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Jessica Gerschultz
Emory University, jgersch@emory.edu

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Jessica Gerschultz
jgersch@emory.edu

A small but fascinating Chancay gauze fragment in the collection of the Michael C. Carlos Museum stands out as an exemplary object that embodies the symbolic associations and aesthetic principles of the Peruvian coastline during the Late Intermediate Period (Fig. 1).[1] Its weave structure, production process, iconography, and polychromy unite in reinforcing the protective and regenerative purposes of the original headdress. Consisting of variably spun threads knotted together, its unique discontinuous warp relates to its function in funerary and ceremonial contexts. Significantly, its weaver pushed beyond technical limitations to bring together the laborious techniques of gauze weaving and discontinuous warping in a single textile.[2] The result of this ingenious yet unpublished technical combination was a "jumping" serpentine figure on an indigo background. The allusion to serpent movement, enabled by the use of a discontinuous warp made whole through the tying of tiny knots, recalls both the corporeal process of the cloth's creation as well as the physical exertion of snakes. Moreover, the cloth's overall polychrome patterning evokes the vivid dorsal patterning of snakes that have just shed their skin and emerged headfirst into the environment as regenerated beings.

Figure 1. *Chancay gauze headdress. 8 ¾" x 5 ½".*

[1] Its accession number is 2002.1.85.

[2] Arlys Evans raises the possibility that Chancay textiles were woven by pairs of weavers, which seems highly probable in the case of gauze weaving due to its technical complexity. For the sake of simplicity, however, I will refer to the weaver of the Carlos Museum gauze in the singular. Arlys Evans, *Representations of Duality in a Chancay Knotted Weft Wrapping Headcloth in the Collection of the Michael C. Carlos Museum* (Master's thesis, Emory University, 1995), 3.

Courtesy of the Michael C. Carlos Museum of Emory University.

Although no other published gauze headdresses have been recognized as having discontinuous warps, and very few are polychromatic, the Carlos Museum gauze nevertheless shares many features with other Chancay gauzes. Commonalities include the organic abstract patterning created by complex gauze weaves, serpentine iconography, elasticity due to slightly over-spun threads, and the wearing of gauzes on the head in transformative ritual contexts. Moreover, the forceful repetitive motions exerted by the weaver during production may also be considered as contributing to the reception of the textile, as process and product are interconnected in Andean worldview. These combined attributes support the interpretation that many other gauze head-cloths were meant to evoke the powerful properties of serpents.

Gauze weaving requires a special technique, in which the weaver forces some warp threads to cross over or under other warp threads. These gauze crosses are held in place by the insertion of weft threads. This method of warp-crossing, contrasts with standard back-strap weaving, where the warp threads do not interact with each other but remain in a fixed position. Different types of gauze weave are classified by the various interactions of the warp threads. The simplest structure is that of plain gauze weave, in which the same warp threads pass over or under each other.[3] More complex gauze weaves are created when variation is introduced into the interworking of warps and interlacing of wefts. In *Textiles of Ancient Peru and Their Techniques,* Raoul d'Harcourt illustrates how several complex openwork gauzes may be created through the omission of the crossing of certain warp threads.[4] These types of gauzes are effective in conveying a sense of movement through their undulating serpentine patterns. The organic shapes created in gauze openwork, often simply labeled "ovular" or "gourd-shaped,"[5] appear to mimic the scale patterning on snakes, a subject to which I will later return.

The Carlos Museum gauze measures approximately 8 ¾" long and 5 ½" wide. It is composed of a mixture of S- and Z-spun threads, which are predominantly single-ply.[6] There are nine serpentine warp patterns in dark brown, gold, and white, with a gold figure or a white figure alternating between each dark brown figure. The indigo blue warp and weft threads provide the background for the "jumping" serpent pattern. Only one other published gauze shares its color scheme; a gauze in the collection of the Ethnologisches Museum in Berlin, which is wrapped around the body of an infant mummy.[7] Most gauzes are monochrome, and are either all-white, all-brown, or, infrequently, a solid color such as mauve or indigo.[8]

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[3] See Irene Emery's book for photographs of gauze weaves. Irene Emery, *The Primary Structures of Fabrics* (Washington D.C.: The Textile Museum, 1980).

[4] Raoul d'Harcourt, *Textiles of Ancient Peru and Their Techniques* (Seattle: University of Washington Press, 1962), 51.

