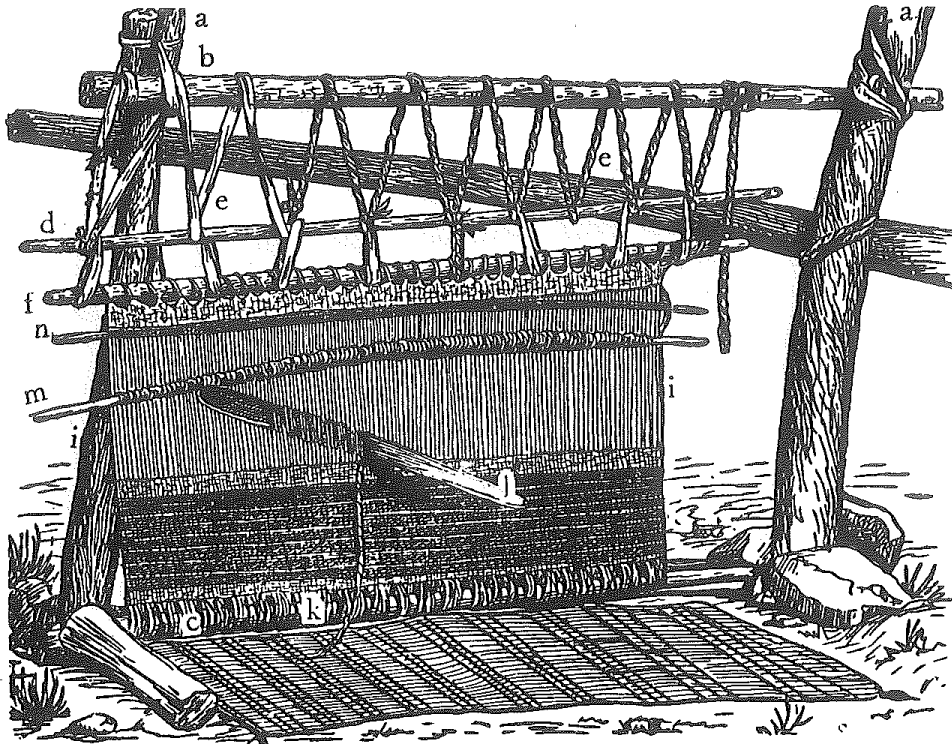


DENVER ART MUSEUM

1300 LOGAN STREET, DENVER, COLORADO

DEPARTMENT OF INDIAN ART

FREDERIC H. DOUGLAS, CURATOR



THE NAVAHO LOOM

Bureau of American Ethnology

LEAFLET No. 3—1930

4th Printing, of 2nd Edition, March, 1945

Navaho Spinning, Dyeing and Weaving

1. **THE NAVAHO INDIANS**, the most important Indian weavers, belong to the Athabaskan stock, number about 45,000, and live on a large reservation in northeastern Arizona and adjoining parts of New Mexico and Utah.

2. **SHEEP** were first obtained from the Spanish and later from the American Government. The care of the now immense flocks is the principal activity of the tribe.

3. **SHEARING** is done in the fall and spring, usually by the men. Modern steel shearing implements are used.

4. **CLEANING**. The fleece is beaten or shaken to remove loose dirt. Burrs and lumps of matted wool are picked out. The wool is then washed with water and soapsuds from the amole or soapweed. After washing it is dried in the sun.

5. **CARDING**. Before spinning is possible the fibres must be untangled and all made to run in more or less the same direction. This is done by carding or combing. The cards are thin rectangular boards, about 4 x 7 inches, set with fine wire teeth and with handles on one side. They look like crude hair brushes. A handful of washed wool is laid on one card and the other is pulled across it a number of times until the fibres are straightened out. The fluffy masses resulting are made into a loose roll 1 to 2 inches in diameter which is rolled into a ball as the work proceeds.

6. **SPINNING**. This is done on a spindle, a slim, round, slightly tapering stick 1 to 2 feet in length, with one end quite sharply pointed and having slipped over it a thin wooden disk 2 to 5 inches across. The disk is fixed several inches above the butt. It acts as a fly wheel and also keeps the wool on the spindle.

To spin, the woman, seated on the ground, takes one end of the roll of combed fleece in her left hand and holds it against the point of the spindle, rapidly revolved by the right hand, until it catches and twists spirally down the spindle shaft, the butt of which rests on the ground. As the loose roll twists around the spindle it reduces rapidly in size. The reduction is increased by drawing the thread away from the spindle with fairly hard jerks. When a section has been brought to a quite small diameter it is allowed to roll up on the spindle shaft, after which a fresh arm's length is drawn out for spinning. When the spindle is full the yarn is removed and rolled into a ball.

