

Chapter 9

Taqueté and Samitum

Taqueté and samitum are two compound structures used extensively for polychrome figured textiles. Taqueté, also known as weft-face compound tabby, the oldest of the structures, is a compound plain weave used by both Coptic weavers (2nd–7th centuries C.E.) and Chinese weavers starting in the Tang Dynasty (7th–10th centuries C.E.). Samitum, a compound twill weave developed later, along with taqueté, was used to create beautiful textiles in diverse cultures, such as Islamic Spain (8th–15th centuries C.E.), Italy, India, and the Ottoman Empire. Samitum is also known as weft-faced compound twill. Taqueté and samitum always imply specific structures (plain weave or twill), where all the figuring occurs in the weft. A third type of compound structure, lampas, which shows both warp and weft, is discussed in the next chapter. In recent times, contemporary handweavers have taken an interest in these weaves, producing figured textiles on dobby and shaft looms through loom-controlled blocks or hand-picked imagery. In this chapter we will discuss taqueté and samitum, and show you how to use Photoshop to design them, first as jacquard cloth, and then for a dobby loom.

Taqueté

Taqueté is compound in both the warp and weft directions. One warp is the tie-down warp (also called the binder warp), the yarn that tucks the weft structurally in a plain weave interlacement. Taqueté always implies plain weave. The other warp, the inner warp (sometimes called the main warp), separates the wefts, allowing them to show on the face of the cloth or be hidden at the back of the cloth. It acts as a plane, which is either up or down (exposing or hiding wefts). There are always two or more wefts. They are structural wefts—if you cut them out of the cloth, you will have incomplete fabric. If only two wefts are used, they compliment each other; that is, one will be on the face, while the other is at the back, and vice versa. If you have three or more wefts, one will show at the front, while two or more will be on

the back. You can also run more than one weft in the front shed, to have a variation of color mixing.

Warp Ratios

The relationship of the two warps can be established at 1:1, or you can have more inner warps than tie-down warps, such as, 1:2, 1:3, 1:4. If your loom is set up with a specific sett, let's say 30 epi, you probably want to decide the length of the weft floats to determine the ratio of the two warps. If you use 1:1, then your tie-down warp has a sett of 15 epi (and 15 epi for the inner warp). Since the tie-down warp will weave plain weave, this will yield a float of approximately 1/7th of an inch. Splitting the warp 1:2 will mean the tie-down sett is 10 epi (20 epi for the inner warp), which will yield a float of 1/5th of an inch. We suggest you weave experiments with different weft yarns, to find ones that work well with your sett and the intended end use of your cloth. Since the inner warp is not seen in taqueté, you might choose a less expensive yarn for this element.

When a weft goes across the cloth, it has two options—it can be on the top, or it can be at the back, diving back and forth between these two conditions as the design dictates. If it is showing on the face, then the inner warps remain down and only the tie-down warp is raised, engaged in binding the weft as a plain weave structure. If the weft is hidden (goes to the back of the cloth), the inner warps are raised along with the plain weave of the tie-down warp. The weft is always tied in plain weave at the face or back of the cloth by the tie-down warp, so you don't have to worry about long floats. Every pattern weft is in the same plain weave shed, and it is the action of the inner warp that separates them, pushing them to the top or back of the cloth.

Warp Tension Issues

The inner warp does not interlace with the weft, just gets pierced as the wefts go from back to front, and vice versa. The tie-down warps will get tighter faster than the inner warps, since they interlace with the wefts. For a short study, the difference in warp take-up will probably not interfere with your weaving, but if possible it is best to wind the two warps on separate back beams. If you only have one back beam, try winding the warps back keeping them separated (put paper between the two warps), with the tie-down warp on top. Also, place a stick (flat on one side and slightly rounded on the other) between the two warps every foot or so. This will make the path of the tie-down warp longer, since it goes over each stick as it is inserted. As you weave, each time you remove a stick it will give the tie-down warp a slight bit of

extra length, and should ease any tension problems. We have worked this way and found it a reasonable solution to having one warp beam. You can also hang and weight the inner warps off the back of the loom, but this might take some adjustments to get everything to work smoothly while weaving a long length of cloth. See Appendix B for further information on working this way.

Note: You can find the figures in color on the CD in the Chapter 9 folder.

Since taqueté structures are all variations of plain weave, we suggest you make your structures in Photoshop first, and save them as Pattern Presets. You can then save them as a set within the Presets Manager menu and call them up for any design woven as taqueté.

Taqueté with Two Wefts (1:1)

Let's make a taqueté structure using two wefts, with the warps working at a ratio of 1 to 1.

Make a new RGB file, 6x6 with white ground. On the Background layer, pencil in the wefts (with the Pencil tool), alternating two colors, and pencil in the warps, using two colors. The Safavid weavers often used a salmon colored warp for the tie-down, thinking it blended well with all colors without being too obtrusive. In Figure 9-1, we have made the tie-down warps salmon colored and the inner warps a light gray; and we have made the wefts alternate red and yellow.

Now make a new layer, and with foreground color set to black (keyboard shortcut D for default color), pencil in the plain weave on the red wefts, with the tie-down warps. It should look like Figure 9-2.

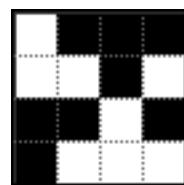
Now make another layer and pencil in the plain weave on the yellow wefts. Note that all wefts will follow the same plain weave structure. Since this is true in all taqueté, you can also just make one layer for plain weave and pencil in the structure for all wefts on the tie-down warp. In our example, Figure 9-3, we are doing it layer by layer so you can see each element.

Now make a new layer, and make marks that raise the inner warps on the yellow picks. This will force the yellow wefts to go to the back of the cloth (Figure 9-4).

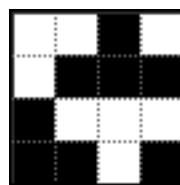
Now make another new layer. Click on the eye next to the previous layer so it is hidden. Working on the new layer, raise the inner warps on the red picks, so the red weft will go to the back and the yellow weft will show on the front (Figure 9-5).

If you want to have an area in your design where the two wefts both show on the face of the cloth, then you want to make a structure where the inner warps remain down and both wefts weave plain weave. This structure will have both wefts showing on the front of the cloth, and you will see the inner warps floating at the back of the cloth. You might not like this effect or want to use it if the final cloth is intended to be two sided. If it is a wall hanging, it shouldn't matter. The structure will look like Figure 9-6.

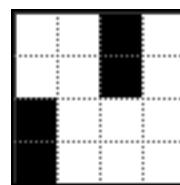
The three final structures (ratio of 1:1, two wefts) will look like this:



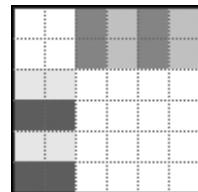
9-7a Taqueté 001
Weft One to Top



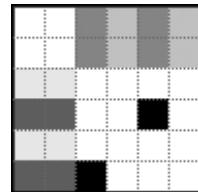
9-7b Taqueté 002
Weft Two to Top



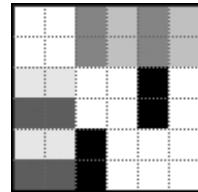
9-7c Taqueté 003
Both Wefts to Top



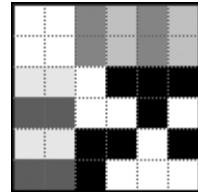
9-1



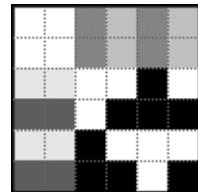
9-2



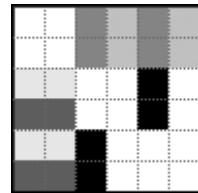
9-3



9-4

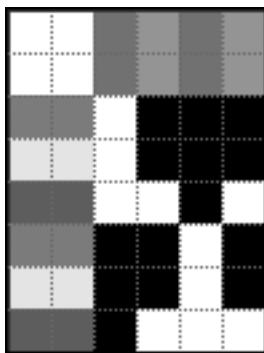


9-5

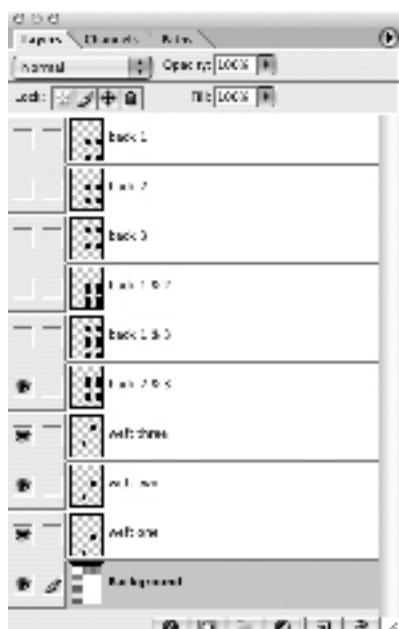


9-6

Be sure and save each combination as a Pattern Preset for future use in designs. You should know how to create Pattern Presets by now—make a selection the size of the structure only (4x4 in the three examples), then go to the Edit menu and select Define Pattern. In the dialogue you will see a small image of the pattern to be saved to the left of where you type in a name. Save it. When you have saved all the taqueté structures, you can go to **Edit>Preset Manager** and save them as a set. We will remind you to do this at the end of this section.



9-8



9-9

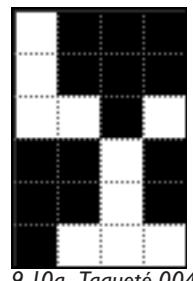
Taqueté with Three Wefts (1:1)

If you want to have additional wefts, you should make a template with the weft sequence on the left, create a layer with plain weave for each weft (or one for all of them), and then create layers that raise the inner warp on each weft. Making the layers visible and invisible by clicking the eye to the left of the layer, will give you the combination of layers for various structures.

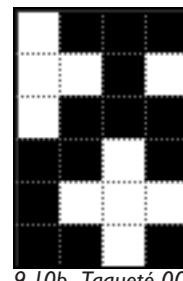
When you are weaving taqueté with three wefts, there are seven structural variations possible: you can bring weft one to the top, weft two to the top, weft three to the top, all three wefts to the top, wefts one and two to the top, wefts

two and three to the top, or wefts one and three to the top. Figure 9-8 shows you what the Photoshop template will look like when you have the first weft weaving on top and the other two going to the back. The template is found on the CD as **9-8.psd**.

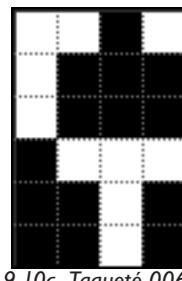
The Layers palette for template **9-8.psd** is shown in Figure 9-9. You can access and save all seven structures by turning different layers on and off. Be sure and use a rectangular selection that includes only the structure (4 wide x 6 high), and save as a Pattern. You can rename the layers so that they are meaningful to you. Here are the seven taqueté weave structures for three wefts when the warps are set at ratio of 1 to 1:



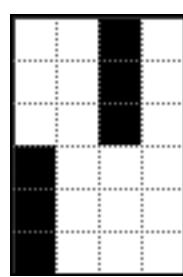
9-10a Taqueté 004



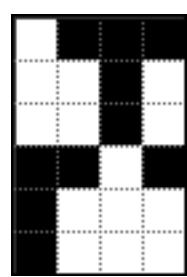
9-10b Taqueté 005



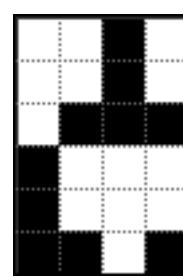
9-10c Taqueté 006



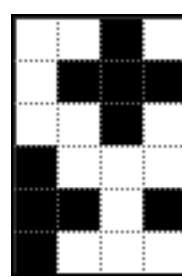
9-10d Taqueté 007



9-10e Taqueté 008



9-10f Taqueté 009



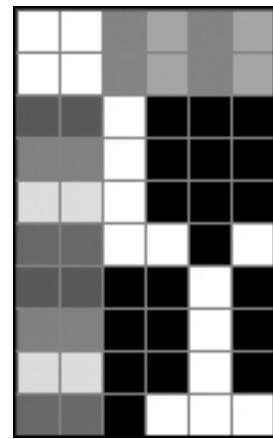
9-10g Taqueté 010

Note that the structure Taqueté 007 brings all three wefts to the face of the cloth, causing the inner warp, which is usually completely hidden in taqueté, to show at the back of the cloth. If you don't like this, then don't use that structure.