[5] The fourteen published gauzes in the Amano Collection are referred to in these terms. Yukihiro Tsunoyama, *Textiles of the Andes: Catalog of the Amano Collection* (Kyoto: Heian/Dohosha, 1979).

[6] This may have been a deliberate decision made for a well-balanced piece, or may have been what was available to the weaver.

[7] See figure 29a for a black and white illustration. Bernd Herrmann and Roelf-Dietrich Meyer, *Südamerikanische Mumien aus vorspanischer Zeit: Eine radiologische Untersuchung* (Berlin: Staatliche Museen zu Berlin, 1993).

[8] Lila M. O'Neale and Bonnie Jean Clark, "Textile Periods in Ancient Peru III: The Gauze Weaves," *University of California Publications in American Archaeology and Ethnology* 40(4) (1948): 145-159.

Figure 2. *Detail of Chancay gauze headdress.*
Courtesy of the Michael C. Carlos Museum of Emory University.

A combination of gauze techniques was used in the creation of the Carlos Museum piece (Fig. 2). The first is a simple alternating gauze weave with directional change occurs every eight wefts. In these sections, each warp is pulled under two adjacent warps and held in place with a single weft. In between directional shifts, the structure is that of an alternating gauze weave (without direction change), which allows the warps to create the long diagonals necessary for making the serpentine zigzag. The serpentine figures stand out against the blue background, but from further away, the polychromy and knobby texture of the cloth give it a speckled appearance.

The organic effect of an openwork gauze such as our piece contrasts greatly with the grid-like effect of square mesh openwork, though both were used in the production of Chancay head-cloths and are generally conflated into one category in the literature. This is problematic, as the term gauze is often applied to openwork textiles whose warp threads do not cross. The confusion is partially generated by the fact that the vernacular use of the term "gauze" is applied to lacy cloths despite their weave structure, and scholars are often loose in distinguishing gauzes from other reticular weavings. For example, Alfredo Rosenzweig, Rosa Fung Piñeda, and Fernando de Szyszlo have all discussed square mesh open-works as "gauzes."[9] Yet indiscriminate attributions may conceal deeper meanings, as a textile's weave structure forms an integral part of its symbolic content. According to Mary Frame, "…the grids and symmetries of fabric structures operate as a construct for the conceptualization of space, giving it form, division, direction, and

[9] Rosa Fung Piñeda, "Los Encajes 'Hechizados' de la Cultura Chancay/The Witching Laces of the Chancay Culture," in *Tejidos Milenarios del Peru/Ancient Peruvian Textiles*, ed. Jose Antonio de LaValle and Rosario de LaValle de Cardenas (Lima: AFP Integra, 1999); Fernando de Szyszlo, "El Arte en la Cultura Chancay," in *Chancay: Creada y dirigida por José Antonio de Lavalle & Werner Lange* (Lima: Banco de Crédito del Péru, 1990); Alfredo Rosenzweig, *Weaving for the Afterlife: Peruvian Textiles from the Maiman Collection* (Herzliya Pituach, Israel: Kal Press Ltd., 2006).

unity."[10] The production of gauze, with its surface area composed around *irregularly* shaped negative spaces, should be seen as involving a deliberate technical choice made by the weaver, a choice imbued with significations.

In examples of square mesh openwork, *uniform* negative spaces were created by the spacing of individual warp threads on the loom and by knotted weft wrapping. A distinctively Chancay technique, knotted weft wrapping entailed the grouping of warps *without* crossing them.[11] Knots then were used to secure these groups of uncrossed warps. The resulting fiber grid then served as a base for embroidered images. Its rigid structure, with angular columns that are strictly vertical or diagonal, merits comparison with the undulating movement and organic patterns created by transposed warps. This distinction becomes apparent through a formal comparison between gauze and non-gauze headdresses, in which we see that the structures of Chancay gauzes are distinct from the grid systems of other reticular weavings.

The process of gauze weaving on a back-strap loom demanded a highly sophisticated and laborious loom set-up; the correct ordering of warp threads through the string heddles required fantastic foresight in order to create a textile with crossed warps. To weave the cloth, the weaver would have employed highly developed skills to manipulate the warp threads, which, because of their crossing during the weaving process, may have seemed to possess their own volition. Furthermore, the crossing of warp threads would have necessitated a certain amount of physical coercion; the weaver must have continuously forced warps to change positions while keeping them from becoming too twisted.

