: figure 11).

Figure 20: Image of a hump-backed animal on a close-knotted headband from a Cavernas Cemetery, on display in the Julio C. Tello Museum in the Paracas Reserve.

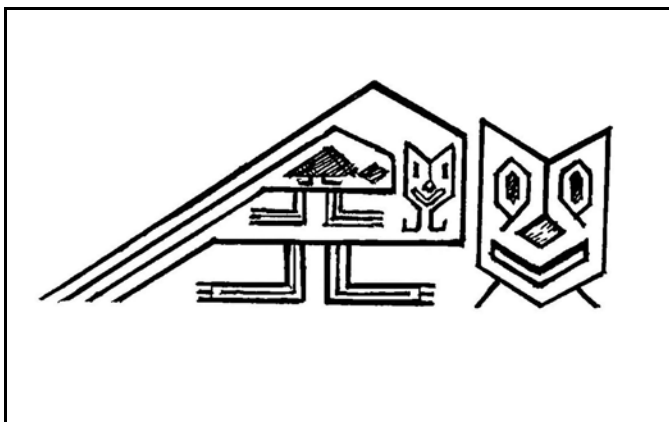


Figure 21: Feline image embroidered on a mantle from the Paracas Peninsula (after Paul 1990:71, figure 6.6).

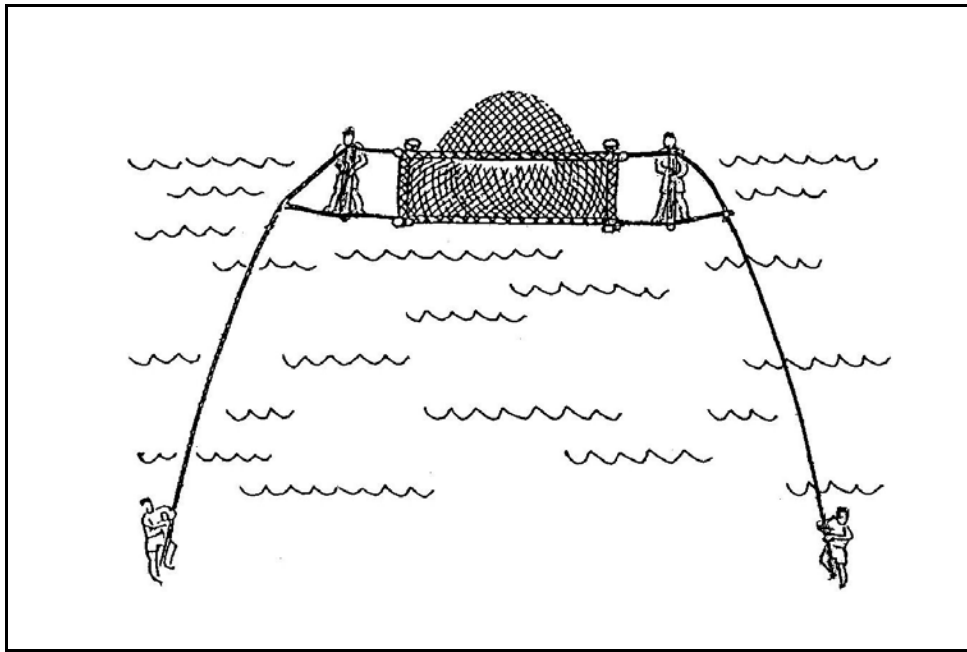


Figure 22: A traditional Muchick fishing net, with the bag extension, in use close to the shore by four fishermen (after Rodríguez 1997: figure 4B).

