

# Beginner Tablet Weaving

## Notes for a 2-day Workshop

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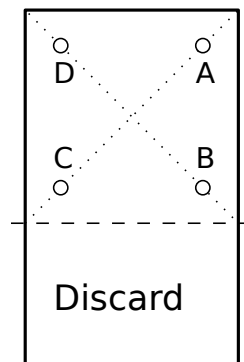
### 1 Introduction

Tablet – or card – weaving is a method of weaving used to create lengths of narrow materials, often called braids. Due to the twining structure of the method, the braids are very strong and durable, allowing them

to be used as belts and straps. The twining structure also allows for a variety of patterns to be woven into the braid, so that the same method can be used to create beautiful trim.

## 2 Tools

### 2.1 Cards



Cards can be made from leather, bone, wood, or cardboard; they can be purchased from a number of shops online, or they can be made at home by using a deck of playing cards. The cards should be square, with slightly rounded corners, and have holes along the diagonals, and equidistant from the center. Ideally, the holes will line up one above another when the cards are held in a neat pile, no matter how some of the cards might be turned.

#### 2.1.1 Making your own cards

It is not difficult to make your own cards, and can be done using the following method:

Figure 1: Creating the stencil from a playing card.

1. Acquire a deck of bicycle<sup>1</sup> playing cards.
2. Make a stencil from one of the cards:
  - (a) Place one of the cards on another at 90 degrees, with the long side of one card matching the short side of the other. Using a pen<sup>2</sup>, draw along the overlapping side. You should now have a card that - if you were to cut along the line you just drew - would be square (not counting the rounded corners up top.)
  - (b) Find the center of the card (I use a ruler and measure) and draw the diagonals from the right angle corners through the center to the rounded corners.
  - (c) Now mark each of the diagonals at the same distance from the center and punch a hole. I use a 1/4" punch, so measure to leave about another 1/4" to the rounded corner.

You should now have a squared card with holes in the four corners. The letters A, B, C, and D do not have to be copied but are there for convenience later on<sup>3</sup>.

3. Use the stencil to make the other cards:
  - (a) Place the stencil on each card in turn, outline the four holes and the bottom edge.
  - (b) Cut the bottom edge (and trim the two corners) and punch out the four holes.

<sup>1</sup>This brand is not mandatory, but I've noticed these are the cards that last when I use them, and having a card disintegrate in the middle of weaving is a minor disaster.

<sup>2</sup>I recommend sharpies because they will write on just about anything, but be careful drawing on the table/surface below.

<sup>3</sup>These markings are used in a lot of books to describe the patterns and threadings. Many commercially sold cards will include the labels.

## 2.2 Loom

A variety of looms are suitable. In period, weavers used either an upright loom which basically consisted of two upright posts to which the weaving is tied, or a box loom. The inkle- or tablet weaving looms we commonly use date to the 19th century but are very *very* convenient.

Generally speaking, a minimalist loom can be created by tying the closer part of the warp to your belt, and the further part to a strong point, which is also period.

## 2.3 Shuttle

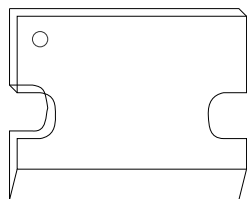


Figure 2: Line drawing of a shuttle. Shuttles are usually wider than they are tall, but sizes vary tremendously.

The shuttle serves two purposes when weaving narrow bands; it carries the weft thread, and also functions as a beater. As such, you want a shuttle that has at least one sharp(ish) long side, with room to hold thread. If possible, I also recommend drilling a small hole in one of the corners on the non-beating side.

The weft thread is wound around the shuttle between the two notches. Leave a loose hanging tail, which is tucked through the hole. The hole serves one purpose: if you thread the weft through the hole, and then hold the shuttle by the tail end of the thread, notice how the shuttle doesn't unravel.

To length the tail of the shuttle while weaving, always pull the loop over the sharp side of the shuttle. (Going the other way you're essentially knotting the thread around itself. This is inconvenient.)

## 2.4 Thread

When first starting out, crochet cotton is a good yarn to practice with, for both weft and warp. In period, weaving was most often done with wool or silk. Wool is very stretchy and sticky, which makes it hard to weave with, and has to be spun fairly tightly, or the yarn will “unspin” as the cards turn. Silk is wonderful to weave with; it's just expensive. Linen is probably also used in period, although I am not aware of any linen-woven finds, but linen tends to degrade relatively quickly in graves and other archeological sites, making it hard to tell if linen tabletweaving was present. The only exception I know of is viking brocaded tabletweaving which would sometimes use silk for the visible threads, and linen for the invisible (because they were on the back or covered by the brocading) threads.