The yarn produced by the first spinning is very coarse, lumpy and uneven, so that it has to be respun a number of times before it is fit for weaving. The finest and hardest yarn, used for the warp, must be spun as many as 6 times.

7. **DYEING** is usually done after spinning. With 2 exceptions the yarn is boiled in an earthenware or metal container in water containing the dye and the mordant. Wool to be dyed with indigo is soaked in a cold solution. Orange was produced by rubbing the wool with a paste made of canaigue root, *Rumex hymenosepalum*.

8. **DYES**. The old native colors were naturally colored white, grey and dark brown wools; yellow from the flowers of the rabbit-weed, *Bigelovia graveolens*; a pale reddish tan from a mixture of the barks of alder, *Alnus incana*, and mountain mahogany, *Cerocarpus parvifolius*; and black from a mixture of sumac twigs and leaves, *Rhus aromatica*, yellow ochre and pinyon gum, *Pinus edulis*. From the whites in Mexico came blue indigo and several shades of bright red cochineal. The red dye stuff was not used, but ravelings of already dyed cloth, the celebrated bayeta. There were also green, blue and possibly yellow bayeta, the blue being indigo and the yellow—pure and mixed with the blue for green—from fustic. All shades have been obtained with aniline dyes since about 1875. Since about 1920 there has been a revival of native vegetable dyes. Many shades, mostly rather pale, have resulted from this movement, but the processes are still so experimental that no definite information can be given. It is possible that a red was once made from red ochre, or perhaps yellow ochre which turns red with heat.

9. **MORDANTS** are substances which fix the dyes in the wool. Urine, crude alum or alunogen, and juniper ashes have been used.

(Single letters refer to the picture on the cover.)

10. **THE LOOM**. Two posts (a, a) are set solidly in the ground somewhat farther apart than the width of the blanket to be woven. Sometimes two young trees, or a tree and a post are used. Between the post are fixed two cross pieces (b, c) one on or very near the ground, and the other near the top of the posts. From the upper cross piece is hung a small pole called the yarn beam (d). It is held in place by a rope (e) wound spirally around the beam and the cross piece. By tightening or loosening this rope the yarn beam can be raised or lowered. When this solid framework is finished the weaver prepares the blanket frame. She lays on the ground two smooth, slim poles at a distance equal to the length of the projected blanket. They are kept fixed in position by two other poles temporarily fastened between their ends. The square thus formed is called the blanket frame. While it is still lying on the ground, the warp is placed upon it.

11. WARP STRINGING. The warp is a continuous strand of the finest yarn. The end is tied to one of the poles at the corner of the blanket frame and is strung on it in a series of long figure 8s. The stringing being finished, a heavy doubled cord is twined between the loops of the warp on the outside of the poles on which it has been wrapped. This spaces the warp loops evenly. By means of a spirally wound length of heavy yarn which passes under the twined cord between the loops of the warp and around a second pole laid against the first one, the warp is securely fastened to the inside of the second pole. The first pole is then withdrawn, leaving the warp tied on the inside of the blanket frame. Heavy cords are fastened between the poles on the outer edge of the warp. These are to form the edges of the finished blanket.

When this process is completed the side poles of the blanket frame are removed and the remaining two, with their connecting web of warp, are tied in the solid loom frame, the top pole (f) being tied to the yarn beam (d) and the lower to the bottom cross piece (c). The warp (i) is made tight by pulling on the spiral rope (e) which holds the top cross piece and the yarn beam together.

12. SHEDS. The two loops of the figure 8 in which the warp is strung are called sheds.

13. INSTALLATION OF HEDDLE. When the warp is firmly placed the weaver attaches a long slim rod (m) to every alternate strand with a series of loops so loosely tied that they can easily be slid up and down on the warp. This rod is the heddle or heald rod. Its purpose is described in paragraph 16.

14. SHED ROD. A second long slim rod (n) is placed between the pairs of warps forming the upper shed. It is not tied, but rests on the central crossing of the figure 8. This crossing is no longer visible because of the extreme tightness of the warp.

15. WEAVING TOOLS. The batten stick (l) is a piece of hard wood about 3 feet long, 3 inches wide and a half inch thick. It has slanting or rounded ends and thin blunt edges. The weaving fork is a short handled paddle with about 10 coarse teeth and a sharp point on the end of the handle. Slender wooden needles a foot or so long are used to thread in the last few courses of weft.