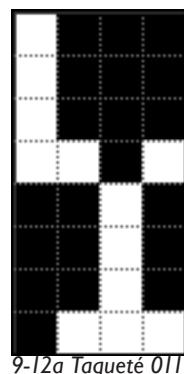
Taqueté with Four Wefts (I:I)

If you are weaving taqueté with four wefts, then you have four undiluted color possibilities with one weft to the top and three to the back, a structure that brings all four wefts to the top, six variations of two wefts to the top, and four variations of three wefts on top. This adds up to 15 structures. The template for the structure that brings weft one to the top alone is found on the CD as **9-11.psd**, and shown here as Figure 9-11.

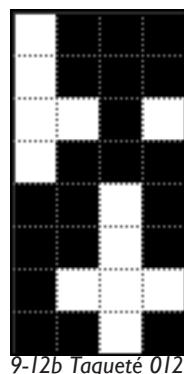
The fifteen taqueté structures using four wefts with a ratio of 1:1 look like this:



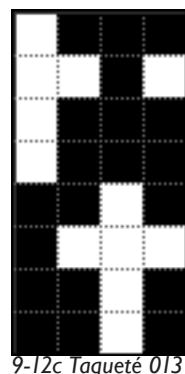
9-11



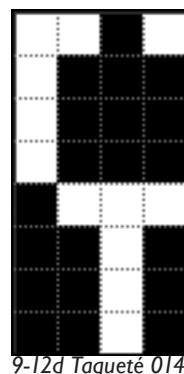
9-12a Taqueté 011



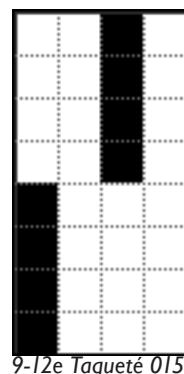
9-12b Taqueté 012



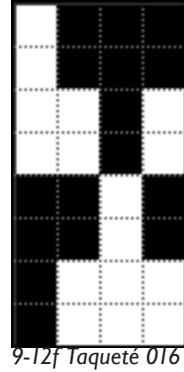
9-12c Taqueté 013



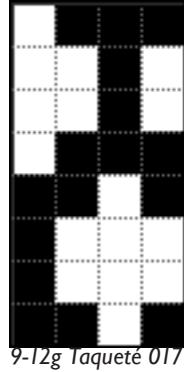
9-12d Taqueté 014



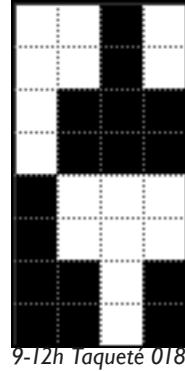
9-12e Taqueté 015



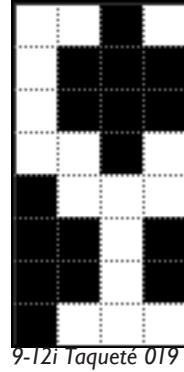
9-12f Taqueté 016



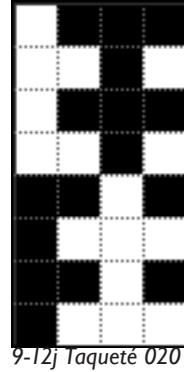
9-12g Taqueté 017



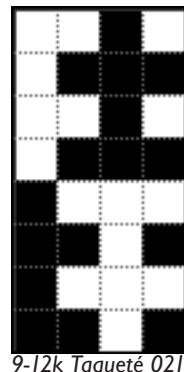
9-12h Taqueté 018



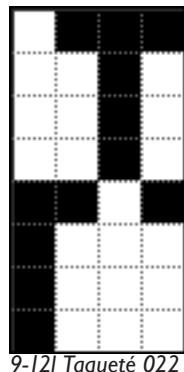
9-12i Taqueté 019



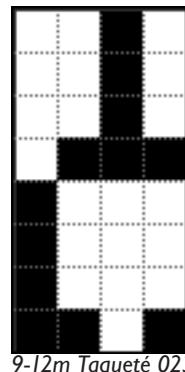
9-12j Taqueté 020



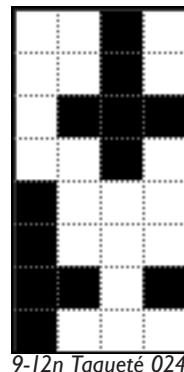
9-12k Taqueté 021



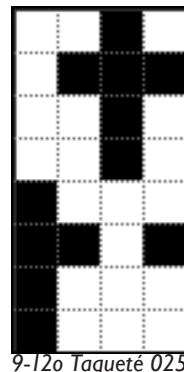
9-12l Taqueté 022



9-12m Taqueté 023



9-12n Taqueté 024

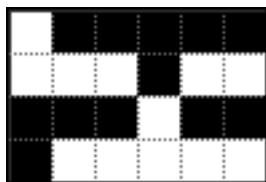


9-12o Taqueté 025

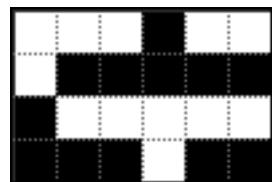
Taqueté with Ratios of 1:2

If the ratio of the sett between the two warps is different than 1:1, you have to make new structures that reflect this. There will still be three structures for two wefts, seven structures for three wefts, and fifteen structures for 4 wefts, giving you a total of 25 structures. Following are the taqueté structures for two, three, and four wefts when the ratio is 1:2 (1 tie-down warp to 2 inner warps).

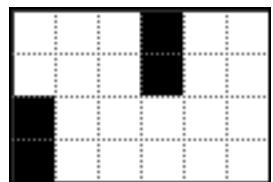
Two Weft Structures (1:2)



9-13a Taqueté 026

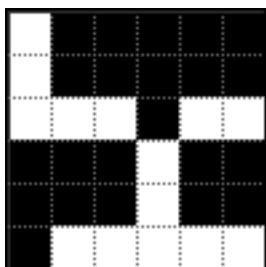


9-13b Taqueté 027

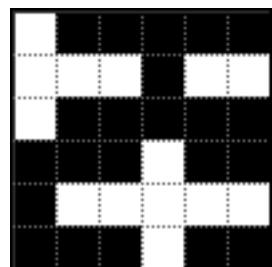


9-13c Taqueté 028

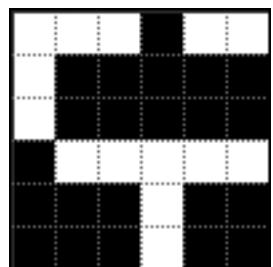
Three Weft Structures (1:2)



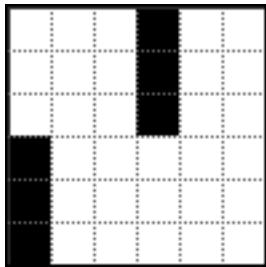
9-14a Taqueté 029



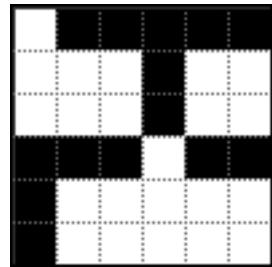
9-14b Taqueté 030



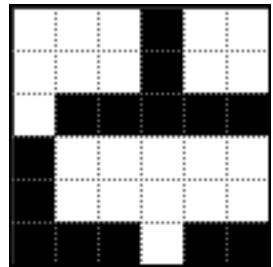
9-14c Taqueté 031



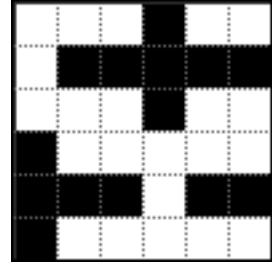
9-14d Taqueté 032



9-14e Taqueté 033

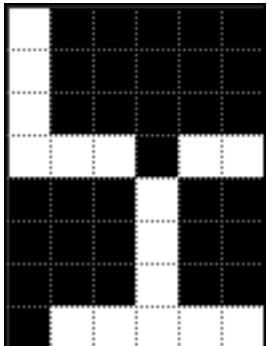


9-14f Taqueté 034

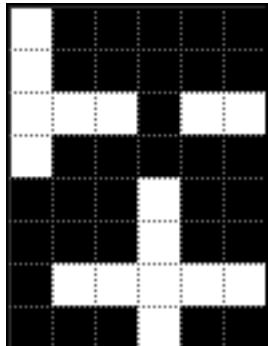


9-14g Taqueté 035

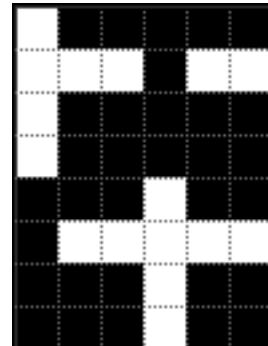
Four Weft Structures (1:2)



