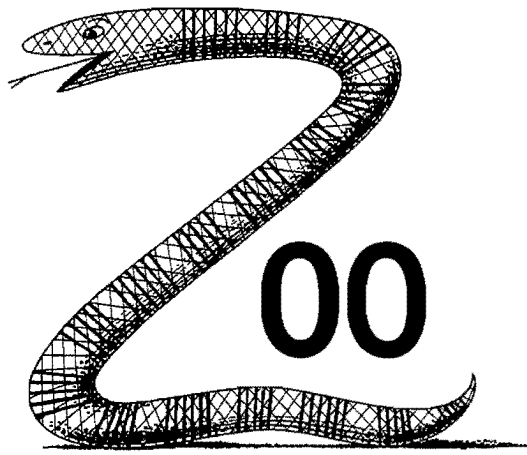


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News for Schools from the Smithsonian Institution, Office of Elementary and Secondary Education, Washington, D.C. 20560

SEPTEMBER 1980

Spinning Yarns, Telling Tales about Textiles



Bull mummy-wrapping (from Egypt)



The Star-Spangled Banner



Ekpe masquerade costume (from Nigeria)

Question: What do these three highly prized museum objects have in common?

Answer: Each one is made from some kind of *textile*, or cloth.

A textile is a fibrous substance, such as wool, cotton, flax, silk, or nylon, that can be spun into yarn and woven or knitted into cloth; it is also any kind of cloth made by weaving, knitting, knotting, or felting.

Have you ever really *looked* at a textile with an eye to its storytelling potential? Most people haven't. Yet...

Every day we *use* textiles in many different ways. We wear them, we dry our dishes with them, we put them on our beds and tables and floors and hang them at our windows and on our walls as decorations. Yet seldom do we stop to really look at them—to notice how they're made and what they're made of. And seldom do we realize that besides being useful, some of the textiles we see every day are important cultural artifacts.

Down through the ages textiles have been a primary means of satisfying two basic human needs: the need for clothing and the need for shelter. Just try to imagine a world without textiles and you will realize that textiles are essential to life as we know it. Many museums, including the Smithsonian Institution, acknowledge the importance of textiles as cultural artifacts; museums collect and preserve textiles and find interesting ways to display them to the public.

Museums collect textiles, then, not only because textiles are beautiful but also because they are interesting from an anthropological and a historical point of view. Like other products of technology, textiles often have fascinating stories to tell about the people who made and used them. As a cultural artifact, each textile on exhibition here at the Smithsonian can be "read" for insight into the culture that produced it.

Textiles Tell Stories: The "Age of Homespun" and Other Tales

Consider, for example, the piece of cloth shown in *figure 1*. This piece of hand-loomed, plaid linen is from the Age of Homespun—a period of American history lasting from colonial times up until the Civil War.

During the Age of Homespun many of the necessities of life—including textiles—were made in the home. This was especially true in remote rural areas, where practically every farm had its own plot of flax (as well as its own flock of sheep) and there was a wool wheel and a flax wheel in every kitchen.

The making of cloth for clothing and bedding demanded an enormous amount of time and energy from different family members in rural households during the Age of Homespun. The men raised the flax and wool and prepared it for spinning; the women and children spun the fibers into yarn; and both men and women wove the yarn into cloth. Each one of the steps of textile making, from growing the wool or flax to sewing together the finished product, was done by hand with the help of various implements, some of which are pictured on these pages of *Art to Zoo*. Dyes were derived from natural sources, such as hickory nut hulls, onion skins, and the leaves of the indigo plant. The actual colors of our textile sample illustrated in *figure 1* (brown, white, and blue) are typical of the lovely soft hues obtained from natural dyes. What we have in this particular textile, then, is a cultural artifact from a period of American history when the rural, backwoods family lived simply and had little time for fancy embellishments.

In your school classroom, you and your students can benefit enormously from the storytelling potential of textiles from different times and places. Textiles can be used to enliven and enrich many areas of your curriculum as you will soon see. But before we discuss how to use textiles in your classroom, let's take a look at the *early history of textiles* and the various *steps involved in making a piece of cloth*.

Textiles Through Time: Early History

Owing to a lack of archeological evidence, little is known for sure about how textiles were made and used in ancient times. Moths, mildew, dampness, and chemicals in the soil all have taken an enormous toll on the plant and animal fibers from which early textiles were made, leaving us with very little solid evidence about how textiles first came to be and how they were developed over time.

It is generally agreed, however, that Stone Age peoples wove nets, baskets, mats, and belts out of reeds, grasses, and strips of animal hides—and this led eventually to the creation of fabrics to substitute for the animal skins that had served as human clothing. We can also assume that in time people began to use textiles such as rugs and blankets to line drafty dwellings and to cover dirt and stone floors; and we know that textiles in the form of flags, banners, and nonutilitarian items of clothing (such as ceremonial robes) eventually became the medium for bearing symbols of state and leadership.

Ancient textiles were made mostly of linen, cotton, wool, and silk. The use of linen began in Egypt, the use of cotton in India, the use of silk in China, and the use of wool in Central Asia. As civilizations developed, the people, the fibers, and the different methods invented for turning the fibers into cloth traveled to different parts of the world, with the result that many ideas were exchanged among various peoples

in regard to spinning, weaving, and other aspects of textile making. This exchange of ideas led to a great many improvements and innovations in all the various aspects of textile making over time. Some of the most important of these developments are explained in the next section of this article.

Textiles From Scratch: Fiber to Cloth

Traditionally the making of a piece of cloth involved first the selection of an appropriate *natural fiber*. (For a discussion of natural fibers, *see* the article on *page 4*.) The fiber was then harvested and made ready for *spinning* into thread or yarn. After spinning, the yarn was usually either *knitted* or *woven* into cloth.

Spinning, weaving, and knitting, then, are three important processes of textile making for your students to know about.

