

Weaving Abstraction

in Ancient and Modern Art

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The Metropolitan Museum of Art, New York



Director's Note

One of the pleasures and privileges of a visit to The Met is the ability to experience over ten thousand years of art from around the world. Often we tend to focus in depth on a specific region and time period in our permanent galleries, exhibitions, and publications. But more and more it is important, relevant, and revelatory for us at The Met to draw together works from different eras and cultures to illuminate their correspondences, communalities, and creative processes in new ways. *Weaving Abstraction* is such an example: two weaving traditions—one ancient, one modern—are brought together to allow us to consider materials and meanings. Textiles from the Andean region of South America, some over two thousand years old, are explored in parallel with fiber works created by four modern international artists to reveal the complex interplay between the fundamental grid structure of weaving and formal expression. At its heart, *Weaving Abstraction* is about the aesthetic and cultural choices artists make, and how the technologies of fiber arts themselves can give rise to striking, inventive compositions.

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Max Hollein
Marina Kellen French Director and CEO
The Metropolitan Museum of Art

Embracing the Grid

Iria Candela and Joanne Pillsbury

Weaving Abstraction brings together two extraordinary bodies of work separated in time by at least five hundred years: the weavings of ancient Andean artists whose names are unknown to us and the fiber works of four modern artists, Anni Albers, Sheila Hicks, Lenore Tawney, and Olga de Amaral. This juxtaposition offers valuable insights into the emergence of abstract imagery via, it would seem, a shared awareness of the integral connection between structure and design in the textile medium. The constructive nature of textiles, arising from the grid formed by crossing the warp and the weft, the vertical and horizontal elements of the loom, is a springboard for the formal investigation of geometric designs. While Albers, Hicks, Tawney, and De Amaral were profoundly influenced by, and deeply invested in, studying the Andean legacy, it is not our intention to dissect how these modern artists appropriated this tradition. Rather, we want to examine how artists from such distant societies mined the rich vein of textile structures to produce works of art of exceptional technical and formal refinement.

Weaving is one of the oldest and most complex art forms from the Andes, extending thousands of years before the rise of the Inca Empire (1470–1532) and boasting one of the most diverse approaches to textile construction known globally. Drawing on a wide repertoire of geometric and figurative designs, weavers developed strikingly bold iconographies and powerful abstract compositions for textiles intended, among other things, for use as everyday objects, royal gifts, and wrappings for sacred offerings. The importance of these designs is further evident in their reproduction in other media. As contemporary artist César Paternosto explained in his 1996 book *The Stone and the Thread*, “it was weaving—the manipulation

of thread—that became the structural matrix not only of the geometric designs but of the predominant orthogonal iconography of Andean arts.”¹

Textiles were also fundamental to the exchange of information in the pre-Hispanic period in the Andes, as recent research on systems of communication in the region has underscored. The absence of writing in the ancient Andes has limited specific interpretations of the imagery on works made hundreds and thousands of years before the Spanish colonialist venture in 1532. Yet the absence of what we consider an essential form of communication—writing—points to the outsized role that textiles played in conveying ideas and information. Never passive, merely decorative elements, textiles were used to swiftly transmit social and political messages in a manner that overcame linguistic and geographic barriers.

Large-scale archaeological excavations on the coast of Peru in the early twentieth century led to an increased awareness in Europe and the United States of the technical sophistication and dazzling compositions of ancient Andean textiles. The expanding public collections of these works, and the publications related to them, in turn, attracted the interest of Expressionist and Bauhaus artists alike, including a young Anni Albers. In these artworks, European and American artists saw a model, a new way of thinking that connected with their efforts to develop a language for modern art.

Modern practitioners starting with Albers and including fiber artists of the 1960s and 1970s, such as Hicks, Tawney, and De Amaral, recognized an alternative path to abstraction within the modernist quest for a universal language and made it their aim to situate textiles at the core of the modern project, regaining a central space for them in society.



Chuquibamba/Inca artist, detail of tunic, 1460–1540 (fig. 22)

In particular, Albers envisioned her textile constructions as models for the utopian potential of art to penetrate all aspects of everyday life. Albers approached textiles with a functionalist aim, and Andean weavings taught her useful techniques that she translated into prototypes for industrial production. Hicks, Tawney, and De Amaral repurposed Albers's artistic theories to further explore the structural possibilities of weaving, experimenting with grid-based constructions, sculptural and spatial dimensions, notions of transparency, and tactile qualities. Together these women challenged the long-standing and often gendered divide between art and craft.

In her 1965 book *On Weaving*, Albers declared that “along with cave paintings, threads were among the earliest transmitters of meaning.”² Yet in the history of art, textiles have often been relegated to the world of ornament. They have been characterized as lightweight, both physically and conceptually, and, not incidentally, as women's work—a less important medium, stepsister to painting, sculpture, and architecture. The works in this *Bulletin* challenge these misconceptions and encourage us to reconsider the place of textiles in the history of world art.



Infinite Pattern: Weaving in the Ancient Andes

Joanne Pillsbury

In 1572, Pedro Sarmiento de Gamboa, a Spanish colonial administrator in Peru, completed his official history of the Inca Empire, which had been defeated some forty years earlier by Spanish forces. The largest pre-Hispanic empire known in the Americas, the Inca themselves had conquered much of western South America by the early sixteenth century. In his text, Sarmiento remarked upon a device composed of multiple colored, twisted, and knotted cords known as a *kipu*, which the Inca used to convey information such as accounts and even narratives across time and space: “It is remarkable to see the details that they preserve in these cordlets, for which there are masters as there are for writing among us.”¹ *Khipus* include a primary cord from which are suspended pendant cords,

which in turn can have their own subsidiary cords (fig. 1). The position, type, and color of each knot in these cords encodes information readable by a *kipukamayuc*, or *kipu* specialist (fig. 2).

Khipus were part of an exceptional fiber arts tradition that evolved over millennia in the ancient Andes. Fiber-based technology was foundational to administration (as seen with *kipus*), transportation (as seen with rope bridges), and warfare (as seen with slingshots). Moreover, textiles had symbolic importance and were unparalleled as a medium for the expression of identity, value, and belief. In the Inca period (1470–1532), they were deployed as diplomatic gifts and formed part of nearly every sacrifice.² Cloth was also closely associated with social identity, be it age, gender, or regional origin. The Inca royal crown itself was a red wool fringe.³ Highly valued in the pre-Hispanic past, ancient Peruvian textiles also later served as a creative springboard for artists in the twentieth century.



Fig. 1.

Inca artist. *Khipu*. Peru, Bolivia, Argentina, or Chile, 15th–16th century. Cotton, 30 × 30 in. (76.2 × 76.2 cm). Buffalo Museum of Science



Fig. 2.

Felipe Guaman Poma de Ayala (Andean, ca. 1535–after 1615). Storehouses of the Inca, from *El primer nueva corónica y buen gobierno*, ca. 1615. Pen and ink. Royal Danish Library, Copenhagen (Gl. kgl. S. 2232, 4^o; fol. 169v)



Fig. 3.

Chavin artist. Textile fragment. Ica Valley region, Peru, 4th–3rd century BCE. Cotton, refined iron earth pigments, 5 ¼ × 12 ¼ in. (14.6 × 31.1 cm). The Metropolitan Museum of Art, New York, Bequest of Jane Costello Goldberg, from the Collection of Arnold I. Goldberg, 1986 (1987.394.704)

Andean fiber arts are notable for their exceptional range, from basic weaving structures to inventive technologies unique to the region, including discontinuous warp and weft weaving. The great majority of textiles that have survived to the present day are garments or other elements of attire such as headcloths. Despite our propensity to display these objects on a wall as if they were paintings, they must also be considered in light of their original function as dress worn on the body and animated through movement.

Arguably the oldest art forms in the Andes, cloth and cordage predate ceramics by at least a millennium. The earliest evidence for textiles dates back some 12,000 years to the Guitarrero Cave, located in the Callejón de Huaylas in the highlands of Peru.⁴ Unsurprisingly, the textile record is more abundant on Peru's desert coast, as dry conditions enable the preservation of natural fibers. This record has allowed scholars to study the evolution of textile technologies and design. Such techniques as looping, netting, twining, and plain weave likely emerged from fiber technologies developed to create fishing nets, bags, and other functional items needed to exploit the rich marine resources of the Humboldt Current. Highly portable backstrap looms, where the tension of the warps (the vertical threads) is controlled by the weaver leaning backward or forward, were in use by at least 1500 BCE.

Likely woven on backstrap looms, early cotton plain weaves were sometimes embellished with painted imagery. One example from the fourth or third century BCE has a fanged, supernatural figure with raptor claws encircled by octagons painted with a red iron pigment (fig. 3). These serpentine forms terminate in profile heads, one upside down in a mirror image, that together form a new head with a fanged mouth. The composition would have been repeated across the textile in an infinity pattern—that is, a theoretically boundless continuation of imagery. This practice of creating a pattern from a reversed and repeated motif endured for another thousand years. Easy to transport, textiles were an ideal medium for the exchange of



ideas across the mountainous Andean region. This fragment, for example, bears imagery that closely resembles relief carvings at Chavín de Huántar, an important religious center in the northern highlands, yet it was found on the South Coast, hundreds of miles from that ritual center, and was created in the twilight of Chavín de Huántar's power, around 300 BCE.

In the centuries following the decline of Chavín de Huántar, related textile traditions flourished on the South Coast. Indeed, large-scale rectangular mantles (some nine feet long) made in this region during the last century or two BCE and the first few centuries of the Common Era are among the most spectacular textiles known from the ancient Andes. In 1925, Peruvian archaeologist Julio C. Tello and colleagues excavated over four hundred funerary bundles at Cerro Colorado, on the Paracas Peninsula. Here, individuals had been interred wrapped in multiple layers of fine- and plain-cloth mantles and other garments.

Weavers from the Paracas culture (800–100 BCE) employed camelid wool imported from the highlands (llamas and alpacas do not thrive on the coast). Notably, this material could be dyed into vibrant colors, and Paracas artists embroidered polychrome animals, plants, and supernatural figures using stem stitch, often on cotton plain cloth (fig. 4). Occasionally, they also embroidered the background, as seen on a border fragment featuring a being with large eyes, carrying a staff (fig. 5). Here, following a convention established centuries earlier, a single figural motif is reversed and repeated, with inventive color alternations of deep blue, red, and yellow.

Weavers from the succeeding Nasca culture (100–700 CE), also on the South Coast, drew on this iconographic tradition of figural compositions, but over time they interpreted subjects in new ways that celebrate the



Fig. 5.

Paracas artist. Border fragment with figures carrying staves. Cerro Colorado, Peru, 4th–3rd century BCE. Camelid fiber, 19 × 4 in. (48.3 × 10.2 cm). The Metropolitan Museum of Art, New York, Gift of George D. Pratt, 1933 (33.149.43)



Fig. 4.

Paracas artist. Border fragment with figures. Paracas Peninsula, Peru, 5th–2nd century BCE. Cotton, camelid fiber, 6 7/8 × 41 1/8 in. (17.1 × 105.1 cm). The Metropolitan Museum of Art, New York, Bequest of Arthur M. Bullowa, 1993 (1994.35.120)



Fig. 6.

Nasca artist. Headband. Río Grande de Nasca, Peru, 6th–7th century. Camelid fiber, 3 × 56 in. (7.6 × 142.2 cm). The Metropolitan Museum of Art, New York, The Michael C. Rockefeller Memorial Collection, Bequest of Nelson A. Rockefeller, 1979 (1979.206.746)



Fig. 7.

Nasca artist. Headband with ornamental tassels. Río Grande de Nasca, Peru, 6th–8th century. Camelid fiber, 8 1/4 × 12 in. (21 × 30.5 cm). The Metropolitan Museum of Art, New York, Bequest of Jane Costello Goldberg, from the Collection of Arnold I. Goldberg, 1986 (1987.394.692)

complex geometries fostered by the grid of the loom itself, including on headbands and turbans (figs. 6, 7). Nasca artists continued to create cotton plain weaves that they then painted or embellished with colorful embroidery, often incorporating imported camelid fiber. For example, on three exquisite *chuspas*, fringed bags designed to hold coca leaves, single geometric motifs are repeated with variations in color (figs. 8–10). Chewing coca leaves with moist lime powder (calcium hydroxide), created from burned seashells, produces a mild stimulating effect, and the practice was and is of profound social and ritual importance in the Andes.⁵

The compositions of some of the earliest Andean textiles are rectilinear with simple geometric patterning, but others boast curvilinear, figural imagery. Contrary to arguments put forward by early twentieth-century theorists, such as Alois Riegl and Wilhelm Worringer, abstraction in the Andes was not a first step toward naturalism and figuration. Worringer in his seminal 1908 book *Abstraction and Empathy* argued that there is an initial human artistic inclination toward abstraction, a response to intense anxiety in certain times and places before the early modern period.⁶ In the ancient Andes, however, figural and geometric imagery coexisted; if anything, abstraction

increased over time: there was an evolution toward an exquisite refinement of geometric patterning that reached its apogee in the workshops of later imperial powers, the Wari and the Inca.

By the middle of the first millennium CE, Andean weavers had begun to experiment with new compositions, in which recognizable form was sublimated to the imperatives of pattern. Figures, if present at all, were reduced to fundamental shapes enveloped in bold, rectilinear compositions. Indeed, the prominence of the figure as a subject of the composition was subverted. A tendency toward a dissolution and recombination of a figure's component parts increased with the rise of the Wari Empire (600–1000). From its capital in Ayacucho in the central Peruvian highlands, the Wari Empire developed a wide-ranging trade network, and its influence was felt as far afield as the North Coast of Peru. Wari artists excelled in the fiber arts, creating woven garments of rich, saturated colors. The chromatic intensity made possible by dyed camelid fibers, along with masterful compositions of interlocking forms, make Wari tunics among the most striking textiles known from the ancient Andes.