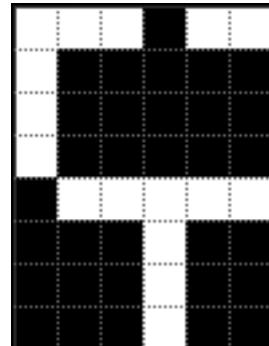
9-15a Taqueté 036



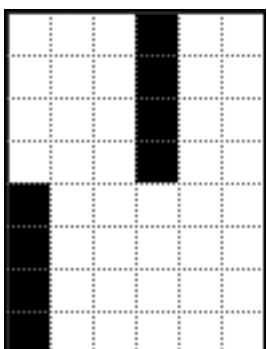
9-15b Taqueté 037



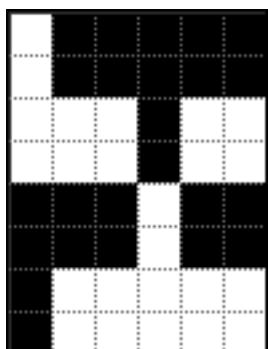
9-15c Taqueté 038



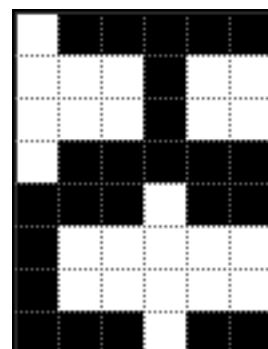
9-15d Taqueté 039



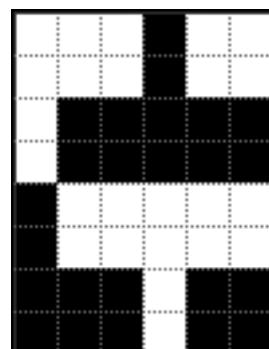
9-15e Taqueté 040



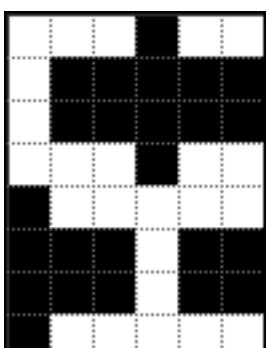
9-15f Taqueté 041



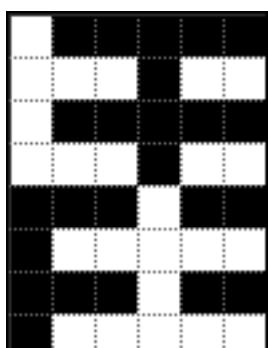
9-15g Taqueté 042



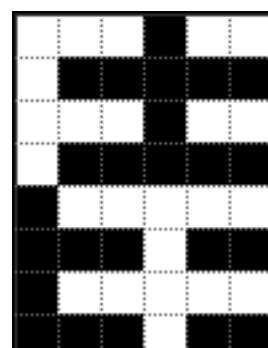
9-15h Taqueté 043



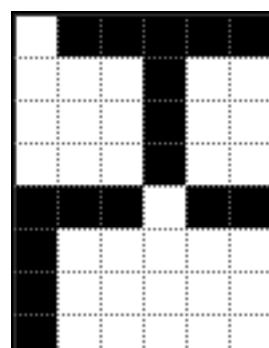
9-15i Taqueté 044



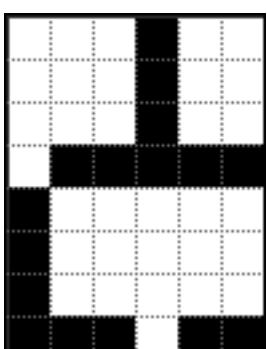
9-15j Taqueté 045



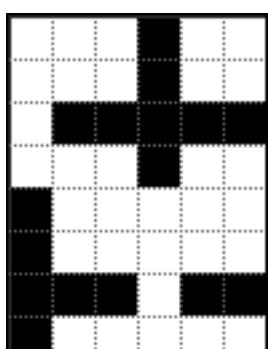
9-15k Taqueté 046



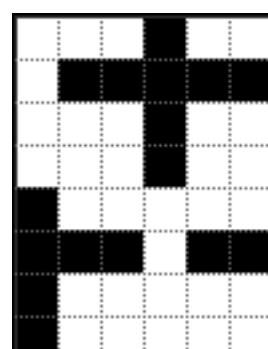
9-151 Taqueté 047



9-15m Taqueté 048



9-15n Taqueté 049

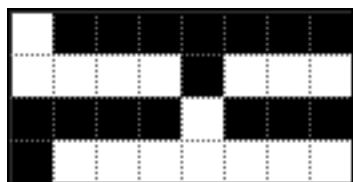


9-15o Taqueté 050

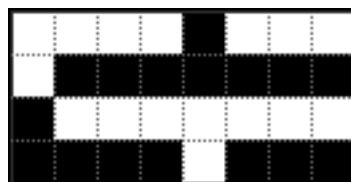
Taqueté with Ratios of 1:3

Here are the 25 structures for taqueté using two, three, and four wefts when the ratio of the two warps is 1:3 (1 tie-down warp to 3 inner warps).

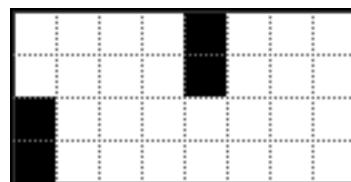
Two Weft Structures (1:3)



9-16a Taqueté 051

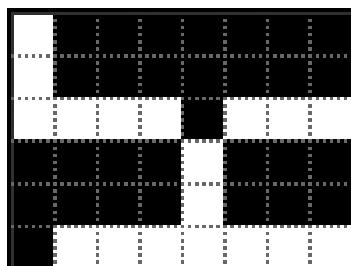


9-16b Taqueté 052

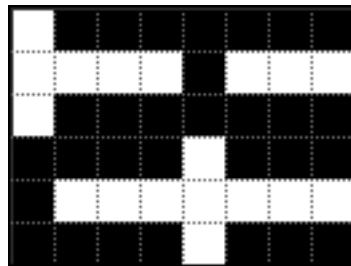


9-16c Taqueté 053

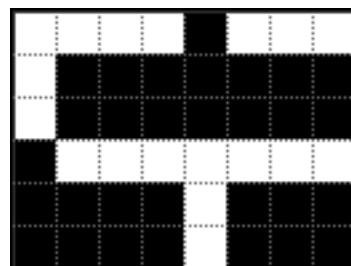
Three Weft Structures (1:3)



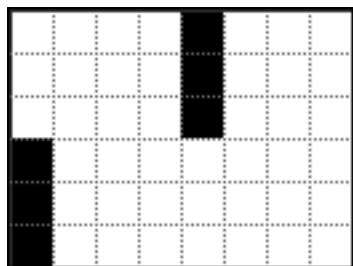
9-17a Taqueté 054



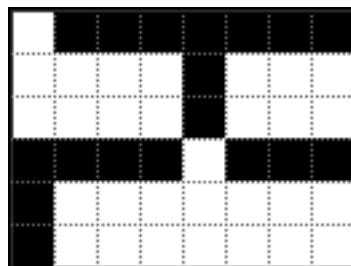
9-17b Taqueté 055



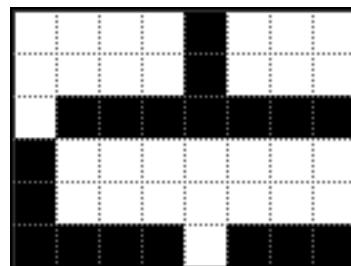
9-17c Taqueté 056



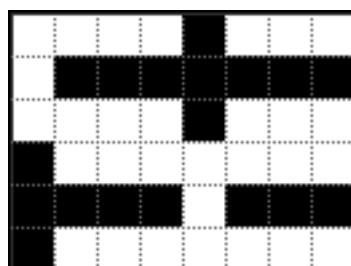
9-17d Taqueté 057



9-17e Taqueté 058

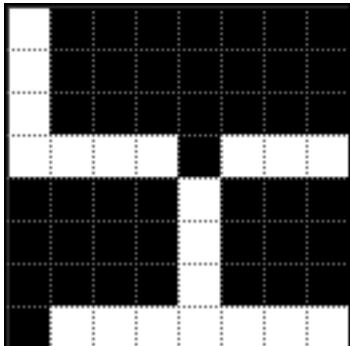


9-17f Taqueté 059

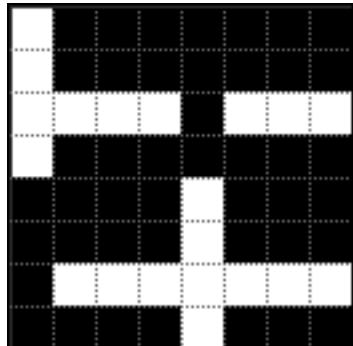


9-17g Taqueté 060

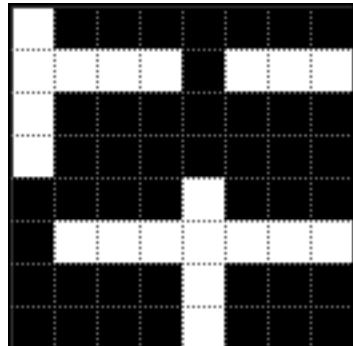
Four Weft Structures (I:3)



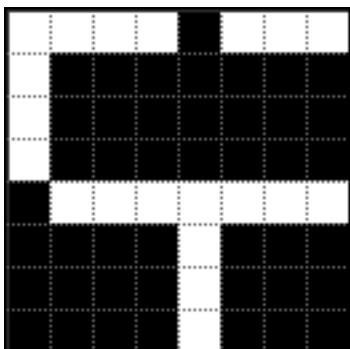
9-18a Taqueté 061



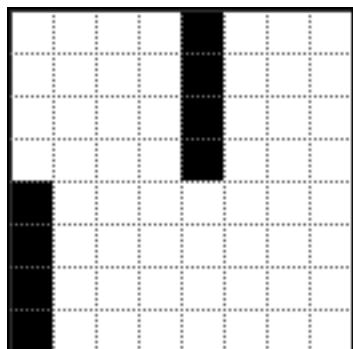
9-18b Taqueté 062



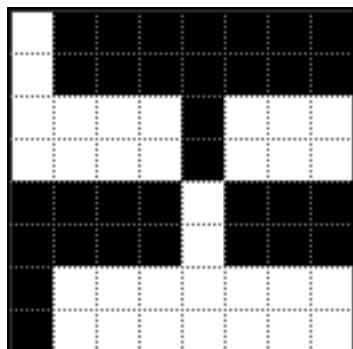
9-18c Taqueté 063



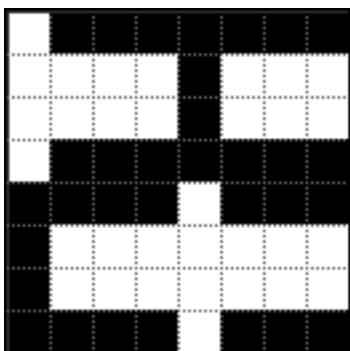
9-18d Taqueté 064



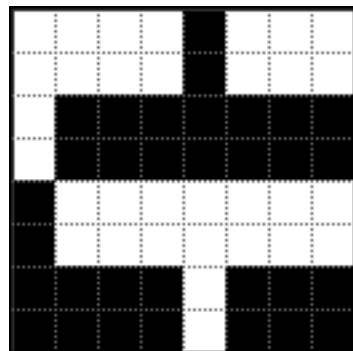
9-18e Taqueté 065



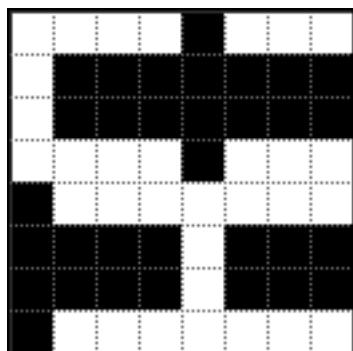
9-18f Taqueté 066



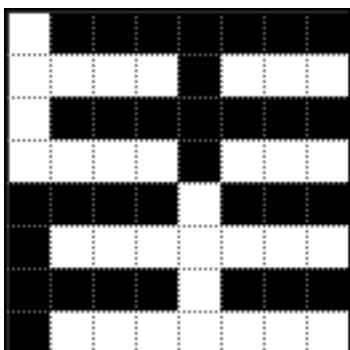
9-18g Taqueté 067



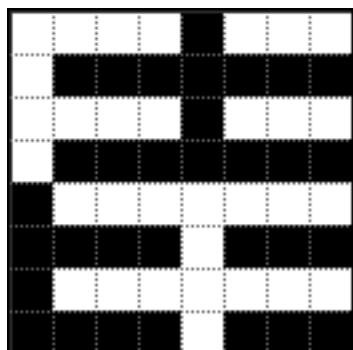
9-18h Taqueté 068



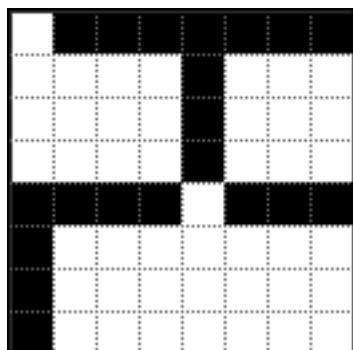
9-18i Taqueté 069



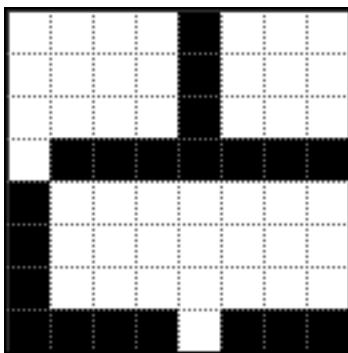
9-18j Taqueté 070



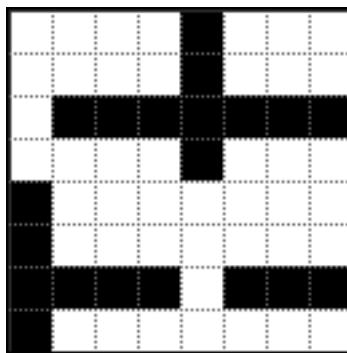
9-18k Taqueté 071



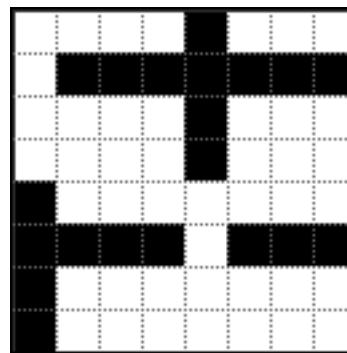
9-181 Taqueté 072



9-18m Taqueté 073



9-18n Taqueté 074



9-18o Taqueté 075

Here is a chart letting you know the variables of these 75 structures.

