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Woven Structures Updates - Part 8

Turkmen Tent Band Knotting



Turkmen tent band. Pinner, The Rickmers Collection, London, 1993, Plate 61

Old Turkmen tent bands, made with a combination of knotted pile and plain weave, have some unusual features that no one has discussed in rug literature. Because band techniques are so widely misunderstood, I'll review a bit first, then show some astonishing details. To study the evolution of design in these textiles, we must think about the structures and processes in new ways.

Most of the bands were made with a *warp-faced* or *warp-predominant* weave, because for a strong tent girth it was important to crowd as many sturdy warp yarns as possible into the band's width. Since the weavers jammed their warps closely together, they tied knots on no more than HALF of them in any one row. To have used them all would have made a buckling and bulging band.

The procedure was this: The weaver opened a shed, and WHILE THE SHED WAS OPEN, she tied ordinary symmetrical knots ON JUST THOSE WARPS THAT WERE RAISED. After inserting a weft and packing everything into place, she changed the shed, tied knots on the next set of raised warps, and inserted another weft. Of course if she was combining areas of pile with areas of plain weave, she could choose freely where to place knots on the raised warps. The weft could be inserted either before or after the knots were tied.

NOTE: Remember, a "shed" is a SPACE through which a weft is put -- it is not a tangible thing. Thus one cannot say that the knots were "tied on the top shed." That is incorrect. Only double weaves--with two fabric layers--are made with upper and lower sheds.



In this drawing, ordinary symmetrical knots in the first row are shown tied on the yellow warps only. To begin a second row, with the blue warps raised, a knot is shown tied on a blue pair of warps. Thus knots are AUTOMATICALLY offset slightly, and vertical pattern lines or edges are always slightly jagged.

People have sometimes referred to this kind of knotting as "knots tied on three warps." THIS IS INCORRECT. There is always an *unused* warp *behind* every symmetrical knot, and that extra warp is NOT encompassed by the knot. In the drawing here, there are also extra, unused warps between the knots.

This tent band knotting technique is called *knotting on an open shed.* The technique is also used in the central Asian rugs known as *julkhir.* In those heavy rugs, however, any number of wefts may appear between rows of knots. When either two or four wefts are used in their foundations, the knots are vertically aligned; if either one or three wefts are used, the knots are offset as in the drawing.



Turkmen tent band detail. Wool, cotton and silk knotted pile on a warp-faced plain-weave cotton ground. A majority of bands have ivory wool grounds. Vertical pattern edges are slightly jagged.

Most horizontal/vertical patterning in this kind of tent band knotting is easy, especially with large, bold forms. Because of the automatic offsets, however, small motifs with vertical edges are not as crisp as in ordinary rug knotting. The checks in the photos below were each made with four knots (two, then two more in the next row). But instead of small rectangles, we see parallelograms that tend to connect in one diagonal direction and separate in the other. This characteristic tended to discourage designing with small



Ordinary tent band knotting is done with first one set of warps raised (yellow), then with the opposite set of warps raised (blue). Unused warps lie behind the knots and between them.

pattern units in tent bands knotted on an open shed.



If a weaver chooses to make a diagonal motif with this structure, when she comes to the third row of knotting -- that is, when the yellow warps are again raised -- she ties a knot for that diagonal so that it lines up vertically with one of those in the first row. Thus knots in the first and third rows are aligned; knots in the second and fourth rows are likewise aligned. Such a diagonal has a series of slight, barely discernible jogs. This kind of diagonal can form the edge of a knotted motif, make a thin linear element, or delineate a pattern within a solid pile area -- especially within vertical bands or borders. Such diagonals may be steep or shallow, depending both upon knot placement and weave balance. The knot arrangement shown in diagram B and in the photo below is the most common of the two on Turkmen tent bands, because it makes a nearly 45-degree diagonal.





Alignments A and B. Regular knotting done with an open shed. Two ways of forming diagonal pattern elements. The arrangement below is common on Turkmen bands.



In the magnified detail above, each colored knot displays TWO parts -- the extra, unused warp lies behind it, visually separating the parts. (When seen on the band's back, as in this photo, one of these extra warps is in *front* of each knot.) On some bands, the warp yarns almost completely obscure the knots; we are lucky to see them in this detail. The photo shows the characteristic diagonal formed with steps that are uneven, since knots are aligned vertically only in every second row. On Turkmen mixed-technique tent bands you will find that diagonal patterns made within VERTICAL pattern sections or borders are normally made in this way, as in the detail at the right. Some band weavers also decorated horizontal bands in this fashion.