Composed of two pieces of cloth sewn together at the top and along the sides with openings left for the neck and arms, Wari tunics were worn by men over a loincloth and served as one of the primary markers of identity. Notably, they were depicted with care in other media, such as on ceramic vessels in the shape of dignitaries and on small wood figures with shell-and-stone mosaic inlays. The cloth for these tunics was tapestry woven, involving a labor-intensive process in which the length-wise warp yarns—the stationary elements of a loom—were concealed by the transversal weft yarns that were drawn over and under the warps. Some six to nine miles of thread were used for a single fine Wari tunic.⁷

Wari tunics display considerable standardization in size, format, color, and design, suggesting they were produced in state-sponsored workshops.⁸ Yet despite this level of state control over production, Wari weavers developed seemingly endless, dazzlingly complex variations on standardized designs. These compositions are often enlivened with frequent mirroring and inversions of repeated motifs, as seen in the bold design of one Wari tunic, which is built around a single wave-like motif known as a stepped fret,



Fig. 8.

Nasca artist. Embroidered bag with fringe. Río Grande de Nasca, Peru, 7th century. Camelid fiber, 14 1/4 × 6 in. (36.2 × 15.2 cm). The Metropolitan Museum of Art, New York, Bequest of Jane Costello Goldberg, from the Collection of Arnold I. Goldberg, 1986 (1987.394.652)



Fig. 9.

Nasca artist. Embroidered bag with fringe. Río Grande de Nasca, Peru, 7th century. Camelid fiber, 16 1/2 × 8 in. (41.9 × 21.3 cm). The Metropolitan Museum of Art, New York, Gift of George D. Pratt, 1932 (32.32.11)



Fig. 10.

Nasca artist. Embroidered bag with fringe. Río Grande de Nasca, Peru, 7th century. Camelid fiber, 12 1/2 × 7 1/4 in. (31.8 × 18.4 cm). The Metropolitan Museum of Art, New York, Gift of George D. Pratt, 1932 (32.32.9)

arranged in registers in vertical bands (fig. 11). Yale University art historian George Kubler, whose work was influential to artists such as Anni Albers and Sheila Hicks in the twentieth century, likened such variations on a theme to the multiple, independent lines of melody in polyphonic music.⁹

Organized into a grid pattern—surely an echo of the orthogonal structure of textiles themselves—motifs were arranged by weavers in imaginative ways through mirroring, reversals, and inversions repeated with often unexpected color alterations in the tapestry-woven cloth of the Wari. In addition, a single motif or design could be

expanded or contracted within the same composition to playful effect, while anthropomorphic and zoomorphic forms—including staff-bearing figures, pumas, and condors—could be deconstructed into nearly unidentifiable shapes. One particularly fine tunic bears a winged feline motif repeated sixteen times, with eight versions on the front and eight on the back (fig. 12). The being is depicted in profile, with head facing upward, staff in hand, and a patterned textile on its back. The most recognizable part of the figure, the head, has a circular magenta nose, black-and-white teeth, and a circular “split” eye—half white



Fig. 11.

Wari artist. Tunic. Peru, 7th–9th century. Camelid fiber, 42¹¹/₁₆ × 42¹⁵/₁₆ in. (108.5 × 109 cm).

The Metropolitan Museum of Art, New York, Gift of Claudia Quentín, in celebration of the Museum's 150th Anniversary, 2020 (2020.79)

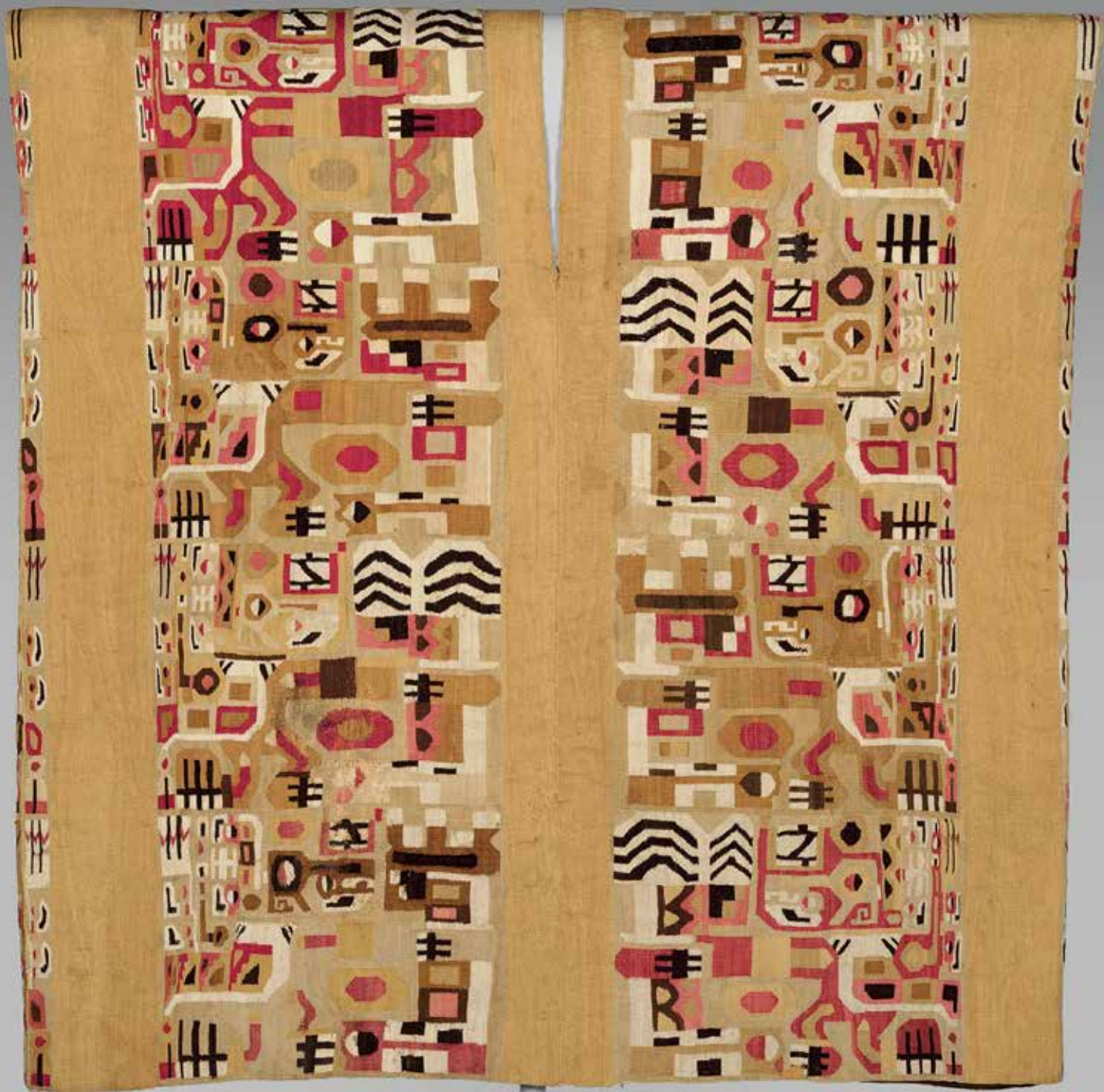


Fig. 12.

Wari artist. Tunic. Peru, 7th–11th century. Cotton, camelid fiber, 39 7/8 × 39 1/2 in. (100 × 100 cm).
The Metropolitan Museum of Art, New York, Gift of Claudia Quintin, 2021 (2021.146)

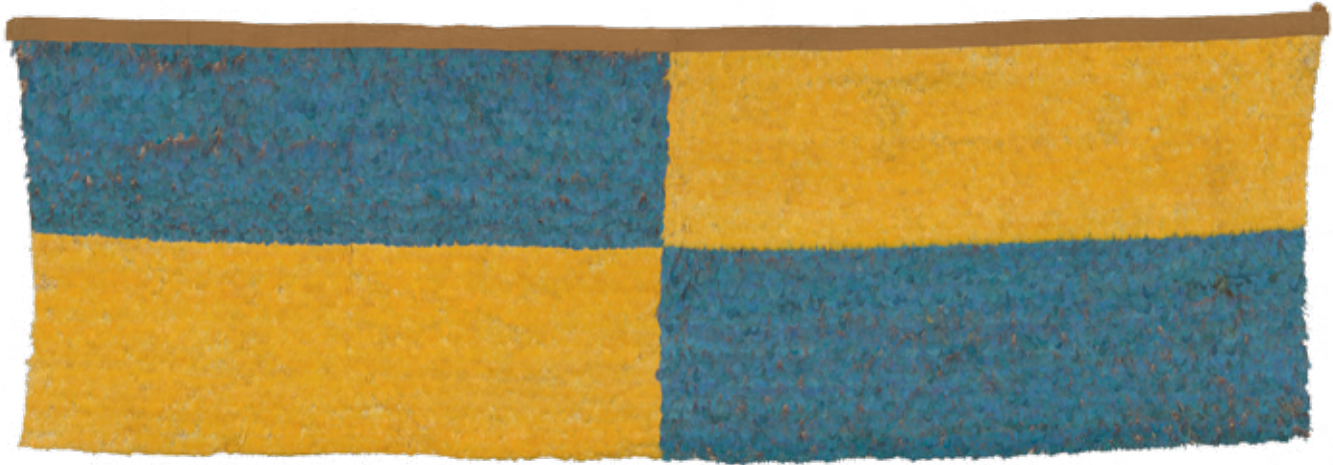


Fig. 13.

Wari artist. Feathered panel. Churunga Valley, Peru, 600–900. Feathers, cotton, camelid fiber, 27 × 83 1/4 in. (68.6 × 211.5 cm).
The Metropolitan Museum of Art, New York, The Michael C. Rockefeller Memorial Collection, Bequest of Nelson A. Rockefeller, 1979 (1979.206.904)

and half black or magenta. Toward the center of the garment, the motif is wider, but as it approaches the sides, it is compressed beyond recognition as the figurative imagery dissolves into geometric abstraction.

The Wari's imperial reach extended not only to the coast but also eastward, where such precious goods as tropical bird feathers could be obtained. Feathers from the blue-and-yellow macaw, a bird native to the eastern

slopes of the Andean mountains, were carefully knotted on cotton strings that were layered to create plush surfaces on garments and wall hangings that may have once graced the interior of a very grand building.¹⁰ Most of the extant panels are divided into quadrants, two blue and two yellow, arranged in a checkerboard fashion, but a few were constructed using only yellow or, in rare cases, red feathers (fig. 13). Some ninety-six of these large feather



Fig. 14a–c.

Ica artists. Miniature dresses. Ica Valley, Peru, 12th–13th century. Cotton, feathers. 1979.206.628: 8 3/4 × 8 1/4 in. (21.3 × 21 cm); 1979.206.639: 8 3/4 × 8 1/4 in. (22.2 × 21.9 cm); 1979.206.626: 9 1/2 × 8 1/4 in. (24.1 × 22.5 cm). The Metropolitan Museum of Art, New York, The Michael C. Rockefeller Memorial Collection, Bequest of Nelson A. Rockefeller, 1979



Fig. 15.

Central Coast artist. Tunic. Central Coast, Peru, 1000–1476. Cotton, camelid fibers, 33 × 36 in. (83.8 × 91.4 cm).
The Metropolitan Museum of Art, New York, Purchase, Anonymous Gifts, 2015 (2015.291)

panels have survived, and their remarkable uniformity reinforces the idea that standardized production comes with the rise of empire.

At the other end of the spectrum, feathers adorn miniature garments that once formed part of votive offerings. Three feathered dresses, made several centuries after the fall of the Wari Empire, were among over a hundred miniature garments reportedly found in a cache in the lower Ica Valley (fig. 14). These works were created using the same technologies as full-size garments for women; however, the openings for the arms and head were sewn closed. These small alterations suggest that the dresses were offerings in themselves rather than garments for figural sculptures. The fronts of the dresses feature checkerboard designs, while the backs have horizontal bands or solid colors. Notably, the feathers were carefully clipped to maintain the crisp regularity of the lines in the patterns.

The structural diversity of ancient Andean textiles is remarkable, ranging from painted plain weave to such complex constructions as slit tapestry, in which open slits are left between adjacent areas of color (fig. 15), and double cloth, a reversible fabric finished on both sides. Inventive weavers sometimes even employed multiple techniques to compose a single piece of cloth. Chancay weavers (1000–1470) in particular experimented with open weaves, such as gauzes. Openwork headcloths, likely made for women by women, usually had a rectangular grid upon which figures were embroidered with thicker cotton yarns (fig. 16). In keeping with formal patterns established thousands of years earlier, a single motif—often a feline or serpent head with large eyes and a mouth—was repeated and reversed in regular intervals within zigzag bands in infinity patterns.

Openwork was also incorporated into textiles in which various weaving techniques were combined to create



Fig. 16.

Chancay artist. Headcloth, Chancay Valley, Peru, 12th–15th century. Cotton, 24 $\frac{3}{4}$ × 23 $\frac{1}{2}$ in. (62.9 × 59.7 cm).

The Metropolitan Museum of Art, New York, The Michael C. Rockefeller Memorial Collection, Gift of Arthur M. Bullowa, 1973 (1978.412.254)



Fig. 17.

