

Technical Notes

NOBUKO KAJITANI

Senior Restorer, The Metropolitan Museum of Art

CONSIDERING ITS AGE, the Cloisters tapestry (acc. no. 1971.43) is in good condition. It seems to have been repaired just once and has never been subjected to a cleaning medium. The areas of repair appear mostly around the edges, though a few are in the center. Done with an unquestionably different kind of worsted yarn, which is seemingly dyed with synthetic dyes, the repaired areas are a minor part of the design and do not interfere with the study of the object. In spite of its small size as a conventional wall hanging in *tapestry weave*, measuring 80 cm. by 102 cm., the depth of the picture space and the rendering of minute details reveal the technical ingenuity of the weaver.

Analysis reveals the construction of the tapestry to be as follows, with the design in its natural position (Figure 1): warps run horizontally with the original selvages at both top and bottom. Wefts run vertically with the original heading at the right and the finishing at the left.

The following structural analysis is recorded with the warp in the vertical direction, as the tapestry was woven, having the top to the right.

The warps were set under considerable tension, possibly in an upright position, in order to weave a weft-faced structure and to knot piles.

Following the weaving procedure, there is first a row of chaining (Figure 2)—a *simple looping stitch*—still intact at the bottom. The chaining, with two warps held in each loop to maintain the constant intervals between warps at the outset of weaving on a loom without a reed, indicates the starting point of the weaving. That this end is the starting point is confirmed by the direction of the knotted pile in the weaving, which will be discussed later. According to common working procedure, the chaining must have been done from right to

left from the wrong side of the tapestry, the side the weaver faces to work *tapestry weave*. Next, there is a heading about 0.5 cm. wide of *weft-faced plain weave* with weft of bast-fiber yarn.

Tapestry weave, in this case *plain weave with discontinuous wefts*, and so-called Ghiordes knotting are the two techniques used in this tapestry. The *plain weave* is *weft-faced*, and *discontinuous wefts* leave *slit* (Figure 3), *dovetailing* (Figure 4), and *double interlocking* (Figure 5) at turning points, the location depending on working procedures and the design. Color change done with *slit* spans only two to eight wefts so that there is no sewing on the back. All the longer straight lines of color change in the warp direction are done with *double interlocking*. Hatching (Figure 6) appears in certain areas to show shading. Because of the small scale of the tapestry the hatching is sometimes actually *dovetailing*. In addition, to complete the shading in larger areas, the effect of varied color orders of wefts in *weft-faced plain weave* (Figure 7) was used, to change from a lighter color to a darker color or vice versa. There are *non-horizontal wefts* (Figure 8) woven at many angles, which emphasize curved designs and shading. In creating the shading and forms of the design, the weaver ingeniously mixed these techniques together with color effects produced by the use of a single weft instead of groups of wefts.

Knotted pile on a flat *weft-faced plain weave* surface creates a texture or a third dimension and is used to emphasize the queen's and Solomon's garments, Solomon's hair, the cushion on the throne, and the drapery of the canopy. The rows of Ghiordes knots, with pile direction toward the right when the tapestry is in its natural position, alternate with four or five wefts of *weft-faced plain weave* (Figure 9). The Ghiordes knots are worked on two adjacent warps, as is commonly

done, but to follow the curve of the design, the pair of warps selected are offset from row to row. Following the sequence of offset pairs of warps, some knots at the ends of rows overlap the adjacent knot. The *weft-faced plain weave* ground together with pile is purposefully used to indicate that the material draped on the canopy and worn by the figures is voided velvet. When knotting or other piling techniques are worked on a fabric, it has to be done with the weaver facing the right side. Therefore, one row of Ghiordes knots must have been worked from the right side of the tapestry, and then one unit of rows of *weft-faced plain weave* for the ground between rows of Ghiordes knots must have been woven from the wrong side. This was repeated and meticulously carried out throughout the areas where the pile appears in horizontal rows. This is proven by the fact that the adjacent *discontinuous wefts* are *double interlocked* with the ground wefts for the knotted areas. So-called lazy lines appear in the *plain weave* for the ground wherever convenient, and this must have somewhat relieved the tedium for the weaver.

Upon completion, the weaver again employed *weft-faced plain weave* for finishing, as he had done for the heading at the bottom. After the tapestry was cut off from the loom, both heading, including chaining, and finishing were secured with *overcast stitch* with bast-fiber yarn the same as the weft of the heading.