Below, in diagrammatic form, we see how pile knots in this structure (normal, regular *knotting on an open shed*) are aligned in vertical, though jagged, columns of pile, and how pattern diagonals are formed. The shallow diagonal of Alignment B is the common one, and was used in the band details above. When this kind of knotting on a tent band is folded or rolled slightly, the jagged vertical knot columns are clear.







"Regular" tent band knotting on an open shed.



Most tent band weavers found this conventional method fine for areas of solid pile. To make large, isolated diagonal designs on their bands, however, they found an approach that worked better, as we will see below.

A Surprising Variation: Extra Offsets

A short while back I flippantly remarked that a demented weaver might of course offset knots on BOTH sets of warps to make steeper, smoother diagonals: Instead of consistently aligning all knots on blue warps vertically and aligning all knots on yellow warps vertically, she might conceivably offset knots on BOTH yellow and blue sets. Well, I simply hadn't looked at knotted bands closely enough. Weavers have tried just about everything, and sure enough, I soon received photos from Christoph Huber in Switzerland showing details of a tent band with exactly the theoretical feature I had mentioned as a possibility. It was an astute observation on his part, as these details can be difficult to see clearly, especially on pieces in mint condition with thick, unworn pile.

The drawing shows that in four rows, knots can easily occupy FOUR different warp positions. Knots are tied on different yellow warp pairs in the first and third rows -- NOT vertically aligned, but offset. It's the same with knots tied on blue warps. With this diagonal arrangement -- with these *extra offsets* -- not until the fifth row will any knot align with one in the first row. A very steep, smooth diagonal is produced.

Here's how this kind of diagonal, made with *extra offsets*, looks on the back of a band -- under severe magnification. Part of each dark blue knot is positioned above part of the knot before it. Remember that each knot is represented by TWO nodules in the photo.

(NOTE: It is not good use the term "overlapped" here, as that has a different connotation. That describes knots that share warps and thus overlap within a single row.)

I know now that nearly all Turkmen tent bands combining knotted pile and flatweave use both regular *knotting on an open shed* and *extra offsets*. Both the unique possibilities and the limitations of the technique have shaped designing in the textiles. That is the main reason the structures deserve a closer look.

First, here's how pile looks on the front when a tent band weaver has used *extra offsets* to align knots diagonally. If you roll the band slightly, DIAGONAL COLUMNS OF PILE separate a little.

It's certainly not normal rug knotting! In fact, to get a quick idea of what kind of knotting a tent band employs, the easiest first check is to roll various sections slightly to see how the pile lines up -- vertically or diagonally. With the steep incline here, knot columns run parallel to the motif's edge.



Alignment D. Tent band knotting with *extra offsets;* knots arranged to make a steep diagonal.





As Christoph and I began to look more closely at the bands available to us, we found more and more variations -- and some truly complex combinations of structures! Bands may include three, four or more different kinds of diagonals, but more importantly, they include unique knotting arrangements and sequences.

A majority of isolated diagonal elements on Turkmen tent bands are made as in the drawing at the right. It's a more shallow *extra offset* incline than the one shown above, and a very natural alignment. Notice in the drawing that although the knots are spread farther apart, they are still positioned on FOUR different sets of warps. They are still tied alternately on yellow warp pairs, and on blue warp pairs.



Alignment E. Tent band knotting with *extra* offsets; knots arranged to make a shallow diagonal.



Here's how this kind of diagonal looks on a typical band -- a back side above, and front side below. In the photo below, all of the diagonal design parts were made with *extra offset knotting* (as in diagram E), while all of the horizontal or vertical sections were made with regular tent band knotting. For the shallow diagonals in this motif, diagonal knot columns intersect the pattern edges. They are nearly perpendicular to those edges.





The Natural Asymmetry of Extra Offset Knotting

The important characteristic that separates *extra offset knotting* from all other weaving structures used by western and central Asian tribal weavers is its natural asymmetry. As you will see shortly, this is a feature that should help us to determine which tent band design elements most likely originated in the band technique itself, and which were copied by band weavers from other textile media.

At the right and below are diagrams showing some of the diagonal knot alignments that are possible with *extra offsets*. Notice that in diagram C diagonally constructed columns of knots are consistent throughout; all knots are offset by one warp to the right in each successive row, although where the color distribution changes in the lower part of the diagram, a differently slanting colored line -- or pattern edge -- is formed. Here the steps are wider.