| Number of Wefts | Wefts on Top | Chart for Taqueté Pattern Presets | | |
|--------------------|-----------------|-----------------------------------|-----|-----|
| | | Pattern Preset Name (Taqueté #) | | |
| | | 1:1 | 1:2 | 1:3 |
| 2 | 1 | 001 | 026 | 051 |
| 2 | 2 | 002 | 027 | 052 |
| 2 | 1 & 2 | 003 | 028 | 053 |
| 3 | 1 | 004 | 029 | 054 |
| 3 | 2 | 005 | 030 | 055 |
| 3 | 3 | 006 | 031 | 056 |
| 3 | 1, 2 & 3 | 007 | 032 | 057 |
| 3 | 1 & 2 | 008 | 033 | 058 |
| 3 | 2 & 3 | 009 | 034 | 059 |
| 3 | 1 & 3 | 010 | 035 | 060 |
| 4 | 1 | 011 | 036 | 061 |
| 4 | 2 | 012 | 037 | 062 |
| 4 | 3 | 013 | 038 | 063 |
| 4 | 4 | 014 | 039 | 064 |
| 4 | 1, 2, 3 & 4 | 015 | 040 | 065 |
| 4 | 1 & 2 | 016 | 041 | 066 |
| 4 | 2 & 3 | 017 | 042 | 067 |
| 4 | 3 & 4 | 018 | 043 | 068 |
| 4 | 1 & 4 | 019 | 044 | 069 |
| 4 | 1 & 3 | 020 | 045 | 070 |
| 4 | 2 & 4 | 021 | 046 | 071 |
| 4 | 1, 2 & 3 | 022 | 047 | 072 |
| 4 | 2, 3 & 4 | 023 | 048 | 073 |
| 4 | 1, 3 & 4 | 024 | 049 | 074 |
| 4 | 1, 2 & 4 | 025 | 050 | 075 |

Remember to save all your taqueté Pattern Presets as a Set, so you can access them at any time in the future. Go to **Edit>Preset Manager**. Change Preset Type to Patterns. If the window displays patterns that are not taqueté, highlight them and choose Delete, but be sure to save them as a set first if you want them for future use. Now highlight all the taqueté structures and chose Save Set. It will ask you where to save them. We suggest you go to **Applications>Photoshop>Presets> Patterns>Weave Presets**. Give it a name like Taqueté and they will be saved as a group. On the CD that came with this book, you will see a folder of Presets with all 75 taqueté structures that we have discussed here. These are for warp ratios of 1:1, 1:2, and 1:3. If you have a different ratio between your two warps, then you will need to create your own taqueté structures that reflect this ratio. Also, we have only given you structures for two, three and four wefts so you will have to create your own structures if you are using more than four wefts.

Even though we have given you many taqueté structures, we suggest that you try to make your own to confirm that you understand this process. You can make a few that we have already made, and compare them to see if you are correct. Weaving a weave blanket of these structures will offer you a cornucopia of choices for your work.

Designing Images for Taqueté

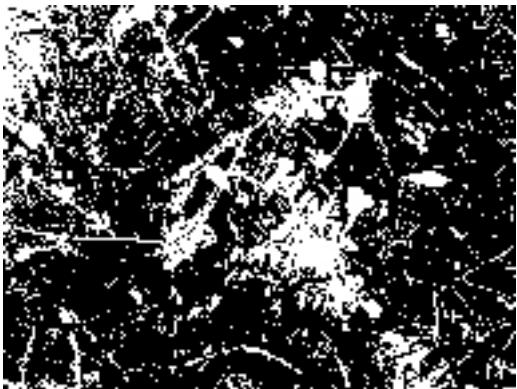
Two-Weft Taqueté

When designing for taqueté, you will want to design for the face of the design, then expand it before putting in the actual weave structures. We suggest you work with square pixels until you have experience and know the actual ppi in the final cloth. Working this way will mean that you need to go to the loom and weave an inch or two of your design, then relax the tension and count the true number of epi and ppi. Find the true Pixel Aspect Ratio by dividing ppi by epi. Then go back to your design and resize it. (If you need a reminder on how to do this, see Chapter 4.) The image will look stretched or squashed on the screen, but will weave correctly. If you want to see the image in the correct proportion on screen, go to Pixel Aspect Ratio and put in the new aspect ratio (ppi divided by epi).

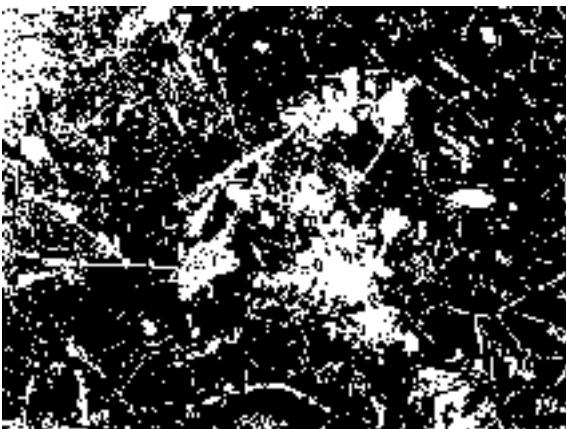
Let's do an example of an image, first creating a two-weft taqueté, then a three-weft taqueté, and finally a four-weft taqueté. In our example, we use a ratio of 1:2 for the warps (1 tie-down warp to 2 inner warps), and we will assume that our loom is threaded at 30 epi. This will mean that the face cloth has 10 epi (tie-down warp only). Since we will work with square pixels, at this point we are considering our face picks as 10 ppi. We will design for a loom with a total of 880 hooks, therefore 294 face ends. Figure 9-19 shows the starting image. Remember, you can follow along with the



9-19



9-20



9-21



9-22

images in color by referring to the Chapter 9 folder of the CD. This image is **9-19.psd** on the CD.

Using Threshold, we reduced the image to two colors, for the first two-color taqueté so it looks like Figure 9-20.

So far the image has not been resized to reflect the face of the cloth. Under **Image>Image Size** we see the width is 1600 and the height is 1200. We want to reduce it to a width of 294 which is the number of face ends and the proportionate number of picks. Under Image Size, change the selection next to Resample Image to Nearest Neighbor. Have both Constrain Proportions and Resample Image checked. Change the width to 294. Photoshop changes your height to 291. Click OK. Figure 9-22 shows what the image looks like now:

Although the elements are blockier, it still retains the essence of the Threshold image. We could have reversed this process—resizing the image first, then using Threshold. Try both ways to find your preference of the sequence of the work. Now we need to resize the image to the correct final number of warps and wefts so we can add the structures.

Again, go to **Image>Image Size**. This time uncheck Constrain Proportions. Make sure Nearest Neighbor is selected next to Resample Image. Change the width to 880 and double the number of picks to 442 (to reflect the two weft systems). Click Okay. The image is going to appear squashed now (see Figure 9-22), but reflects the real number of warps and wefts. Basically you have expanded your design by repeating every vertical column three times, and every horizontal row two times.

There should still be only two colors in your design, but just to be sure, go to **Image>Mode>Indexed Color**.

You should see Exact next to Palette and the number 2 next to Forced. Just cancel out of this menu, since we need to be in RGB to make layers from each color.

Using the Magic Wand, click on the black in your design. Use the keyboard shortcut **Command(Control)-J** and you will have a new layer of just the black color. Alternatively, you can go to **Layers>New>Layer via Copy** and it will also give you the black as its own layer. Now click back on Background layer and select the white with your Magic Wand. Again, make a layer out of it.

You have to make a mental decision now about the sequence of wefts that you will use in the weaving. Do you want your first weft to represent the black color or the white color? Let's say that the black color will be our first weft, and the white color will be our second weft. Click on the black layer, so it is

the active layer. Now go to the bottom of the Layers palette and click on the *Add a Layer Style* button, which is the small “f” icon, and choose Pattern Overlay. In the menu that opens, uncheck Link with Layers and **do not** click on Snap to Origin. Choose Taqueté 001, since this is the weave structure that brings the first weft to the top of the cloth. Click OK. Now click on the white layer and do the same thing—only this time, choose Taqueté 002, since this is the structure that brings the second weft to the top of the cloth. Your Layers palette is going to look like Figure 9-23.

Save your layered image and duplicate it. Now flatten the duplicate and save as a .tif or .bmp file. It is ready to be woven. Go to the loom and weave an inch or two with the natural beat you will use to weave the cloth. Loosen the tension and count the number of picks per inch and ends per inch in the slack cloth. Find out your true Pixel Aspect Ratio by dividing the ppi by the epi.

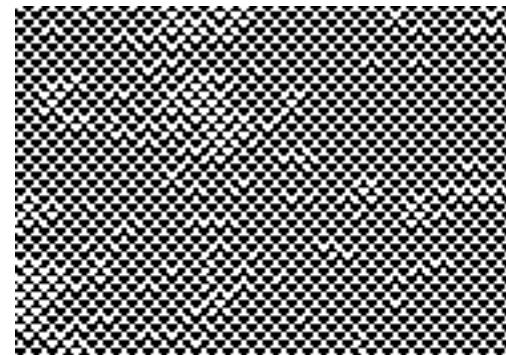
Open up the layered file, with the weaves in it (**9-24.tif**) and go to **Image>Image Size**, uncheck Constrain Proportions, make sure Resample Image has Nearest Neighbor selected, and change the number next to the height to the true number of picks, which is the pixel height multiplied by the Pixel Aspect Ratio that you just calculated. Click OK. (You will want to make sure the new height is divisible by 2, so that the weaves will fall in the right place. Actually, if the new height is divisible by four, you can be sure a complete weave structure is flooded into the design, which is even safer in terms of wefts falling on the right pick.) The weave structures will remain correct but the file will have changed height. Save this file, flatten it and resave as either a .bmp or a .tif file. Return to your loom and weave it. Now it should weave at the right proportions.

When you look at the image with the weave structures in place (Figure 9-24), it is hard to see your design, since the structures are so similar. You can see a crude simulation this way. Make a new file 1 pixel wide x 2 pixels high. Choose a color to represent your first weft (we chose red) and with your pencil dot in a red pixel on the bottom of the new file. Choose a color to represent your second weft (we chose yellow) and dot in that color in the second pixel. Go to **Edit>Define Pattern** and save this file—we called ours **2 taqueté wefts**.

Now highlight the white color in your structure, which represents weft. Go to **Edit>Fill** and choose your **2 taqueté wefts** as the fill. Now you should see your image as a two-color design (**9-26.tif**). The black pixels represent warp, which in our cloth will be hidden. For an expanded explanation of Cloth Simulation in Photoshop where warps and wefts are visible, see Appendix C. A section of our simulation looks like Figure 9-26



9-23

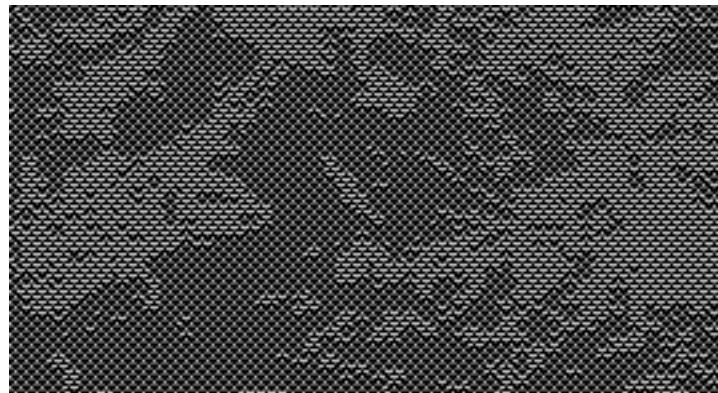


9-24



9-25

(remember, we didn't resize ours because we didn't actually weave it to find out the true picks per inch).

