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# WEAVING TODAY™

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Weaving Projects and Patterns  
for the 4-Shaft Loom

# Simple Twill

## T O W E L S

MARGARET GAYNES

**T**he functional textiles we surround ourselves with should be beautiful! Drying dishes is more enjoyable if I'm using a colorful and attractive towel—preferably handwoven.

Towels are one of my favorite weaving projects because each towel on any given warp can be woven with a different weft color or stripe sequence. Handwoven towels make perfect gifts, too; everyone can use more towels.

### Choosing fiber, color, and structure

Cottolin is an ideal fiber for towels. A sturdy and practical yarn, cottolin comes in a wide range of colors. Towels made from cottolin are absorbent, can be machine washed and dried, and need no ironing!

A good way to learn about color and design is to start with analogous colors. Analogous colors are next to each other on the color wheel and almost always make a pleasing combination. For these towels, blue-green is used as the main color with blue and green, the two colors closest to blue-green on the color wheel. The green and blue-green yarns are similar in value (degree of lightness or darkness), while the blue yarn is darker for an accent. A slightly warp-faced 2/2 twill emphasizes the colors in the warp and provides a sturdy, pliable structure—slightly denser than plain weave—that is suitable for towels.

### Designing stripes

To design the warp stripes, I cut a strip of graph paper as wide as the warp (19" for these towels). If the graph paper squares coordinate with the dents in the reed, the paper can be used as a guide for slewing

(with front-to-back warping). For a 12-dent reed sleyed 2/dent, for example, each square of 4 square/inch graph paper represents 6 warp threads. The graph paper strip can be taped on the shuttle race next to the reed and the graph paper lines aligned with the reed teeth. With the graph paper in place, each color can be wound separately on the warping board (easier than changing to a new color for each stripe) and sleyed over the correspondingly colored squares.

To design stripe proportions, I first mark the center point on the graph paper strip and then, using a pencil and eraser, play with stripe widths. The warp for these towels uses a Fibonacci proportion (see Further Reading) of 5, 8, 5, 3, 2, 1, 2, 3, 5, 8, which then reverses to make the stripes symmetrical. The unit of measure is  $\frac{1}{4}$ " (one square), so, for example, if the number in the Fibonacci sequence is 5, the width of that stripe is  $1\frac{1}{4}$ " ( $5 \times \frac{1}{4}$ ").

To judge the effectiveness of a design with many colors or many narrow stripes, it is a good idea to make a wrap by winding threads around a ruler or piece of smooth cardboard in the intended proportions. For these towels, since all three colors clearly work well with each other in both wide and narrow stripes, coloring in the marked stripes on the graph paper strip with colored pencils is sufficient to determine design success. Once the stripes are filled in, step back to see if you like the result. If not, cut another graph paper strip and try a different color order and/or stripe proportion until you are satisfied.

For these towels, the three colors are used in rotation. Although the stripe proportions are arranged symmetrically, the three-color rotation gives the design an appealing asymmetrical look. If you exam-



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ine the warp color order closely, you will notice, however, that the main color, blue-green, appears symmetrically, which adds harmony to the design.

## Warping and weaving the towels

Wind the warp and prepare the loom following Project at-a-glance and Figures 1 and 2. Use the outermost warp thread on each side as a floating selvedge. If you wind each of the colors separately, color a 4 square/inch graph paper strip to match the proportions 5, 8, 5, 3, 2, 1, 2, 3, 5, 8, 5, 3, 2, 1, 2, 3, 5, 8, 5 (numbers indicate numbers of squares) and the color order in Figure 2. Each square represents six ends (three dents of a 12-dent reed). Line the graph paper up carefully with the teeth in the reed and tape securely. Wind 168 ends blue-green and sley 2/dent above blue-green squares on the graph paper. Wind 144 ends blue and sley above the blue squares. Finish with green in the same way.

