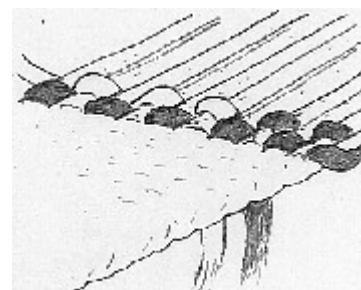


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## Weft-Substitution Bands

The *weft-substitution weave* has been used to ornament rugs, bags and other objects in both North Africa and Central Asia. It appears on some Central Asian Turkmen pieces, but since it does not appear, to my knowledge, in Anatolia, the technique is likely to have developed, or at least to have been adopted by Turkmen weavers, AFTER the major westward migrations of Turkic groups.



Our interest here is in the structure's use for narrow decorative borders on pile rugs, or as a secondary structure on knotted-pile bags. It appears most commonly in Baluch work, where it has often been miss-identified as "brocading," "supplementary-weft weave," "interlocked tapestry," "dovetailed tapestry," or even "embroidery." It is none of these! It has also been called "weft-float weave," which fails to distinguish it from the brocading that also sometimes appears on Baluch work.

Unfortunately there is not a good popular label for the construction.

The *weft-substitution* technique has most often been used for intricate patterning. The structure looks exactly like a *weft-faced plain weave* on the fabric's front surface, except for intermittent color changes. (This plain-weave surface most readily distinguishes it from *brocading*.) The weaver simply substitutes one colored weft for another in the plain weave-- thus the name *weft substitution*. In Persian, Afghani, Turkmen and other Central Asian work the yarns are most often left loose on the back, to float between areas where they are used in the pattern. That is shown in the Baluch border below.





Weft-substitution border on a Baluch knotted pile sofreh, front and back.  
Photos: Mark Hopkins

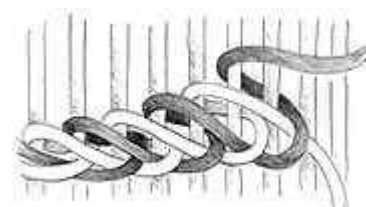
In some Baluch bags, and also on the skirts of pile rugs, the weavers have reversed patterning yarns to avoid floats over wide pattern areas. The weaver of the bag below has switched methods midstream in her broad orange and brown chevron pattern: in the lower section she tried floating her brown yarns, while reversing the orange. Then she tried reversing both orange and brown. It is the same structure, whether the yarns are reversed or not: *weft substitution*. Long floats are obviously impractical, because they can easily snag.



Baluch weft-substitution bag, back side.  
Photo: Daniel Deschuyteneer

## Wrapped and Bound Borders

Narrow raised borders often accompany *weft-substitution* patterning in Baluch weavings. A specialized kind of soumak, done in two colors, these borders are *wrapped and bound*. The detail is often used to edge or enclose the intricately patterned borders. The narrow edgings look, at a glance, like slightly lop-sided braiding; as the diagram shows, however, the yarns are wrapped, not braided. Pairs of wrapping yarns are used, and one binds the other down in a forward position.



This clever technique may prove to have significance in

helping to separate groups of Baluch weavings. Since it has been given virtually no attention, I think it should be interesting to see in precisely what pieces it is found--and in which it does NOT appear. There are a couple of early examples below which display simple twining instead, another which uses soumak.



In this detail scan of a modern Baluch trapping, the lower *wrapped and bound* border was done as in the diagram above--with the wrapping yarns enclosing pairs of warps. In the upper row, the wrapping encloses just single warps, so that the structure is condensed. The lower version prevails on older weavings--at least those in which the edgings are not twining or soumak instead.

### *Baluch Saddlebag Face*

17" x 21" (43 cm x 54 cm).

**PRIMARY STRUCTURE:** Asymmetrical knots, open left. H: 7, V: 10, 70 per square inch (H: 28/dm, V: 39/dm, 1092 per square dm).

Pile inclines upward. No warp depression.