## 2.5 Miscellaneous Tools

- Scissors
- Popsicle sticks – make good starters and spacers when weaving bookmarks. Use 2 popsicle sticks between bookmarks, and when you separate, cut between the bookwarks to get an even, pretty fringe.
- Pen, paper, pencil. Taking notes is crucial when beginning. Early patterns should be developed in pencil, which makes it easier to fix them if you've made a mistake.
- Coffee. Or Tea. Or something to drink. Something that encourages regular microbreaks.

## 3 Warping the Loom Using Continuous Warping Methods

There are two ways to warp a loom. One way is to warp each card separately, whilst the other warps a group of cards all at once. Table 1(p. 4) lists the advantages and disadvantages of both methods. We will be using the Continuous Warp method.

### 3.1 Setting Up

Warping Cards Individually	Warping Cards in a Pack
<ul style="list-style-type: none"> <li>- Used when adjacent cards have different threadings</li> <li>- Tension can be controlled on a card by card basis</li> <li>- Can warp with only one source of each colour, even if that colour is needed through multiple holes, by measuring each string individually.</li> <li>- Can be used for any type of loom</li> <li>- <i>Slow.</i></li> </ul>	<ul style="list-style-type: none"> <li>- Used when all cards in a pack are threaded the same way</li> <li>- Tension can be controlled only over a group of cards</li> <li>- Requires 4 sources of string, one for each hole.</li> <li>- Requires a loom where the warp can be stretched in a continuous loop. (It is possible to work around this restriction with a warping board.)</li> <li>- <i>Fast.</i></li> </ul>

Table 1: Advantages and Disadvantages of Individual vs Continuous Warping.

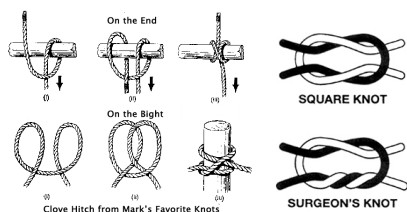


Figure 3: Tying the Clove Hitch, the square knot, and the surgeon's knot

With this kind of loom, the weaving is always done near the front peg; as the weaving progresses, the warp is gently shifted around the continuous loop.

Arrange the cards in a pile so that they are all facing the same way<sup>5</sup>, and in a reasonable order. If using playing cards, they can, for instance, be ordered by rank and suit. Ordering the cards makes it easier to recover from mishaps.

### 3.2 Warping

If warping more than 10 cards, I usually divide the pack into smaller packs of approximately 10 cards. Then for each pack do the following:

1. Thread the four threads of yarn through all the cards at once. Since we are setting up for doubleface, thread the two dark threads through holes D & C, and the light threads through holes A & B. (Thus, the dark threads and the light threads each have a *vertical* orientation.)
2. On the other side of the pack of cards, tie the four ends together with a simple half knot so that none of the yarn slithers loose.
3. Tie the knotted end around the starting pack using a knot that is easily undone with one hand. I prefer the clove hitch, because it can be loosened and undone one-handed.

<sup>4</sup>And make sure you *thoroughly* clean the jugs first. The smell of sour milk is very pungent and long lasting.

<sup>5</sup>I achieve the setup for the cards I use when I am weaving by pre-turning the cards. However, we will leave that for a more advanced class, or after I have had time to write those notes up too.

4. Drop one card off the bottom, then gently pull the yarn through the remain cards in the pack and around the pegs in a circular loop. (Follow the guide-string.)
5. Repeat until you have dropped the last (topmost) card. Pull the yarn around the loom one more time.
6. Cut the yarn leaving a generous tail so you can tie the beginning and end together. Tie a half knot in the tail to keep those four threads together. Undo the starting knot, and knot the tail and start together using a square or surgeon's knot, Make sure the square knot lies on the outside of the peg, and that no yarn is wrapped all the way around any of the pegs since then the warp won't advance.

## 4 Weaving

Before you start weaving, it is crucial that you take a moment to straighten out your cards. We will define the colours in terms of foreground (FG) and background (BG).

*Assumption: you are using a loom that lets you sit "behind" the weaving; in front of you is the woven material, then the cards, then the remainder of the warp.*

To weave doubleface, your cards should be turned (and if necessarily flipped around the vertical axis) so that the cards are arranged consistently in terms of colour and thread orientation.