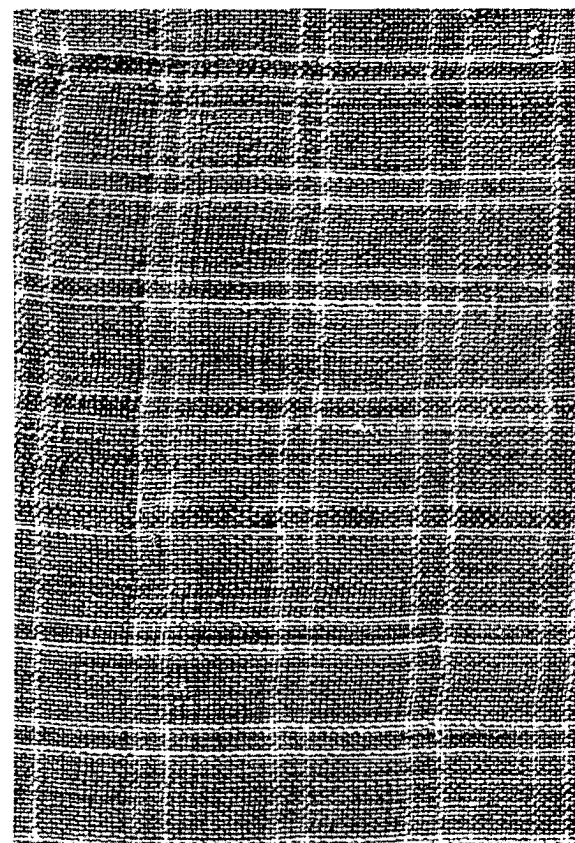


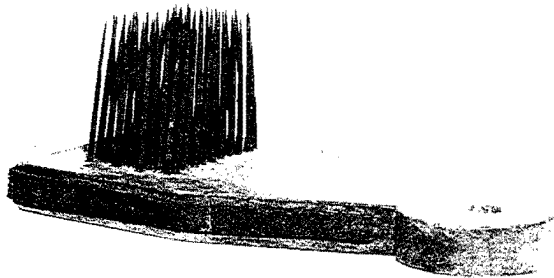
figure 1. Hand-loomed plaid linen from the "Age of Homespun"

Spinning Whether accomplished by hand or by machine, spinning is the simple process of drawing out a few fibers, twisting them together into a continuous length, and winding them into a ball or onto a stick. Just when people discovered how to do this is not known—but we have archeological evidence to suggest that spinning was practiced in Europe at least as early as 20,000 years ago.

In the early days of spinning, the drawing out and twisting of the fibers was done by hand; later the winding stick itself was modified by the addition of a weight, or whorl, at its lower end (which gave increased momentum). Thus modified the winding stick became the spinning implement, or *hand spindle*. Many variations on the size and design of the hand spindle can be found in different cultures.

The *spinning wheel*, invented in India between A.D. 500 and 1000, was simply a mechanical way of turning the spindle. The person spinning turned the wheel, which was powered by a driving belt that turned the spindle. The actual drawing, twisting, and winding of the yarn was accomplished in the same way as with a hand spindle. But the wheel power gave a steadier rate

continued on page 2



Hackle

of speed and left both hands of the spinner free to manage the fibers.

By the 13th century, the spinning wheel had been introduced to Europe, where two centuries later a new and more complex type of wheel appeared. While the simpler spinning wheel remained popular to spin the shorter fibers of wool and cotton, the newer type of wheel, which provided continuous spinning, was especially successful for the longer flax fibers. Both the simpler "wool wheel" and the more complex "flax wheel" came to America with the early colonists.

By the mid-17th century, the demand for cloth had grown tremendously throughout Europe, and in many countries weaving was done professionally rather than in every home as previously. Improved weaving techniques prompted better spinning methods. Inventions and improvements followed one after the other in the 18th century. In the fifty-five years from 1770 to 1825, spinning production went from one spinner with one wheel and spindle who could produce four skeins in a day, to one spinner with one spinning jack having 140 spindles, which could produce 700 skeins in a day! One factor enabling this increase in production was the change from hand-powered to steam-powered spinning machines in 1790.

Weaving For many thousands of years, weaving has been a versatile and efficient way of making cloth. Most sources mark the emergence of weaving in Paleolithic times, when it is thought that people wove mats, baskets, and even some forms of shelter. Today the basic principle of weaving is still the same: Woven textiles are made by *interlacing a lengthwise set of material with a crosswise set of material*. The lengthwise element is called the *warp*, and the crosswise element is called the *weft* (see figure 2).

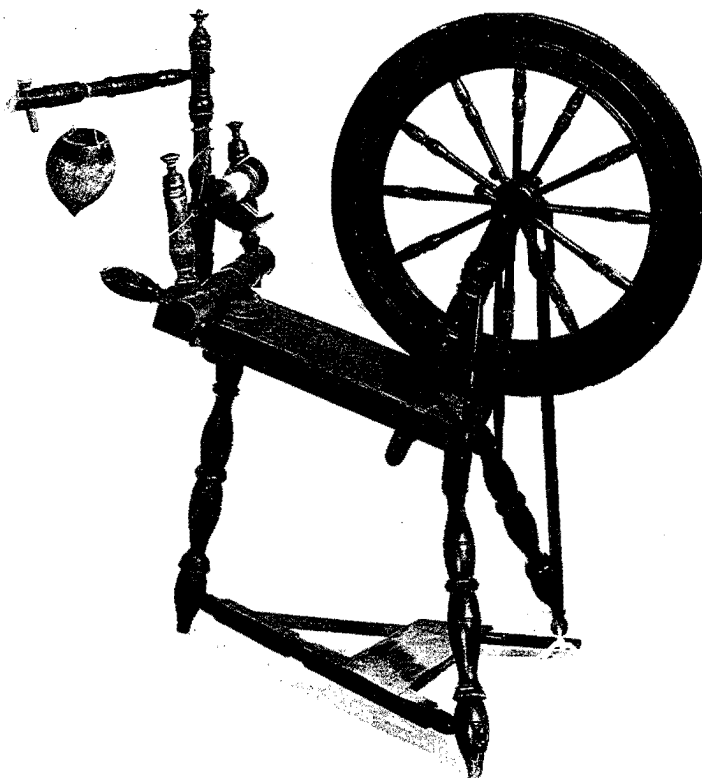
At first, when fairly rigid materials such as rushes or reeds were used for the warp, weaving was accomplished by simple means. The rushes or reeds were laid out on the ground and more limber vegetable fibers were interlaced over and under them. Later, when weavers began to choose more flexible materials for the warp, they needed some device to hold the warp taut during the weaving process. This need gave rise to the invention of the *loom*.