This challenging corporeal production process, requiring great physical power, visionary strength, and dexterity, may have influenced the reception of gauze cloth in Chancay society, as these qualities would have been desirable among those wearing and viewing the textile. Furthermore, the performance of the weaver during the cloth's manufacture, which required a display of her strength and agility, may have been conceived of as analogous to snake behavior. Rebecca Stone links the weaving process with the perceived properties of textiles, "In Andean art as a whole, the process is as important as, and instills the basic essence in, the work of art as it finally appears."[12] Moreover, Mary Frame identifies serpentine configurations with fabric structures in Andean art, noting that artists of the Late Intermediate Period continued to emphasize "twisted strand imagery."[13] Frame demonstrates that throughout different time periods, individual strands of fiber "are conceived of and represented as serpent bodies."[14] Thus, in a gauze structure, the physical movement of the crossing warp threads may be reasonably identified with the bodily motion of snakes. Combined with the physical exertion of the weaver, a gauze structure may well embody and convey the essence of snake movement. The choice of gauze may thus be considered an iconographic choice, as individual fiber strands may represent snake bodies.

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[10] Mary Frame, "The Ancient Images of Fabric Structures in Ancient Peruvian Art," in *The Junius B. Bird Conference on Andean Textiles: April 7th and 8th, 1984*, ed. Ann Pollard Rowe (Washington, D.C.: The Textile Museum, 1986), 55.

[11] See Aryls Evans's research for a detailed analysis of this technique. Evans, *Representations of Duality in a Chancay Knotted Weft Wrapping Headcloth.*

[12] Rebecca Stone-Miller, *Art of the Andes from Chavín to Inca* (London: Thames & Hudson Ltd., 2002), 59.

[13] Frame, "The Ancient Images of Fabric Structures in Ancient Peruvian Art," 54.

[14] Ibid., 52.

The artist who created the Carlos Museum gauze appears to have pushed the serpentine paradigm to an extreme. I discovered this when I drew a segment in an effort to understand the weave structure (Fig. 3). Beginning in the top center with the white serpentine figure, I drew each individual thread. In doing so, I noticed that tiny knots connected strands of blue warp with the other colors in the warp patterning. After realizing that there were several knots related to color change, I investigated more closely, as they did not seem to be accidental. In fact, a system of knots appeared to be deliberately concealed from detection. Woven with slightly over-spun thread, the gauze has a crepe-like, knobby effect that subsumes the knots entirely; there is seemingly an element of illusion at play.

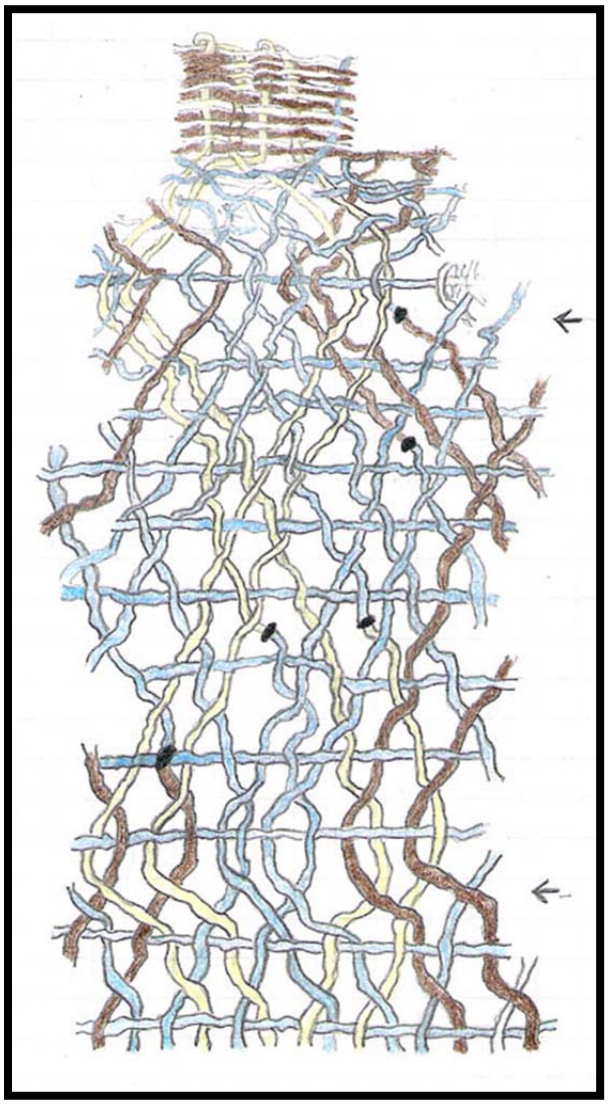

Figure 3. *Author's drawing of a segment of the Chancay gauze headdress.*

By diagramming the location of each knot, I noted the color change and the direction of warp movement. The first knot appears in the far right upper corner of the first serpentine pattern, and knots continue to appear twice in each serpentine pattern until the very edge of the fragment. This consistency suggests that they would have permeated the entirety of the original headdress. In total, I located sixteen knots of color change at the top end of the fragment. Each serpentine