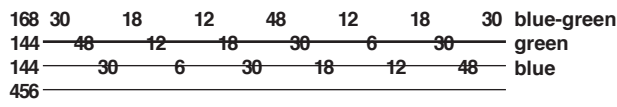
The weft color order for these towels mimics the color order of a section of the warp with blue stripes at each end to balance and outline the stripe sequence. To make sure that the stripes at both ends of the towel match, cut a strip of paper (adding-machine tape works well) half the length of the towel (15" for these 30" towels) plus an inch or so at each end. Mark the start and end of the 15" and pin the tape to the cloth, lining up the starting mark with your first pick.

Weave following the weft color order in Figure 3, marking the width, number of picks, and color of each weft stripe on the tape as you weave. When you finish weaving the stripe sequence, weave with blue-green to the center mark on the tape. Then unpin the tape and reverse it, placing the center mark at the fell of the cloth. Continue weaving, following the stripe widths and colors marked on the tape; the color order will be automatically reversed so the two ends of the towel match.

Separate the towels with two picks of a dyefast yarn in a contrasting color. Keep track of how many towels you have woven by making notes on the tape.


Each towel can be woven with a differ-

## 2. Warp color order

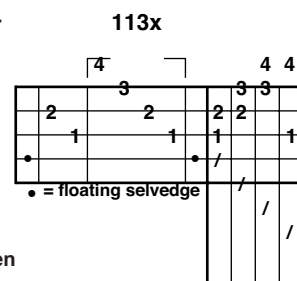


ent colored weft and/or stripe sequence, or try using one weft color for a towel. Weave other sets of towels in other analogous color schemes—red, red-violet, violet, for example. Towels present a wonderful opportunity to experiment!

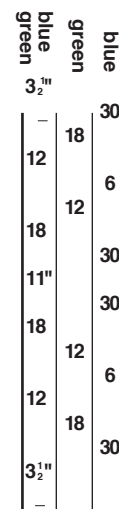
## Finishing

Cut the fabric from the loom and machine staystitch raw edges. Machine wash in warm water with mild detergent. Tumble dry, removing the fabric from the dryer while it is still slightly damp. Press with the iron on a cotton setting. Staystitch the ends of each towel, and cut them apart, trimming close to the staystitching and removing the contrasting marker wefts. Turn the ends under ¼" and then turn under again. Stitch the hems by hand or machine, and press once more. 

## 1. Draft for towels



## 3. Weft color order



Numbers followed by (") indicate inches to be woven. Other numbers indicate number of picks.

## Further reading

Moore, Jennifer. "The Golden Proportion." *HANDWOVEN*, September/October, 2000, pp. 64–67.

## PROJECT at-a-glance

### Weave structure

2/2 twill.

### Equipment

4-shaft loom, 19" weaving width; 12-dent reed; 1 shuttle, 3 bobbins.

### Yarns

Warp: 22/2 Cottolin (50% cotton, 50% linen, 3,200 yd/lb), #7322 blue-green, 756 yd (4 oz); #7840 green, 648 yd (3½ oz); #6252 blue, 648 yd (3¼ oz).

Weft: 22/2 Cottolin, #7322 blue-green, 1,020 yd (5¼ oz); #7840 green, 140 yd (¾ oz); #6252 blue, 308 yd (1⅓ oz).

### Yarn sources

Cottolin in many colors is available

from most retail suppliers.

### Notions and other materials

Sewing thread for hems.

### Warp order and length

456 ends 4½ yd long (includes 2 ends floating selvages) in the color order in Figure 2.

### Warp and weft spacing

Warp: 24 epi (2/dent in a 12-dent reed). Width in reed: 19". Weft: 21 ppi in the color order in Figure 3.

### Take-up and shrinkage

After washing, 15% in width and 13% in length (5% take-up, 8% shrinkage). Amounts produce 4 towels 16⅞" × 24¾" hemmed.

# DUTCH FLAG NAPKINS

ERICA DE RUITER

There is something very special about sharing fabrics with weavers across oceans and continents.