The small flower heads below were made with pile arranged diagonally as in diagram C. The shapes are slightly asymmetrical: The diagonal outline on the left side of each blossom is a little steeper than that on its right, and the left side has smaller "steps" than the right. It is a quintessential tent band motif -- its characteristics determined by the unique structure. The slant of the stems is the same as that on the right side of the blossoms; their direction is just reversed.





Extra offset *knotting*. Knotted pile is aligned in consistent diagonal columns.

The red and green diagrams are by Christoph Huber.



When tent band designers wished to make symmetrical forms, they had to vary their methods. They created some unique forms by inclining their pile knot columns in first one direction, then the other. In arrangements like D and E below, not only does the direction of offset reverse for the green diagonals, the direction of offset reverses for ALL of the knots. When we roll a band section made in this way, the diagonal pile columns zigzag, as in the photo. In Alignment D, the knot columns are parallel to the green diagonal; in Alignment E, knot columns are perpendicular to that diagonal, and intersect it. You can try rolling small sections of a tent band fabric in both directions -along diagonals, and across them.



The zigzagging columns of extra offset knotting.

Any of these alignments can be used for solid color motifs, for divisions within solid areas, or for thin linear elements and outlines. The zigzag motif below (with knots aligned as in E) is a structurally-derived design encouraged by the *extra offset knottin*g technique. Continuous zigzags formed in this manner became especially popular for vertical borders.



A close look at the small row of flowers below reveals the peculiarities of the *extra offset knotting* technique used to full advantage. The natural shallow inclines and obliquely oriented knot columns in diagram E were used consistently throughout.





To create BILATERALLY SYMMETRICAL motifs, weavers could run knot columns in opposite directions simultaneously. At the left is a simple motif that was made with knots arranged in diagonal columns of pile converging along a central axis. Solid color motifs could be formed in the same way. Although this seems like a logical approach to forming symmetrical designs, there is an inherent disadvantage: it's messy in the middle. Inevitable irregularities occur where the columns converge, requiring single-warp knots, overlapping knots, larger multiple-warp knots, or a combination of these.



Both knot alignments D and E can be arranged so that diagonal columns converge.



In each of these flowers, oblique knot columns converge to make symmetrical flowers with sharp points. Vertical knot columns fill the centers.

Sometimes weavers combined several different alignments, as in this flower motif. Points on the small figures were drawn with converging sets of steep *extra offset* diagonal knot columns, which, where they ended, formed wider, more shallow diagonal contours. The vertical flower stems were made with regular tent band knotting. Small triangles in the flower centers further confused the mix. These are complex little motifs indeed.

Forms like these point up the fact that Alignments D and E merely utilize two different aspects of the natural asymmetry in *extra offset knotting*. At least two different inclines are always present with this structure -- they just do not always form two outside adjacent diagonal edges of a single motif.

Flower motifs constructed in several different ways are shown in detail on the next page.



As you might have guessed, still more shallow diagonals and even curves can be produced with the same techniques. On the Anatolian horse cover detail here, part of the contours were shaped with knots in successive rows placed still farther apart in selected areas. The knotting was done in a fairly free-form sort of way. Although the central Asian weavers of *julkhir* used regular *knotting on an open shed*, the Turkic weavers of these Anatolian horse covers also used *extra offsets*, as in the tent bands. The back of this heavy textile is perfectly plain: no knots are visible.

I mentioned above that when diagonal columns of knots CONVERGE, awkward transitional areas are created. When *extra* offsets are used for motifs that have BOTH DIAGONAL and VERTICAL pattern edges, as in the large star below, there are also awkward areas of transition. Take a look again at the red and green diagrams above -- at C, D and E -- and notice the ragged vertical edges at the sides of each. To fill these uneven spaces, knots may be overlapped, warps may be skipped, or knots may tied so that they encircle more than just a pair of warps. The latter, at the right, seems to be a frequent solution.





We can expect to find irregular knotting in motifs that tent band weavers have copied from other textile media. Pile rug motifs, in particular, often have shapes made with both vertical and diagonal edges. The weaver of the band above used an eight-pointed star on her band, but found it difficult in the tent band techniques. In motifs like this, knot columns are often irregular: they are sometimes vertical, sometimes diagonal, sometimes wavering.



When we try to catalog or compare the knotting techniques used in bands, it can be terribly confusing to study either transitional areas or areas where different pattern parts merge. It is easier to focus on long, uninterrupted pattern edges and solid parts of motifs. Even skilled weavers improvised in difficult areas, and experimented with various solutions.