- Colour orientation: FG and BG each vertical
- Thread orientation: All cards either threaded in the same direction, or alternating S/Z<sup>6</sup>.

### 4.1 Starting the band

- Turn all the cards backwards (towards yourself) once, then place a popsicle stick. This makes it easier to make a clean start. Turn the cards forward again.
- Place the weft in the shed, leaving a 6" + tail.
- Turn all the cards forward (away from yourself) a quarter turn;
  - clear the shed
  - insert the shuttle and beat
  - pull the shuttle through (and if there is tail left, pull it in the opposite direction.)
  - Do *NOT* pull the weft tight until after the following quarter turn and beating.

Repeat this step as often as wanted (I usually perform 6 quarter turns) until the BG and FG are vertical once more.

### 4.2 Doubleface: Background Only

I weave doubleface using the two pack method. Here the cards are divided into three groups; the foreground (FG) pack and background (BG) pack, and the selvage cards. Cards are moved between groups every second quarter turn, when the cards are in the **home** position – each colour is oriented vertically. The FG and BG pack both turn forward twice, backward twice (F F B B), but if the FG pack turns forward, the BG pack turns backward, and vice versa.

The selvage cards are unique in that they always turn in the same direction, usually forward<sup>7</sup>. The selvage cards will change packs every two quarter turns; the pack they are with will hence turn forward.

<sup>6</sup>S and Z threading is the term used to describe how the thread travels through the card (left to right or right to left from the far end of the warp to the weaver); threading orientation can be switching by turning the card around its vertical axis. Collingwood and Crockett, however, define s and Z threading oppositely.

<sup>7</sup>When the twist in the selvage gets excessive, turn the cards around their vertical axis. Now turning the cards forward will undo the twist.

To weave, alternate between the following two steps. Start at step 1 if the FG colours are vertical, closest to you<sup>8</sup>, else start at step 2.

*After every quarter turn, remember to pass the shuttle through, beat, and tighten the previous weft.*

1. Selvage with the FG pack, turn FG forward, BG backward two quarter turns.
2. Selvage with the BG pack, turn FG backward, BG forward two quarter turns. (When weaving background only, the BG pack will contain only the selvage cards.)

Practice weaving the background only until you are comfortable with the motions, including shifting the selvage cards between packs.

*Remember to pass the shuttle through after every single quarter turn.* (Very common beginner mistake.)

### 4.3 Doubleface: Adding a Pattern

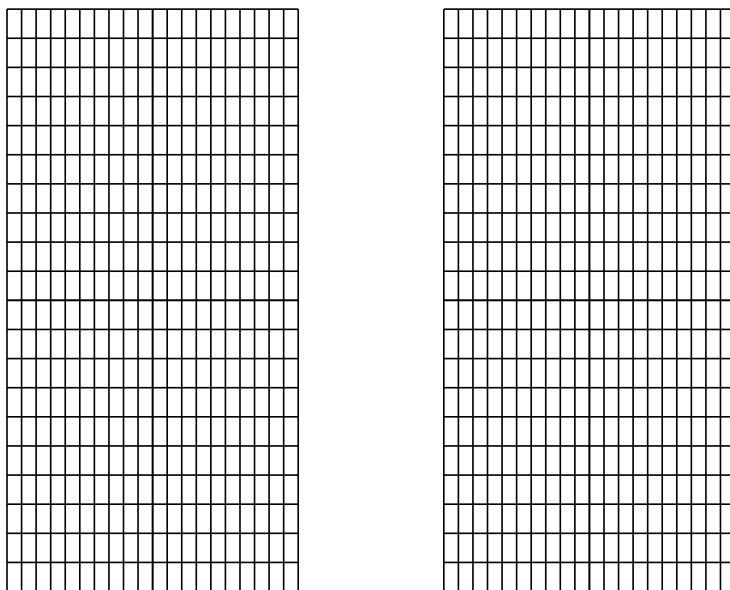
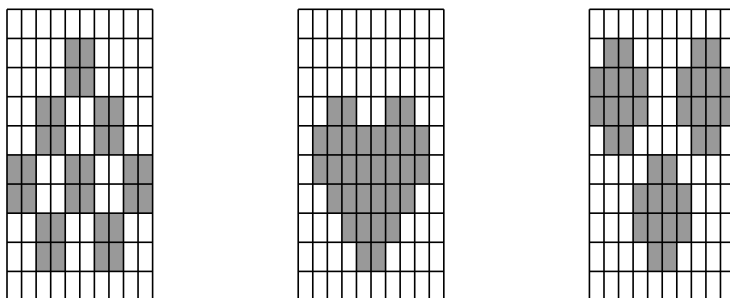


Figure 4: Three simple patterns, each 10 cards wide, followed by blanks to design some of your own patterns.