## Designing the napkins

Five bright, clear colors and one neutral color (gray) form warp and weft stripes in these napkins. An accent of white is provided by a supplementary warp. The plain-weave ground cloth requires two shafts, the supplementary pattern warp a third.

The colors are inspired by the red, white, and blue of the Dutch flag, the orange of our royal family, and the turquoise, white, and gray of a Dutch summer sky.

A good method for designing stripes is to make a wrap (see inset, page 6). The darkest colors are used at top and bottom and become borders. For balance and harmony in the design, I use a favorite little

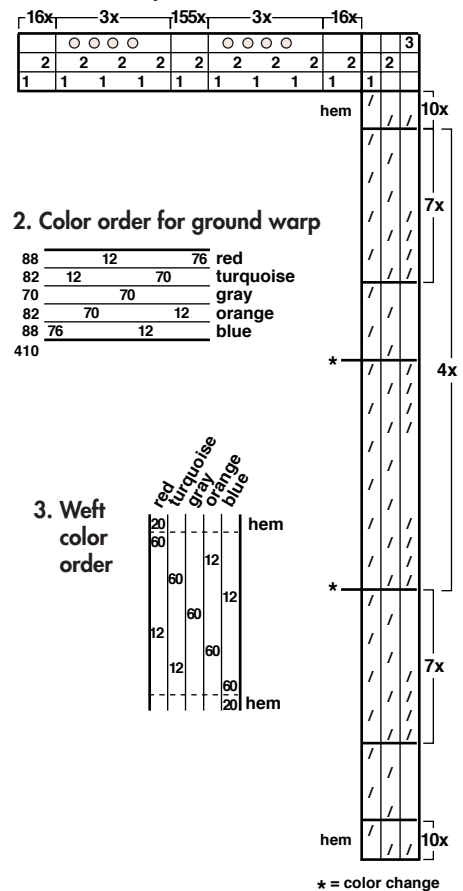
trick: each color is echoed as a narrow stripe between large stripes.

## Warping and weaving the napkins

Wind, sley, thread and beam the ground warp following Figures 1, 2, and Project at-a-glance, placing unthreaded heddles for the pattern ends on shaft 3 where indicated. Wind two 12-end chains of white. Thread these ends through the empty heddles, sley with their adjacent ground-warp ends, tie onto the front apron rod, and weight just enough to equal ground-warp tension.

Weave eight napkins following Figures 1 and 3. Weft color changes occur at asterisks (\*). If the pattern ends stick to the ground ends, raise only shaft 3 and separate them with a stick. Do not increase weight as this may wrinkle the fabric.

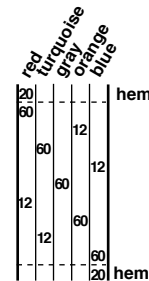
## 1. Draft for napkins




## 2. Color order for ground warp

|    |    |    |           |
|----|----|----|-----------|
| 88 | 12 | 76 | red       |
| 82 | 12 | 70 | turquoise |
| 70 | 70 |    | gray      |
| 82 | 70 | 12 | orange    |
| 88 | 76 | 12 | blue      |

## 3. Weft color order



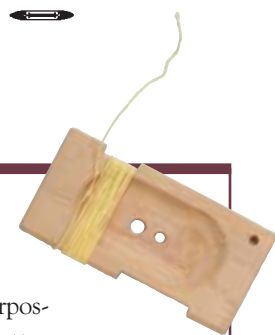
## Finishing the napkins

Remove the fabric from the loom and secure raw edges with machine stitching. Machine wash, gentle cycle, with a mild detergent. Hang to dry. Cut the napkins apart, turn  $\frac{1}{4}$ – $\frac{3}{8}$ " double-fold hems, and sew hems by hand. 

## Get sett

### Making wraps

Wraps can serve two important purposes. To determine sett, wrap a half inch or an inch on a tool for that purpose or use a ruler. Whatever number is the average wrap for one half inch should be the right number of ends per inch for a plain-weave cloth. To determine successful proportions and colors for stripes, wrap a cardboard with varying widths of possible colors (see inset, page 6).