Writers have often puzzled over the fact that Turkmen tent band design repertoires differ considerably from those in Turkmen rugs and bags. This should not be surprising, however, because technical constraints encouraged the development of unique tent band motifs, as we saw with the zigzags and rows of diagonal flowers above. Motifs borrowed from other textile media were sometimes altered to fit the long narrow format; others were simply rearranged and incorporated. Examples include the linear horizontal brocade motif repeated below, and the common slit-tapestry kilim motif that was turned vertically and used for a center stripe below. Hooked brocade forms were isolated and elaborated, like that at the right, and placed within compartments. The adaptation of pile rug motifs to the oblique columns of extra offset knotting -- with their inherent asymmetry -- often required considerable improvisation with zigzagging or converging knot columns and multiple knotting adjustments.







When examining a band, we might first notice differently inclining diagonals in the design. Such variations are obvious clues that different knotting methods have been combined. In the photo, steep diagonals constructed with *extra offsets* and pile aligned diagonally as in diagram D are marked with green; more shallow diagonals with knots aligned as in E are marked with red. With symmetrical motifs like those shown, we might then look to see how the weaver formed the motifs -- whether she used converging diagonals or some other arrangement. The central vertical column, with checks, was knotted in the normal fashion, with no need for *extra offsets*. These checks form still another diagonal. The section shown here is from the far right portion of the tent band photo below.

Incidentally, this weaver used red warp stripes as guides to help keep the knotted borders straight. These are only visible in the flatweave section at the end, and on the band's back side. Use of marker warps or stripes was a common practice, although on some early bands, flatweave stripes themselves provided borders throughout.



Turkmen tent band with a simplified version of the common serrated "wings" and flowers. Christoph Huber

After we have examined some bands closely and understand the reasons why different techniques were used for different design parts, photos can *suggest*, but cannot tell us for certain, what kinds of knotting was used. We can guess that the vertical borders of the panels below were done with normal, vertically aligned knotting, because that's the most practical in narrow vertical spaces; otherwise, constant messy knot transitions would have been required.



Turkmen tent band, detail. (Several cut panels sewn together) P.Andrews, S. Azadi, V. and A. Rautenstengel, and H. Sienknecht, *Wie Blumen in der Wüste,* Hamburg, 1993, detail from Plate 48

We might guess that the large horizontal and vertical design parts in these panels are also normal knotting, subdivided with diagonals made as in diagram B. In some of the bands we have analyzed, however, horizontal bands with "barber pole" decoration were made with *extra offset knotting* -- the knotting diagonally aligned. We can guess that the large, major diagonal design parts were made with *extra offset knotting* as in diagram E. An examination of the actual panels might prove any of these assumptions wrong, but they seem to exhibit some of the "purest" uses of the techniques. Detail photos on the next page contrast the approaches of different weavers.





When we try to determine the mix of techniques used in bands by studying book photos, we face some difficulties. First, different diagonal inclines can result from uneven warp spacing. The warps are much farther apart in the left pile section of the band above than in other pile sections. (The center of the band is at the right in this magnified view, and it is also solid pile.) Thus diagonals made the same way in various areas incline at slightly different angles. Secondly, variations result from unevenly packed wefts and knots. Weft yarns rarely maintain perfectly horizontal positions when lying partly in flatweave areas, partly in pile areas. We must at least check several different portions of a band before drawing conclusions from photos. Knotting errors also produce variations, especially in sequences with uneven steps.

At first glance, serrations on some band motifs may seem to be more



steeply inclined because one side of a saw-toothed point is actually vertical, while the other is diagonal. We see that in the band below. In the band at the left, however, serrations were formed with asymmetrical diagonal knot columns, and so represent one of the purest approaches possible with *extra offset knotting*.

Turkmen tent band. Moshkova, *Carpets of the People of Central Asia*, Tucson, 1996, O'Bannon edition, Plate 5. The horizontal center figure in this photo has diagonal parts that obviously slant at a different angle than nearby design parts. Serrations on the "wings" or "leaves" are formed with *extra offset knotting*. For details, see the next page.

Turkmen tent band. Moskova, Figure 114. In this band the dominant plant motif is articulated in two different ways, although the serrations all combine verticals and diagonals. A majority of diagonal elements in the band display *extra offsets.* Details are discussed on the next page.