A loom is essentially a frame (or device) designed to keep the warp ends firmly anchored. Many different types of looms have been invented over the centuries.

The earliest loom weaving was done by hand. The warp ends were raised with the fingers and each strand of weft was interlaced with the warp individually. For this slow and tedious operation, a needle-like tool (or shuttle) was often used. The most significant advance in the performance of this task came with the introduction of foot-operated devices for raising or lowering certain warp ends while leaving others in place, thus creating a space between the raised or lowered yarns and those that remained stationary. This space or opening was called the *shed*. Now it was possible to pass the weft material through the open shed across the full breadth of the warp instead of interweaving it strand by strand.

More improvements in looms throughout the centuries increased the weaver's efficiency, reduced chances of mechanical error, and shortened the man-hours needed to weave even intricate cloths. Today machine-woven fabrics are made on power looms. Whereas once a hand-weaver could make possibly one yard of cloth per day, a modern high-speed loom can produce many times that amount.

Knitting Knitting is a way of making a fabric by intermeshing loops of yarn (see figure 3) by hand or machine using two needles or hooks. A special quality of knitted fabrics is their *elasticity*—which means that garments made from knitted cloth generally have more "give" and fit more snugly than woven garments. One advantage of hand knitting, as opposed to hand weaving, is that it can be practiced anywhere, without a lot of tools or the tedious preparation of equipment.



Flax wheel

At what date knitting began no one knows for sure, but archeological evidence from around the world indicates that it is a very old craft. Some of the earliest of this evidence includes fragments of knitted cloth excavated at Dura-Europia (on the Euphrates River) dating to around 256 A.D. and knitted socks from Coptic Egypt dating to the 4th and 5th centuries A.D. It is generally believed that knitting originated on the Arabian peninsula and spread from there both east and west, carried by Arab traders to the ports they visited.

Although hand knitting nowadays is done almost solely by women, we know that such has not always been the case. For centuries, sailors from many countries knitted their own sweaters and socks; and in medieval Europe, magnificent hand-knotted garments were made by men working in craft guilds. In fact, it was not until the end of the 19th century that knitting became almost exclusively a female craft in most parts of the world. Today the factory-knitted garments we buy in the store are mass-produced by machine; however, many people still knit things by hand.

Loose Ends: Looking at Textiles as Cultural Artifacts

Once your students have become familiar with the steps involved in making a piece of cloth from scratch, and once they have done the "fiber activities" suggested on page 4, they will be ready to look at textiles as cultural artifacts.

Looking at a textile as a cultural artifact involves first of all careful examination of the fabric, either at first hand or in a good color picture, and describing in words its *color*, then *how it was made* (by hand or by machine; by weaving, knitting, or some other means), what *fibers* it is made from, and its *pattern* or *design*. By practicing such analysis with a number of different textiles, your students will learn to identify the elements that distinguish one piece of cloth from another. Then they can begin to discern, in at least some of the textiles they see, clues to the cultures that produced those particular textiles. A number of textiles—from different parts of the world—are shown in the photoessay on page 3 of this issue of *Art to Zoo*. What stories do *these* cultural artifacts have to tell about the people who made and used them?