## PROJECT at-a-glance

### Weave structure for napkins

Plain weave with a supplementary pattern warp.

### Equipment

4-shaft loom, 21" weaving width; 10-dent reed; 1 shuttle and 5 bobbins; six  $\frac{1}{2}$  lb weights for pattern warp.

### Yarns

Ground warp: 22/2 cottolin (60% cotton, 40% linen), 3,175 yd/lb, red, 528 yd (2 $\frac{3}{8}$  oz); turquoise, 492 yd (2 $\frac{1}{2}$  oz); gray, 420 yd (2 $\frac{1}{2}$  oz); orange, 492 yd (2 $\frac{1}{2}$  oz); blue, 528 yd (2 $\frac{3}{8}$  oz). Pattern warp: 22/2 cottolin, bleached white, 144 yd ( $\frac{3}{4}$  oz).

Weft: 22/2 cottolin, red, 466 yd (2 $\frac{3}{8}$  oz); turquoise, 416 yd (2 $\frac{1}{2}$  oz); gray, 310 yd (1 $\frac{1}{2}$  oz); orange, 416 yd (2 $\frac{3}{8}$  oz); blue, 466 yd (2 $\frac{3}{8}$  oz).

### Yarn sources

Cottolin is available from most retail suppliers.

### Warp order and length

410 ground-warp ends in the color order in Figure 2 and 24 bleached white pattern-warp ends 6 yd long (allows 24" take-up and loom waste).

### Warp and weft spacing

Ground warp: 20 epi (2/dent in a 10-dent reed). Pattern warp: 2/dent with ground-warp ends. Width in the reed: 20 $\frac{1}{2}$ ". Weft: 19–20 ppi.

### Take-up and shrinkage

After washing, 15% in width and 15% in length (5% take-up, 10% shrinkage). Amounts produce eight hemmed napkins 17 $\frac{1}{2}$ " x 18".



*Erica de Ruiter, of Nijmegen, The Netherlands, has been teaching weaving for twenty-five years. She has published books and articles, and she loves inventing weaves for fewer than four shafts.*

KATE LANGE-MCKIBBEN

**8/2 cotton or  
cottolin towels****STRUCTURE**

Huck lace.

**EQUIPMENT**

4-shaft loom, 21" weaving width; 10-dent reed; 2 shuttles, 5 bobbins.

**YARNS**

Warp and weft for cotton towels: 8/2 unmercerized cotton (3,570 yd/lb, Aurora Earth, Cotton Clouds), Natural, 2,700 yd; Beige #15, 233 yd; Special Green #11, 118 yd; Mustard #35 and Plum Green #4, 166 yd each.

Warp and weft for cottolin towels: 22/2 cottolin (60% cotton/40% linen, 2,900 yd/lb, Cotton Clouds), Natural, 2,700 yd; Brick Red, 233 yd; Olive Green, 118 yd; Light Brown and Light Green, 166 yd each.

Weft for hems: 20/2 cotton or similar (8,400 yd/lb), about 120 yd.

**WARP LENGTH**

407 ends (includes 2 floating selvages) 4½ yd long (allows 6" for take-up, 28" for loom waste).

**SETTS**

Warp: 20 epi (2/dent in a 10-dent reed).  
Weft: 20 ppi.

**DIMENSIONS**

Width in the reed: 20½".  
Woven length: 32" for each of four towels, 128" total.  
Finished sizes after washing: four hemmed towels 16½" × 24" each.

# Kitchen towels in four all-natural fibers

EVER WONDER WHICH YARN MAKES THE BEST DISH TOWEL? VISIT A WEAVER'S TEST KITCHEN!

Choose a yarn to explore or weave coordinated sets of towels in all four yarns to test their absorbency and durability in your kitchen.

It is an amazing experience to weave the same towels in four different all-natural yarns. Variations in texture, color, lint-producing capacity, draw-in, shrinkage, hand, and absorbency all come into play. The four yarns used for these towels are: 8/2 unmercerized cotton, 10/2 naturally colored organic cotton, cottolin (60% cotton, 40% linen), and a fine 100% linen used doubled. All of the towels are woven using the same 4-shaft huck-lace draft.