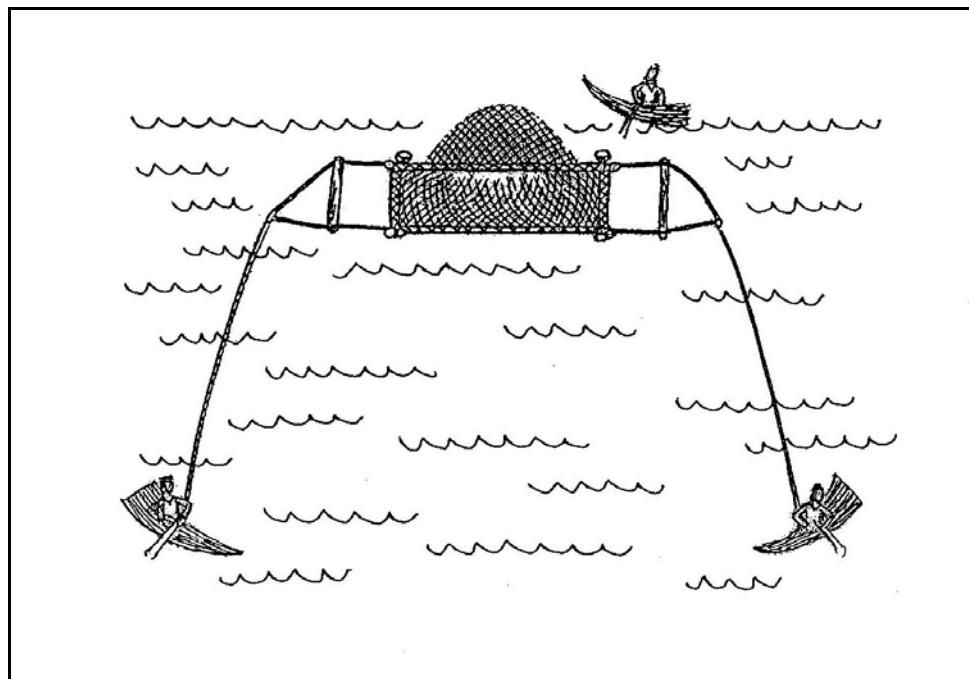


Figure 23: A traditional Muchick fishing net, with the bag extension tended by fishermen in totora boats farther out to sea than those in Figure 22 (after Rodríguez 1997: figure 4C).