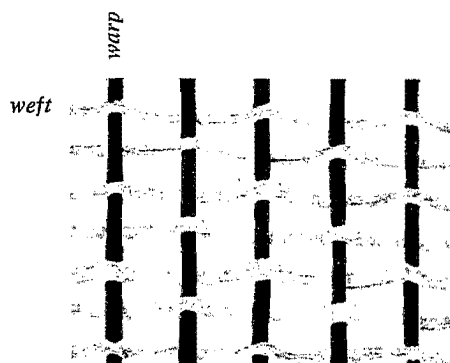


figure 2. Weaving

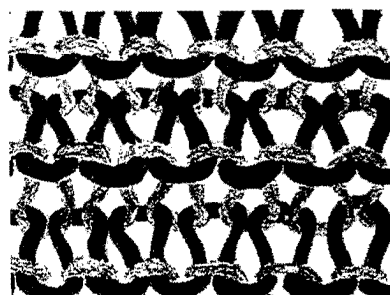


figure 3. Knitting

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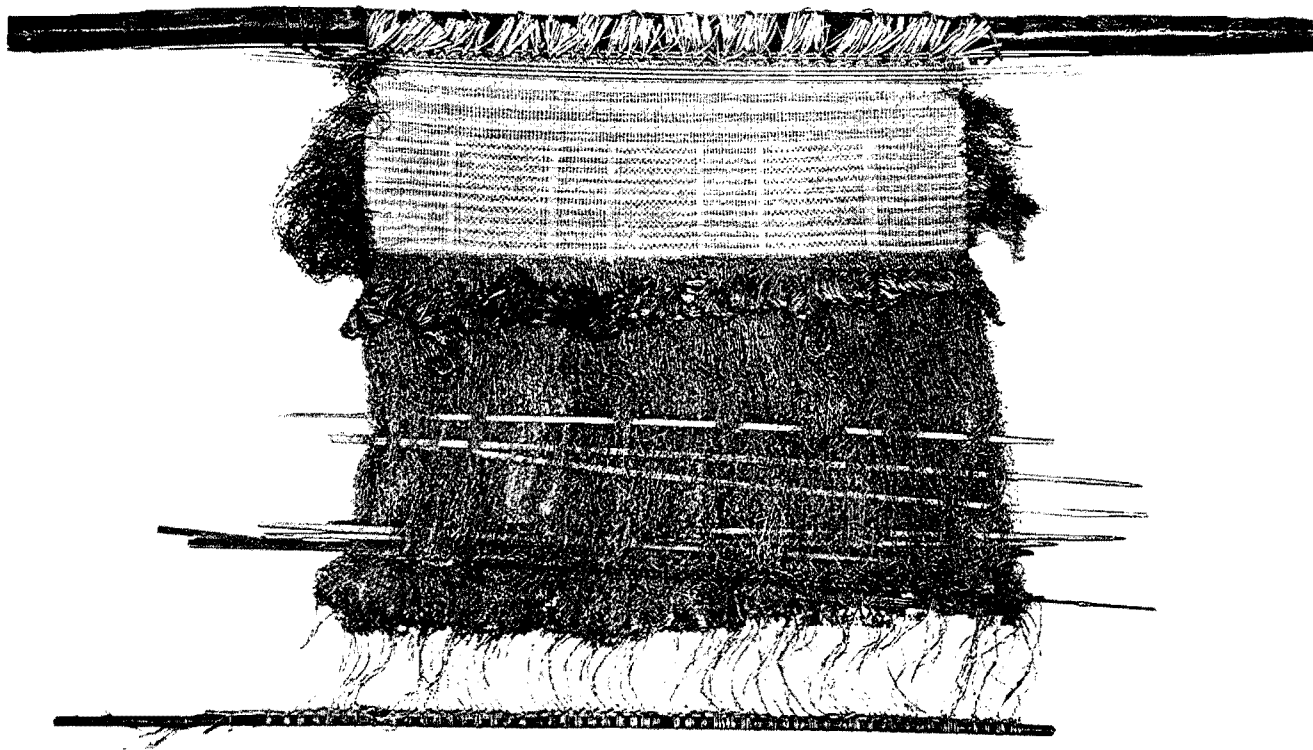
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EXOTIC TEXTILES from FAR-FLUNG PLACES

As Recently Seen in the Smithsonian's National Museum of Natural History

Raffia Cloth—the Congo Throughout much of Central Africa, as well as in other tropical regions of the world where the raffia palm grows wild, the predominant textile for centuries was woven raffia cloth.

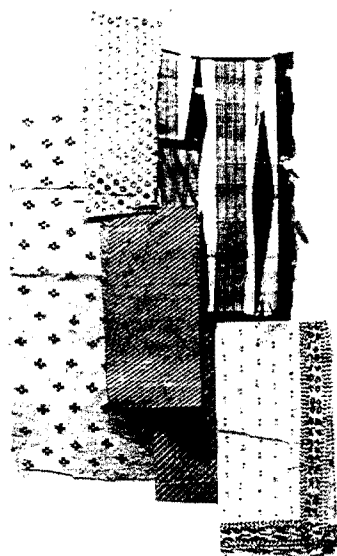
Among the settled farming peoples of Central Africa, raffia cloth was made by men. The men would strip the bast from the young palm leaves and beat it to separate the fibers into threads. Then they would string the warp threads on simple looms and attach one or more hand-operated heddles *as shown here*. The finished cloth was made into clothing and also fringed squares, which were used as money to pay tributes, fines, and initiation fees.



Feather Cape—Hawaii The people of Hawaii used to make splendid feather garments for their rulers to wear on special occasions. The brilliantly colored cloaks and capes were made from the feathers of exotic birds that lived in remote mountain areas. A special caste of venturesome men, who knew the habits of the birds and the seasons when the plumage was at its best, were responsible for capturing the birds alive and plucking a few feathers from each one. (The birds were immediately released—to grow more feathers!)

Once plucked, the individual feathers were tied to a bark fiber net grounding. This was, as you can imagine, a time-consuming process requiring great patience and skill. As many as 400,000 feathers might be used for a single cloak, which could take over a hundred years to complete!

The standard design motifs for both capes and cloaks were triangles and crescents, and the usual colors were yellow and red. The feather cape *shown here* has a design of yellow crescents and a yellow border on a red background.

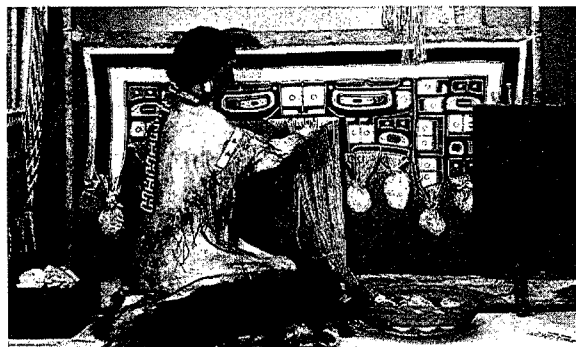


HAWAIIAN TAPA
This tapa cloth is of bark. Hawaiian tapa design.
This tapa cloth is of bark. Hawaiian tapa design.
This tapa cloth is of bark. Hawaiian tapa design.

Tapa (Barkcloth)—Polynesia Tapa, a fabric made from pounded bark, has been produced for centuries in many tropical regions of the world but nowhere with such artistry as in Polynesia. Working in groups to the rhythm of songs, Polynesian women traditionally spent much of their time pounding out the bark for tapa, which was used mostly for clothing such as *worn by the man in the picture shown above*.

In Polynesia as elsewhere, the preferred material for tapa was the fibrous inner bark (bast) of the paper mulberry tree. The bark was stripped from the tree in one piece, and its outer layer was scraped away to expose the bast; then the bast was soaked and beaten into cloth. The finished cloth was decorated by painting, stamping, stenciling, or some other method.

Tapa still is made in Samoa and Tonga but has been replaced by imported woven textiles in most other Polynesian islands.



Twined Woolen Blanket—Southern Alaska Chilkat women of the Tlingit tribe of Southern Alaska traditionally wove fine blankets of mountain-goat wool. The stylized designs of these blankets represented the family crests of different Tlingit clans.