The warp, woven under heavy tension, in the count of 15 per 2.5 cm., and the weft, woven under loose tension, in the count of 80 to 85 per 2.5 cm., make the weave *weft-faced*. The warp is a very irregularly spun bast fiber, made up of two Z-spun yarns plied into S and undyed. Very often they were broken during the weaving, and there are many places that show how the weaver struggled to repair it by knotting two ends of the slippery material under heavy tension. Selvages at both edges are of one warp doubled.

The wefts are wool, silk, and metal-wrapped yarns. The wool covers almost all the areas, silk covers only the eyes of the four figures, and the metallic yarn covers small areas emphasizing significant objects belonging to the two main figures.

The colors of wool are natural, blue, yellow, green, red, wine red, brown, gray, purple, and black, all in several shades. Black, brown, and gray shades are natural wool colors, and therefore none of the yarns in these colors show deterioration. The wine red in both dark

and light shades used on Solomon's throne cover and light red in the queen's robe are so drastically faded that it is almost impossible to imagine their original color from the right side. The lighter shade of wine red is the only color that was dyed very unevenly. As usual, the yellow is faded, which now makes the green bluer than it was originally. The makeup of the wool is again two Z-spun yarns plied into S (for the knots, they are doubled), and the thickness of it varies from yarn to yarn and from color to color. They are spun tightly so that the plied yarns are harsh and ribbed. For some reason or other all the yarns have been knotted in many places. Some shades of brown, blue, orange, and purple are spun from blends of several colors of dyed fleece, producing complex variations in color. These yarns are used mainly in the sky and distant landscape so that their subtle gradations of color aid in suggesting distance, as a substitute for other complicated patterning. Overall, in spite of unskilled spinning, the dyeing shows matured skill by its richness and variety even if some colors have faded.

The silk is used only for the eyes of the four figures. All colors—natural, three shades of brown, and light blue—are made up of two combined silk filaments twisted into Z and plied into S.

Finally, the metallic yarn is made up of two Z-spun bast fibers plied into S, on which a strip of membrane laid with gold or silver is wound in S direction. It was wound well so that the core yarn is not exposed at all. Pure gold is used in the crown, part of the scepter, Solomon's belt, and the queen's garment; almost pure silver, which is now tarnished, is used in Solomon's crown and a part of his scepter and in the finial on top of the canopy, and is at times used as shading for the gold.

REFERENCE

Irene Emery, *Primary Structures of Fabrics*, Washington, D.C., 1966.

ACKNOWLEDGMENTS

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FIGURE 1
Relationship of the design and weaving procedure. The numbers indicate the position of areas shown in Figures 2–9

DETAILS OF THE TAPESTRY. See Figure 1 for original positions of details.

RIGHT SIDE of the tapestry. Only Ghiordes knots (Figure 9) must have been worked with this side facing the weaver

WRONG SIDE (turning right to left) of the tapestry. Except for Ghiordes knots (Figure 9) all must have been woven with this side facing the weaver

FIGURE 2
Chaining at the edge
of heading

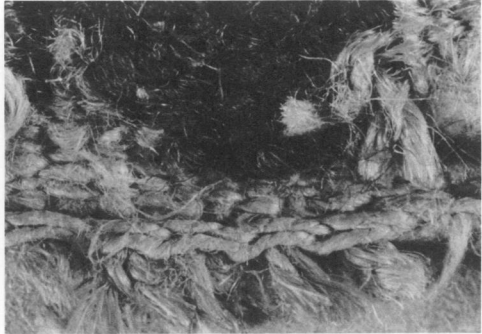


FIGURE 3
Slit in the tapestry weave

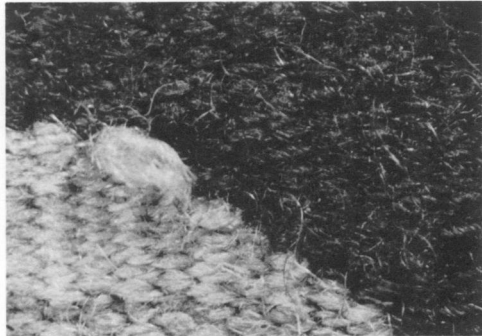
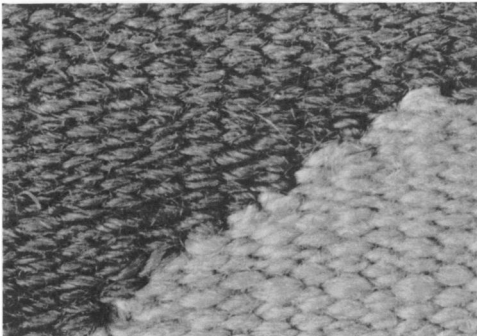