In analyzing mixed-technique bands, then, we need to first distinguish between the two major structures. Consistent, regular, normal tent band knotting with alternate rows of knots aligned so that the pile lies in slightly jagged vertical columns can be described as:

Knotting on an open shed.

When bands include diagonal design elements with knots offset on BOTH sets of warps, with knots offset along diagonals so that the pile separates in

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oblique columns when the fabric is rolled slightly, we can describe the areas as:

Knotting on an open shed with extra offsets.

While most central Asian *julkhir* were made with just plain *knotting on an open shed*, most pile and flatweave tent bands were made with a combination of the structures above. Analysts might be advised to focus especially on horizontal pattern parts and knotting in design areas that have both vertical and diagonal edges.

The Ramifications

So why have we previously overlooked the unusual knotting techniques in surviving tent bands? Well... most of us don't have lots of them around to study and compare! Furthermore, peculiar knot alignments only become clearly visible as pile wears, exposing knot collars, and that is not the kind of wear that tent bands typically received. Although published photos offer a few clues to the techniques involved, only a close examination of the weavings conveys a sense of the skills required for their production.

We need to compare many more bands before technical differences in the knotting will be useful for making attributions to specific tribal groups. But since band labels have usually been tentative and intuitive, based mainly on features such as color palette and wool quality, additional clues should be welcome. Motifs have rarely been useful in making tribal attributions, as they reflect the peculiarities of the structure and format more than group design tendencies. It has always been troubling to find bands made with symmetrical knots assigned to groups that use asymmetrical knotting exclusively in their other work, and we need to consider reasons for that disparity.

Turkmen tent band. P. Andrews, S. Azadi, V. & A. Rautenstengel, and H. Sienknecht, *Wie Blumen in der Wüste,* Hamburg, Plate 97.

The steep dark, linear diagonal elements in both the left and right panels surely use *extra offsets* arranged as in diagram D above. Small flower details also include these steeply inclined edges. We can guess that most of the remaining diagonal elements employ *extra offsets*, made in the manner of diagram E, and



that vertical pattern parts were done with normal tent band knotting. Horizontal pattern parts and motifs with both verticals and diagonals require first-hand examination. The *ashik* "flower" heads with complex interior motifs presented extraordinary technical complications.



Tent band, HALI 26, Nicky Eltz

We might logically wonder if there is good reason for attributing bands with certain kinds of extra offsets to tribal groups that routinely use offset knotting in other work -- in their ensis, chuvals and other bags. We find such details primarily in Saryk, Yomut and Tekke weavings, occasionally in Ersari work. I've found none in Salor, Chodor, Arabatchi, Kizil Ayak, or pieces with "Eagle Göl" characteristics. Yet the band directly above was published with a Salor label. The piece just before that has been attributed to the Chodor by Moshkova, although it has been pointed out that the generous use of silk in the piece is unusual for Chodor work. Zigzag and diagonal floral motifs shown in detail earlier are from an unusual band thought to perhaps be Arabatchi -- a reasonable guess based on its unusual color palette and materials.

My unsubstantiated hunch is that band techniques employing *extra offsets* at least *originated* within Saryk or Yomut groups -- among weavers who frequently used *offset symmetrical knotting* in their chuvals and rugs. More study may clarify relationships and suggest which developed first -- the bands or the use of offset knotting in other weavings. (See the previous UPDATES page on *Turkmen Offset Knotting*.)



Familiarity with the techniques can definitely give us a better understanding of design evolution within the bands. The earliest mixed-technique Turkmen band designs appear to be those in which horizontal and vertical knotted-pile features dominate. Large angular hooks are most common on these. Diagonals seem limited to those within horizontal and vertical bands, and those made with one simple, natural kind of *extra offset*. Bands made by Uzbek and Kirghiz weavers display some of the most extensive but purest use of *extra offset knotting*, with designs made primarily with simple diagonals. While the extant bands from these groups may not be the oldest chronologically, their patterning may be characteristic of earlier Turkmen bands.

The earliest motifs infrequently display complex converging knotted diagonals or interior motifs that disrupt columns of diagonal knotting. Pattern areas with concurrent vertical and diagonal sides -- motifs much less suited to *extra offset knotting* -- also appear infrequently in the bands that otherwise seem to be the oldest.

Inlaid brocading and twining are important decorative elements on many early bands and probably represent the oldest parts of the tradition. Knotting on an open shed almost certainly developed as an adjunct to inlaid brocading. Both techniques were accomplished with an open shed: brocade wefts were interlaced with just the top layer of warps, while knots were tied on just the top layer of warps. The intimate connection between these structures is demonstrated most clearly when the two kinds of patterning occur side by side, both techniques having been done while the SAME shed was open.