In the museum diorama *pictured here*, a woman is making a Chilkat blanket on a horizontal, warp-weighted loom. To the woman's right is a pattern board from which she is copying the blanket's design. The warp threads of the blanket, which have cores of cedar bark twine, hang from a horizontal bar with their lower ends tied in bladder bags to keep them clean. The woman will interlace each weft strand with the warp by hand.

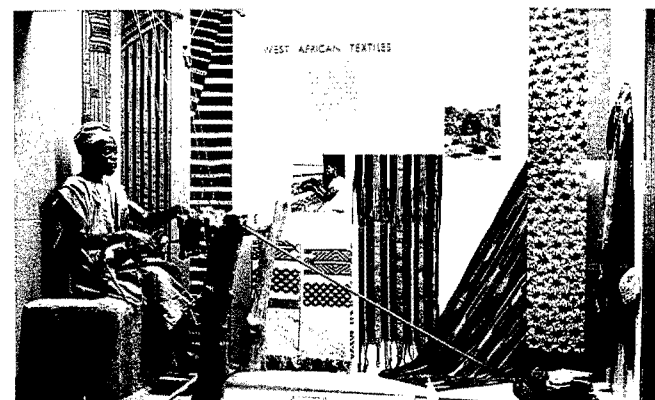
Elaborately designed and skillfully executed, Chilkat blankets often required as much as half a year to complete. Very few of the blankets still exist, because the Tlingit often cremated them with their dead chiefs.

Strip Weaving—West Africa In many traditional West African societies, textiles made from narrow strips of cloth have a special role to play.

West African men use lightweight horizontal looms like the one in the museum diorama *shown here* to produce long narrow fabrics, which are sewn together and made into a large variety of everyday items—including purses, blankets, and shirts, as well as the traditional West African garment or toga, such as *worn by the man in the picture at left*.

West African strip-woven fabrics are patterned in a variety of ways as you can see from the samples shown in the background of this photograph. They may be painted, tie-dyed, or embroidered; or stripes may be woven right into the fabric.

Although cloth woven in strips on hand looms can be found in other parts of the world besides West Africa, it is only in West Africa that such *narrow* strips and so *many* strips are used. The width of the strip usually ranges from between 3½ to 10 inches and as many as twenty-four strips may be used to make a single toga.



Plant and Animal Fibers Used in Making Cloth

Today cloth is made from both natural and man-made fibers—although in the past only natural fibers were used. The most popular natural fibers used in making cloth have always been flax, cotton, wool, and silk. Here are some things for your students to remember about each one:



Flax flower with stem

Flax

Linen thread is made from the stem fibers of a blue-flowered plant called flax. The use of flax as a textile fiber dates back more than 7,000 years to the early Egyptians, who found flax growing wild on the banks of the Nile.

Eventually, as flax became domesticated, its use spread to many parts of the world. Today Russia is the world's biggest flax producer; but Belgium and Ireland also grow large amounts. The largest flax-growing area in the United States is in Oregon.

In harvesting, flax is pulled straight up out of the ground so as to maintain the full undamaged length of the fiber right down to the root. Once harvested, flax is dried in the field and the seeds for replanting it are gathered. The dried plant is then soaked in large tanks. During this soaking process (called *retting*), the woody core and gums of the plant decompose, loosening the fiber from the other vegetable matter. After a period of between four days and three weeks, the retted flax is dried. Then it is *hackled* (combed) until cleaned of all waste, before being carded and then spun into yarn on a *flax wheel*. Flax makes very strong, highly absorbent cloth, which is cool to wear.

To find out what the flax plant and its stem fibers look like, you and your students can grow flax in your classroom. The seeds can be obtained through many seed catalogs and from hardware stores.



Cotton boll

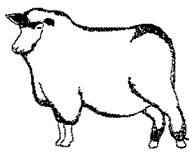
Cotton

Cotton, like flax, is a vegetable fiber—but with very different properties: Whereas flax fibers are long and strong, cotton fibers are short and fluffy. Cotton is a seed fiber that comes from the seed pod (called the boll) of the cotton flower.

Cotton is grown in many subtropical regions of the world, including India (where it originated), Central America, Egypt, West Africa, and the southern United States. After harvesting, it is sent in bales to a textile mill, where the seeds and heavy impurities are removed by a machine called a *picker*. Finally the cotton is carded (to untangle the fibers) before being spun into yarn.

Although cotton cloth soils and crushes easily, it is cool to wear and easy to launder. Strong soap can be used in laundering it, and it can even be boiled if necessary—which makes cotton the most hygienic of all the natural fibers.

Like flax, cotton plants can be grown successfully in your classroom, although the seeds may be harder to find. You might try your regional farm council, or again, your local hardware store.



Sheep

Wool

Wool is fine fibers of the hair that grows on sheep and certain other animals. Its use as a textile fiber began about 6,000 years ago in Central Asia and eventually spread to many other parts of the world. Today the world's main wool-raising regions are Australia, New Zealand, South Africa, and certain parts of South America.

After being shorn from the sheep, the wool is scoured in hot-water-filled vats to remove not only dirt and other impurities but also a heavy coating of waxy grease called lanolin. When thoroughly cleaned of dirt and lanolin, the wool is pressed through wringers and sent on a moving belt through a long oven, where it is fluffed and dried. Once out of the oven, the wool is ready to be carded and spun into yarn.

Wool fibers are flexible as well as strong and are not easily broken by being bent. Because they are curly and fine and quite scaly, they cling loosely together to make a yarn that is relatively thick and fuzzy and therefore warm.

Lambswool, used by dancers to pad their shoes, can be bought from your nearby dance supply store. The wool comes in small boxes, and each student can pull off a small tuft to examine and spin between the fingers.



Silkworm

Silk

Silk is a continuous filament of protein substances produced by the silkworm as it spins its cocoon. There are several species of silkworm; but the species that produces most of the silk for the textile industry is the *Bombyx mori*, which originated in China and feeds on the leaves of the mulberry tree. The Chinese were the first to develop silk as a textile—and because the mulberry tree requires a special climate, the Chinese were able to keep the silk monopoly to themselves for thousands of years.