FIGURE 4
*Dovetailing in the
tapestry weave*

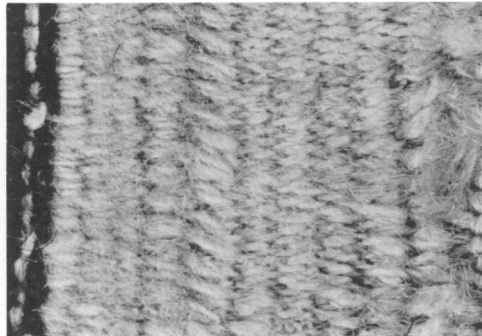
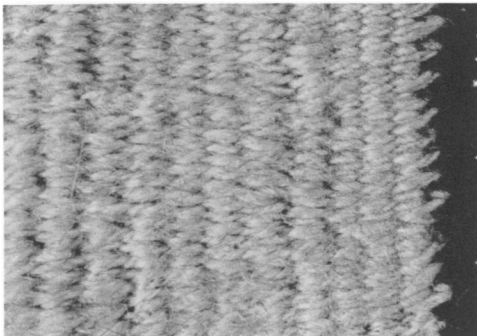
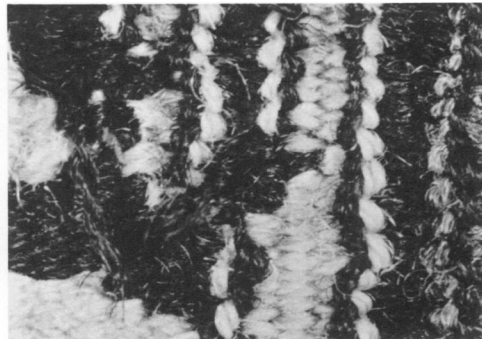
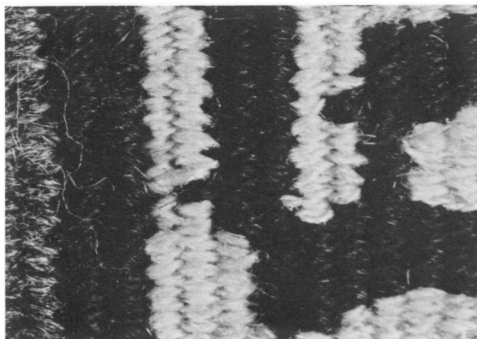
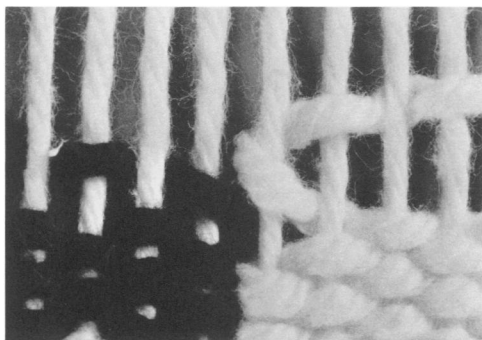


FIGURE 5
*Double interlocking in
the tapestry weave*

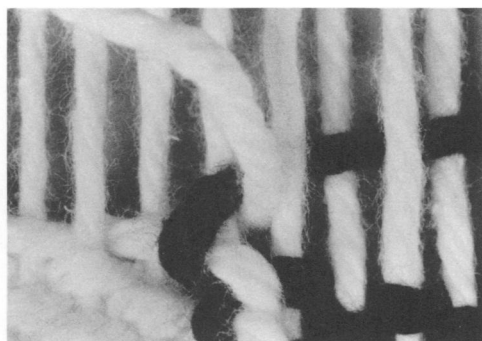
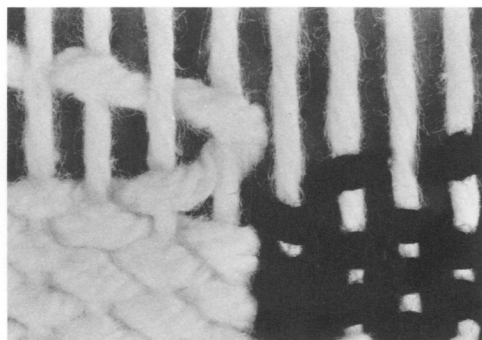
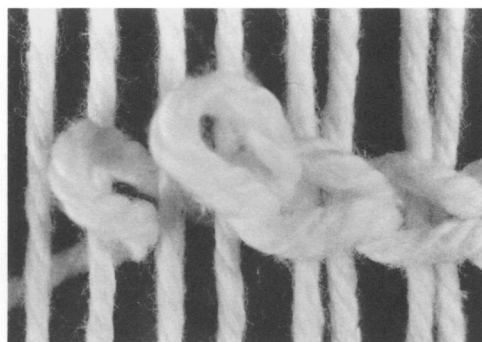