Chimú artist. Loincloth. North Coast, Peru, 12th–15th century. Cotton, camelid fiber, 146 1/4 × 44 3/4 in. (370.8 × 113.7 cm).
The Metropolitan Museum of Art, New York, The Michael C. Rockefeller Memorial Collection, Bequest of Nelson A. Rockefeller, 1979 (1979.206.597)

compositions with dynamic three-dimensional elements. For example, an overscale man's loincloth, perhaps never intended to be worn in life, features a front panel woven from cotton and camelid fibers (fig. 17). Likely made between the twelfth and fifteenth centuries in a workshop of the Chimú kingdom (ca. 1000–ca. 1470), the panel (now missing its tie band) has three rows of six squares, each composed of a yellow fringe surrounding a large red tassel, in an openwork grid pattern embellished with smaller red tassels. The loincloth was part of a garment set that included a matching shirt and headdress. With its impressive scale and vibrant

hues, the ensemble would have made a striking impression against the muted colors of the desert coast.

Textiles made solely of cotton tend to have a paler color palette, as seen in a wall hanging with a stylized monkey motif and a zigzag organized into alternating horizontal bands. In this design, the tail of each monkey fuses with the body of the next one in a pattern of infinite repetition (fig. 18). This type of pattern is echoed on the wall reliefs on buildings at Chan Chan, a massive adobe city and the capital of the Chimú kingdom, situated on the coast near the modern city of Trujillo in the Moche Valley.



Fig. 18.

Chimú artist. Hanging. North Coast, Peru, 12th–15th century. Cotton, 61 × 79 1/2 in. (155 × 201 cm).
The Metropolitan Museum of Art, New York, Gift of Jacob and Bronka Weintraub, 1983 (1983.491.1)



Fig. 19.

View of Palace Wall, Chan Chan, Peru, 1893. Photo by Charles Lummis

For example, one burial platform in a palace features a composition with a pelican, doubled and repeated upside down and above, joining the right-side-up form at the tail (fig. 19). A creature with a head and two appendages is found in its belly. This composite image is linked with others by a vertical band. The completed form is repeated but reversed, thus knitting together the imagery, creating an overall pattern of bifold rotational symmetry. This pattern extends from the floor level to the upper border, where a zoomorphic form with a crescent headdress is repeated across the entire expanse of the walls of the entryway. Many of Chan Chan's reliefs in other parts of the city follow this structure of infinity patterns within borders; that is, the motifs are repeated over and over in

an expanse halted only by the decorative bands along the sides, top, and/or bottom of the walls. The parallel with textile design is unmistakable.

The importance of textiles in the Andes is underscored by the repetition of their designs in other media. A gold crown, for example, likely made just prior to the rise of the Chimú state, emulates the patterning of woven cloth, even down to the manner in which the two ends of the metal sheet were joined, lashed together with thin gold “threads” (fig. 20). Similarly, as noted above, architectural ornament often borrowed from woven patterns. Chan Chan’s adobe reliefs were made from a malleable earthen plaster, yet their forms are planar and angular, echoing the linear rigidity of woven textiles. Moreover, the architectural reliefs and textiles share similar iconography and compositions, with an emphasis on infinity patterns and borders. This correspondence between textiles and architecture does

not appear for the first time at Chan Chan, but it is seen there at unprecedented levels.

In his 1851 study on the origins of architecture, German architect Gottfried Semper argued that most decorative elements used in architecture were derived from the textile arts—that all geometric ornamental patterns were prompted by the fundamental structures of the warp crossing the weft.¹¹ Semper also saw the textile “dressing” of the architecture—the practice of covering structural elements with ornament—as “masking” the reality of the construction material. Moreover, he posited that the earliest architectural forms were textile based (for example, tents), and over time evolved into structures made from more durable materials, such as stone, albeit with textile patterning playing a residual symbolic role. This does not seem to be the case in Peru, however, where there is no evidence for such an evolutionary process in architecture.



Fig. 20.

Lambayeque artist. Crown. North Coast, Peru, 900–1100. Gold, diam. 7 ¼ in. (18.4 cm).
The Metropolitan Museum of Art, New York, Gift and Bequest of Alice K. Bache, 1966, 1977 (66.196.13)

Rather, the emulation of textile patterning in adobe reliefs is explicit and intentional, and likely related both to the tradition of hanging elaborate textiles in architectural interiors and to the inherent value and function of textiles in Andean cultures.¹² Indeed, by evoking textiles, these adobe reliefs may have been making connections to deeper beliefs about the sanctity or preciousness of the textile medium. Since the pre-Hispanic period in the Andes, sacrifices and precious things have been wrapped in finely woven textiles.¹³ This emphasis on textile imagery may have served a votive or even a protective purpose, conveying certain properties to the architecture. In this light, the walls of the palaces at Chan Chan are metaphorically tightly wrapped in a precious and sacred material.

The Chimú kingdom grew wealthy in part through expanding trade networks but also through its workshops, where, in addition to textiles, ornaments and vessels of silver and gold were created. Prosperous Chan Chan became a target for the rapidly growing Inca Empire, and the Chimú kingdom was defeated by the Inca around 1470. Following the Inca practice of dismantling conquered polities, members of the Chimú population were dispersed and forcibly resettled in other parts of the Inca Empire. Communities of Chimú weavers were relocated to Peru's South Coast, among other destinations, where they were pressed into service for their new lords.¹⁴

Traces of Chimú weaving practices are discernible in parts of the Inca Empire, but technically—and to a certain degree formally—Inca weavers drew more heavily from highland traditions, particularly Wari tunics. Inca weavers took the style of abstraction present in Wari textiles one step further, however, creating striking compositions. The visual power of these garments was not lost on the Spanish. Francisco de Jerez, secretary to the conquistador Francisco Pizarro, described the fateful meeting between Atahualpa, the Inca emperor, and Pizarro's contingent in Cajamarca, Peru, in 1532, noting that the first regiment of the Inca army wore checkerboard livery, visible from a great distance. These garments are most surely the fine, tapestry-woven black-and-white checkerboard tunics with a deep red V-shaped yoke, some two dozen of which are now in museum collections internationally (fig. 21).¹⁵

Wildly successful in their imperial ambitions, the Inca managed to conquer much of western South America, from what is now the southwestern border of Colombia to Santiago, Chile (some 2,600 miles), in roughly a century. The compositions of their tapestry-woven tunics often

feature large fields of one or two colors, minimally interrupted by a band or bands of geometric ornamentation. This is not to say that these compositions are devoid of an iconographic referent—some Inca designs bear names that tie them to certain concepts—rather, that larger ideas about power are surely conveyed by the forms alone. The meanings of the designs are poorly understood today, but their formal strength, if not their specific ideas, is readily comprehensible and certainly would have been so in the past, including by populations newly under Inca control.

The Inca called their realm “the land of the four quarters,” and they maintained a complex administrative and ritual system from their highland capital, Cusco. The empire encompassed remarkably diverse terrain, including the western portions of Ecuador, Peru, Bolivia, Chile, and Argentina, from the dry coastal desert to the high Andean peaks and lush intermontane valleys. Unified by a road system operating from Quito in Ecuador to Santiago in Chile, the state attempted to enforce, with varying degrees of success, a rigid organization of its territories and communities, including a program of forced population resettlements and strict labor taxes. The Inca state's extreme control is also visible in its textile production. Inca tunics, for example, display remarkably little variation in size, suggesting tight management of manufacturing.¹⁶ On the consumption side, these luxurious textiles were restricted by sumptuary laws to the emperor, members of the nobility, and revered non-elites who received them as royal gifts.

We know considerably more about the Inca than we do about their predecessors, as textual accounts by the first Spanish conquistadors, administrators, priests, and missionaries, as well as later accounts by both Spaniards and Andeans, add to the archaeological record to form a more complete picture of the empire. These sources underscore the importance of fiber arts in Inca culture: no political, military, social, or religious event was complete without textiles being exchanged or gifted, burned or sacrificed. Textiles adorned rock outcroppings at sacred sites and served as votive offerings in themselves. Precious tapestry-woven tunics were bestowed on warriors who distinguished themselves on the battlefield and were given as diplomatic gifts by Inca rulers in their campaigns to expand their vast empire.

The finest cloth, or *cumbi*, was produced by both men and women in the Inca Empire. *Cumbi* could have as many as three hundred wefts per inch, and garments made of it were created by either *acllas*, the “chosen women” of



Fig. 21.

Inca artist. Tunic, Argentina, Peru, or Bolivia, 16th century. Camelid fiber, $34\frac{1}{4} \times 30\frac{1}{4}$ in. (87 × 76.5 cm).
The Metropolitan Museum of Art, New York, Purchase, Fletcher Fund, Claudia Quentin Gift, and Harris Brisbane Dick Fund, 2017 (2017.674)



Fig. 22.

Chuquibamba/Inca artist. Tunic, South Coast, Peru, 1460–1540. Cotton, camelid fiber, 37 × 29 3/4 in. (94 × 75.6 cm).
The Metropolitan Museum of Art, New York, Gift of George D. Pratt, 1933 (33.149.100)



Fig. 23.

Central Coast artist. Shirt. Peru, 1460–1540. Cotton, camelid fiber, 19 × 47 in. (48.3 × 119.4 cm).
The Metropolitan Museum of Art, New York, Gift of Arthur M. Bullowa, 1983 (1983.497.1)

the Inca emperor in Cusco, or *cumbi camayos*, men who worked in the service of the Inca or other important lords.¹⁷ Inca tapestry tunics were woven as a single panel with single-interlocking joins, with the neck slit held closed by a temporary weft yarn that was removed after the weaving was complete. After the tunic was cut from the loom, all seams and selvedge edges were completely covered with double-faced embroidery that formed a series of multi-colored bands of different widths. A zigzag line of yellow and other colored threads was added to the bottom of the garment.

Notwithstanding the great control the Inca state exerted over textile production, local weaving traditions still flourished. An elegant shirt with alternating vertical bands of a solid dark color and a geometric wave pattern, finished on the lower edge and cuffs with a dark stepped-fret motif on cream, is similar in composition to a highland style, but it was tapestry woven with cotton warps, and the garment has sleeves: these two aspects are more consistent with coastal techniques and fashion (fig. 23). Distinctive styles can also be identified in the region of Chuquibamba, near Arequipa in southern Peru. Tunics from this area have the same proportions as those of the standard imperial style, yet the designs are specifically local, with small-scale motifs, such as eight-point stars and stylized fish, repeated in a grid pattern (fig. 22).¹⁸ As with earlier North Coast textiles, they were sometimes embellished, as seen in a Chuquibamba-style bag (fig. 24). Here, against a woven



Fig. 24.

Chuquibamba artist. Bag with fringe. South Coast, Peru, 12th–16th century.
Camelid fiber, 27 ¼ × 9 ¼ in. (69.2 × 23.5 cm). The Metropolitan Museum of Art,
New York, Rogers Fund, 2001 (2001.489)



Fig. 25.

Unidentified artist. Tunic. Arica(?), Chile, 15th–early 16th century(?). Camelid fiber, feathers, 35 ¼ × 54 ½ in. (89.5 × 138.4 cm).
The Metropolitan Museum of Art, New York, Gift of John B. Elliott through the Mercer Trust, 2000 (2000.160.25)

grid pattern, small fringes fall from four folded tabs on the front, while an impressive longer fringe dramatically completes the lower edge. On a garment from the southernmost reaches of the empire, on the coast of what is now Chile, the familiar checkerboard pattern is expressed in vibrant hues of deep red and purple (fig. 25). Enlivened by a band of small stepped frets in white and yellow below the uppermost row of squares and by woven multiband borders at the sides, the tunic was finished with four small bundles of feathers near the neck.

Despite the disruption and devastation of incursion and colonization by Spain in the sixteenth century, weaving traditions continued following the fall of the Inca Empire and into the modern period and present day. While certain types of garments, such as the black-and-white checkerboard tunics, stopped being produced, others evolved according to changing tastes and needs. Indeed, many weaving traditions have remained strong, particularly in the southern highlands of Peru and Bolivia.¹⁹ Today vibrant

workshops, such as the Centro de Textiles Tradicionales del Cusco, founded by Nilda Callañaupa Alvarez in 1996, preserve, revive, and extend regional weaving practices.