Sericulture—or the cultivation of silkworms to produce silk—is a delicate process requiring a lot of patience and care. After the silkworm has spun its

cocoon (over an approximately 10-day period), the cocoon is softened in hot water and the filaments of silk are separated out and wound on a reel. Then the individual filaments are spun together to produce the yarn or thread.

Silk is a long and slippery fiber, which makes a cloth that is at once fragile and very beautiful. Silk has always been considered a luxury item and in many societies is worn as a status symbol.

Silkworms can be raised successfully in your classroom—if you have a mulberry tree nearby! Many biological supply houses have silkworm eggs for sale. (One vivid memory from my own childhood involves some silkworms I had when I was nine years old. The only mulberry tree in our town was on the lawn of the county courthouse, so every evening after dark my father and I would have to drive down to the courthouse and get a few leaves from that tree in order to keep my silkworms from starving to death!)



Fiber Activities: A Closer Look

One good way for your students to find out more about natural fibers and their properties is by looking at a sample of each fiber through the lens of a **microscope** or a **magnifying glass**. In this way *each child can see for himself* the characteristics that make one fiber different from another. *Have the children make labeled drawings* of each fiber and think of several adjectives to describe each one. Then ask the children to think about why the different fibers, when spun, result in very different types of yarns. For example, why would a thick and “catchy” fiber like wool result in a yarn that is warm and fluffy . . . and why would a long and slippery fiber like silk result in a yarn that is slick and fragile?

Another good way for your students to find out more about natural fibers and their properties is by taking a closer look at some of the textiles we see every day. As a *homework assignment*, have the children look around their houses for examples of textiles made from cotton, linen, wool, and silk; and *have each child make a list identifying the items he or she finds*. The following day, in the school classroom, the children should be prepared to discuss why it is that certain types of natural fibers are used for certain types of textiles. For example, **why is linen (but never wool) used for tablecloths and napkins?** and why is wool the choice above all other natural fibers for cold-weather outer garments? In other words, how do the properties of a fiber determine to a large extent what a textile made from that fiber can be used for?

Drawings by Susan Whitmore

MUSEUM IDEA

A how-to-do kit on classroom museums, containing slides, teacher's guide, and taped narration, is available on loan from this office. For details about this kit, called the *Museum Idea*, write to Ann Bay, A&I Building, Room 1163, Smithsonian Institution, Washington, D.C. 20560.



Sensing the wonder of wool as it comes off the sheep (photograph courtesy of Cooper-Hewitt Museum)

Art to Zoo brings news from the Smithsonian Institution to teachers of grades three through eight. The purpose is to help you use museums, parks, libraries, zoos, and many other resources within your community to open up learning opportunities for your students.

Our reason for producing a publication dedicated to *promoting the use of community resources among students and teachers nationally* stems from a fundamental belief, shared by all of us here at the Smithsonian, in the power of objects. Working as we do with a vast collection of national treasures that literally contains the spectrum from “art” to “zoo,” we believe that objects (be they works of art, natural history specimens, historical artifacts, or live animals) have a tremendous power to educate. We maintain that it is equally important for students to learn to use objects as research tools as it is for them to learn to use words and numbers—and you can find objects close at hand, by drawing on the resources of your own community.

Our idea, then, in producing *Art to Zoo* is to share with you—and you with us—methods of working with students and objects that Smithsonian education staff members have found successful. This is the first of four issues to be published this school year.

ART TO ZOO

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PULL-OUT PAGE



Soft Sculpture Magic

Mention the word “sculpture” and most people think of carvings, and statues, and such. But there’s a new kind of sculpture that you may not have heard of, which is different because it is *soft*.

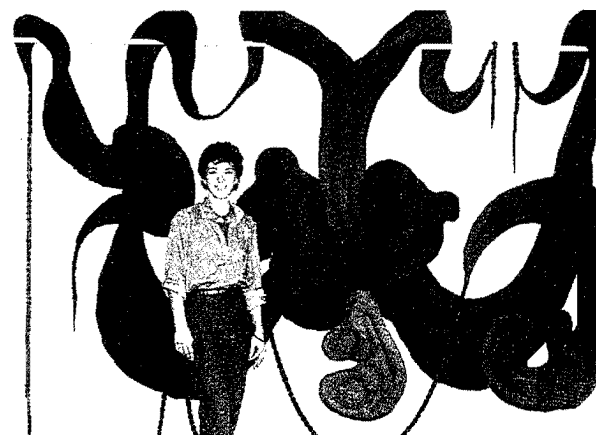
The orange, red, and purple wall hanging in this photograph is one example of this new kind of sculpture. It was made by a Washington, D.C., artist named CAROL KURTZ, who uses hand-woven fabrics and a lot of imagination to create brightly colored soft sculpture forms that make you want to stop, and look, and look again—because they are so beautiful.

Recently we visited Carol Kurtz in her artist’s studio, a big room with many windows to let in the light, and asked her to explain how she creates this special kind of soft sculpture magic. “After coming up with a design for a sculpture, I weave the fabric and cut it into the desired shapes,” she told us. “Then I stuff the shapes with foam filling and sew them together on my sewing machine.”

We saw that her studio contained among other things two big looms and a cupboard filled with skein upon skein of yarn in many different colors. There was also a drafting table where she sketches the designs for her sculptures and makes patterns from the sketches.

“Finding the right yarn, in the right color, for each sculpture is very important,” she told us. “Sometimes I buy my yarn already dyed, but often I dye it myself in a big kettle on my kitchen stove. . . . As to type of yarn, I generally use wool because I like the way it takes and holds the dye and the way its fibers fluff up when washed to create a lovely, soft texture.” Sometimes she uses cotton next to wool to create a contrast in texture.

The ideas for her sculptures often come from her dreams—and many of the pieces have a dreamlike, playful quality that is reflected in the titles she has given them. Although these titles may seem at first not to make any sense, they really *do* make sense if you think about them. Each one is a mixture of syllables from words that relate to the meaning of the piece. For example, can you guess what these titles mean: “Mommer-fly” . . . “Fanimation of Loverbrace” . . . “Two Threme of Wolvomen”?