Even the Turkic horse cover from Anatolia, shown earlier on this page, includes both *knotting on an open shed* and *inlaid brocading*, although neither structure appears in any other kind of Anatolian weavings.

One cannot help but notice that bands with the most active and intricate patterning are those with varied and complex use of extra offsets in the knotting. Their production required a high level of skill, and they display a deft handling of several techniques, along with repertoires of between 10 and 20 motifs. My feeling now is that these must surely have been the products of specialists, rather than scattered tribal weavers who each produced one or two bands in their lifetimes. There may have been individuals within some groups who concentrated on bands. Samplings of information from governmental statistics support the idea that production of at least the later and more intricate bands was centralized. For example, records show that only 200 rugs but over 3800 tent bands were produced in the Turkmen kustar industry in Ashkabad in the year 1911. Kustar weavers in the Merv oasis produced about 1100 rugs but over 2000 bands in that same year.* Indeed, the most



Inlaid brocading. Pattern yarns are interlaced with the shed open.

* Richard Wright, "In Search of Turkmen Carpets," Oriental Rug Review, Vol. 9, No. 5, pp 34-39. Mr. Wright quotes from the records of the Statistical Committee, Transcaspia Oblast. See also The R.E. Wright Research Report, Vol. 4, No. 2.

> complex of these weavings may have been the work of specialists for quite a long time, with only the earliest, simplest examples done as a part of routine nomad household production. Specialization would certainly help to account for the use of symmetrically knotted bands within groups such as the Tekke, who routinely used asymmetrical knotting in their other weavings.

One unusual dating problem is pointed up by the *kustar* reports: In the early 1900's these committees made an effort to improve the quality of production by furnishing the weavers with natural dyes. Thus late 19th century pieces may display synthetic colors, while early 20th century pieces sport vegetable colors!





* William Irons has mentioned that the Yomut tribesmen with whom he lived in northern Iran traditionally bought their wooden tent frames from specialists in nearby Göklan settlements. [They made flatwoven tent bands for their own use.] *Vanishing Jewels,* Rochester, 1990, p. 47.

P. Centlivres, in "Les Uzbeks du Qattaghan," *Afghanistan Journal* 2/1, 1975, p. 28ff, tells of Uzbeks buying the wooden parts of their yurts from specialized carpenters, mainly Tajiks.

When mulling over the question of how specialized tent band techniques and design repertoires would have been passed along within groups of weavers, we have to consider how many tent bands each family needed, and how often bands would have been produced. Is it reasonable to assume that in the past young weavers assembled household goods and dowries much as they do today -- swapping or selling some of their own woven products to raise money for other items made by specialists? Perhaps for fancy tent bands made by specialists who had the skills, extensive repertoires of special motifs, and also the appropriate loom set-ups? We do know that nomads bought their wooden latticework yurt frames from specialists, even from woodworkers in other tribal groups;* that does not lessen their status as ethnographic objects. It is much easier to envision warp-patterned tent bands as items made by individuals at home, since identical techniques, designs and equipment were used for warp-patterned rugs, bands and bags.

All-Pile Tent Bands

So how do tent bands that are solid pile relate to this discussion? First, the technique is different, and much simpler. All-pile bands were made essentially like long, skinny knotted-pile rugs. The fragment at the right even has pile made with asymmetrical knots (open to the right). A weaver could, of course, incorporate areas of offset knotting in such bands, just as in the bags or rugs on the first of these pages. In the few examples I've seen at first hand, however, I have not discovered this practice.

Because all-pile bands have only half the number of warps used in bands knotted on an open shed, all-pile bands were much less satisfactory as utilitarian tent girths. They simply were not as strong. They could, however, be produced by any rug weaver, with any designs, without the need to learn specialized techniques. I suspect that the rarity of these bands has much to do with the looms available. Weavers producing warp-patterned or warp-faced textiles routinely work on narrow ground looms, because crowded warps are sticky and only narrow fabrics are practical. Shedding devices are different, because shed changes are more frequent and demanding. There is no limit to the warp length that can be stretched and pegged



All-pile tent band fragment. R. Newman, *HALI* 74 and *ORR* 12:6.

to the ground. It is hard to imagine that individuals without a tradition of warp-faced weaving should construct special looms just to produce an occasional all-pile band -- especially one truly suitable only for decoration.

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