Ancient Andean weaving also had an indelible impact far beyond Peru and Bolivia as examples were collected, studied, and published in Europe, becoming a springboard for inspiration for modern artists. The beginnings of scientific archaeology in the mid-nineteenth century spurred a boom in collecting and the development of national museums, the scale of which is staggering by today's standards. For example, Berlin's Königliches Museum für Völkerkunde (today's Ethnologisches Museum) acquired multiple private collections in the decades around the turn of the twentieth century, including one from Hannover textile merchant Christian Theodor Wilhelm Gretzer comprising some 33,000 ancient American objects, many of them textiles.²⁰

Information about ancient Andean textiles also circulated through illustrated publications. Notably,



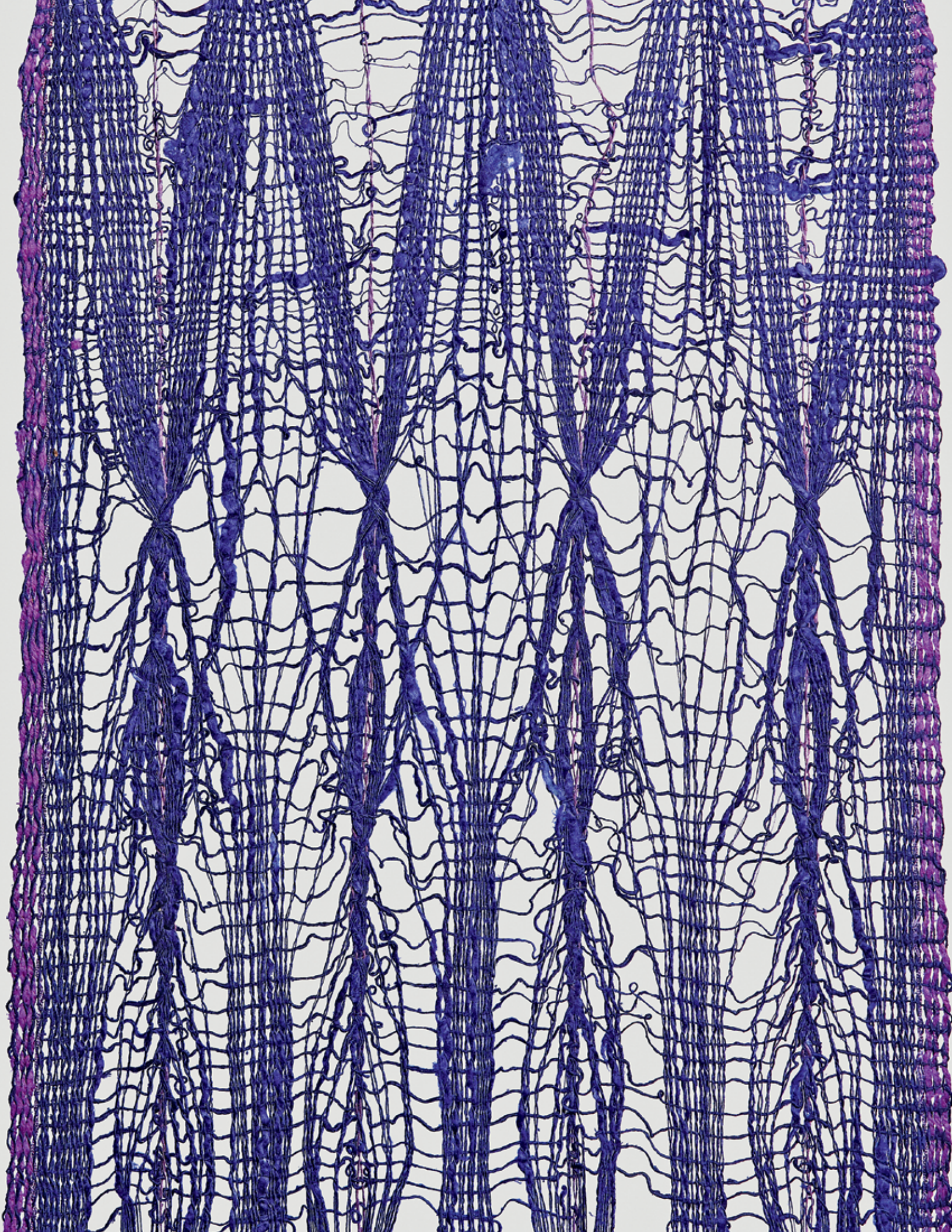
Fig. 26.

"Sumptuous garment of a mummy," from Wilhelm Reiss and Alphons Stübel, *The Necropolis of Ancón in Peru*, vol. 2, 1880–87. Chromolithograph. The Getty Research Institute, Los Angeles (2992-584; pl. 49)

vulcanologists turned archaeologists Wilhelm Reiss and Alphons Stübel gave a large collection to the Königliches Museum für Völkerkunde in exchange for the production of a luxurious archaeological atlas. Published between 1880 and 1887, the three volumes of *The Necropolis of Ancón in Peru* illustrate the results of their excavations at the seaside resort of Ancón, near Lima.²¹ The most dramatic finds were elaborate mummy bundles, individuals carefully wrapped in textiles, including very finely woven Wari tunics. To capture all the vibrancy of the textiles' colors, Reiss and Stübel opted for chromolithography over photography for the plates (fig. 26). Stübel wrote of the astonishing quality of the Ancón textiles, comparing them to tapestries from the famed Gobelins Manufactory in Paris and marveling at the excellent preservation of the color and the complex patterning.²² More volumes on ancient Andean art were published in the first decades of the twentieth century, including books that enjoyed greater circulation, such as Walter Lehmann's *Kunstgeschichte des Alten Peru*

(*The Art of Old Peru*, 1924) and Max Schmidt's *Kunst und Kultur von Peru* (*Art and Culture of Peru*, 1929), which was part of a series published by Anni Albers's family.

The Andean textiles on view in galleries and textile study rooms in Berlin and elsewhere internationally, including at The Met, along with the related publications, captured the imagination of several artists in the twentieth century, including Albers. She remarked with admiration that they represented "a standard of achievement that is unsurpassed" for design and production.²³ The lines of descent, of influence, inspiration, and aspiration, were direct and acknowledged. The enduring textile traditions of the Andes did not dissipate like the smoke from once great fires—they were the kindling for the ambitious experiments of modern textile artists.



Abstraction and Andean Textiles, from Anni Albers to the Fiber Arts Movement

Iria Candela

In August 1953, while visiting Peru for the first time, Anni and Josef Albers went to what is now the Museo Nacional de Arqueología, Antropología e Historia del Perú in the country's capital. One may only speculate about how Anni Albers felt while walking through the museum, viewing exquisite examples of ancient Andean textiles and contemplating the endless array of design patterns and weaving techniques that had fueled her imagination for years.¹ These galleries probably brought Albers back to her teenage years in Berlin, where the Königliches Museum für Völkerkunde's extensive collection of Peruvian textiles provided her first encounter with this material that she immediately loved. The architect Alfredo Linder, who guided the Alberses on that visit, recalls hearing them say to each other: "See, we are not alone after all."²

That spontaneous, rather existential comment at the museum in Lima may be read as a statement of affirmation that speaks to Anni Albers's position as an outcast in twentieth-century art history—a position that defined her pioneering contribution to modern art. Her productive decades of learning, teaching, collecting, and practicing the art of threads must have all converged in that moment of reassurance. Driven to work with textiles because, although egalitarian in its inception, the Bauhaus ended up directing all female students to the weaving workshop,³ Albers went on to successfully situate textile technology at the core of the modernist project. Fibers allowed her to master an abstract constructive method that aligned with some of the avant-garde aspirations of her contemporaries from De Stijl, Constructivism, and the Bauhaus: that is, to achieve a unity of the arts through the universal vocabulary of abstraction and to commit to a utilitarian drive amid an increasingly industrial society.

In 1965, Albers dedicated her compendium of critical writing *On Weaving* to "the weavers of ancient Peru," whom she referred to as "my great teachers."⁴ Both *On Weaving* and *On Designing*, Albers's earlier volume of essays, describe her theoretical approach to the medium by crediting the significance of the Peruvian legacy. "Of infinite phantasy within the world of threads," she wrote, "conveying strength or playfulness, mystery or the reality of their surroundings, endlessly varied in presentation and construction, even though bound to a code of basic concepts, these textiles set a standard of achievement that is unsurpassed."⁵ While the influence of Andean techniques on her weavings has been studied relatively recently by Virginia Gardner Troy,⁶ the degree to which these played a crucial role in her artistic philosophy remains to be fully comprehended. Albers's essays not only offer clues to her practice, but also outline her vision for the medium and its future, forming a textile manifesto of sorts. Her meticulous written analyses of interlocking grid constructions, many of them Peruvian, alongside her insightful ideas on topics such as structural transparency and the tactile sensibility of fibers, came to provide a theoretical framework for a new generation of practitioners that emerged during the fiber arts movement. Artists like Sheila Hicks, Lenore Tawney, and Olga de Amaral would, like Albers, find resonance in the transformational lessons of the weavers of ancient Peru.

But let's go back to the beginning—before *On Weaving* and *On Designing* were published, before the long-awaited trip to Lima in 1953—to Anni Albers's upbringing amid the artistic debates held in Europe in the early decades of the twentieth century. Within the artistic community, there was a shared concern that the figurative tradition

was becoming sterile due to the strict academicism that dominated art schools. Moreover, critiques of the accelerated industrialization and decadence of modern Western society brought back Arcadian visions of a premodern utopia. The sense that art's spirituality had been lost activated a search within the material culture of civilizations outside of Europe; art historian Wilhelm Worringer and artist Vasily Kandinsky led the movement to identify such alternative sources of inspiration, resulting in a turn to examples of so-called "primitive" art. Needless to say, the primitivist discourse of early modernist circles that considered non-Western art uncultured was suffused by racism. One outcome, however, of this shift of attention was an increased appreciation for the ability that the art of other cultures had to represent the human connection to nature and to channel the universal meanings and values so vehemently sought by the European modernists. Albers belonged to a generation eager to find a new vocabulary for their modern society; this aspiration was central to the founding of the experimental art school of the Bauhaus in 1919.

By the time Albers enrolled in the Bauhaus in April 1922,⁷ she already possessed an advanced knowledge of ancient weavings and was probably pleased to find like-minded people among her teachers and fellow students in Weimar. Peruvian textiles had been used as pedagogical materials since the school's inception and not only in the weaving workshop. Instructors Johannes Itten and Paul Klee included them in their lessons on the principles of abstraction that were part of the preliminary course. Klee's exercises in color interaction, composing a picture with layers or bands of color like in a woven textile, taught the students the interwoven dynamics of the grid as the basis of a pictorial surface. In a parallel vein, the Bauhaus weavers acknowledged the grid as the defining structural matrix of the loom fabric (fig. 27).

"One of the most ancient crafts," Albers wrote later in life, "hand weaving is a method of forming a pliable plane of threads by interlacing them rectangularly."⁸ With this sentence, she aligns the weaving technique with the grid, the modernist trope par excellence, and simultaneously recognizes its ancient lineage within the textile medium. A weaving, in its essence, is defined by the intersection of one system of threads—the warp—with another—the weft—at right angles, so every weaving construction is a reticular network based on a grid structure. One of the first pieces that Albers made while at the Bauhaus, a "Wallhanging"



Fig. 27.

Members of the Bauhaus weaving workshop, ca. 1928. Top row, left to right: Lisbeth Oestreicher, Gertrud Preiswerk, Léna Bergner, Grete Reichardt. Bottom row, left to right: Lotte Beese, Anni Albers, Ljuba Monastirsky, Rosa Berger, Gunta Stölzl, Otti Berger, Kurt Wanke. Bauhaus-Archiv, Berlin

from 1924 (fig. 28), exemplifies this "quintessence of weaving" with its simple, single-weave structure.⁹ Firm, even, and uniform, its warp and weft appear in equal measure and repeat the same effect on the front and back of the fabric. With this precept—weaving's reticular interlacing and all its creative potential—the artist found her own pathway to abstraction and was able to convert the medium into a successful model for the modern geometric style that came to define the interwar period.

Indeed, the principle of interlocking lines, alongside the rich possibilities textiles offered for the design of linear and geometric patterns, reassured Albers in her artistic endeavor, hand weaving. Paradoxically, ancient Andean textiles became her sources for a modern approach to her work, helping her reconcile the modernist drive of the Bauhaus with the Arcadian impulses of her generation. The principles of the applied arts reform led by William Morris in the nineteenth-century Arts and Crafts movement continued to prevail in Germany when the Bauhaus opened, and textile designers still used preliminary drafts (known as cartoons) to design their patterns. Albers, on the contrary, advocated for structure to inform design and turned away from practices that did not draw from "the inherent over-and-under structural process of weaving."¹⁰ The geometric patterns of Andean textiles reflected the essential structure of weaving, key to their "directness of communication,"¹¹ and therefore resonated with her own search for a modern approach to the medium. "The fascination that the pre-conquest materials has for us today



Fig. 28.

Anni Albers (American, born Germany, 1899–1994). Wallhanging, 1924. Cotton, silk, 66 ¼ × 39 ½ in. (168.3 × 100.3 cm).
The Josef and Anni Albers Foundation, Bethany, Conn. (1994.12.1)



Fig. 29.

Anni Albers. *Black-White-Yellow*, 1926 (lost); rewoven by Gunta Stölzl (German, 1897–1983), 1965. Mercerized cotton, silk, 80 ¼ × 47 ¾ in. (203.8 × 120.3 cm).
The Metropolitan Museum of Art, New York, Purchase, Everfast Fabrics Inc. and Edward C. Moore Jr. Gift, 1969 (69.134)

lies, to my mind," she explained, "in the fact that their concern was the interplay of structural and formal concepts. . . . one senses the daring and discipline that conceived and planned them."¹² Albers not only appropriated formal motifs and designs such as checkerboards, diamonds, and meanders from the ancient sources—thus satisfying the Bauhaus interest in universal primary symbols—but, more importantly, she also assimilated the constructive methods of repetition, mirroring, and modular variations found in the individually patterned rectangles of *tocapu* tunics, the finest garments worn by the Incas, for example, or the positive and negative shapes of Tiwanaku cloths. In her practice, she put the textile technology at the service of the formal program.

Further, Albers considered weaving a high art, just as pre-Hispanic Peruvian societies had. Her output came to challenge the traditional arts-and-crafts divide responsible for the marginalization of textiles in the modern era, and to claim a central space for their artistic and cultural significance. From the apparent collision between craft and industry, she envisioned textiles as a solution that could fully engage the modernist project. With the growing demands of industry, and the premonition that machines would end up substituting handwork and craft, Albers promoted hand weaving for the design of textile models suited for mass production. The Bauhaus provided a platform for this realization; reflecting later on the most salient "learning outcomes" of her years there, she highlighted not only having acquired an "unprejudiced attitude" to materials but also having shifted from free play with forms toward more systematic training in the construction of weaving structures that could be used as prototypes for industrial production.¹³ The alliance of design and industry was reflected in the new motto of the Bauhaus in 1923: "Art and technology: a new unity."¹⁴ Its director Walter Gropius endorsed the concept of "model work" to such a degree that making prototypes became an important source of income for the otherwise financially strained school.¹⁵ Albers reiterated this mission over a decade later, while on the faculty at Black Mountain College, stating that "teaching has to lead toward planning for industrial repetition."¹⁶

With a functionalist drive, Albers systematized the design and production of complex and quality weavings that satisfied modern technology as much as her aesthetic commitment to abstraction. Among Albers's contributions to the Bauhaus was her ability, as Gardner Troy puts it, "to unite a geometrically abstract visual vocabulary with

corresponding constructive processes, such as double and triple weaves."¹⁷ Fascinated by the structural methods and techniques of interlocking threads that Andean civilizations had achieved, she particularly admired their mastery of multi-ply structures such as double, triple, quadruple, and tubular weaves.¹⁸ Double weaves are fabrics that present two separate layers, which can be locked at both sides, at one side, or within the fabric, wherever the design asks for an exchange of top and bottom layers (usually of different colors). Such cloths have been found in textiles of the Paracas and in the Nasca traditions of the late first millennium BCE and first centuries CE, respectively. Albers once explained that "the purpose of these ancient double- and multi-ply weaves was in most instances an aesthetic one, that is, they were to make possible designs of solid colored areas within other contrasting solid colored areas."¹⁹ This type of compositional pattern can also be appreciated in Paul Klee's grid-based paintings from his Bauhaus years, based on contrasts of color and gradation of tonalities that dynamize the picture plane.