figure has two knots of color change, except for the first gold serpentine, which is fragmented at the top and shows signs of thread loss. These knots are the result of a deliberate technical choice made to facilitate color change. In addition, they make possible a discontinuous warp, which allows the serpentine warp patterns to shift gradually to the right.

Examining a particular segment (Fig. 4) permits us to look at the "jump" to the right taken by three serpentine patterns (from left to right: dark brown, white, and dark brown). There are five knots of color change visible in this photograph. While most color changes in our gauze (twelve out of sixteen) move in a diagonal direction to the right, three color changes, including knot A, move diagonally to the left. However, these cases aid in the overall rightward movement of the patterning. Knot A, shown magnified in Figure 5, enables the warp to change from dark brown to blue. It also allows the innermost line of the serpentine to "jump" to, or be replaced by, the outer rightmost thread, causing the entire pattern to shift to the right. In fact, in Figure 4, we can see that all three of the serpentine patterns shift to the right in a subtle diagonal movement. While this shift is indeed difficult to describe, an analysis of the photographs reveals the carefully constructed movement of the warp patterning.

Figure 4 (left). *Chancay gauze headdress, det. Courtesy of the Michael C. Carlos Museum of Emory University.*
Figure 5 (right). *Chancay gauze headdress, det. Courtesy of the Michael C. Carlos Museum of Emory University.*

An allusion to two types of snake movement may be construed from this patterning. Both typical serpentine locomotion, the most common form of snake movement, and side-winding locomotion, used by snakes in desert regions, are seemingly emulated. In the former, the snake's body wiggles from side to side, using irregularities, rough surfaces, and tree branches to move. In the latter, the snake propels itself sideways using its muscles in a series of looping movements, leaving an identifiable track that "appears as a discontinuous series of shapes at an

angle to the direction of travel."[15] Snakes are capable of both kinds of movement and can alter their normal locomotion to adapt to a changed environment. In terms of our gauze, there is both the typical undulation of the serpentine figure, apparent in the figures' zigzag, as well as the side-winding locomotion, represented by the knots of color change that enable the serpentine figure to "jump" to the right. We are then faced with the question, why would the weaver have gone through the trouble of referring to not one but two kinds of movement?
The weaver's inclusion of what Rebecca Stone calls "a multiplicity of possible views yielding various glimpses of different 'realities'" is common in Andean textiles.[16] Considering the significance that Andean people assigned to transformed states of being,[17] the ability of snakes to physically transform themselves according to their environment is a phenomenon that would have had resonance among Chancay peoples. Furthermore, the affiliation of snakes with fibers may have endowed a headdress with these transformative properties. Interestingly, in their analysis of Chancay gauzes, Lila O'Neale and Bonnie Jean Clark describe the weaver's manipulation of gauze threads into patterns in analogous terms, referring to "passive" and "active" gauze strands; the passive (relaxed) gauze strands are the warp threads under which the active (contracted) gauze threads are forced to cross.[18] However, passive and active gauze threads reverse roles throughout the weaving process; each strand of warp may be contracted and relaxed at different points in the textile. Once again, the artistic process may have informed the conceptualization of the product.

The weaver of our specimen pushed beyond technical limitations to combine the laborious techniques of gauze weaving and discontinuous warping. Discontinuous warping was utilized in the production of different prestige cloths in several historical periods of the Andes, notably that of the Nasca in the Early Intermediate Period. What is perhaps most noteworthy about this technique is the laborious loom set-up, which requires a complex system of scaffolding. There were several different approaches to the use of discontinuous warp and weft depending on the desired outcome; either a whole cloth or section of cloth could be completed using this technique, or miniature woven pieces could be produced for eventual assembly into an entire piece. As in the Carlos Museum gauze, discontinuous warping was frequently combined with other time-intensive techniques such as tie-dyeing.