Patterns are read, row by row, usually from the bottom to the top. Each rectangle in a row represents one card, each row represents two quarter turns. (Ergo, every time you move to the next row up, your cards should be in the home position, with all colours vertical.)

A white rectangle is a BG card, a coloured rectangle is a FG card. In the home position, ensure that the BG and FG are in their respective decks, by shifting cards between decks as needed.

### 4.4 Doubleface: Designing your first Pattern

Use the blank grids to design some simple patterns of your own.

### 4.5 Ending the band (And immediately planning the next band.)

To end the band (or bookmark), I usually weave a few rows forward only. It is possible to finish the band cleanly, including weaving the tail of the weft back in, by using helper loops. Using 3 loops, you want to start the finishing process four quarter turns before the end.

<sup>8</sup>When turning the cards forward, the colour that will appear is the colour of the thread in the top hole closest to you. If turning backwards, the relevant thread is in the top hole furthest from you.

1. Make three helper loops, so that each loop is about an inch wider than the band. (for each loop measure a length  $2 \times$  the band's width plus about 2". Fold in half, tie a half knot near the end.)
2. After passing the weft through, place one of the loops in the shed, with the knot at the same side of the band as the shuttle. Repeat until you have run out of loops.
3. Turn another quarter turn, beat, put the shuttle through, then turn once more, beeat, and slide in a popsicle stick.
4. Cut the weft leaving at least three times the width of the band.
5. Using the loops in reverse order, put the tail through the loop, and use the loop to pull the tail through the band.

## 5 Designing Patterns

The design process usually involves a lot of experimentation. Images should be simple, and two-colour. (Adding more colours involves brocading.)

One technique I picked up from the internet is to copy the grid onto a transparent slide. Place the slide over the image you are trying to recreate, and use dry erase markers to colour in the covered rectangles. Then adjust and experiment for the partially covered rectangles. (Admittedly in today's computer world, I use a JPG, and a paint program, but the principle holds.)

Another approach is to borrow, and modify, patterns published by other people.

## 6 Finishing

considering the tails at both ends are woven in, all you have to do is trim off the remaining little tail.

### 6.1 Ways to use narrow bands

- Belts and girdles
- Straps
- Hair bands and fillets
- Business card holders
- Bookmarks
- Bags (sew multiple strips together)
- Vests
- Etc etc etc

## 7 3/1 Broken Twill

Please note that this section is extremely short, and is intended only for the experienced weaver. This is not for beginners.

### 7.1 Setting up the cards

Thread the cards as in doubleface, using a foreground and background colour. Then set up the cards as follows.

- Separate the cards into two packs A & B, so that pack A contains all the odd numbered cards, and pack B the even numbered cards. (I will assume that pack A is closer to the weaver.)
- In each pack, flip the cards so that the threading alternates between S and Z.
- In pack A the BG colours should be vertical, and closest to the weaver. In pack B, the BG colours should be horizontal and on top.

- The selvage starts with pack A.

## 7.2 Background Turning Pattern

Each of the packs turns F F B B, but the turning pattern is offset. Hence the turning patterns is actually

Row	Pack A	Pack B
1	F	F
2	F	B
3	B	B
4	B	F

I usually write the turning directions on the outermost selvage card, one pair of instructions along each of the four edges. Thus, if FF is showing at the top of the card, I know to turn both cards forward, whereas if BF is showing, I know to turn pack A backwards and pack B forwards. This way I don't have to remember where I am, just check the selvage.

## 7.3 Weaving a Pattern

Unlike doubleface, the two packs don't represent the two separate colours. Instead, individual cards change colours when they are in the vertical position. That means that cards in pack A switch colours in rows 1 and 3, and cards in pack B switch in rows 2 and 4. This is why patterns are often draw using the brick-grid.

To actually switch the colour of a card, the card is flipped around its vertical axis.

*Key point: cards do NOT switch between packs.*

## 7.4 Designing a Pattern

Ummmm. I have no idea how to write this bit. The graph paper you want is the offset "brick" graph paper. See the Appendices for a sample. Beyond that ... I am not entirely comfortable coming up with designs myself yet. Any suggestions to add here are welcome.