While training in the textile workshop, Albers conceived the double weave *Black-White-Yellow* (1926, rewoven 1965; fig. 29). Her design for *Black-White-Yellow* (1926; fig. 30), a gouache and pencil on paper, sets up the pattern of the weaving, which superimposes layers to create a dynamic concatenation of color sequences. This drawing also

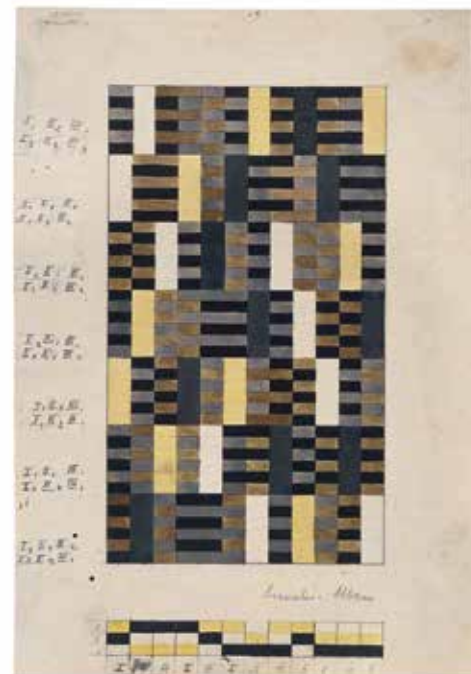


Fig 30.

Anni Albers. Design for *Black-White-Yellow*, 1926. Gouache and pencil on paper, 13 3/4 × 9 3/8 in. (34.9 × 23.8 cm). The Museum of Modern Art, New York (399.1951)



Fig. 31.

Chimú artist. Sampler. Peru, 1100–1300. Cotton, wool, 17 × 10 in. (42.2 × 22.9 cm).
The Josef and Anni Albers Foundation, Bethany, Conn. (1994.16.3)



Fig. 32.

Anni Albers. Detail of textile sample. Linen, 24 ¼ × 15 ½ in. (61.6 × 39.4 cm).
The Metropolitan Museum of Art, New York, Gift of Anni Albers, 1970 (1970.75.22)

anticipates Albers's use of draft notation, a standard system for drafting weaves implemented by the industry of mechanized looms.²⁰ Notably, draft notation served her in the study—and teaching—of the samples of ancient weavings that she started to collect later in her life, coinciding with her trips to Latin America with Josef.²¹ Andean fragments were among the pieces she added to the Harriet Engelhardt Memorial Collection of Textiles at Black Mountain College, which she also used to teach structural and formal problems; she would cut—sometimes even unravel—a piece of tapestry to observe the thread's intersections from above and trace the course of each thread (fig. 31).

With her keen interest in the structural aspects of weaving, Albers demonstrated an alliance with some of the artistic postulates of Constructivism, a movement that heavily influenced the Bauhaus, notably with her “unprejudiced” attention to materials and her aim for transparency in the constructed works. Made years after she left the Bauhaus, one of her textile samples concretizes her vision for the modern work through its use of an open weave (fig. 32). As she saw it, the more transparent a weaving's structure and the more clearly that structure is expressed in its design, the better: “[A] weaving that exhibits the origin

of its rectangular thread-interlacing will be better than one which conceals its structure.”²² Albers was aware of the openwork tradition in the Andes and may have studied the descriptions and technical analyses of the various types of openwork, including gauze, provided by Raoul d'Harcourt in his 1934 book on the *Textiles of Ancient Peru and Their Techniques*, whose French first edition she owned.²³

Following the abrupt closure of the Bauhaus instigated by the Nazis in 1933, Anni and Josef Albers relocated to the United States. Between 1936 and 1946, they taught at Black Mountain College and traveled often in Latin America. During this time, Anni made three major wall hangings—*Ancient Writing*, *Monte Alban*, and *With Verticals*—in response to the landscape and architecture of Mexico, a country where only a very few fragments of ancient textiles survived. These new, cryptic geometric designs paved the way for her “pictorial weavings,” which she started to make in 1947. Unlike her industrial designs, which she continued to pursue, the pictorial weavings were formal exercises with discontinuous weaving patterns aimed at experimenting with threads as a pure artistic expression. *Pasture* (1958; fig. 33) presents a supplementary weft joined to a double-cloth support, embodying a

technique that creates infinite possibilities for what can be described as textile calligraphy, a kind of writing with threads the artist sought to explore.

As art historian Maria Müller-Schareck points out, the word “text” is derived from the Latin word *textus*, or “woven.” Both texts and fabrics, then, connect patterns of thought into a material with a specific rhythm.²⁴ Albers was interested in the transmission of information and knowledge through encrypted scripts of threaded patterns, finding parallels in the visual coding developed in the Andes to overcome the lack of a written language. The *kipu*, for example, was a mnemonic device consisting of a series of cotton or wool cords knotted at regular intervals and dyed

in codified colors to symbolize numbers and other values that helped pre-Hispanic societies collect data and keep records for calendar, tax, or census purposes (see fig. 1). *Khipus*, along with the vast geometrized iconography of Andean textiles, acted often as substitutes for writing, with their portability making them accessible and easy to disseminate. In *Red Meander* (1954; fig. 34), Albers uses broad, mazelike lines to suggest an encrypted pattern. The motif of the meander recurs in her work in inventive ways.

Anni and Josef’s expression of kinship in 1953—we are *not alone after all*—coincided in time with the training of a younger generation of artists and designers who similarly found connection and inspiration in ancient Andean



Fig. 33.

Anni Albers. *Pasture*, 1958. Mercerized cotton, 14 × 15½ in. (35.6 × 39.4 cm).
The Metropolitan Museum of Art, New York, Purchase, Edward C. Moore Jr. Gift, 1969 (69.135)

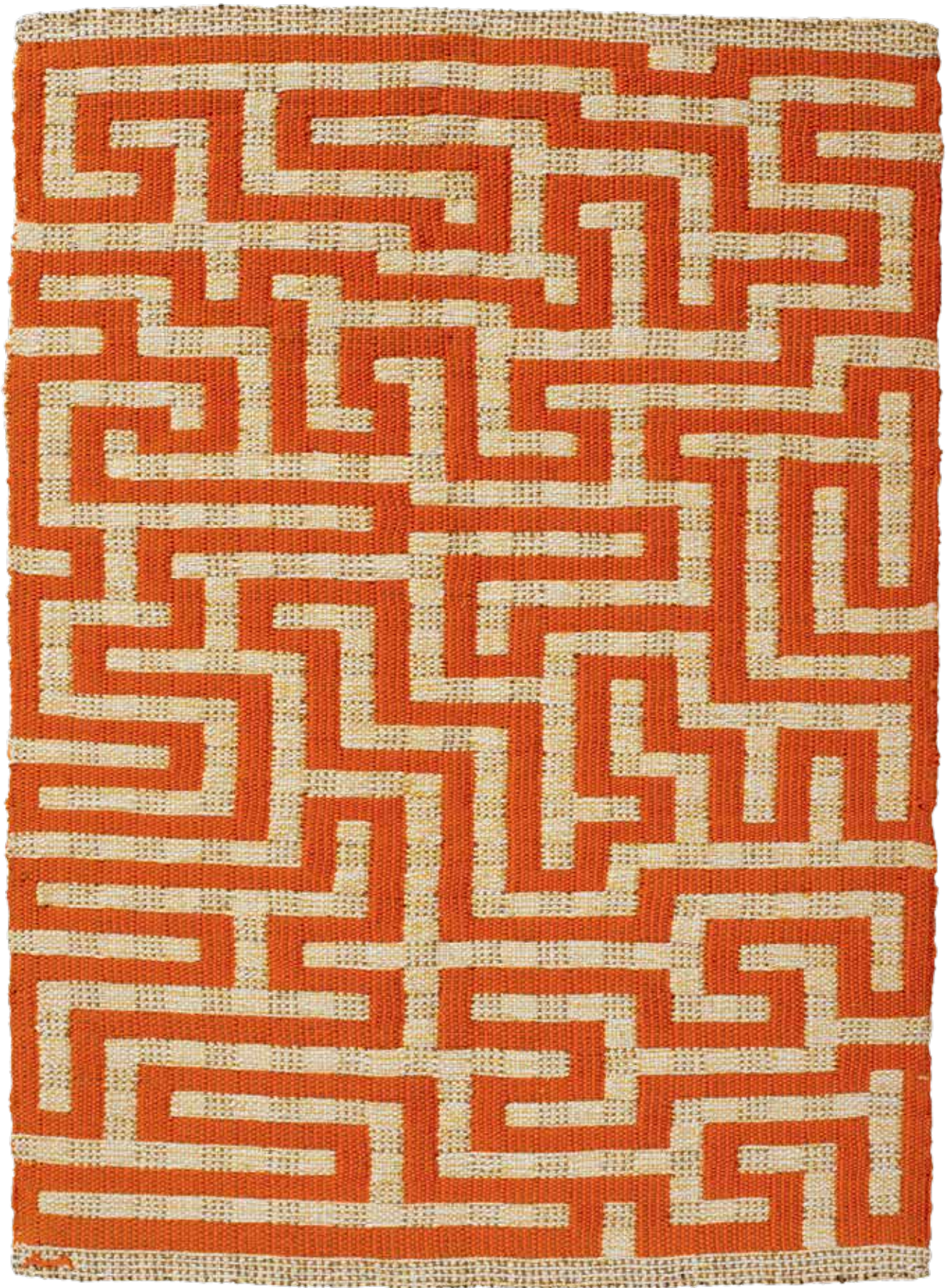


Fig. 34.

Anni Albers. *Red Meander*, 1954. Cotton, 20 ½ × 14 ¾ in. (52 × 37.5 cm). Private collection

textiles. During the 1950s and 1960s, hand weaving was included in the curriculum of many art schools and universities across the Americas.²⁵ Scholar and curator Elissa Author has argued that, while Albers was influential to the development of U.S.-based artists working in fiber a generation or two after her, the role ancient and indigenous textile cultures, including the Andean, played in their work cannot be credited only to Albers and the Bauhaus legacy. "When Albers resettled in the United States," Author explains, "she encountered a country already caught up in a revival of interest in the ancient art of the Americas fostered by a range of federal, cultural and corporate programs and initiatives undertaken between the U.S. and Mexico."²⁶ Among these initiatives were the American Museum of Natural History's design reform program, initiated in 1915, which made the museum's textile collections available to designers with the aim of deriving a national style from indigenous designs of the Americas, and the 1933 Museum of Modern Art exhibition *American Sources of Modern Art* (Aztec, Mayan, Incan), which paired modern and ancient objects.²⁷ The fiber arts movement exploded in the 1960s, with textile artists experimenting with structures, unconventional materials, and the language of weaving with and

without the constraints of the loom. In a way, they put into practice many of Albers's visionary ideas for the medium.

It was serendipitous, then, that Josef Albers was teaching at Yale University when Sheila Hicks enrolled there to study painting in 1954. She was first introduced to Andean textiles in an undergraduate course with Professor George Kubler, a leading scholar of ancient art of the Americas. Fascinated by them, she started to learn to weave and went on to write her undergraduate thesis on this subject under the advisement of Junius Bird, an archaeologist and curator at the American Museum of Natural History and an expert on Peruvian textiles (fig. 35).²⁸ In 1954 Josef introduced Hicks to Anni so they could discuss their shared interests. As Hicks recalls, Anni advised her to keep her weavings reticular as she started her own journey into the world of interwoven threads.²⁹ It was Josef who encouraged her to travel to Chile to replace him on a teaching invitation, and with the support of a Fulbright grant, Hicks embarked on a two-year trip to South America in 1957.³⁰

She began her series of small weavings called *Minimes*, such as *Rallo* (1957; fig. 36), during this trip. These exercises—modest in scale but rich in compositional variation—feature the weaving skills Hicks developed

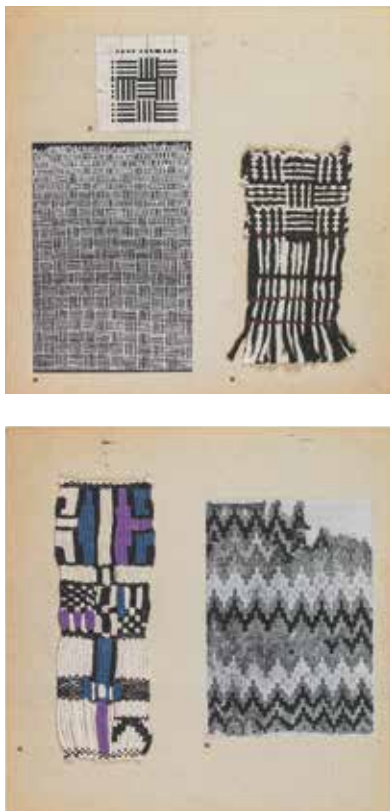


Fig. 35.