**SOME OBSERVATIONS**

**Lint production** The result of reed and heddle friction in weaving, lint production varies with 10/2 organic cotton producing the most lint, 8/2 cotton and cottolin less, and the 100% 2-ply linen the least.

**Texture and hand** The organic cotton towels are the softest and most absorbent with cottolin towels a close second. The 8/2 unmercerized cotton yarn is a bit stiff during weaving (making it especially easy to use), but the towels soften with washing. Repeated washings should increase absorbency. The linen towels have the distinctive firm but supple hand of linen; they will also soften and gain absorbency with use and washing.

**Draw-in and shrinkage** All of the towels are woven at the same width (requiring more warp ends for the finer yarns but allowing comparison of shrinkage and take-up).

Towel width off the loom and after washing:  
8/2 unmercerized cotton: 18¼" to 16"  
10/2 organic cotton: 18½" to 16½"  
22/2 cottolin: 18¾" to 16½"  
2-ply linen doubled: 19½" to 18".

**TIPS FOR THESE TOWELS**

Warping sticks, in addition to paper between the warp layers on warp beam and cloth beam, help maintain even tension.

Humidity makes linen easier to control. I kept a stainless-steel pot of water simmering on a propane stove as I wove with linen.

To wind two strands of linen on the bobbin with equal tension on both, I threaded them through my fingers with my palm facing me: under the little finger, over the ring finger, under the middle finger, and then between thumb and index finger.

When I wove with the doubled linen yarn, I slowed the unwinding bobbin with my index finger as I brought the shuttle out of the shed. Use an end-feed shuttle if you have one.

Soft and absorbent dish towels in easy-to-use 8/2 unmercerized cotton (one of four fiber options).

Project





Towels woven in organic, naturally colored cotton (top right) have a very soft hand, and the colors become more intense with repeated washings. Balls of yarn (top left) are shown with butterflies wound from the same yarn and washed only once.



Linen 14 (at 7,000 yd/lb) is a fairly fine fiber. Used singly, it would make lovely fingertip towels. For sturdier dish towels (at lower left), it is used doubled in both the warp and the weft. The washcloths (at lower right) are woven with Linen 7 (1,750 yd/lb). Sets of towels and washcloths are a great way to play with color arrangements!

## Linen or organic cotton towels

### STRUCTURE

Huck lace.

### EQUIPMENT

4-shaft loom, 21" weaving width; 12-dent reed; 2 shuttles, 5 bobbins.

### YARNS

Warp and weft for linen towels: Linen 14 used doubled (7,000 yd/lb, Cotton Clouds), Cream, 6,500 yd; Burlap, 466 yd; Cilantro,

236 yd; Flax and Green Tea, 332 yd each. Warp and weft for naturally colored organic-cotton towels: 10/2 unmercerized cotton (4,200 yd/lb, Fox Fibre, Cotton Clouds), Pima, 3,250 yd; 100% brown, 233 yd; 100% green, 118 yd; 50% brown and 50% green, 166 yd each. Weft for hems: 20/2 cotton or similar (8,400 yd/lb), about 150 yd. These towels are available as kits from Cotton Clouds.

### WARP LENGTH


487 working ends (includes 2 floating sel-

vedges) 4½ yd long (allows 6" for take-up, 36" for loom waste).

### SETTS

Warp: 24 epi (2/dent in a 12-dent reed). Weft: 24 ppi.

### DIMENSIONS

Width in the reed: 20<sup>5</sup>/<sub>12</sub>". Woven length: 30" for each of four towels, 120" total. Finished sizes after washing: four hemmed towels 18" × 27" each in linen; 16½" × 23" each in organic cotton. 

KAREN FOLLAND

# Twelve months, twelve weaves, twelve towels

OUR STUDY GROUP USED AN ARTICLE BY CLOTILDE BARRETT IN A 1983 *WEAVER'S JOURNAL* AS THE SPRINGBOARD FOR A DISH TOWEL EXCHANGE.