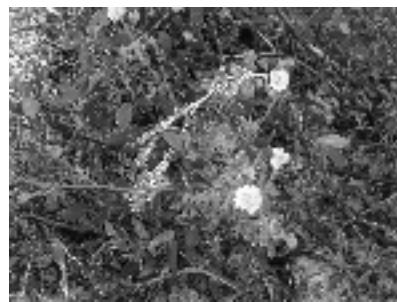


9-26

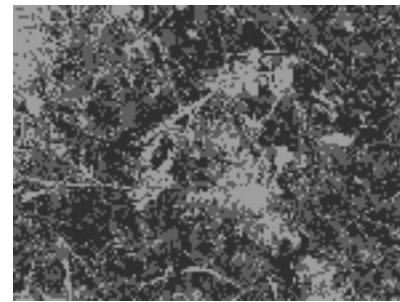
Three-Weft Taqueté Using Three Structures

Now we will do a three-weft taqueté. We opened the original image but this time we resized it before doing anything else. Resized to 294 ends and 221 picks (square pixels), it looks like Figure 9-27 and is found on the CD as **9-27.tif**.

Then we reduced it to three colors via Indexed Color Mode. It looks like Figure 9-28.



9-27



9-28



9-29

Planning to weave it with yellow, olive and green wefts, we went to **Image>Mode>Color Table** and changed the colors to better reflect what we intend in the cloth. Customizing the Color Table can really help you get a better sense of what you want. At first we thought we would use red instead of olive—but it looked awful and we tried several other colors until we settled on olive. The image can be found in color on the CD as **9-29.psd**. Here it is shown as Figure 9-29.

When we expanded the design before putting in the weaves, we multiplied the height by three—to account for our three wefts. The width was also multiplied by three, to account for both warp systems (1 tie-down warp to two inner warps). After putting in weaves, we made a simulation using the three weft colors, yellow, olive and green, shown in Figure 9-30 and found on the CD as **9-30.tif**.

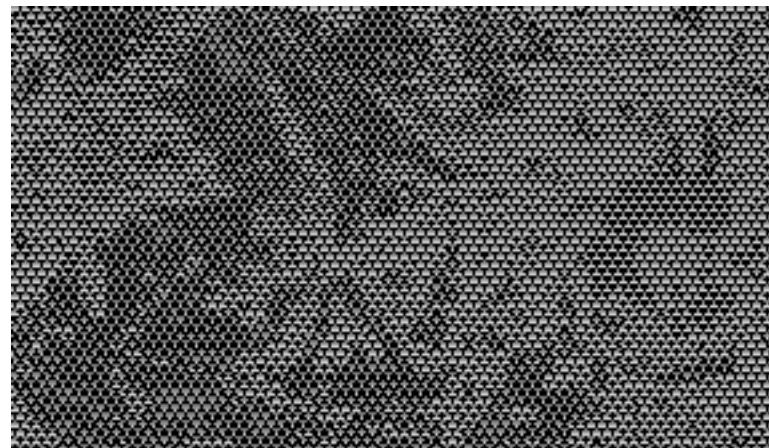
The simulation (a detail is shown in Figure 9-31) does not look as good as in the two-color simulation, because the black warp, which is indicating both the tie-down warp and the inner warps is more prominent. It won't be in the cloth, however, since the inner warps will be completely hidden.

Using Six Structures

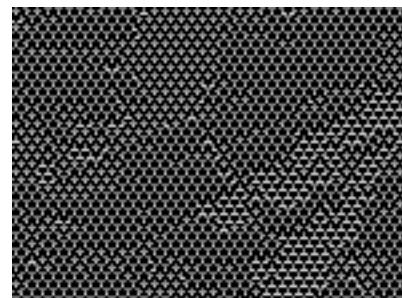
For a three-weft design, using combinations of wefts as color areas, we returned to image **9-27.tif**, with 294 ends and 221 picks. This time when we went to Index mode we asked for 6 colors, so there would be areas of one weft showing, and areas of two wefts showing. After we went into the Color Table and modified the colors to reflect the wefts we planned to use, the indexed image in 6 colors looked like Figure 9-32 (**9-32.tif** on the CD).

Then the image was changed to RGB, expanded to the true size, and layers were made for each color. Pattern Overlays with taqueté structures were created. We named our layers with the weft color(s) we wanted to show in that portion of the design, as well as the number of the taqueté structure that was used as the Pattern Overlay. The Layers Window is shown in Figure 9-33.

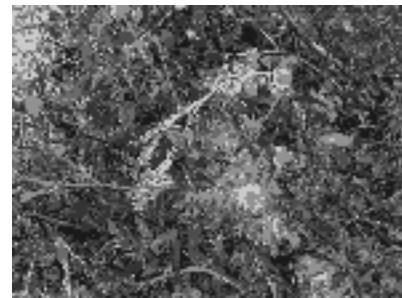
Here is what a section of the structural image looks like flattened, with the white (weft) filled with the three-color weft rotation shown in Figure 9-30. Again, the black of the warp represents both warps, the tie-down ends and the inner warps. Remember the inner warps will not show in the actual cloth,



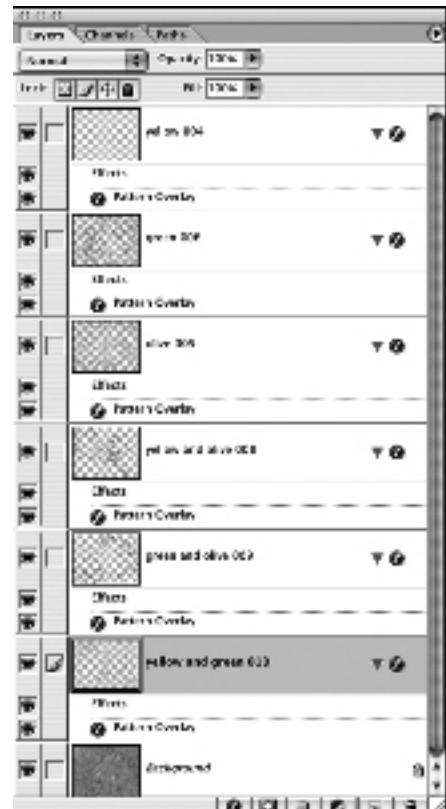
9-30



9-31



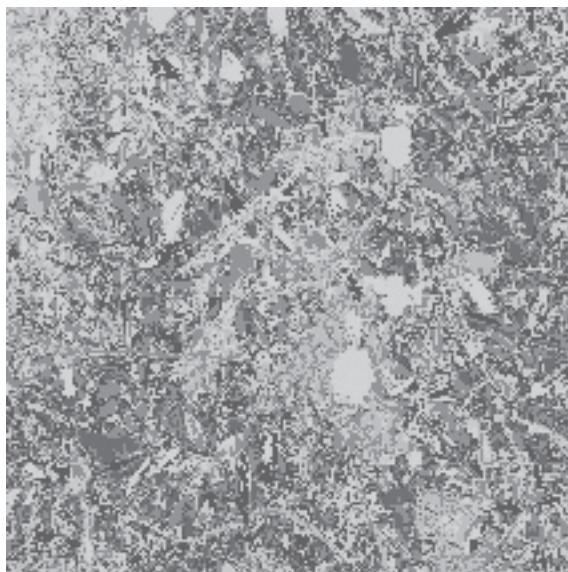
9-32



9-33

so this illustration should be viewed as a representation, not an accurate simulation of the cloth.

Four-Weft Taqueté Using 8 Structures



9-35

Here is our image (Figure 9-35) as a four-weft taqueté (yellow, light green, dark green, and blue). There are 8 colors in the image because the plan is to use the wefts as distinct colors as well as combined. The image looks stretched in the height because the design was multiplied by four to account for all four weft systems. In the actual weaving it won't look stretched. However, remember you need to weave an inch or two of the actual design and count the wefts to find out what the true ppi will be—then resize the height of the design to reflect this number. In this case, you should make sure your new height is divisible by 4, so that the structures will coordinate with the correct weft system. If you want to have complete structures, from start to end, then have your height divisible by 8, the number of wefts for one repeat of each structure.

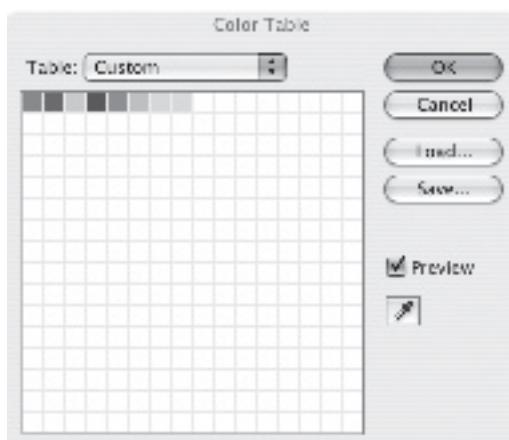
Some Helpful Hints

We want to remind you of a few things we did to make working with this many colors easier. First, we saved a custom Color Table of 8 colors (**9-36.act** found on the CD). Review Chapter 6 for details on how to do this. When we indexed our image (**Image>Mode>Indexed Color**), we used Local (Adaptive), changed the number of colors to 8, and Forced: Custom which then allowed us to load **9-36.act**. Figure 9-36 shows the Custom Color Table. The indexed file is saved as **9-36a.tif** on the CD.

Then we changed our file to RGB, so we could make layers out of the 8 colors to put in our weave structures. We loaded the colors into our Swatch palette (click on the triangle in the upper right-hand corner of the palette to access the flyout menu, we chose Replace Swatches, but we could have added them to the previous swatches). Then we made fixed-size small squares (8x8) at the bottom left-hand corner of the file, and filled them with each color—so we could easily identify the colors when using the Magic Wand to make separate layers

of them. (If we had included a border with the design, as we probably would have done if actually weaving the design, we would have put the squares into the border.) Figure 9-37 on the next page shows the bottom left corner of Figure 9-35 with these squares of color.

When we made separate layers from each color, we named the layer with the wefts we wanted on top, as well as the number of the taqueté structure



9-36

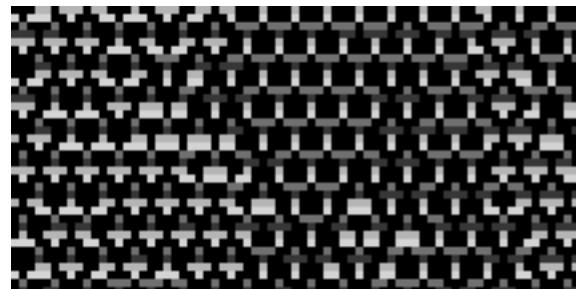
used as a Pattern Preset. File **9-38.tif** found on the CD is the layered weave file. We also flattened it (**9-38a.tif**), made sure it had only two colors in it, and saved it as a color simulation (**9-38c.tif**). The four color weft sequence used for the simulation is saved as **9-38b.tif**. We also saved a loom-ready file as **9-38.bmp**. Figure 9-38 shows a detail from the color simulation file.



9-37

Weave Face Down

We have discussed taqueté as if you are weaving the cloth face up. If you find you are having heavy lifts, you might want to try inverting the design and weaving it face down. This option will be more attractive as the number of wefts increases, and more of them lie on the back of the cloth than on the front. If your design has a specific direction, then flip the image, right to left, before you invert it.



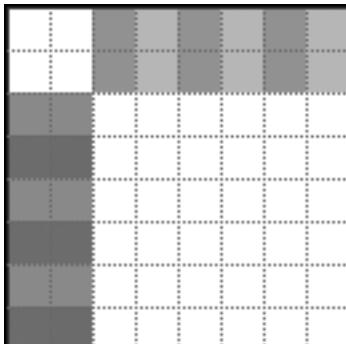
9-38

A final comment: we have discussed the weft sequence as if you are always weaving with the same two, three or four wefts, following the same color rotation throughout the cloth. There is no reason why you can't change the colors along the length of the cloth, but think of it as a rotation within a weft system. In other words, you might start off by using a rotation of red, yellow and green wefts (weft systems one, two and three), and as you weave, switch the red weft into an orange yarn and later into a brown yarn (still weft systems one, two and three). The actual color changes but red, then orange, and finally brown are still the first weft system. Changing colors within a weft system can add complexity to your work without forcing you to add more weft systems.