Sheets from "Andean Textile Art," Yale University undergraduate thesis by Sheila Hicks, ca. 1957. Private collection



Fig. 36.

Sheila Hicks (American, b. 1934). *Rallo*, 1957. Wool, 9½ × 5½ in. (24 × 13 cm). Cooper Hewitt, Smithsonian Design Museum, New York, Museum purchase from General Acquisitions Endowment Fund (2006-13-2)



Fig. 37.

Sheila Hicks. *Willow*, 1960. Cotton, wool, 11 $\frac{1}{8}$ × 15 $\frac{1}{8}$ in. (29.5 × 40.5 cm). Cooper Hewitt, Smithsonian Design Museum, New York, Gift of Anonymous Donor (2006-14-5)

thanks to her early studies of Andean techniques. *Willow* (1960; fig. 37), for example, is woven with all selvages finished, like many Peruvian textiles. Eventually, the *Minimes* became her modus operandi to respond to and register a broad range of personal experiences, research, and travel that continues to date. “I found my voice and my footing in my small work,” she declared.³¹ Upon her return from South America, Hicks presented her thesis project for a Master of Fine Arts degree at Yale, an exhibit titled *Andean Textile Art*. It included *Inca Chinchero* (1959), a small weaving with a checkerboard pattern inspired by a plain weave reproduced in Raoul d’Harcourt’s seminal study of Peruvian textile techniques.³² Years later, *Inca Chinchero* became the prototype for a textile pattern manufactured by Knoll Associates.

Like Albers, Hicks was inspired by the sophisticated structures of Andean textiles, as well as by their unique path to systematize abstract designs. Further, she continued the modernist alliance with industry through numerous collaborations and commissions over the years. Her signature style is found, however, in the innovative ways she subverted the orthogonal rigor of weaving, expanding to the more unruly and expressionistic territories of abstraction. *Untitled* (1986; fig. 38) presents warp threads not filled with weft, hanging vertically to create slits that allow light to filter through. Hicks first used this technique, which echoes the Moche culture’s use of the negative spaces of slits to codify a linguistic system of signs, in 1961.



Fig. 38.

Sheila Hicks. *Untitled*, 1986. Two-ply linen, 89 × 16 in. (226.1 × 40.6 cm). The Metropolitan Museum of Art, New York, Gift of Sheila Hicks, 1987 (1987.368)

As art historian Carolina Arévalo argues, some of Hicks's works from the early 1960s appear to propose notation systems to convey messages, with uniform weaves interrupted by slits or variations of relief, density, and scale, as exemplified by *Wall Hanging* (1961; fig. 39). Many of these works received fitting titles, in English or Spanish, such as

Jeroglífico, *Grand Hieroglyph*, *Carta blanca*, *Blue Letter*, and *Quipu*. Hicks, like Albers, explored the calligraphic quality of threads, but Hicks's work "deconstructs the grid to create her text."³³ Her distinct approach to the constructive methods of Andean textiles was ultimately expressed in her "open compositions." These did not employ weaving techniques



Fig. 39.

Sheila Hicks, *Wall Hanging*, 1961. Wool, 27 ½ × 27 in. (69.8 × 68.6 cm).
The Museum of Modern Art, New York (348.1961)



Fig. 40.

Sheila Hicks. *The Principal Wife*, ca. 1965. Silk, linen, wool, synthetic fibers, 96 × 86 × 8 in. (243.8 × 218.4 × 20.3 cm).
Museum of Arts and Design, New York, gift of Dreyfus Corporation, through the American Craft Council, 1989 (1989.1.8a-g)

per se but, rather, referred to the thread-dyeing process—in particular the pre-Hispanic tie- or resist-dyeing technique known as ikat, still employed across Latin America. In *The Principal Wife* (ca. 1965; fig. 40), she displays warp threads still wrapped in certain sections to prevent them from absorbing dye.

Lenore Tawney did not have contact with Anni Albers as Hicks did, but she did study with two Bauhaus émigrés at the Institute of Design in Chicago during the mid-1940s: the painter and photographer László Moholy-Nagy and

the weaver Marli Ehrman. It was not until the mid-1950s, however, that she specifically trained in weaving, starting with a six-week course taught by the Finnish weaver Martta Taipale at the Penland School of Craft in North Carolina.³⁴ Tawney's artistic philosophy was shaped by various influences, including Taoism, and she often traveled in South America, collecting ancient samples and small fragments for study. She appreciated the primary structures of Andean weaving and decided to stay with this tradition, especially when her work became fully



Fig. 41.

Lenore Tawney (American, 1907–2007). *Peruvian*, 1962. Linen, 86 × 18 in. (218.4 × 45.7 cm). Lenore G. Tawney Foundation, New York (1962.08)

abstract around 1959.³⁵ *Peruvian* (1962; fig. 41), an appropriation of the checkerboard pattern characteristic of Andean textiles that finds its finest example in Inca tunics (see fig. 21), was a declaration of intentions. Constructed as a tubular weave, it shares the same structural principle as the double weave. Two layers of cloth are woven separately, though in one weaving operation—in tubular weaves there is no exchange of the two layers. A continuous weft thread alternatively weaves both layers in a spiral movement, closing both selvages and thus forming a tube in a method also practiced in ancient Peru.

But it was Tawney's signature "woven forms," installation-like hangings that could be very narrow and as high as four meters long, that consecrated her jump from more classical forms of tapestry to radical innovations with the grid-based principles of weaving. Initiated in 1959, these pieces offered her a way to recontextualize the Peruvian traditions. *The Bride* (1962; fig. 42) combines multiple weaving structures in one piece, and the width variation provides the work with an unconventional shape, which she called "woven form." Influenced by Peruvian woven caps with human or camelid hair braids, Tawney began to explore the addition of knots and fringes in this period. Experimenting with beginnings and endings was a characteristic feature of the fiber arts movement.³⁶

Despite these off-loom methods, Tawney never gave up the loom, especially as she studied the effects of transparency in a gridded structure. According to Florica Zaharia, Conservator Emerita of textiles at The Met, "like Hicks, [Tawney] also wanted to break rules within the discipline."³⁷ The hanging *Morning Dove* (1962; fig. 44) presents another idiosyncratic technique of the ancient tradition: featherwork.³⁸ Tawney had also been using the Peruvian openwork technique of gauze since 1955, emulating the finest standards of lace making of coastal Peru in intricate, delicate works such as *Untitled* (1961; fig. 45). In *Shrouded River* (1966; fig. 43), the artist utilizes openwarp or vertical openings of slit tapestry. As historical photographs of her studio capture, she enjoyed placing such works away from the wall to allow light and air to come through. Transparency was one of Anni Albers's key aspirations for the medium, and her book *On Weaving* includes an illustration of Tawney's *Dark River* (1962), a woven form with slits.³⁹

Another participant in the fiber arts movement, Olga de Amaral applied to the Cranbrook Academy of Art in Bloomfield Hills, Michigan, while studying architectural



Fig. 42.

Lenore Tawney. *The Bride*, 1962. Linen, feathers, 11 ft. 6 in. × 13 in. (350.5 × 33 cm).
Lenore G. Tawney Foundation, New York (1962.11)



Fig. 43.

Lenore Tawney. *Shrouded River*, 1966. Linen, wood, 12 ft. 10 in. × 22 in. (391.2 × 55 cm).
Lenore G. Tawney Foundation, New York (1966.11)



Fig. 44.

Lenore Tawney. *Morning Dove*, 1962. Linen, feathers, 53 ¹⁵/₁₆ × 16 ⁷/₁₆ in. (137 × 42 cm). Cooper Hewitt, Smithsonian Design Museum, New York, Gift of Lenore Tawney (1964-66-3)



Fig. 45.

Lenore Tawney. *Untitled*, 1961. Rayon, wool, 63 × 22 ⁵/₁₆ in. (160 × 56.8 cm). Lenore G. Tawney Foundation, New York (1961.04)

drafting in Bogotá. She enrolled in September 1954 for a one-year fabric design and weaving program. Because she was studying under textile designer Marianne Strengell, her introduction to the loom was conditioned by a curriculum heavily oriented toward industry and upholstery, drapery, and rug design. At Cranbrook, De Amaral was more interested in experimenting freely with fiber, but upon returning to Bogotá she established the workshop Telas Amaral for the production of functional weavings. Begun in 1956 as a one-loom operation, the workshop within a decade had expanded to a twelve-loom operation that employed local artisans and provided services to architects, interior designers, and the fashion industry.⁴⁰

As Telas Amaral expanded in the early 1960s, De Amaral began to produce individual tapestries that earned her a prominent place within the fiber arts movement.⁴¹ She started with knotting to the warp, creating pictorial tapestries she called *mechudos*, and replicating ancient techniques such as slits, wrapped warp, and interlacing in pieces with contrasting color combinations reminiscent of Klee's Bauhaus teachings.⁴² With a geometric composition of vibrant colors, *Geometric Play of Colors* (*Juego geométrico de colores*, 1962; fig. 46) acknowledges the grid as the essential principle of weaving, and its expressive alternation of figures inside rectangles suggests the modular units found in Wari and Inca tunics (see figs. 11, 12).



Fig. 46

Olga de Amaral (Colombian, b. 1932). *Geometric Play of Colors* (*Juego geométrico de colores*), 1962. Wool, 35 3/8 × 17 3/4 in. (90 × 45 cm). Private collection

Referencing a checkerboard pattern, the vibrant turquoise grids in *Interlaced in White and Turquoise* (*Entrelazado en blanco y turquesa*, 1965; fig. 47) even tend a bridge to optical (Op) art.

De Amaral expanded her practice with off-loom constructions. Her first *trenzado* (braiding), based on the crisscrossing of vertical plain-weave bands, dates to 1966. This technique gives the impression that it was made with multiple bands woven independently, yet they are in fact woven to a split warp, as in *Wall Hanging 1* (*Muro tejido 1*, ca. 1969; fig. 48), a work whose intricate structure accentuates the sculptural interplay of depth and shadow. Prefabricating some elements allowed her to enter a dialogue with the architectural space,⁴³ as

demonstrated in *Woven Gridded Wall #66* (*Muro tejido cuadrículado #66*, 1970; fig. 49). In this massive, voluminous work made with heavy fibers such as coarse wool and horsehair, the interlaced elements use frame braiding on a large scale.⁴⁴

In 1972, De Amaral devised her signature tile tapestries. Defined by the artist as her “words,” the tiles are rectangular woven units of linen and cotton sewed to an underlying strip.⁴⁵ *Alchemy 13* (*Alquimia 13*, 1984; fig. 50) shows the modular rigor of this technique, which recalls tile roofs or complex layered systems like a bird’s plumage. Its surface shines with the iridescent effects of gold leaf, a material the artist started to use in 1973 with the purpose of turning textiles into “golden surfaces of light.”⁴⁶ Indeed, De Amaral

Fig. 47.

Olga de Amaral. *Interlaced in White and Turquoise* (*Entrelazado en blanco y turquesa*), 1965. Wool, 51 × 19 1/2 in. (130 × 50 cm). Private collection

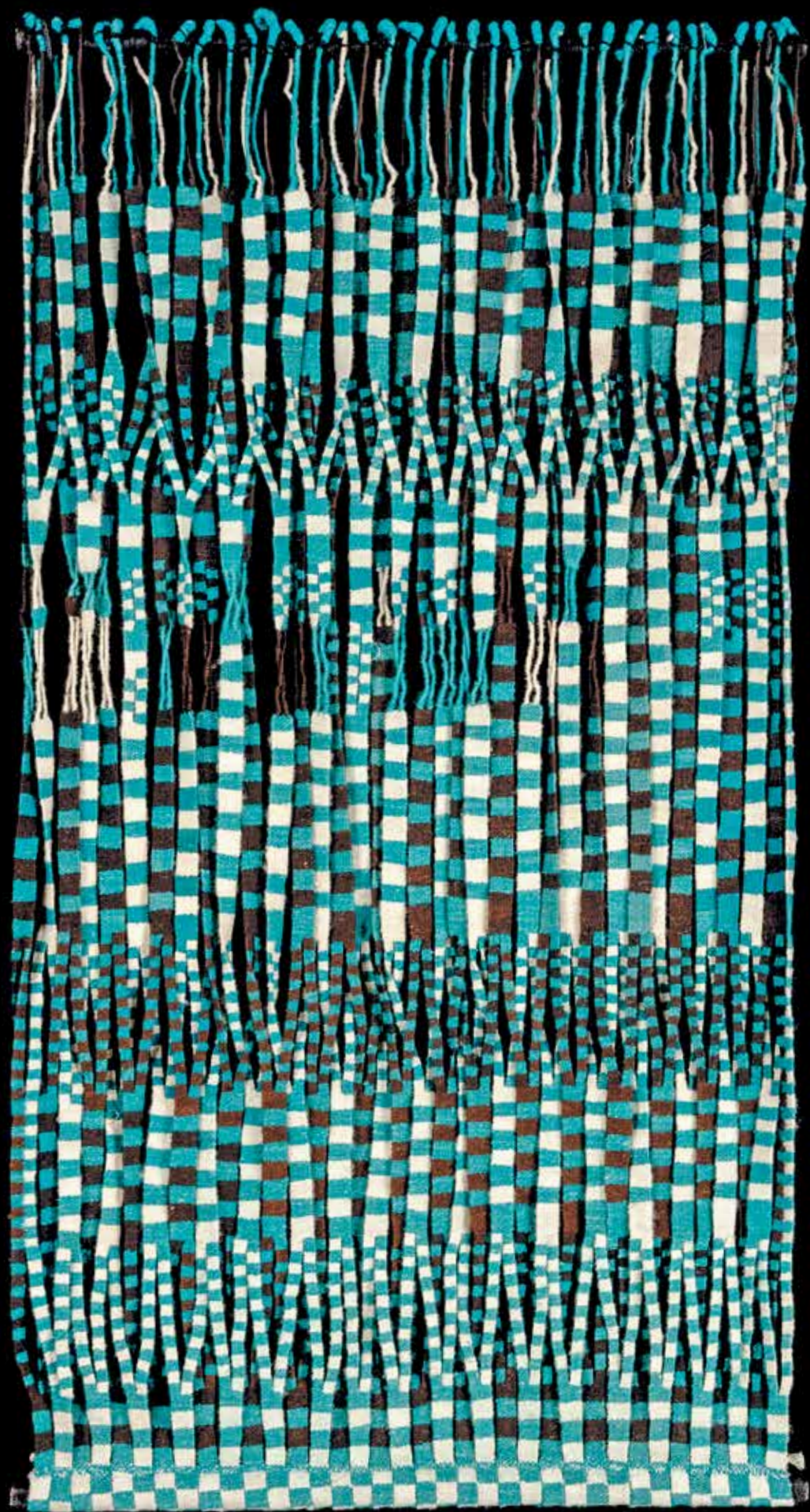




Fig. 48.