Artist Carol Kurtz, with an example of her work

Fancy Stitchery



Among a lot of other things to see here at the Smithsonian Institution are many beautiful textiles from around the world.

One thing that makes many of these textiles especially interesting is the way they are decorated with a kind of fancy stitchery called *embroidery*. The art of embroidery has been practiced by both men and women in various parts of the world for centuries. And although the stitches used and the design traditions followed for this ancient craft vary from place to place, the basic idea of *using a needle threaded with yarn to stitch a design onto a piece of cloth* is always the same wherever you go. Here are some particularly fine examples of embroidered textiles from the collections of three different Smithsonian museums.

Sampler, Colonial North America: Silk yarn on linen cloth

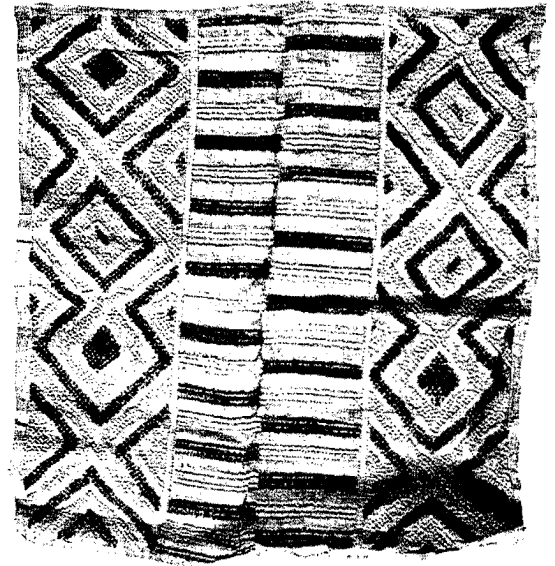
(Photograph courtesy of National Museum of History and Technology)

“Better it is to be of an humble Spirit with the lowly than to divide the Spoil with the proud” is the message on this sampler embroidered by an eleven-year-old girl from colonial New England.

In early America, embroidery was taught to girls from a young age; and many girls made samplers to demonstrate their skill. The design on this sampler is quite typical in the things that it contains. Can you find numbers, letters, flowers, the date, and the maker’s name?

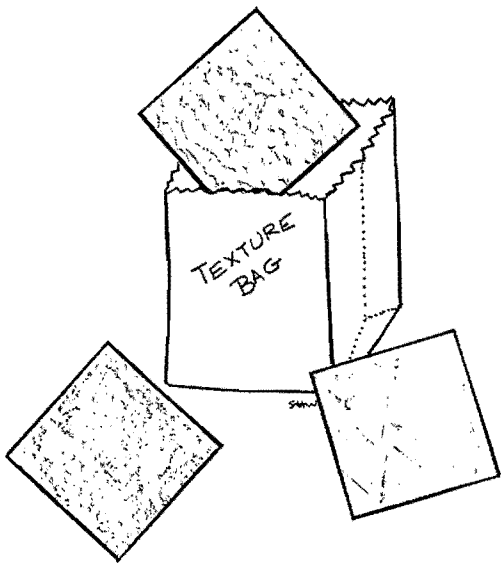
Pile Cloth, the Congo: Raffia yarn on raffia cloth (Photograph courtesy of National Museum of Natural History)

Women of the Kasai area of the African Congo embroider designs on raffia cloth, which men have woven from raffia palm fibers. For the particular kind of embroidery shown here—it is called *pile work*—the loops of the embroidery stitches are left long and then cut on one side of the cloth. The result is a rich velvety fabric worn only on special occasions.



Rank Badge, China, 19th century: Silk and metallic yarn on silk cloth (Photograph courtesy of Cooper-Hewitt Museum, the Smithsonian’s National Museum of Design)

Many years ago in China, embroidered or woven “rank badges” were sewn to the long, black coats worn by official persons. Each one of these badges featured a bird or an animal design that would tell you just by looking the rank of its wearer. The wild goose on this embroidered rank badge signified the rank of a civil official of either the fourth or the eighth order.



It's in the Bag

Match the feel with the sight
by SUSAN WHITMORE

When you touch the surface of an object—*any* object—you are feeling its texture. Everything in the entire world has texture, including your skin, your hair, and everyday objects made of wood, cotton, silk, metal, brick, stone, and glass.

Besides touching textures, you can also *see* them. By using your imagination, you can see how a texture would feel if you touched it. To find out how this works, why not make yourself a texture bag?

For this project you will need scissors and some glue, a paper bag, some cardboard, and eight or so pieces of cloth having different, interesting textures. Here is what you do:

From each piece of cloth, cut *two* 2"x2" squares. Then glue each square onto one side of its own piece of 2"x2" cardboard. This will