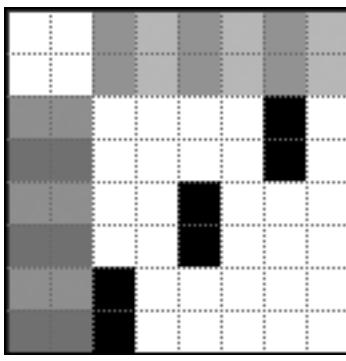
Samitum

Samitum is very similar to taqueté except twill is used as the structure to bind the wefts instead of plain weave. If you like the diagonal lines that are created by twills, then you will probably prefer samitum to taqueté. Except for the structure, everything else we discussed above for taqueté is the same for samitum. The tie-down warp is the structural element—and the wefts lie in the same twill shed, pushed to the top or back of the cloth by the inner warps—which act as a plane, rising when a weft is to go to the back, and staying down when the weft is to be seen on the face of the cloth. This is still a weft-faced fabric with the inner warps hidden in the center and the tie-down warp showing only where they tack the wefts. Often they too seem hidden, as in weft tapestry.

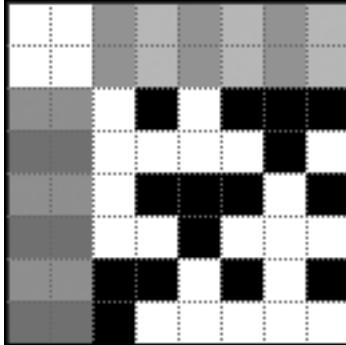
As with taqueté, you have to consider the ratio between the two warps when you make your structures. It can be 1:1, 1:2, 1:3 or more. Structures also have to be created for the specific number of weft systems you are using. A two-weft samitum structure is going to be smaller than a four-weft structure.



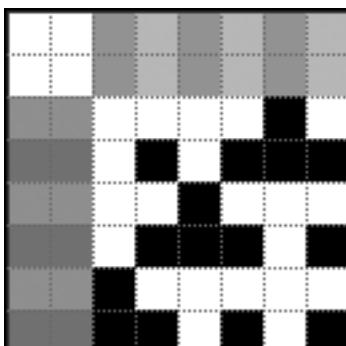
9-39



9-40



9-41



9-42

There are many variations of twills, but a three-end twill or a four-end twill are probably the most widely used in samitum. These are the ones we will describe.

Samitum with Two Wefts, I:I Ratio, Using the 1/2 Twill

Starting with a 1/2 twill for two wefts, and a ratio of 1:1, make a template that shows the sequence of wefts and warps. You can follow the images in color by opening the Chapter 9 folder of the CD. Figure 9-39 shows file **9-39.psd**.

Make a new layer, and using black as the foreground color, with the Pencil tool, dot in the twill on all wefts. In the taqueté, we did separate layers for each weft, but we could have easily combined them in one layer, as we are doing here. By doing it this way, we are showing you more clearly that all wefts follow the same twill path. See Figure 9-40.

Make a new layer, and mark the inner warps so that they rise on every pick of the second weft system (Figure 9-41).

Make a selection 6x6 and select the structural area only. Save this as a Pattern Preset. We named ours Samitum 001.

Make a copy of the previous layer by dragging the layer down onto the Create a New Layer button at the bottom of the Layers palette. Turn the visibility of the first inner warp layer off. Make sure your new layer, the copy, is the active layer. Using the Move tool and the down arrow, move the marks down so they fall on the place where the inner warps and the first weft system overlap. See Figure 9-42. We renamed the layers so they would help us understand the template (*twill layer, hides weft 2 layer, and hides weft 1 layer*). You can see the Layers Palette and the completed template on the CD as **9-42.psd**.

Again, using a 6x6 selection, save the structural area as a Pattern Preset. We called this Samitum 002.

If you want a structure that brings both wefts to the face, save a selection with only the tie-down warp rising, as in Figure 9-40. Remember though that this structure will not have either weft working at the back of the cloth in the areas of the design where you use it. It will be structurally sound, but the inner warps will show as warp floats at the back of the cloth. This is not typical in traditional samitum, but you might like it. We saved the structure as Samitum 003.

We made templates for both the 1/2 twill and 1/3 twill using 2, 3, and 4 wefts, at ratios of 1:1, 1:2, and 1:3. We saved them on the CD in the Chapter 9 folder.

In total we have created and saved 150 samitum Pattern Presets that you can find on the CD. There are 75 samitum structures using the 1/2 twill, and 75 samitum structures using the 1/3 twill. Each twill has been saved at three ratios. The Pattern Presets can be found in the

master Weave Presets folder as well as the Chapter 9 folder. Below is a chart explaining our samitum structures.

| Chart for Samitum Structures | | | | | | | |
|------------------------------|----------------------|-------------------------------------|-----|-----|-------------------------------------|-----|------|
| Number of Wefts | Weft(s) on Top | Pattern Preset Names (Samitum #) | | | | | |
| | | 1/2 Twill | | | 1/3 Twill | | |
| | | Ratio of Tie-Down to Inner Warps | | | Ratio of Tie-Down to Inner Warps | | |
| | | 1:1 | 1:2 | 1:3 | 1:1 | 1:2 | 1:3 |
| 2 | 1 | 001 | 026 | 051 | 076 | 101 | 126 |
| 2 | 2 | 002 | 027 | 052 | 077 | 102 | 127 |
| 2 | 1 & 2 | 003 | 028 | 053 | 078 | 103 | 128 |
| 3 | 1 | 004 | 029 | 054 | 079 | 104 | 129 |
| 3 | 2 | 005 | 030 | 055 | 080 | 105 | 130 |
| 3 | 3 | 006 | 031 | 056 | 081 | 106 | 131 |
| 3 | 1,2,3 | 007 | 032 | 057 | 082 | 107 | 132 |
| 3 | 1 & 2 | 008 | 033 | 058 | 083 | 108 | 1323 |
| 3 | 2 & 3 | 009 | 034 | 059 | 084 | 109 | 134 |
| 3 | 1 & 3 | 010 | 035 | 060 | 085 | 110 | 135 |
| 4 | 1 | 011 | 036 | 061 | 086 | 111 | 136 |
| 4 | 2 | 012 | 037 | 062 | 087 | 112 | 137 |
| 4 | 3 | 013 | 038 | 063 | 088 | 113 | 138 |
| 4 | 4 | 014 | 039 | 064 | 089 | 114 | 139 |
| 4 | 1,2,3,4 | 015 | 040 | 065 | 090 | 115 | 140 |
| 4 | 1 & 2 | 016 | 041 | 066 | 091 | 116 | 141 |
| 4 | 2 & 3 | 017 | 042 | 067 | 092 | 117 | 1422 |
| 4 | 3 & 4 | 018 | 043 | 068 | 093 | 118 | 143 |
| 4 | 1 & 4 | 019 | 044 | 069 | 094 | 119 | 144 |
| 4 | 1 & 3 | 020 | 045 | 070 | 095 | 120 | 145 |
| 4 | 2 & 4 | 021 | 046 | 071 | 096 | 121 | 146 |
| 4 | 1,2,3 | 022 | 047 | 072 | 097 | 122 | 147 |
| 4 | 2,3,4 | 023 | 048 | 073 | 098 | 123 | 148 |
| 4 | 1,3,4 | 024 | 049 | 074 | 099 | 124 | 149 |
| 4 | 1,2,4 | 025 | 050 | 075 | 100 | 125 | 150 |

Even though we have given you many samitum structures, we suggest that you try to make your own to confirm that you understand this process. You can make a few that we have already made, and compare them to see if you are correct. Weaving a weave blanket of these structures will offer you a cornucopia of choices for your work.

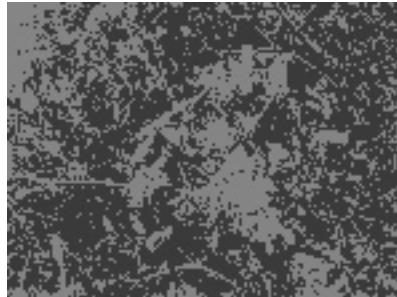
Designing Images for Samitum

Two-weft Samitum Using A 1/2 Twill (Ratio 1:2)

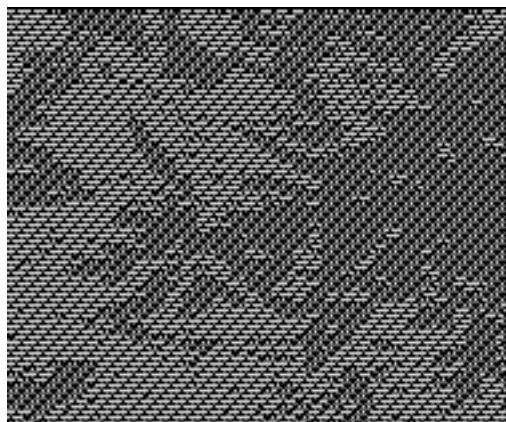
We started with *9-43.psd* (Figure 9-43), which was the floral image used above reduced to the face warp and wefts, i.e., 294 ends and 221 picks. Instead of using Threshold, this time we turned it into a 2-color design by going to Index mode and choosing 2 as the number of colors.

After resizing the image to reflect the true number of warps and wefts (the width is multiplied by 3 to reflect our warp ratio of 1:2 and the height is multiplied by 2 to reflect our two-weft structures), we made each color a separate layer and added the Pattern Presets as Layer Styles. As in taqueté, we suggest you weave a few inches of the flattened .bmp or .tif file and count the true picks per inch. Then resize the file once more before weaving your design. If you want the structures to flood in as complete rotations, then have your final height be divisible by 6, the total number of picks in each structure.

A simulation of a section of the current image with two weft colors replacing the white wefts has a clear indication of the twill structure showing. It is shown in Figure 9-44.



9-43



9-44

Samitum with More Than Two Weft Systems

Designing for samitum with more than two weft systems is the same as described above. The only caveat is about the height of the design. Once you know your true ppi, and multiply it by the height, see if that number is evenly divisible by the total number of picks in your structure. A 1/2 twill using 4 wefts has 12 picks; a 1/3 twill using 4 wefts has 16 picks. Having the total number of picks divisible by the height of your weave structures will ensure that the structures flood into the design and line up with the correct weft system.

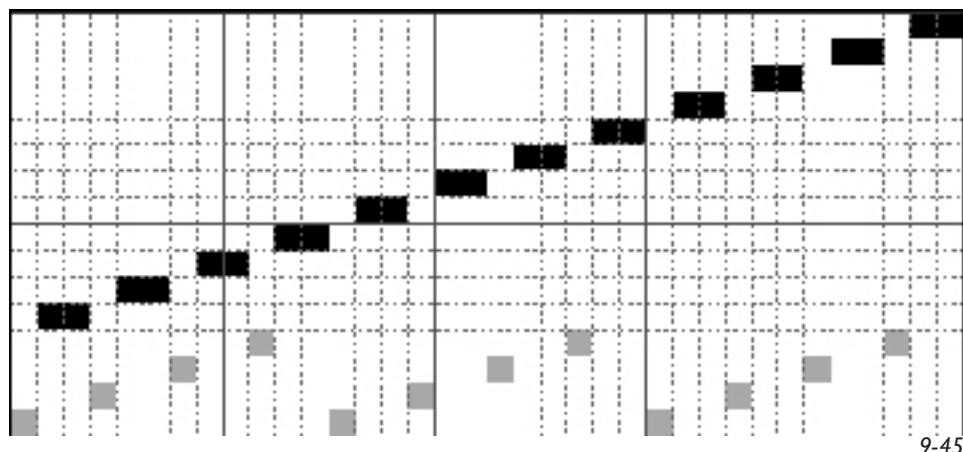
Taqueté and Samitum for Dobby Looms

Taqueté and samitum can be woven on dobby looms. The same shafts control the plain weave or twill structures across the web of the cloth. The inner warps are threaded on different shafts, and raising or lowering them will create your pattern. You can have narrow blocks or wide ones, but the number of shafts available to you will control the number of blocks available.