Olga de Amaral. *Wall Hanging 1* (*Muro tejido 1*), ca. 1969. Wool, 87 × 43 in. (221 × 109.2 cm). Museum of Arts and Design, New York, gift of the Dreyfus Foundation, through the American Craft Council, 1989 (1989.1.2)



Fig. 49.

Olga de Amaral. *Woven Gridded Wall #66* (*Muro tejido cuadrículado #66*), 1970. Wool, horsehair, 119 × 70 × 20 in. (302.3 × 177.8 × 50.8 cm). Museum of Arts and Design, New York, gift of the Dreyfus Foundation, through the American Craft Council, 1989 (1989.1.3)

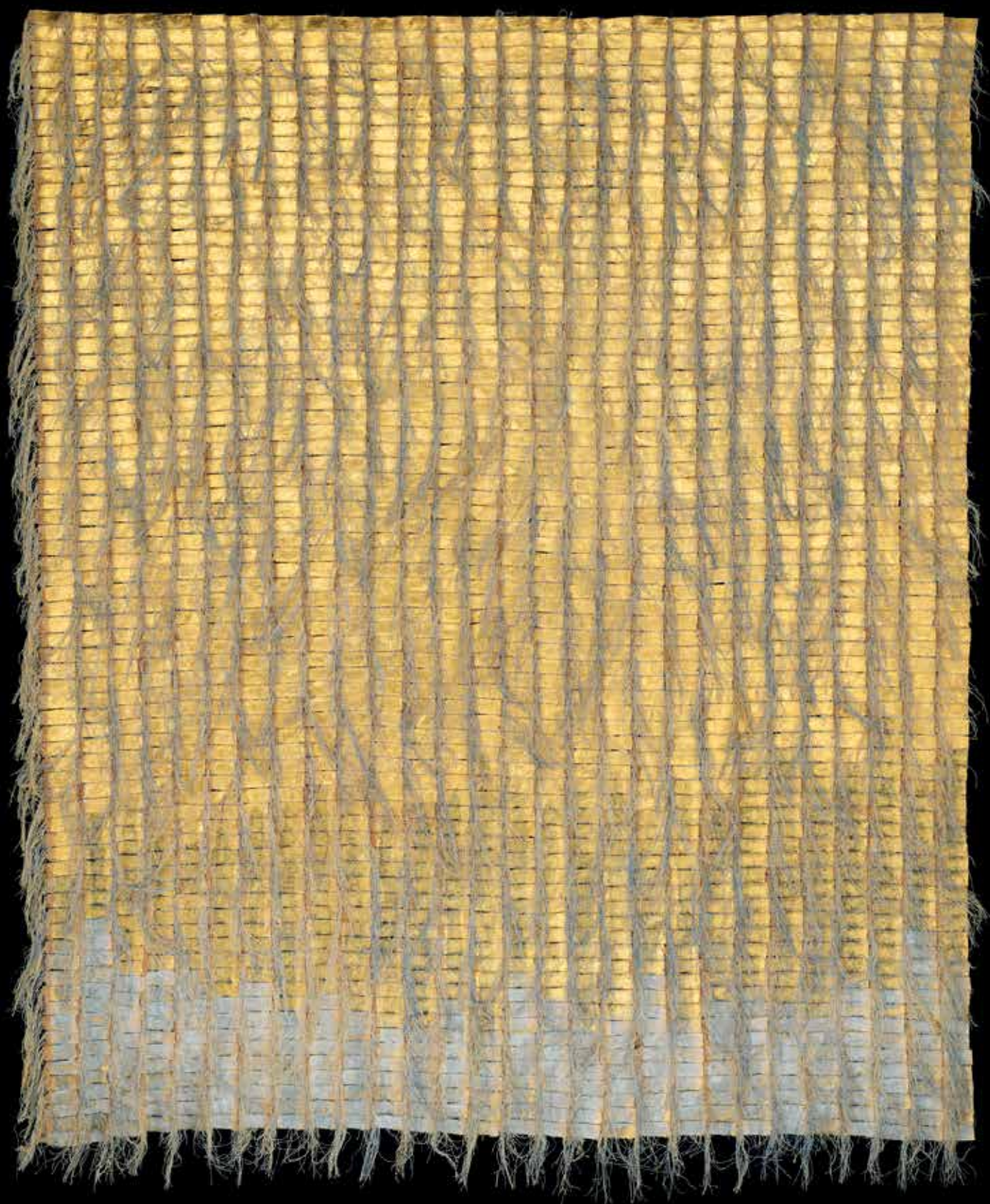
made her *Alchemies* (*Alquimias*) series “in homage to a pre-Columbian gold mantle I had the fortune of seeing in Peru’s Gold Museum.” The artist visited Peru in 1969 and was overwhelmed by “the ancestral intelligence—the unconscious high mathematics—present in everything textile in ancient Andean culture. It was an awareness that seemed almost genetic,” she said.⁴⁷

“Going back to beginnings,” Anni Albers wrote in *On Weaving*, “is seeing ourselves mirrored in others’ work, not in the result but in the process.” This, to her, was learning: “looking forward from a point way back in time.”⁴⁸ The beginning, for this group of groundbreaking weavers and fiber artists of the mid-twentieth century, involved taking “a long glance backward” to the ancient tradition of the textile medium.⁴⁹ Albers acted as a historical bridge between the past and the present, studying ancient

Andean techniques and theorizing on the unparalleled potential of textiles to contribute to the modernization of society, both by embracing industry and by providing its antidote through the enhancement of textiles’ tactile qualities.⁵⁰ Albers’s practice, teaching, and writings acted together as a textile manifesto, catapulting her radical vision to the fiber artists of the 1960s and 1970s. Learning from her emphasis on the structural aspects of weaving as well as from its materiality, Sheila Hicks, Lenore Tawney, and Olga de Amaral started their careers with works that expanded the language of abstraction through the experimentation with the grid, transparency, multiple structures, and three-dimensional and modular work in their weavings. Their innovations set the stage for the ubiquity of the art of threads today and will continue to inspire artists of the future.

Fig. 50.

Olga de Amaral. *Alchemy 13* (*Alquimia 13*), 1984. Linen, rice paper, gesso, indigo red and gold leaf, 72 × 62 in. (182.9 × 157.5 cm). The Metropolitan Museum of Art, New York, Gift of Olga and Jim de Amaral, 1987 (1987.387)



Notes

Embracing the Grid Iria Candela and Joanne Pillsbury

1. César Paternosto, *The Stone and the Thread: Andean Roots of Abstract Art*, trans. Esther Allen (Austin: University of Texas Press, 1996), p. 12. See also César Paternosto, *Abstraction: The Amerindian Paradigm*, exh. cat. (Brussels: Société des Expositions du Palais des Beaux-Arts de Bruxelles, 2001), esp. pp. 24, 52, 59, 111.
2. Anni Albers, *On Weaving* (Middletown, Conn.: Wesleyan University Press, 1965), p. 68.

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I thank Christine Giuntini for her insights on Andean weaving and helpful suggestions on an earlier draft of this essay, and Anne Blood Mann for her elegant revisions. Additional thanks are owed to Edward S. Harwood, Natalia Majluf, Jeffrey Splitstoser, and Daniel Rifkin, and, most especially Iria Candela, for the stimulating conversations over the years about weaving and abstraction in ancient and modern times.

1. Pedro Sarmiento de Gamboa, *The History of the Incas*, trans. and ed. Brian S. Bauer and Vania Smith (manuscript, 1572; trans., Austin: University of Texas Press, 2007), p. 57. *Khipu* means “knot” in Quechua, the modern descendant of the language of the Inca. For more on *khipus*, see *Written in Knots: Undeciphered Accounts of Andean Life*, exh. cat. (Washington, D.C.: Dumbarton Oaks Museum, 2019).
2. Bernabe Cobo, *Inca Religion and Customs*, trans. and ed. Roland Hamilton (manuscript, 1653; trans., Austin: University of Texas Press, 1990), p. 117.
3. John V. Murra, “Cloth and Its Functions in the Inca State,” *American Anthropologist* 64, no. 4 (August 1962), p. 719.
4. Edward A. Jolie, Thomas F. Lynch, Phil R. Geib, and James M. Adovasio, “Cordage, Textiles, and the Late Pleistocene Peopling of the Andes,” *Current Anthropology* 52, no. 2 (April 2011), pp. 285–96.
5. Nicola Sharatt, *Carrying Coca: 1500 Years of Andean Chuspas* (New York: Bard Graduate Center, 2014), pp. 13, 43.
6. Wilhelm Worringer, *Abstraction and Empathy: A Contribution to the Psychology of Style*, trans. Michael Bullock (Munich: R. Piper and Co., 1908; trans., London: Routledge and Kegan Paul, 1953).
7. Rebecca Stone, *Art of the Andes: From Chavín to Inca*, 3rd ed. (London: Thames and Hudson, 2012), p. 155.
8. Susan E. Bergh, “Tapestry-woven Tunics,” in *Wari: Lords of the Ancient Andes*, exh. cat. (Cleveland: Cleveland Museum of Art; New York: Thames and Hudson, 2012), pp. 158–91.
9. George Kubler, *The Art and Architecture of Ancient America: The Mexican, Maya, and Andean Peoples*, 3rd ed. (New York: Penguin Books, 1990), pp. 429–30.
10. Heidi King, *Peruvian Featherworks: Art of the Precolumbian Era* (New York: The Metropolitan Museum of Art, 2012), pp. 28–30.
11. Gottfried Semper, *The Four Elements of Architecture and Other Writings*, trans. Harry F. Mallgrave and Wolfgang Herrmann (Braunschweig: Vieweg Verlag, 1851; trans., Cambridge: Cambridge University Press, 1989).
12. See, for example, an anonymous account written about 1593–97, “Relación de las costumbres antiguas de los naturales del Pirú,” in *Crónicas peruanas de interés indígena*, ed. Francisco Esteve Barba (Madrid: Ediciones Atlas, 1968), pp. 158–89.

13. Catherine J. Allen, *The Hold Life Has: Coca and Cultural Identity in an Andean Community*, 2nd ed. (Washington, D.C.: Smithsonian Institution Press, 2002).

14. Ann P. Rowe, *Costumes and Featherwork of the Lords of Chimor: Textiles from Peru's North Coast*, exh. cat. (Washington, D.C.: Textile Museum, 1984), pp. 185–86.

15. Ann P. Rowe, “Technical Features of Inca Tapestry Tunics,” *Textile Museum Journal* 17 (1978), pp. 5–28, and “Provincial Inca Tunics of the South Coast of Peru,” *Textile Museum Journal* 31 (1992), pp. 5–52.

16. John H. Rowe, “Standardization in Inca Tapestry Tunics,” in *The Junius B. Bird Pre-Columbian Textile Conference, May 19th and 20th, 1973*, eds. Ann P. Rowe, Elizabeth P. Benson, and Anne-Louise Schaffer (Washington, D.C.: Textile Museum, 1979), pp. 239–64.

17. Cobo, *Inca Religion*, pp. 239–40.

18. Mary Frame, “Chuquibamba: A Highland Textile Style,” *Textile Museum Journal* 36–37 (1997–98), pp. 2–47, and *Textiles Chuquibamba: 1000–1475 d.C.* (Lima: Museo de Arte de Lima, 1999), pp. 21–22.

19. Laurie Adelson and Arthur Tracht, *Aymara Weavings: Ceremonial Textiles of Colonial and 19th Century Bolivia* (Washington, D.C.: Smithsonian Institution Traveling Exhibition Service, 1983). Note that ethnographic textiles, which fall beyond the scope of this essay, were not a major collecting area in many art museums until the 1970s, when, in the wake of artists such as Barnett Newman, the minimalist aesthetic of the cloths were reevaluated. Natalia Majluf, message to the author, 2022.

20. Beatrix Hoffman, “Wilhelm Gretzer and His Collection of Peruvian Antiquities in the Ethnological Museum in Berlin,” in *PreColumbian Textiles in the Ethnological Museum in Berlin*, eds. Lena Bjerregaard and Torben Huss (Lincoln, Nebr.: Zea Books, an imprint of University of Nebraska-Lincoln Libraries, 2017), pp. 9–14.

21. Wilhelm Reiss and Alphons Stübel, *The Necropolis of Ancon in Peru: A Contribution to Our Knowledge of the Culture and Industries of the Empire of the Incas*, trans. Augustus Henry Keane, 3 vols. (Berlin: A. Asher and Co.; New York: Dodd, Mead, and Co., 1880–87).