## A Useful Software And Links

One program I have found very useful to simulate weaving and try patterns is Guntram's Tabletweaving Thingy, or GTT. His website at <http://www.guntram.co.za/tabletweaving/> includes patterns. Guntram is a tablet weaver living in South Africa and playing in the SCA.

Linda Hendrickson, in the USA, has a website with a video showing continuous warp at <http://www.lindahendrickson.com/>.

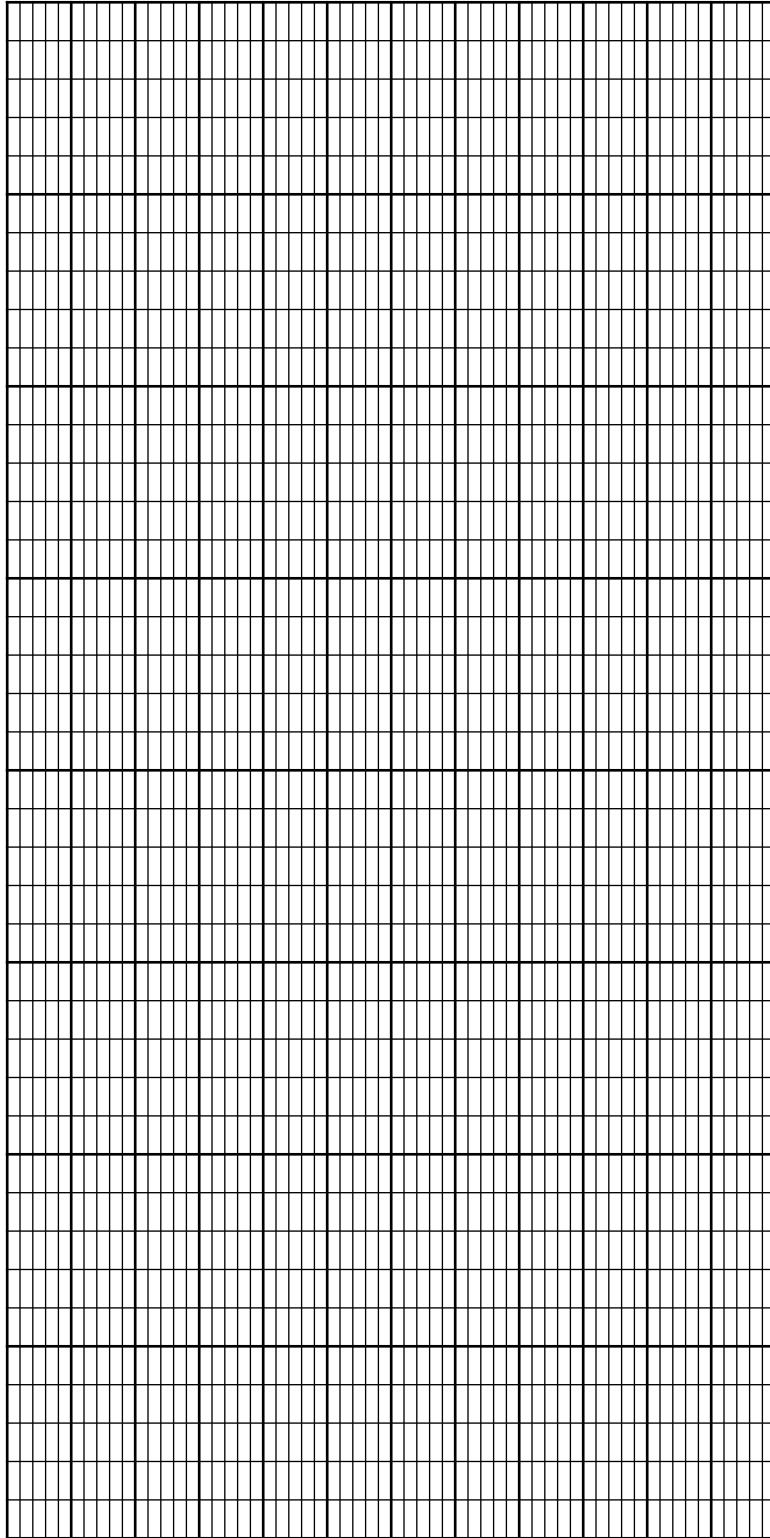
Sarah Goslee (aka Phiala) has a wonderful website with much textile-y goodness and information at <http://www.stringpage.com>, which includes a very thorough, annotated bibliography.