Diagrammatic reconstruction of the areas shown at
left

RIGHT SIDE



WRONG SIDE
(turning right to left)



DETAILS OF THE TAPESTRY—*continued*

RIGHT SIDE of the tapestry. Only Ghiordes knots (Figure 9) must have been worked with this side facing the weaver

WRONG SIDE (turning right to left) of the tapestry. Except for Ghiordes knots (Figure 9) all must have been woven with this side facing the weaver

FIGURE 6
Hatching done with
slit

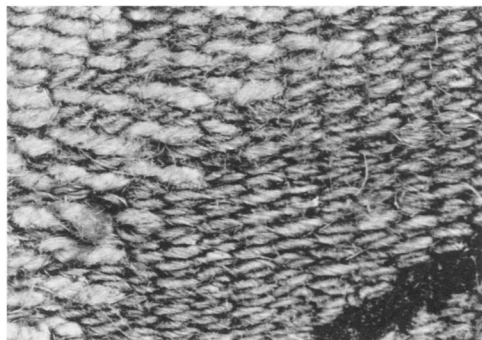


FIGURE 7
Hatching done with
varied color orders
of wefts

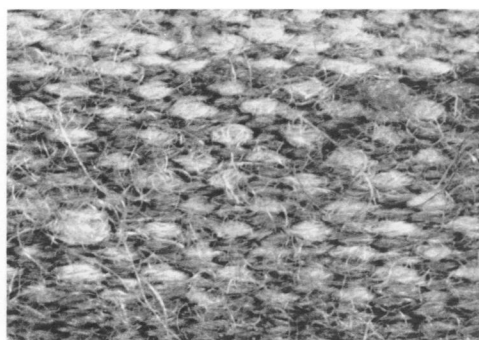
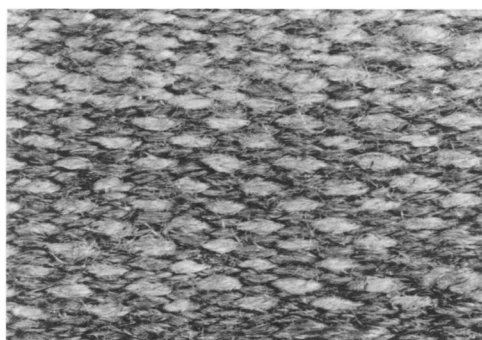