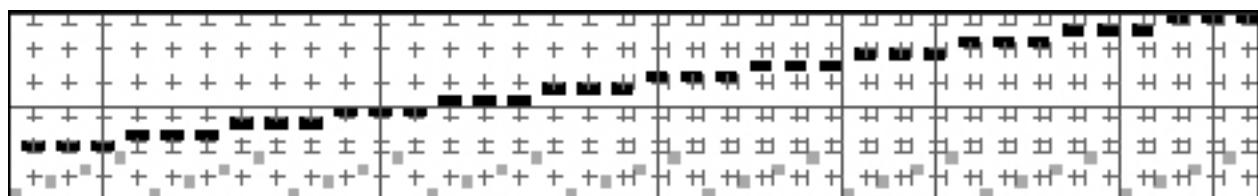
If you have a computer-driven dobby loom, you probably already own software for making your designs and controlling the loom. It might be

easier for you to continue using that system than switching to Photoshop for drafting. However, if you have a dobby loom with hand pegging, you can try doing your drafting in Photoshop as we have done below.

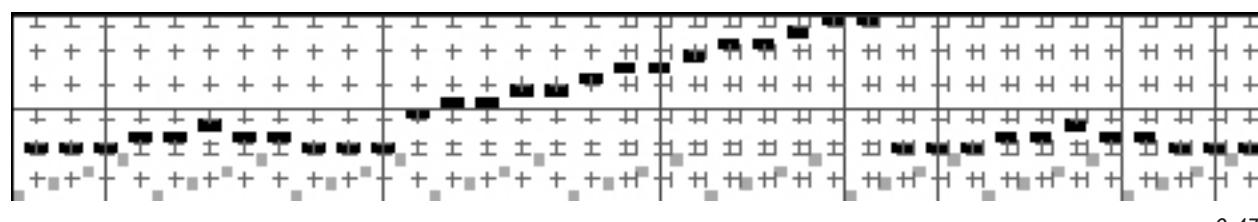
Here is an example of a threading for a dobby with 16 shafts that will allow you to weave either taqueté or samitum. The tie-down warp is indicated with yellow, and threaded on four shafts. The two warps are sett at a ratio of 1:2 (tie-down to inner warps). Therefore, there are two inner warps (black marks) between every tie-down thread (yellow mark). In this example the blocks are very narrow, only the width of two inner warps, and they are threaded in sequence on 12 shafts.



If you want the blocks to be wider, you can extend the number of repeats of a block before switching to the next one. You don't want to increase the number of inner warps between tie-down ends because you don't want to increase the length of the weft floats; you just want the design element to be wider. Here is an example:



Of course, you always have the option to vary the size of the blocks as well as to thread the inner warps in any sequence that you want. Here is an example that shows both these possibilities:



With any of the threadings above, if you want to weave taqueté, then you raise the tie-down shafts in a plain weave sequence (shafts 1 and 3 versus shafts 2 and 4). If you want to weave samitum, you raise the tie-down shafts in a 1/3 twill sequence (shafts 1, then 2, then 3, then 4).

Your pattern is determined by how you lift the inner warps. For a two-weft fabric, there will be pairs of picks, where the raising of the tie-down warp is the same, but the raising of the inner warps is complementary. Here is an example of the first 8 picks of a dobby chain for a two-weft taqueté (we have skipped lines between the pairs of wefts). Read the chain from the bottom to the top, just as you would when weaving.

| Chain for Taqueté | | | | | | | | | | | | | | | |
|-------------------|---|---|---|---|---|---|---|---|----|----|----|----|----|----|----|
| Shafts | | | | | | | | | | | | | | | |
| | 2 | | 4 | 5 | 6 | 7 | | | | 11 | 12 | 13 | | | |
| | 2 | | 4 | | | | 8 | 9 | 10 | | | | 14 | 15 | 16 |
| 1 | | 3 | | 5 | 6 | | | | 10 | 11 | 12 | | | | 16 |
| 1 | | 3 | | | | 7 | 8 | 9 | | | | 13 | 14 | 15 | |
| | 2 | | 4 | 5 | | | | 9 | 10 | 11 | | | | 15 | 16 |
| | 2 | | 4 | | 6 | 7 | 8 | | | | 12 | 13 | 14 | | |
| 1 | | 3 | | | 5 | 6 | 7 | 8 | 9 | 10 | | | | 14 | 15 |
| 1 | | 3 | | | 5 | 6 | 7 | | | 11 | 12 | 13 | | | 16 |

We can do the same design in a samitum. The raising of the inner warp blocks will be the same. What changes is the lifting of the tie-down warp. Since it is a two-weft samitum, the wefts work in pairs, just the same as in the taqueté. Again, read the chain from bottom to top, as you would for weaving.

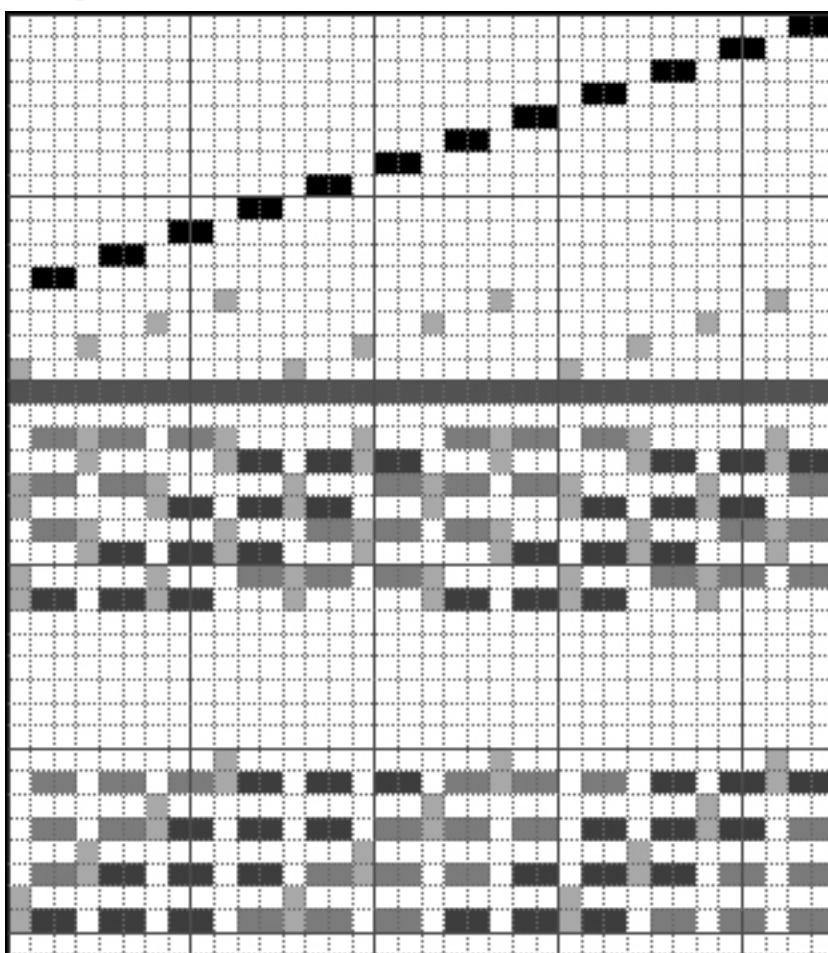
| Chain for Samitum | | | | | | | | | | | | | | | |
|-------------------|---|---|---|---|---|---|---|---|----|----|----|----|----|----|----|
| Shafts | | | | | | | | | | | | | | | |
| | | | 4 | 5 | 6 | 7 | | | | 11 | 12 | 13 | | | |
| | | | 4 | | | | 8 | 9 | 10 | | | | 14 | 15 | 16 |
| | | 3 | | 5 | 6 | | | | 10 | 11 | 12 | | | | 16 |
| | | 3 | | | | 7 | 8 | 9 | | | | 13 | 14 | 15 | |
| | 2 | | | 5 | | | | 9 | 10 | 11 | | | | | 15 |
| | 2 | | | | 6 | 7 | 8 | | | | 12 | 13 | 14 | | |
| 1 | | | | | 5 | 6 | 7 | 8 | 9 | 10 | | | | 14 | 15 |
| 1 | | | | | 5 | 6 | 7 | | | 11 | 12 | 13 | | | 16 |

The block design, 12 blocks, will look like Figure 9-48 (**9-48.psd** on the CD) if blue is used for the first weft system and salmon is used for the second weft system. In this image, the blocks are squared, but the actual threading, yarn sizes and sett will modify that.

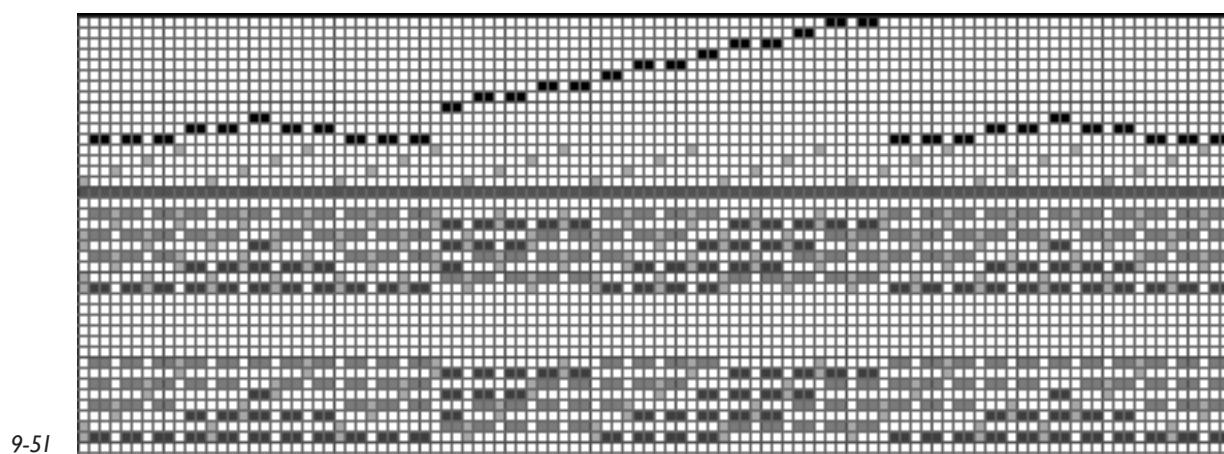
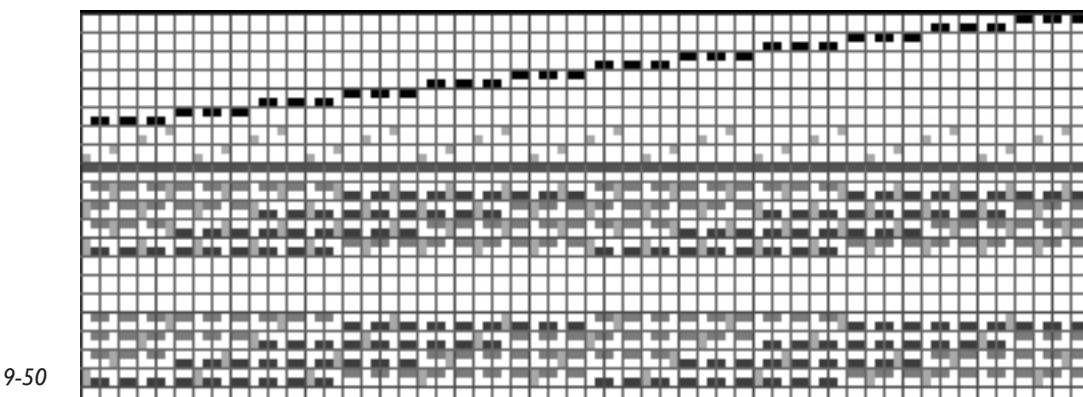


9-48

Figures 9-49 through 9-51 show how the structural designs will look using each of the three threadings, with taqueté shown as the top weave, then samitum as the bottom weave. Blue and salmon are used as the colors for the wefts. If you wish to stretch out the blocks lengthwise, you will have to repeat complete rotations of the tie-down sequences, while keeping the lifts for the inner warps constant.