**SECONDARY STRUCTURES:** Weft-substitution bands, edged with wrapped and bound borders.

**YARN SPIN:** Z.

**WARP:** 2-ply ivory wool.

**WEFT:** 2 olive green/brown wool singles; 2 shots.

**PILE:** 2 wool singles.

**SELVAGES:** 2 warp units (2,2), interlaced by the ground wefts.

**UPPER END FINISH:** Plain weave hem, 2 wool singles.

**LOWER END FINISH:** Plain weave, 2 wool singles.

[MM-1087. M. Mallett]



The small weft-substitution border design shown here is the most common of all on Baluch knotted-pile weavings.

Each pair of narrow wrapped and bound borders on this saddlebag is separated by a single row of asymmetrical knots, either brown or salmon-colored.



Back of the weft-substitution pattering and accompanying wrapped and bound borders. The wrapped segments are short on the back. When twining is used instead, the structure is the same on front and back.

*Baluch Khorjin. Khorassan, Northeast Persia*

Pile Face: 20" x 21" (50 cm x 55 cm)

Back: 20" x 21" (50 cm x 55 cm). Circa 1900.

**PRIMARY STRUCTURE (Front):** Asymmetrical knots, open left; H: 9, V: 11, 99 per square inch (H: 35/dm, 43/dm, 1505 per square dm). Fine and regularly woven, with no warp depression.

**SECONDARY STRUCTURES (Bag's back side and front upper and lower borders):** Weft-substitution weave in both wide and narrow bands. Wefts are discontinuous in the wide bands. Narrow 2-color wrapped and bound borders edge the pattern bands.

**SECONDARY STRUCTURES (Closure system):** Weft-faced closure band decorated in weft-substitution weave; braided closure loops with 6-span, 2-color twining between the loops; also 3-span two-color decorative twining.

**YARN SPIN:** Z.

**WARP:** Fine, tightly plied 2-ply ivory wool.

**GROUND WEFTS, pile area:** 2 dark brown wool singles; 2 shots between knotted rows.

**WEFTS, flat-weave areas:** 2 wool singles; 50 per inch.

**PILE:** 2 wool singles.

**SELVAGES:** Right side: 2 sets of paired warps; Left side: no special treatment. 6 warp units on the right, and 4 on the left are unknotted.

[DD-108. Daniel Deschuytneer]





Wide chevron borders like these have often been mis-identified. Such details are easily confused with *double interlocked tapestry*. But all three borders here--wide and narrow--are the same structure: weft substitution.

The blocky "S" border shows the brown and blue yarns floating where not used in the pattern. They are continuous from one side of the weaving to the other. The ivory yarns float underneath. The more delicate undulating border is made in the same way.



Since in the wide chevron border, such floats would be very long, the weaver has reversed each color at the end of each intricate area, to weave back and forth.

*Baluch Knotted Pile Rug. Southwestern Afghanistan or Seistan region of Iran.*

41" x 49" (105 cm x 125 cm). C. 1950.

**STRUCTURE:** Asymmetrical knots, open left; H: 7, V: 11, 77 per square inch (H: 28/dm, V: 43/dm, 1161 per square dm). No warp depression.

**SECONDARY STRUCTURES:** Wide weft-substitution borders patterned with blue and ivory squares; narrow two-color wrapped and bound borders.

**YARN SPIN:** Z.

**WARP:** 2-ply ivory wool.

**WEFT:** 2 wool singles; 2 shots.

**PILE:** 2-ply wool.

**SELVAGES:** Right side, 4 warp units (1,1,1,1, the outside two units corded), double-looped in pairs with brown-black goat hair. Left side, 2 cords only.

**UPPER END FINISH:** Band of oblique wrapping; the warp ends wrap upward, then interlace downward. (For a better photo of this detail see the *Obliquely Wrapped Bands* page.)



**LOWER END FINISH: Long (3") warp loops. A row of twining and two heavy wefts start the weave.**  
[DD-107. Daniel Deschuyteneer]



In this weft-substitution border, the weaver has floated blue wefts on the back where they are not used in the design; they are continuous from side to side. She has cut the white yarns, however, and left long ends as decorative pile on the back.

(Front above; back below)



See the *Obliquely Wrapped Bands* page for a discussion of the warp-end finish.