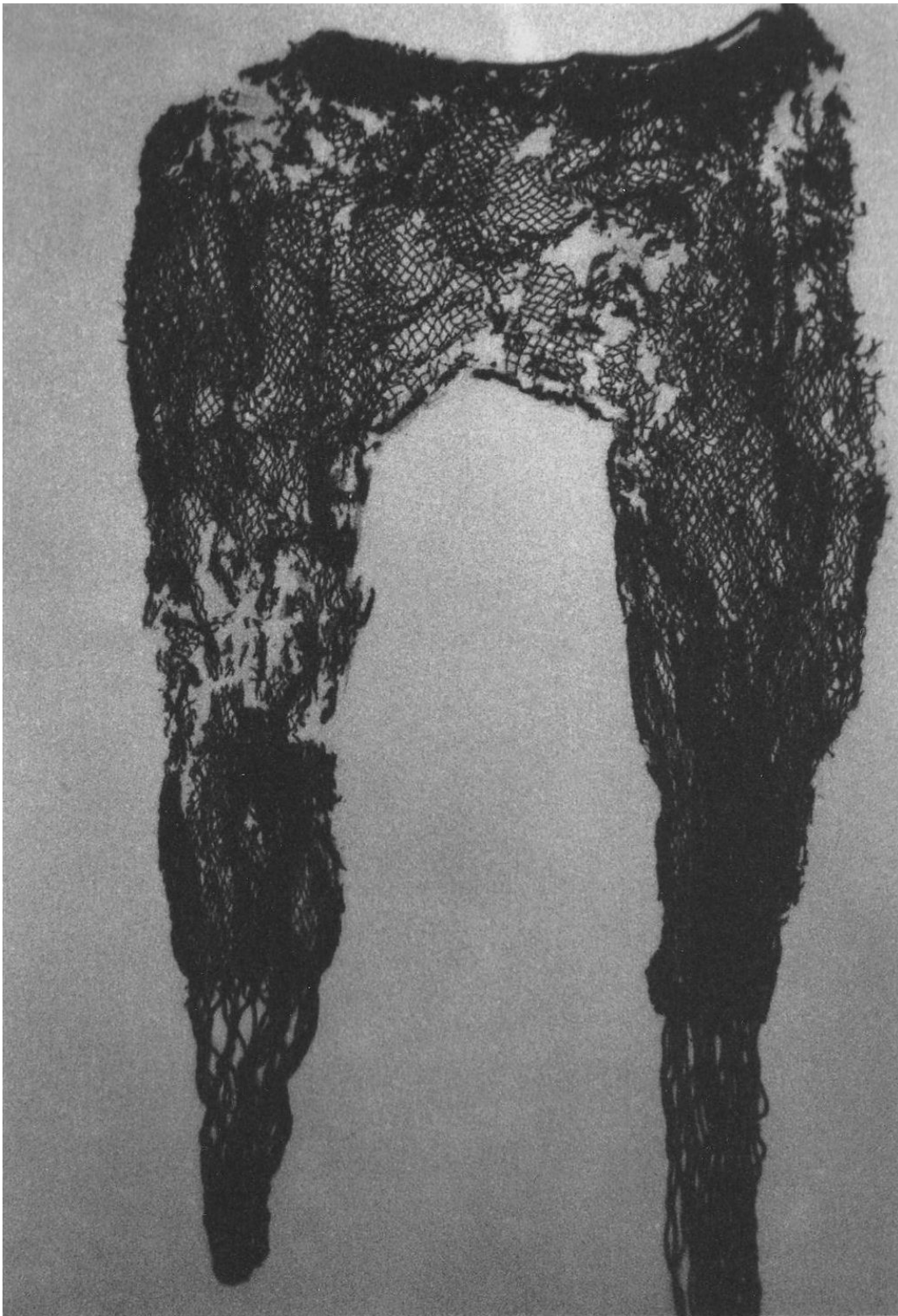


Figure 24: Net with leg extensions, Julio C. Tello Museum, Paracas Reserve.

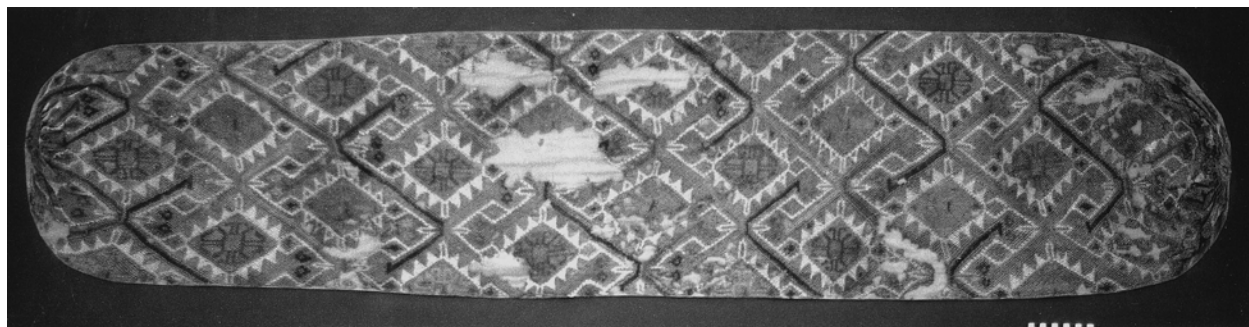


Figure 25: Oval net (MP-689) Cavernas Cemetery, Paracas Peninsula, in the Julio C. Tello Museum, Paracas Reserve.