16. PLAIN WEAVING PROCESS. The weaver, almost always a woman, sits cross-legged in front of the loom on the ground or on a low pile of skins or blankets. Balls of wool and her tools are close by. The first step is to pull toward herself all or part of the heddle, thus drawing forward the alternate strands of the warp. Behind these threads she slips the batten stick and turns it at right angles with the warp, thus enlarging the opening made by pulling forward the heddle. Through the space so made she passes the first strand of weft. This is not pulled tight. With the weaving fork she pats it into place and then, turning the batten stick flatways, pounds the weft firmly against the end cord tied to the lower pole. The side cords are caught by the weft at the ends of each row.

The next step is to remove the batten and to pull the shed rod (n) down to the heddle (m). This forces the strands tied to the heddle backwards and the others forward. The batten is then inserted in this new opening, the reverse of the one first made by pulling out the heddle. The second strand is passed through this new opening, patted in place with the comb and pounded down on the first strand with the batten. This process is repeated until the blanket is finished.

When the finished work gets too high for the seated weaver to reach, the rope which fastens the blanket frame to the upper cross piece is loosened enough to bring the work within reach again. The fold of completed blanket thus made is strongly sewed to the lower frame work. After tightening the warp by pulling up the spiral rope the work continues.

When the blanket is so nearly finished that there is no longer room for the batten stick the weaver pokes the wool into place as best she can with the comb or with long wooden needles.

Ordinarily no shuttles are used, as the opening made by the batten stick is plenty big enough to allow the passage of small balls of yarn. But sometimes when a strip of color runs the full width of the blanket the yarn is wrapped lengthwise on a small piece of wood.

17. FANCY WEAVES. Diagonal, zigzag, diamond and double faced blankets are woven on the same loom, but with 2 to 4 heddle rods in use, including the shed rod. Description of these complicated weaves is beyond the scope of this leaflet.

18. BELT WEAVING. Belts, sashes, garters and head bands are woven on a much smaller loom which lacks the heavy solid frame. In these articles the warp is seen and the weft is invisible, the reverse of the condition in blankets. The patterns are made with the help of several heddles. Detailed descriptions of these processes are also too involved for inclusion in this leaflet.

19. DESIGN. So far as is known the first blankets had simple cross stripes. As time went on the stripes were varied with zigzags, connected and single diamonds, square frets or meanders, boxes and crosses. The spaces between these larger elements were likely to be filled with short narrow lines. The units making up these elements were square ended. After the introduction of machine made yarns in the seventies the designs began to run the length of the blankets instead of across. Small and highly elaborate zigzag patterns came in, often edged with a contrasting color. The square ended units were no longer seen as a rule. This style was the vogue in the eighties. In the next decade blanket design began to adopt the forms most familiar today. Borders appeared and have very largely persisted, as has the lengthwise direction of the pattern. As a rule the patterns consist of large and small elements, often not connected, on a background of contrasting color. Neutral; uninteresting colors have been in the majority. Since 1920 under the influence of the modern revival there has been a tendency, fortunately growing, to revert to the transverse patterns and the rich colors of the best period.

The designs are conceived in the mind of the maker, no pictured guide being used. The designs are without significance, though some of the more common have generally accepted names. In recent years a number of blankets have been made showing designs taken from the elaborate sand-paintings of the tribe. These are often called "sacred" or "ceremonial" blankets, but without justification. They are not used in ceremonies and are not, with a few exceptions, accurate copies of the sand-paintings.

20. DESIGN MAKING PROCESS. Designs are made by the placing in the warp of weft threads in the colors required by the pattern. Each of these separate threads is carried through the warp until a color change is indicated by the pattern plan. The ends of these wefts are not cut off, but are pulled out of the warp and left hanging. On the return course they are reintroduced into the warp as needed.

Compiled from the following sources by Jean Allard Jeançon and F. H. Douglas:

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9. Navaho Weaving, Its Technic and History—Charles Amsden, 1934.

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10. The Navaho and his blanket—Hollister. Privately printed 1903.

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11. Spider Woman—Gladys A. Reichard. 1934.

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12. Navajo Shepherd and Weaver—Gladys A. Reichard. 1936.

Color plates, 5, 10; photos and drawings, 1, 3, 4, 5, 7, 8, 10, 11 and 12.

Thanks are due to Charles Amsden of the Southwest Museum for his revision of this edition of the leaflet.