***Knotted Pile Baluch Sofreh***

2'2" x 3'10" (102 cm x 181 cm)

**STRUCTURE:** Symmetrical knots, H: 10, V: 8, 80 knots per square inch (H: 39/dm, V: 32/dm, 1248 knots per sq. dm)

**SECONDARY STRUCTURE:** Bands of weft-substitution weave. Tiny wrapped and bound borders.

**YARN SPIN:** Z.

**WARP:** 2-ply ivory wool.

**WEFT:** 2-ply tan/gray wool; 2 shots.

**PILE:** Wool.

**SELVAGES:** 4 warps (cords), reinforced with brown goat hair.

**PUBLISHED:** Dennis R. Dodds and Murray L. Eiland, Jr., eds., *Oriental Rugs from Atlantic Collections*, Philadelphia, 1966, Plate 317.



[MH-101. Mark Hopkins]



At each end of this early weaving, three borders are patterned with the weft-substitution technique. In the broad chevron band, the yarns float only in the intricate areas-- not over the wide, plain sections.



*Baluch Knotted-Pile Prayer Rug*  
2'10" x 4'4"

**SECONDARY STRUCTURES:** Bands of weft-substitution weave. Narrow soumak borders, with red and blue yarns combined and used as one.

**PUBLISHED:** Mark Hopkins, "Doing the Baluch Bend," HALI 93, p.81, Plate 7.

[MH-102. Mark Hopkins]





Three weft-substitution bands. In the wide middle band the pattern wefts reverse at the design edges, rather than floating. In the wide lower border, blue and brown yarns are discontinuous, interlacing back and forth in the small sections where they are needed, while the white yarns are continuous. The weft-substitution structure is the same throughout--worked in each area in the way that best suits the design.



The tiny raised borders separating the weft-substitution bands appear to be soumak on this piece, with a blue and a red yarn combined and worked as one, twisting together erratically.

*Baluch Knotted-Pile Prayer Rug*  
2'6" x 4'1" (76 cm x 122 cm)

**SECONDARY STRUCTURES:** Bands of weft-substitution weave. 2-color, 2-span twining.

**PUBLISHED:** Mark Hopkins, "Doing the Baluch Bend," HALI 93, p. 79, Plate 3. [MH-104. Mark Hopkins]







Here again, wide chevron bands are woven with substituting wefts. The structure has been confused with various kinds of tapestry--interlocked, dovetailed or slit-tapestry--but the technique is weft substitution. Blue and red yarns follow plain-weave interlacement paths, with one substituting for the other to make the small alternately colored columns. On the back side it is easy to see the horizontal path taken by each yarn, just as in the white border. At the ends of the large red and blue projecting shapes, these yarns reverse, so as to not float over such large plain areas, and here they leave slits such as in slit tapestry.

The same "slits" occur in the examples above; in those weavings the slits are just much shorter--perhaps only the height of two or three yarns. This minor feature occurs naturally within the weft-substitution technique, and is not reason for categorizing the technique as "slit tapestry."



There is no "interlocking" element here. Likewise, no "dovetailing." With dovetailed tapestry, yarns meet and share warps--so that both the front and back of the fabric look the same. For photos comparing those two structures, see the *Twining* page.

At the top of this photo, above the white border, we can just barely see a small row of red and brown twining. This was used in lieu of the tiny wrapped and bound borders that appear in so many Baluch pieces. Is this twining typical of earlier weavings, or weavings from particular areas? More examples are needed!

## A Slit-Tapestry Comparison

In contrast to the weft-substitution borders shown above, the piece at the right has bold chevron borders of slit tapestry. Such details have not been carefully separated in rug literature, and weft-substitution details have been erroneously described as one sort of tapestry or another.

*Baluch (Aimaq ?) Knotted Pile Rug*  
3' x 7'10" (142 cm x 370 cm)

**STRUCTURE:** Symmetrical knots, with 3 wool singles.

**SECONDARY STRUCTURES:** Bands of slit tapestry. Bands of weft-substitution weave. Narrow bands of countered, two-color, two-span twining.

[MH-105. Mark Hopkins]



In contrast to the bold chevron borders on many Baluch rugs, here the structure is slit tapestry. On the back side, yarns are floated upward to start the next step.

The very narrow two-color edgings here are countered twining. This technical feature, along with slit tapestry, sets this piece apart from a majority of Baluch pile weavings. The narrow white diamond borders are standard weft-substitution, although an unusual motif.

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