## References

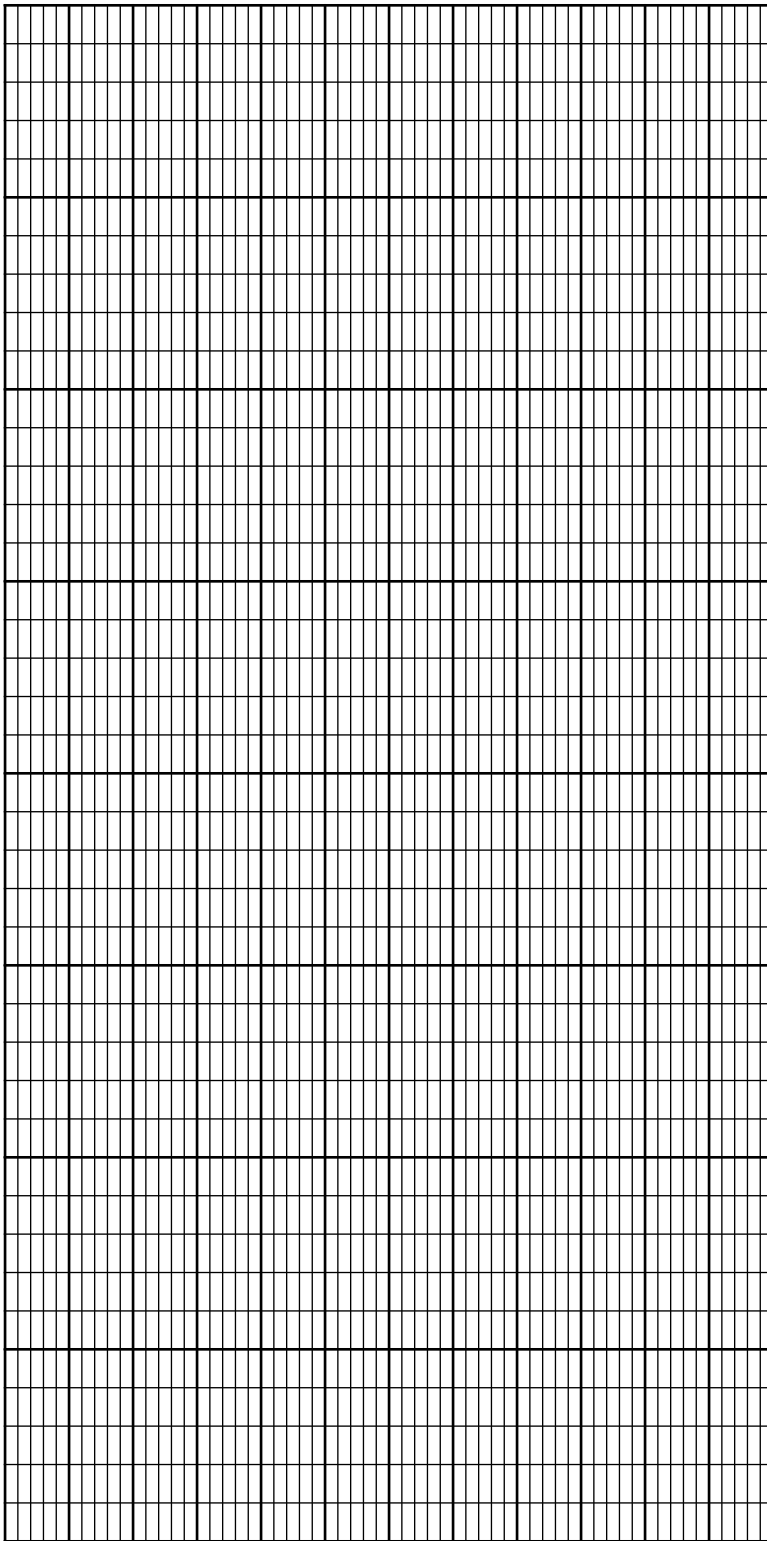
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- [3] Anna Neuper, Nancy Spies, and Ute Bargmann. *Anna Neuper's Modelbuch: Early Sixteenth-Century Patterns for Weaving Brocaded Bands*. Arelate Studio, 2003.
- [4] David R. Shackleton. Hochdorf method. *TWIST*, XVI(1), 2009.
- [5] Nancy Spies. *Ecclesiastical Pomp & Aristocratic Circumstance; A Thousand Years of Brocaded Tablet-woven Bands*. Arelate Studio, 2000.



## B Doubleface Graphing Paper



Free Asymmetric Graph Paper from <http://incompetech.com/graphpaper/asymmetric/>



Free Asymmetric Graph Paper from <http://incompetech.com/graphpaper/asymmetric/>