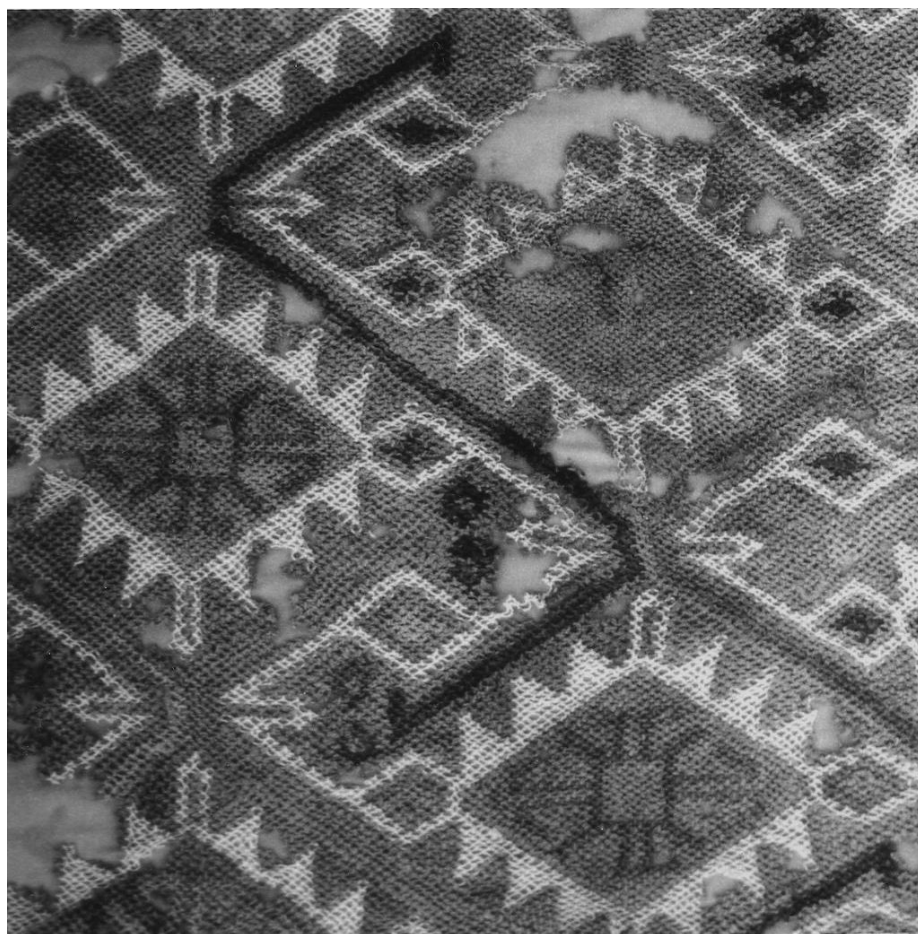
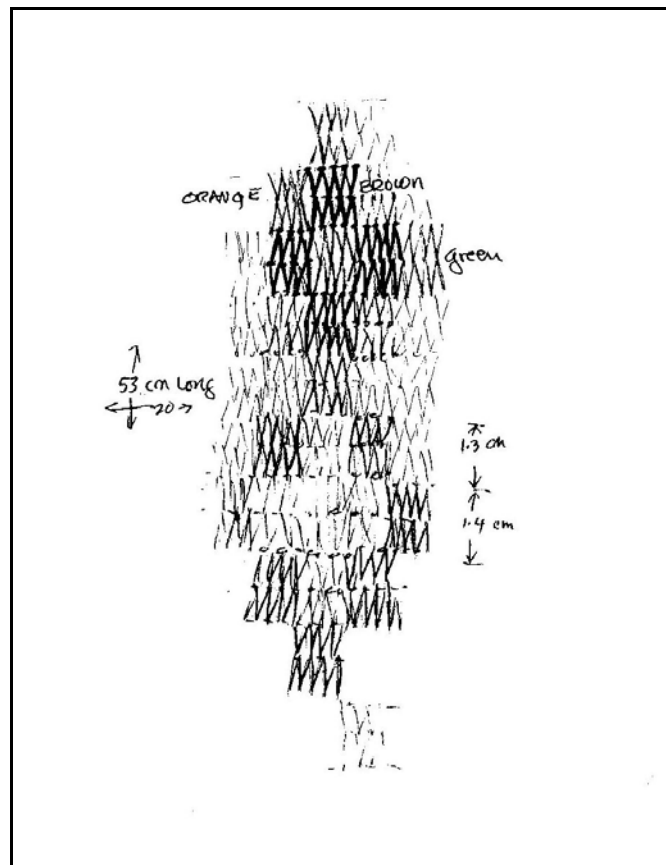


Figure 26: Detail of the iconographic images in the oval net (MP-689)



Figure 27: Sketch of a net of dyed cabuya fiber, knotted in different shades of brown, on display in the Gold Museum of Peru, Exhibit 5131.