9-49



The Presets described in this chapter may also be used for dobby projects under certain specific conditions:

1. Straight draw (straight threading) on a number of shafts which is an exact multiple of the width of the weave structure (for example, Samitum 001 is 6 pixels wide and may be used on a straight draw of 12, 18 or 24 shafts).
2. Block threadings, in which each of the blocks is an exact multiple, as above.
3. A networked threading, in which the initial underlying the network is the same size as the width of the weave structure.

Any of the taqueté weaves described in this chapter and whose warp ratio is 1:1 will be four pixels wide, and will fit in a straight threading on 8, 12, 16, 24, 32, or 40 shafts. The weaves of 1:2 ratio, six pixels wide, fit on straight threadings of 12, 18 and 24 shafts. The weaves of 1:3 ratio, eight pixels wide, fit on straight threadings on 8, 16, 24, 32 and 40 shaft looms.

Likewise, the samitum weaves of 1:1 ratio, six pixels wide, will fit on straight threadings of 12, 18 and 24 shafts, and so forth.

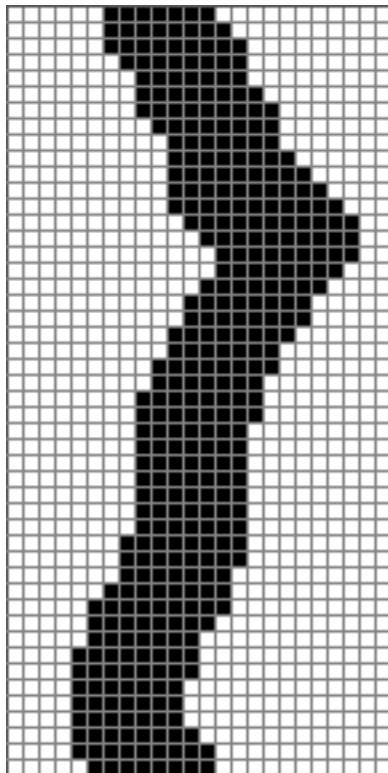
Refer to Chapter 15 to review the procedure for designing in the dobby lift plan in Photoshop, filling in the weaves as Pattern Presets, and copying and pasting these lift plans to your loom control software.

Use the Correct Network

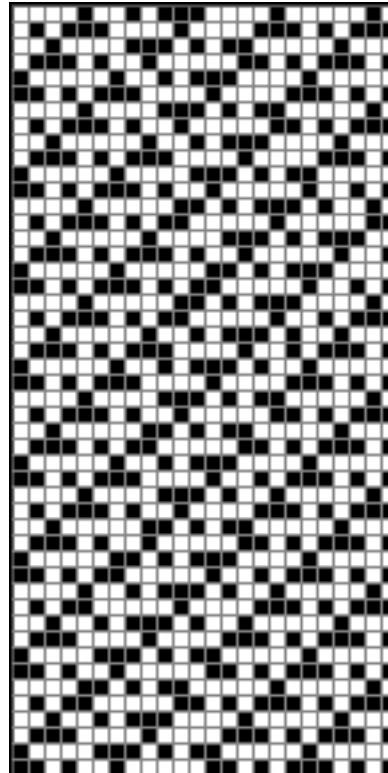
If working in block threadings of which each block is a straight draw within its own block area (for instance, on a 32 shaft loom block A would be threaded 1–16 and repeat for desired width of block, and block B threaded 17–32 and repeated), divide your lift plan in half vertically and treat each half as a mini-lift plan in the design process. Again, the width of the taqueté or samitum structure has to be divisible into the width of half of the lift plan.

If working on a networked threading, be sure the threading is plotted on the correct network (initial = width of Pattern Preset), design in the lift plan, and assign the weaves as Pattern Presets. Networked threadings also require that the number of shafts equals an exact multiple of the width of the Pattern Preset.

Here is an example of samitum, warp ratio 1:1, 2 wefts, Pattern Preset size of 6x6. The lift plan for a 24-shaft loom is shown. The black and white pixels of Figure 9-52 are each assigned to their own layer and Samitum Presets 001 and 002 are assigned to these as Layer Styles, shown in Figure 9-53.

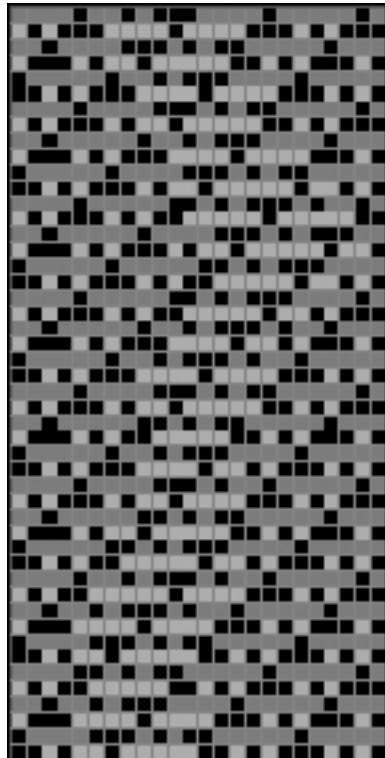


9-52

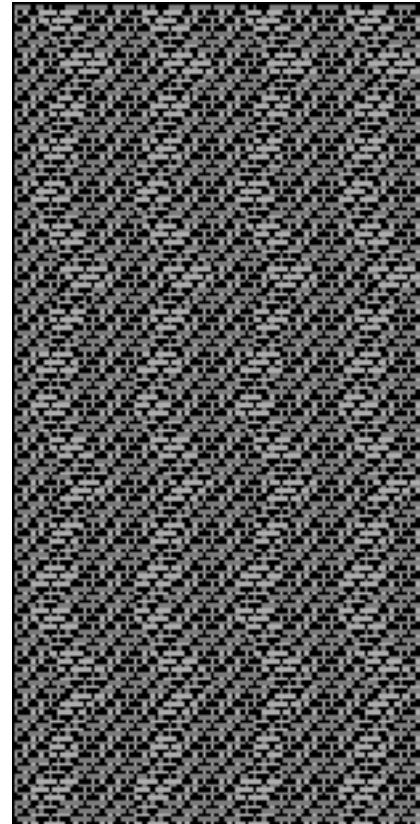


9-53

The cloth simulation is shown in Figure 9-54. Several repeats of this design, on straight threading for a 24-shaft loom, are shown in Figure 9-55.



9-54

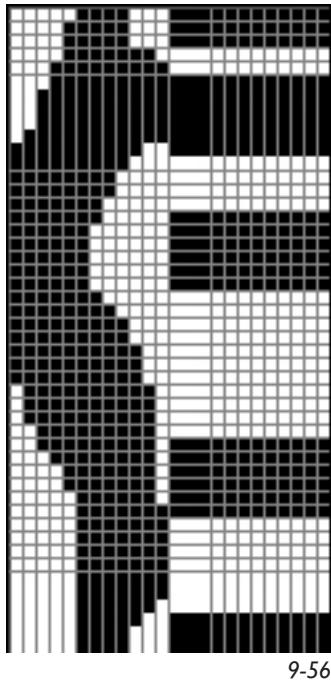


9-55

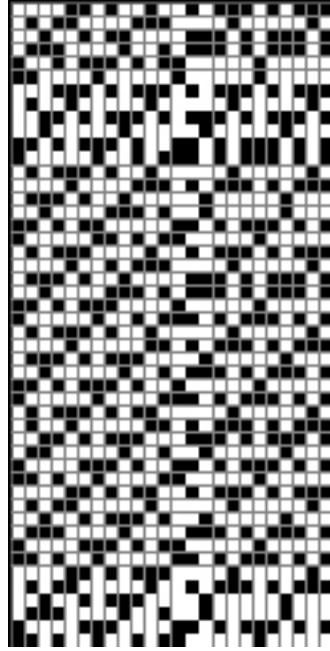
Design for Two 12-Shaft Blocks

On the following page is a design for two 12-shaft blocks on a 24-shaft loom (the threading is shafts 1-12 x 3, shafts 13-24 x 3, repeat) (Figure 9-56).

Samitum weaves 001 and 002 are assigned in Figure 9-57, also shown on the next page.

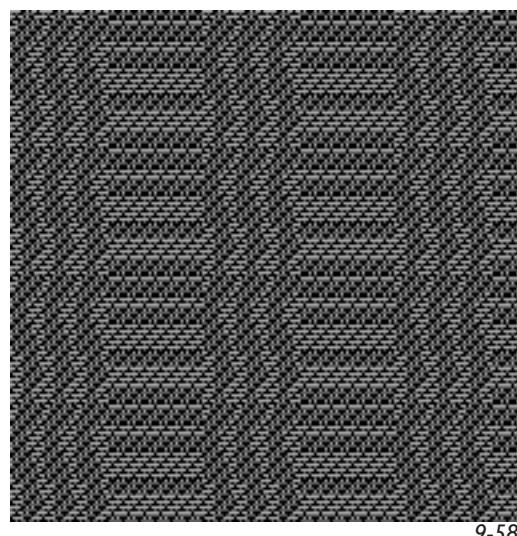


9-56



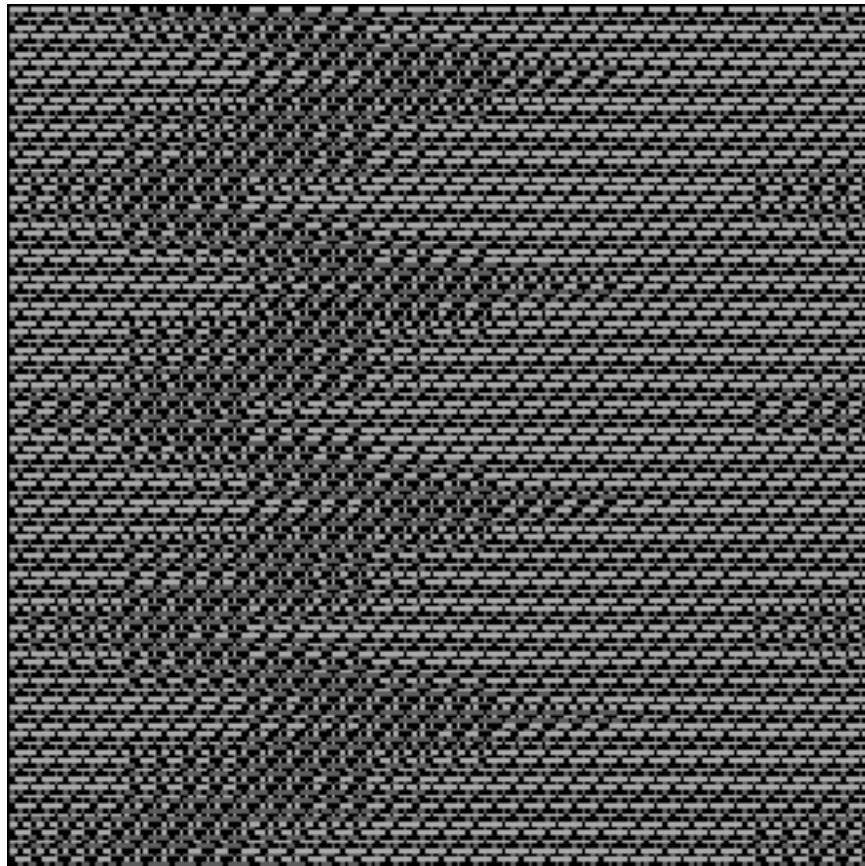
9-57

The resulting fabric is shown in Figure 9-58.



9-58

Following is the fabric simulation from the lift plan in 9-53 with a threading plotted on a network derived from a 6-end initial:



9-59

For more information on network drafting, see Schlein, *Network Drafting: An Introduction*, in the Bibliography.