A discontinuous warp and weft facilitates color change while maintaining flexibility and lightness.[19] This technique made it possible for our weaver to produce the lightweight, airy fabric desirable for a head-cloth *and* create the shifting serpentine warp patterning in solid colors. Not only did she master the intricacies of weaving a complex gauze, but she also inventively combined it with her knowledge of discontinuous warping. The ingenious use of knots, obscured in the gauze's knobby texture, enabled the weaver to reproduce two kinds of serpent movement, instilling the headdress with a serpentine essence. Yet the Carlos Museum gauze differs from other examples of textiles with discontinuous warps. In the creation of our piece, the scaffold

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[15] George R. Zug and Carl H. Ernst, *Snakes: Smithsonian Answer Book* (Washington D.C.: Smithsonian Institution, 2004), 12.
[16] Rebecca Stone-Miller, *Seeing With New Eyes: Highlights of the Michael C. Carlos Museum Collection of Art of the Ancient Americas* (Atlanta: Michael C. Carlos Museum, Emory University, 2002), 269.
[17] Stone-Miller, *Art of the Andes from Chavín to Inca*, 16.
[18] O'Neale and Clark, "Textile Periods in Ancient Peru III: The Gauze Weaves," 159.
[19] Renate Strelow, *Gewebe Mit Unterbrochenen Ketten aus dem Vorspanischen Peru/Pre-Hispanic Peruvian Textiles with Discontinuous Warp* (Berlin: Museum für Völkerkunde, Staatliche Museen zu Berlin, 1996).

threads and reeds associated with known examples of discontinuous warping would have been impediments, rendering a gauze weave impossible. The weaver solved this dilemma by tying tiny knots to produce color change and movement, playing off the texture of the over-spun thread. Her task of measuring and tying different lengths of colored warp threads before threading the gauze project was extremely complex.

In closing, let us consider the possible significations of our gauze. The wearing of a snakeskin-like cloth on the head may have been conceived of as empowering the wearer with snake-like attributes while in her state of transformation. Though associated with funerary contexts, the headdress was also worn on other ritual occasions. As we have discussed, gauze was an effective way to convey both the essence and appearance of a serpent, as the process of creating gauze and its finished effect underscore serpentine associations. Furthermore, the head, over which the gauze would have been draped, possesses its own attributes connected with serpent imagery. These are convincingly outlined in Anne Paul's study of the snake iconography of Paracas head garments, all of which have been found on the heads of mummy bundles.[20] Identifying the turban as "the primary vehicle of serpentine imagery," Paul follows Mary Frame in her assertion that snakes are visual metaphors for hair, noting the close association of strands of hair, fiber, and snakes, all of which are "long, thin, and sinuous."[21] In addition, hair's self-regenerative power parallels that of snakes, which periodically shed their skin in a dramatic process of self-regeneration called ecdysis.

When a snake sheds its skin, its head is the first part of the body to emerge as new. By rubbing against rough surfaces, the snake gradually pulls itself out of its old skin. Like a gauze headdress, snakeskin possesses an elastic quality. This elasticity enables the old head and body covering to peel away from the regenerated head and body. For a brief period during this process, the snake appears to be double-headed. This liminal state of transformation is well-represented in Andean shamanic iconography and signifies states of transformation, which, in the human realm, correspond to rituals of creation, healing, marriage, and death. As the new snake forcibly emerges from its skin, its pattern and coloring are visibly brighter and bolder.[22] Like hair, the power to regenerate originates with the head. Thus, the gauze may be interpreted metaphorically. Just as the snake crawls out of its skin, bright and regenerated, the human being may emerge headfirst from her cloth bundles in the afterlife.

Our gauze's bright patterning in gold, white, dark brown and blue seems symbolic of a desired outcome. When viewed closely, the colors and patterns are vivid and clear, yet from a distance, the piece takes on the appearance of a speckled snakeskin. In this textile, as in a real snake, movement and patterning are interdependent. They embody physical power and assume protective and regenerative functions. Worn on the head during moments of transformation, the cloth, with its serpentine associations, would have empowered the wearer, perhaps helping her to initiate her own rebirth.

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[20] Anne Paul, "The Symbolism of Paracas Turbans: A Consideration of Style, Serpents, and Hair," *Ñawpa Pacha* 20 (1982): 41-60.
[21] Ibid., 44, 46.
[22] In addition to the gauze discussed here, the only two color images of multicolored gauzes in my possession, one in the Museo Amano Collection and the other in the Michael C. Carlos Museum, 2002.1.96, also feature serpentine patterns.

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