Towels make an ideal format for studying weave structures. Patterned borders and lace textures work especially well.

**T**hese towels are the result of a towel exchange and study conducted by five members of the Mill Race Weavers Guild in Northville, Michigan. Clotilde Barrett, in her 1983 article, presents specific weaving instructions for twelve towels, one for each month of the year. The article would make an excellent challenge for an individual weaver, too. Six of the towels in the article can be woven on the same warp, so weaving twelve

towels is not as daunting as it sounds. Instructions given here are for two of the towels, the March towel (the second towel from the bottom on page 47) and the September towel (the bottom towel).

## RESOURCES

Barrett, Clotilde. "Weaving Towels as a Means of Learning the Basic Four-Shaft Weaves." *The Weaver's Journal*, Fall 1983, pp. 11–19.



### March towel

#### STRUCTURE

Overshot.

#### EQUIPMENT

4-shaft loom, 20" weaving width; 10-dent reed; 2 shuttles.

#### YARNS

Warp: 20/2 pearl cotton (8,400 yd/lb), bleached white, 3,769 yd.  
 Tabby weft: 20/2 pearl cotton, white, 3,455 yd.  
 Pattern weft: 8/2 unmercerized cotton (3,360 yd/lb), blue-gray, 160 yd.

#### WARP LENGTH

595 ends 6½ yd long (allows 8" for take-up, 30" for loom waste).

#### SETTS

Warp: 30 epi (3/dent in a 10-dent reed).

Weft: 30 ppi in plain-weave areas, 60 ppi in pattern areas (30 tabby, 30 pattern).

#### DIMENSIONS

Width in the reed: 19½". Woven length (measured under tension on the loom): 192" (38" for each towel). Finished sizes: five hemmed towels 19" × 35" each.



### September towel

#### STRUCTURE

Turned monk's belt.

#### EQUIPMENT

4-shaft loom, 19" weaving width; 10-dent reed; 1 shuttle.

#### YARNS

Ground warp: 20/2 pearl cotton (8,400 yd/lb), white, 3,610 yd. Supplementary warp:

10/2 pearl cotton (4,200 yd/lb) used doubled, forest green, 608 yd; lime green, 456 yd; kelly green and brown, 304 yd each; pea green, gold, yellow, and orange, 104 yd each.  
 Weft: 20/2 pearl cotton, white, 3,344 yd.

#### WARP LENGTH

570 ground-warp ends, 164 supplementary-warp ends 6½ yd long (allows 10" for take-up, 28" for loom waste).

#### SETTS

Warp: 30 epi (3/dent in a 10-dent reed) in plain-weave areas, 60 epi (6/dent) in supplementary-warp areas.  
 Weft: 30 ppi.

#### DIMENSIONS

Width in the reed: 19". Woven length (measured under tension on the loom): 192" (38" for each towel). Finished sizes: five hemmed towels 17" × 34" each.



From top down,  
towels woven by:  
Ruth Whitmyer  
(June, Atwater-  
Bronson lace); Jean  
Gordon (November,  
crackle); Karen Folland  
(April, rosepath);  
Nancy Vaghy (March,  
overshot); Ken Allen  
(September, turned  
Monk's belt).



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## ***Waffle Weave Dish Towel • Pattern or Kits***

*by Michael Patterson*

Weave a soft and functional kitchen towel in Homestead Cotton. Or use the pattern to select your own colors - *Cottolin works well too!* Requires a four shaft loom capable of weaving 21" wide. Reed sett of 20 epi. Kit includes pattern and Homestead Cotton yarn to make three thirsty dish towels, finished size of 17" x 28".

Pattern (#1520002P) • Also available as a download.

*Free with purchase of project yarn!*

Shown in Glacier Sunrise. See all kits, including holiday colors online!

**[halcyonyarn.com/waffle-weave](http://halcyonyarn.com/waffle-weave)**