FIGURE 8
Non-horizontal wefts
in the tapestry weave

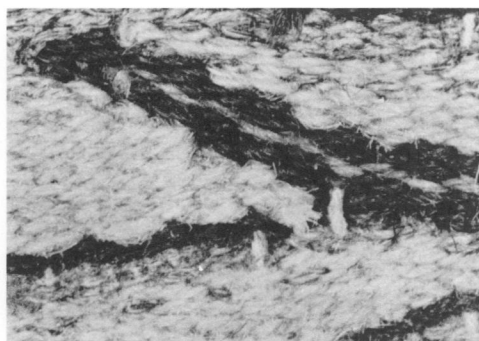
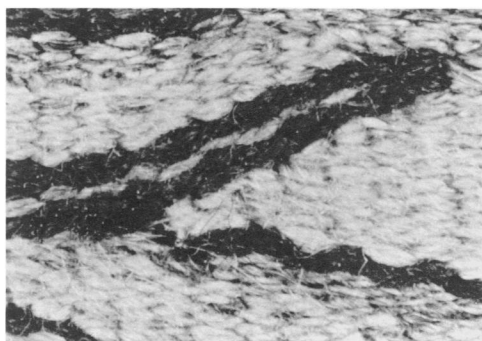
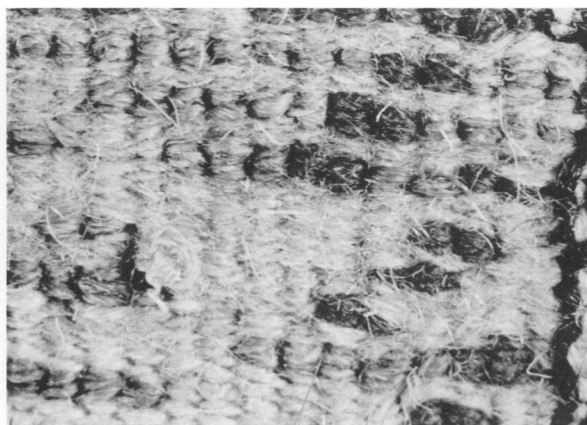
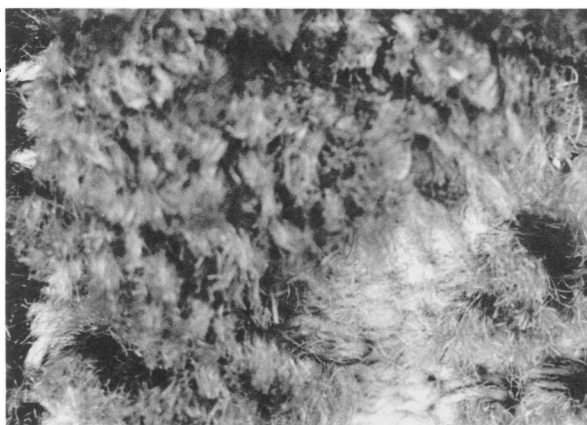
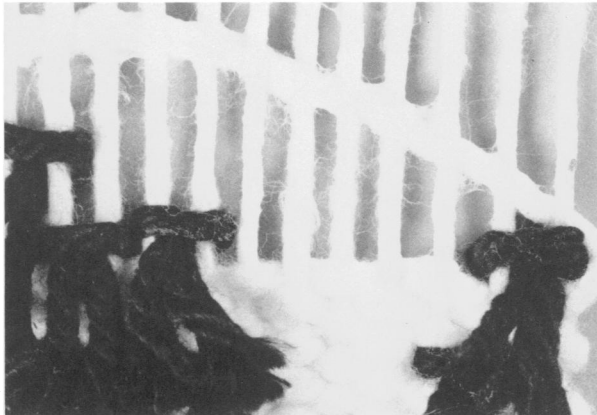
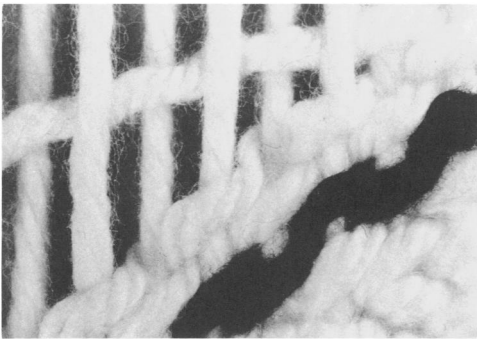
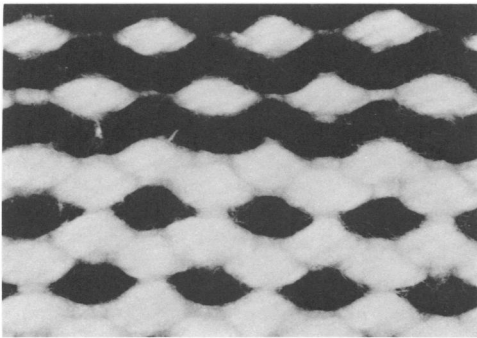
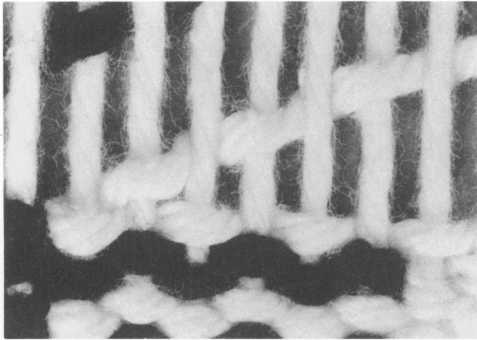


FIGURE 9
Ghiordes knots alter-
nated with four or
five wefts of *weft-*
faced plain weave



Diagrammatic reconstruction of the areas shown at
left

RIGHT SIDE



WRONG SIDE
(turning right to left)