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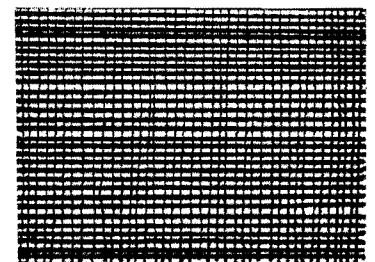
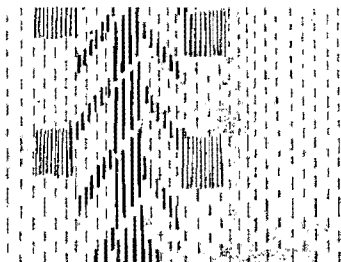
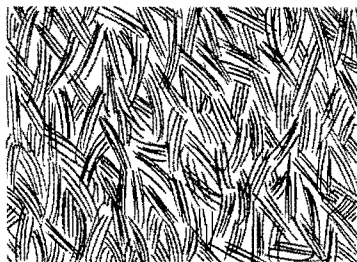
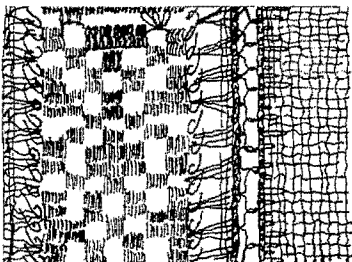
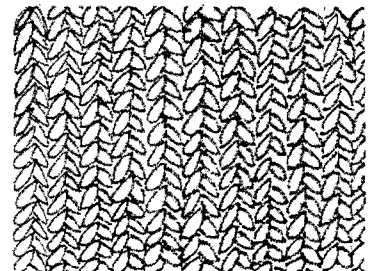
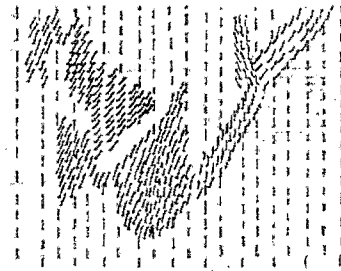
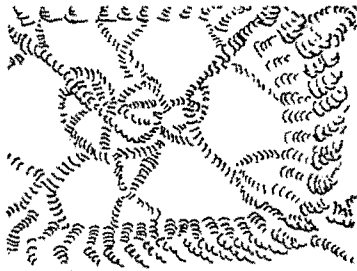
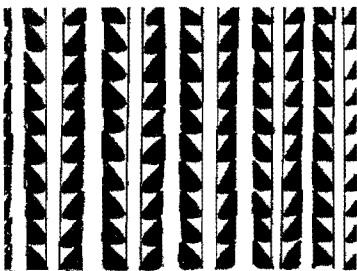
Textile Squares

by SUSAN WHITMORE

Each one of the eight squares below is printed **front and back** with a close-up drawing of a textile. When you touch these drawings, they all feel the same—as flat as the paper they are printed on. However, when you look at them, you can see that *each one has a different texture*. You can see that some are hard, some are soft; some are smooth, some are rough; some are nubby, some are flat . . . and so forth.

Now cut the eight squares and look at them again. In all you have sixteen different textures, one on front and one on back of each square. Choose let's say five of these textures and line them up, from smoothest to roughest and from softest to hardest. Then give the squares to a friend to arrange as he or she sees fit using the same hard/soft, smooth/rough categories that you used.

Now, compare your friend's arrangements with the ones you made. Did the two of you see the textures in the same way?



give you two matching sets of texture squares. Put one of the sets in the bag, and spread the other set out in front of you.

Now reach into the bag (*without looking!*) and touch one of the squares. Can you see in your mind's eye the texture of the square you are touching? Look at the squares in front of you and pick up the one that you think matches the square you are touching. When you have found the right mate for this first square, go on and match another pair of squares . . . and another . . . and another . . . until every square in the bag has been matched up.

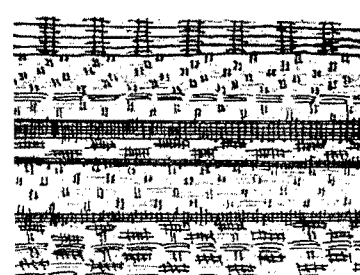
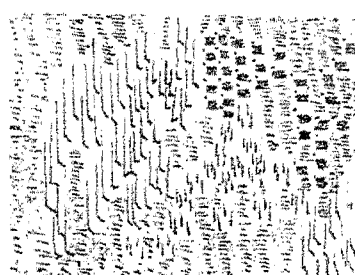
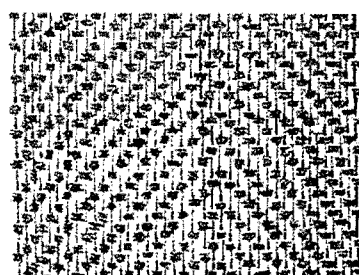
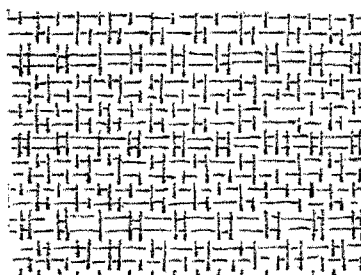
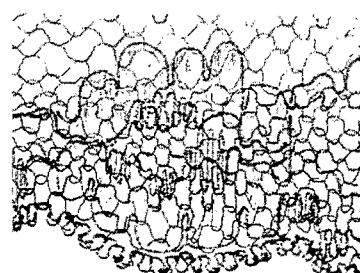
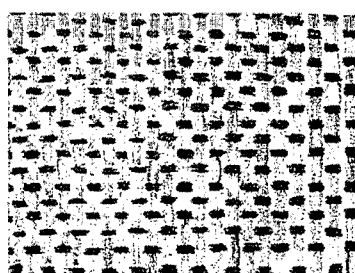
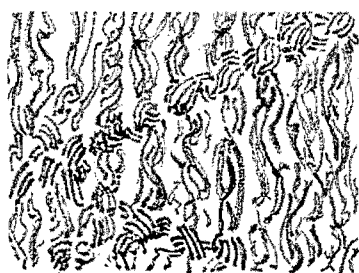
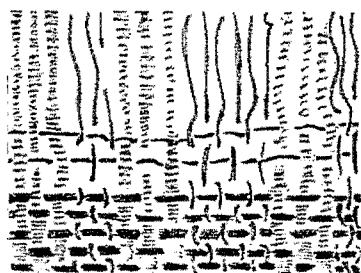
You can also play this game in reverse by *first looking* at one of the squares in front of you and then reaching into the bag (*without looking!*) and trying to find the right match. But either way you play, you will find that your ability to match the squares correctly will improve with practice. And as it does, you'll become much more aware of how things look *and feel*—not only “in the bag” but outside too—in the entire world around you.

Weaving on a Card Loom

Write to us for free instructions

Weaving on a card loom is fun and easy to do. From string, feathers, ribbon, and pieces of lace, you can make things like placemats, pot-holders, and fancy wall hangings to keep for yourself or give to your family and friends. Free from *Art to Zoo* you can have your own set of instructions. Just write to *Art to Zoo* in care of Susan Whitmore, A&I Building, Room 1163, Smithsonian Institution, Washington, D.C. 20560.

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