22. Alphons Stübel, letter (February 26, 1875), cited in Uwe Carlson, “Reiss y Stübel en Ancón,” in *El inicio de la arqueología científica en el Perú: Reiss y Stübel en Ancón: Exposición de litografías de 1875 publicadas en “The Necropolis of Ancon in Peru,”* exh. cat. (Lima: Museo de Arte, 2000), p. 9.

23. Anni Albers, *On Weaving* (Middletown, Conn.: Wesleyan University Press, 1965), p. 69. See also Virginia Gardner Troy, *Anni Albers and Ancient American Textiles: From Bauhaus to Black Mountain* (Burlington, Vt.: Ashgate, 2002). On textile study rooms, see Amelia Peck and Freyda Spira, “Art for All,” in *Making the Met, 1870–2020*, eds. Andrea Bayer with Laura D. Corey (New York: The Metropolitan Museum of Art, 2020), pp. 50–69. Although The Met’s commitment to the collection of ancient American art waxed and waned over the course of its 154-year history, ancient Andean textiles were collected more or less continuously, even when Precolumbian works in other media were sent across Central Park to the American Museum of Natural History. See Joanne Pillsbury, “Aztecs in the Empire City: ‘The People without History’ in The Met,” *Metropolitan Museum Journal* 56 (2021), pp. 12–31.

Abstraction and Andean Textiles, from Anni Albers to the Fiber Arts Movement Iria Candela

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1. Though Anni Albers wrote to René d’Harnoncourt, director of the Museum of Modern Art, New York, in 1945 asking him for funds to support “plans my husband and I have had for years—that of going to Peru for several months of study,” the pair did not visit Peru until 1953, when Josef was invited to teach at the Escuela Nacional de Ingenieros. I thank Paul Galloway for sharing Albers’s letter with me. Anni Albers, manuscript letter (1945), Anni Albers correspondence file, Architecture and Design Study Center, Museum of Modern Art, New York.

2. Brenda Danilowitz, “We are not alone”: Anni and Josef Albers in Latin America,” in *Anni and Josef Albers: Latin American Journeys*, eds. Brenda Danilowitz and Heinz Liesbrock, exh. cat. (Madrid: Museo Nacional Centro de Arte Reina Sofía; Ostfildern: Hatje Cantz Verlag, 2007), p. 17, n. 1.

3. “The Pottery Workshop, however, was less than keen to accept female students. . . . By 1922 the Bookbinding Workshop had been dissolved. This left only the Weaving Workshop open to women.” Sigrid Wortmann Weltge, *Women’s Work: Textile Art from the Bauhaus* (San Francisco: Chronicle Books, 1993), p. 42.

4. Anni Albers, *On Weaving* (Middletown, Conn.: Wesleyan University Press, 1965), p. 5.

5. Albers, *On Weaving*, p. 69. “Among high achievements in hand weaving, Coptic as well as early Peruvian weaving must be recognized, the latter surpassing perhaps in inventiveness of weave structure, formal treatment, and use of color, other great textile periods,” Albers, *On Weaving*, p. 21.

6. Virginia Gardner Troy, *Anni Albers and Ancient American Textiles: From Bauhaus to Black Mountain* (Burlington, Vt.: Ashgate, 2002).

7. Between 1916 and 1919, Albers studied in Berlin with the impressionist painter Martin Brandenburg; subsequently she attended the Kunstgewerbeschule in Hamburg and studied weaving for two months. “Chronology,” Josef and Anni Albers Foundation, accessed September 6, 2023, <https://www.albersfoundation.org/alberses/chronology>.

8. Albers, *On Weaving*, p. 19.

9. Albers, *On Weaving*, p. 39. In her personal records, Albers referred to some of her works with the term “Wallhanging,” as Karis Medina, Associate Curator at the Josef and Anni Albers Foundation, confirmed in an email to the author, July 7, 2023.

10. Gardner Troy, *Ancient American Textiles*, p. 9. On the German manifestation of Morris’s applied arts reform, see pp. 6–9.

11. Albers, *On Weaving*, p. 68. “[R]egardless of scale, small fragment or wall-size piece, a fabric can be great art if it retains directness of communication in its specific medium. This directness of communication presupposes the closest interaction of medium and design.”

12. Anni Albers, "A Structural Process in Weaving" (1952), in *On Designing* (Middletown, Conn.: Wesleyan University Press, 1961), pp. 76–77.
13. Anni Albers, "Weaving at the Bauhaus" (1939), in *On Designing*, pp. 38–39. Originally written in 1939, this essay was first published in *Bauhaus 1919–1928*, eds. Herbert Bayer, Walter Gropius, and Ise Gropius (New York: Museum of Modern Art, 1948) and later revised for inclusion in *On Designing*.
14. Leah Dickerman, "Bauhaus Fundaments," in *Bauhaus 1919–1933: Workshops for Modernity*, eds. Barry Bergdoll and Leah Dickerman, exh. cat. (New York: Museum of Modern Art, 2009), p. 19.
15. See Magdalena Droste, "The Bauhaus Workshops," in *Anni Albers*, eds. Ann Coxon, Briony Fer, and Maria Müller-Schareck, exh. cat. (London: Tate Publishing, 2018), pp. 53–54.
16. Albers, "Work with Material" (1937), in *On Designing*, p. 52.
17. Gardner Troy, *Ancient American Textiles*, p. 41.
18. Albers, "A Structural Process," p. 68. Admiring the structural methods deployed by ancient Andean textiles, Albers noted: "To name only some of the weaving constructions, aside from single element techniques like knotting, looping, netting, and additive techniques like embroidery and brocading: they knew plain weave, rib weave, basket weave, and some other plain weave variations uniquely their own; there were twills, though only rarely encountered; they had warp as well as weft brocades, damasks, crepes, and gauze weaves of a fantastic variety judged by present day standards. They had tapestry techniques with more modes of interlocking threads of adjacent form areas and delineating these areas than found in any other culture, and, significantly, they had double, triple, quadruple, and tubular weaves."
19. Albers, "A Structural Process," pp. 69–70. And she continues: "In the usual process of weaving, mixtures of colors occur wherever warp and weft of different color cross each other. In multi-ply weaves, however, each layer of cloth is woven with its own color, even when sections of different layers are interchanged. In a double weave, for instance, a light colored top layer may have a dark figure inserted in it by borrowing warp and weft threads from a dark colored second layer."
20. It represents the number of times the basic unit of construction must be repeated to complete the structure of the weave, allowing for the scheme of the design to be replicated.
21. Albers formed two major collections: The Harriet Engelhardt Memorial Collection of Textiles for Black Mountain College (created between 1947 and 1950) and a personal collection she and Josef amassed of textiles, objects, and miniature sculptures. Many of the textiles she collected would appear reproduced or cited in *On Weaving*. Following the 1957 closure of Black Mountain College, the Engelhardt Collection was purchased by the Yale University Art Gallery. See Jennifer Reynolds-Kaye, "Anni Albers as Collector," in *Anni Albers*, p. 107.
22. Albers, *On Weaving*, p. 39.
23. Raoul d'Harcourt, *Textiles of Ancient Peru and Their Techniques*, eds. Grace G. Denny and Carolyn M. Osborne, trans. Sadie Brown (Seattle: University of Washington Press, 1962), originally published as *Les textiles anciens du Pérou et leurs techniques* (Paris: Editions d'art et d'histoire, 1934); Gardner Troy, *Ancient American Textiles*, p. 169, n. 37.
24. Maria Müller-Schareck, "The Language of Threads," in *Anni Albers*, p. 137.
25. See Paulina Brugnoli and Soledad Hoces de la Guardia, "Anni Albers and Her Great Teachers, the Andean Weavers," in *Anni and Josef Albers: Latin American Journeys*, p. 61. The authors, members of the first generation of university-trained designers in Chile, explain how their schooling was heavily influenced by the Bauhaus and its principles, as present in the course syllabi at the Design School at the Pontificia Universidad Católica de Chile during the 1950s and 1960s. In this way, Latin America readopted its own concepts: the rich ancient Andean textile legacy influenced early twentieth-century German artists, whose work traveled to America, south and north, and returned the Andean legacy to its home continent.
26. Elissa Auther, "Andean Weaving and the Appropriation of the Ancient Past in Modern Fiber Art," *bauhaus imaginista*, no. 2 *Learning From* (June 8, 2018). I thank Elissa Auther for sharing a longer draft of this paper with me.
27. These exhibitions coincided with the early years of The Met's own Textile Study Room, founded in 1910. See Amelia Peck and Freyda Spira, "Art for All," in *Making the Met, 1870–2020*, eds. Andrea Bayer and Laura D. Corey, exh. cat. (New York: The Metropolitan Museum of Art, 2020), pp. 55–56.
28. Anni Albers, too, had taken a class in pre-Hispanic art with George Kubler, in 1952; her research paper for the course, which also led her to engage Junius Bird for advisement, proposed an analysis of the enigmatic wide fabrics of the Early Nasca period and was later published as "A Structural Process in Weaving." See Albers, "A Structural Process," pp. 65–78.
29. Sheila Hicks, in conversation with the author, July 2022.
30. Hicks traveled from Venezuela to Tierra del Fuego, visiting Colombia, Ecuador, Peru, Bolivia, and Mexico. She also passed through Argentina, Uruguay, and Brazil. Carolina Arévalo, "Essential Writing: Sheila Hicks and Pre-Hispanic Art," in *Sheila Hicks: Free Threads: Textile and Its Pre-Hispanic Roots, 1954–2017*, exh. cat. (Puebla: Museo Amparo, 2018), p. 106.
31. Cited in Nina Stritzler-Levine, introduction, in *Sheila Hicks: Weaving as Metaphor*, ed. Nina Stritzler-Levine (New York: Bard Graduate Center, 2006), p. 17.
32. D'Harcourt, *Textiles of Ancient Peru*, p. 187, plate 1B. Hicks likely consulted the French first edition.
33. Arévalo, "Essential Writing," p. 120.
34. Mona Schieren, "Every Moment Is a Moment of Learning:—Lenore Tawney. New Bauhaus and Amerindian Impulses," *bauhaus imaginista*, no. 2 *Learning From* (November 14, 2018).
35. For an account of Lenore Tawney's diverse influences, see Schieren, "Every Moment."
36. Auther, "Andean Weaving."
37. Florica Zaharia, in conversation with the author, May 5, 2022. I thank Florica—who keeps Tawney's loom!—for sharing her knowledge of Tawney's life and work.
38. Tawney's integration of beads and natural materials into her weaving allowed her to annex Andean weaving and Native American aesthetics in her own work, linking it cross-culturally and trans-historically with indigenous textile traditions. Auther, "Andean Weaving."
39. Albers, *On Weaving*, p. 190, plate 107.
40. See Nell Znamierowski, "Olga Amaral," *Craft Horizons* 27, no. 3 (May/June 1967), p. 29.
41. Anna Walker points to De Amaral's participation in the prestigious 1967 Lausanne International Tapestry Biennial to show her position as a leading representative of Latin America within the international fiber arts movement. Anna Walker, "Square Words and Gold Landscapes: Building a Life in Textiles," in *Olga de Amaral: To Weave a Rock*, exh. cat. (Houston: Museum of Fine Arts; Stuttgart: Arnoldsche Art Publishers, 2020), pp. 18–19.
42. Galaor Carbonell, *Olga de Amaral: Desarrollo del lenguaje* (Bogotá: Universidad de los Andes, 1979), pp. 48–56. It is striking that Carbonell makes no reference to the Andean textile tradition in his analysis of these colorful geometric pieces, and instead classifies them as not particularly innovative, mere copies of painting.
43. In these pieces, pre-woven bands or straps become the threads of the warp, and the weft no longer comes into use—or does only at select places—so the tapestry is constructed through braiding with occasional weaving. With this process, De Amaral could renounce the vertical shape and predetermined size of the loom.
44. In *Muro tejido cuadrículado*, loops encircle parallel rods at each end, and woven strips are worked in a mirror-image progression of braiding, finishing in a center line. The piece was included in De Amaral's important 1970–71 solo show, *Woven Walls*, held at the Museum of Contemporary Crafts in New York.
45. "Words" that she uses to create "landscapes of surfaces, textures, emotions, memories, meanings, and connections." Olga de Amaral, *The House of My Imagination: Lecture by Olga de Amaral at The Metropolitan Museum of Art, April 24, 2003* (Bogotá: Zona Ltda., 2003), p. 7; ebook available at <https://www.olgadeamaral.art/publication/2003-met-house-of-my-imagination/>.
46. De Amaral, *The House*, p. 7.
47. De Amaral, *The House*, p. 9.
48. Albers, *On Weaving*, p. 52.
49. Albers, *On Weaving*, p. 58.
50. See Albers's revelatory essay "Tactile Sensibility," in *On Weaving*, pp. 62–65, in which she states that modern society has grown increasingly insensitive to tactility.

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Front cover: Anni Albers, detail of *Pasture*, 1958 (fig. 33). Inside front cover: Inca artist, detail of tunic, 16th century (fig. 21). Page 2: Olga de Amaral, detail of *Alchemy 13* (*Alquimia 13*), 1984 (fig. 50). Page 6: Chimú artist, detail of hanging, 12th–15th century (fig. 18). Page 26: Lenore Tawney, detail of *Untitled*, 1961 (fig. 45). Inside back cover: Sheila Hicks, detail of *Linen Lean-To*, designed 1967–68, executed 1985. Linen, 59 1/2 × 82 3/4 × 6 in. (150.2 × 210.2 × 15.2 cm). The Metropolitan Museum of Art, New York, Purchase, Anonymous Gift, 1986 (1986.7). Back cover: Chimú artist, detail of loincloth, 12th–15th century (fig. 17).

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