Figure 28: Sketch of Net EU/773 in the Museo Nacional de Arqueología, Antropología y Historia (Lima) with a design of rectangular blocks executed in camelid cordage vertically aligned as crosses on a white ground.



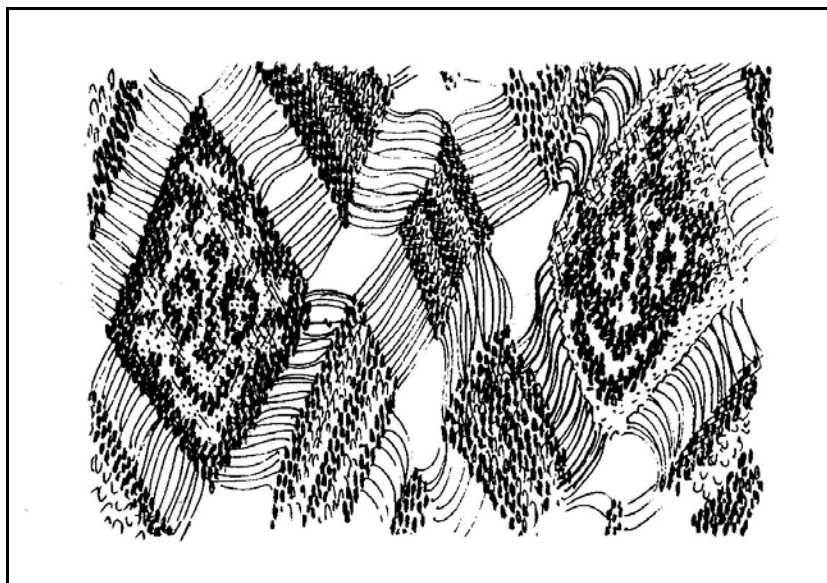


Figure 29: Sketch of a section of a hood from Ocucaje knotted in red, blue, green, and cream cordage (after King 1965: figure 45).

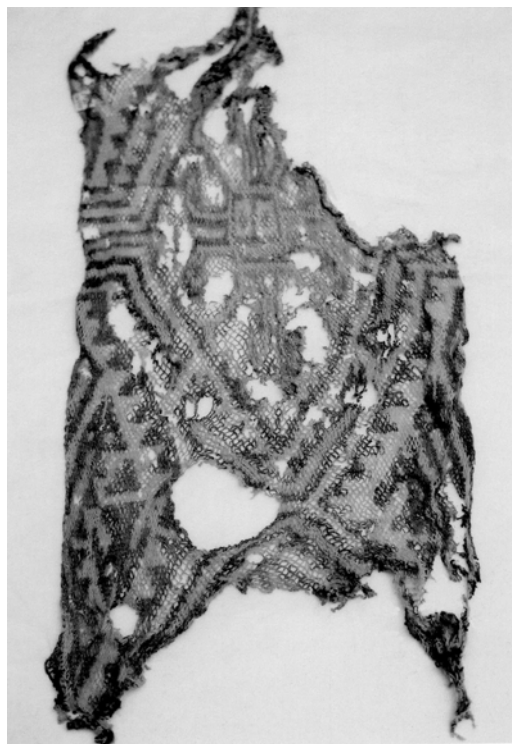


Figure 30: Net (27154) from Cabeza Larga in the Museo Nacional de Arqueología, Antropología y Historia, Lima knotted in dark brown and yellow-ocher cordage.

