

Lampas:

Pick-up Weaving on a Four Shaft Loom

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1 Summary

This project is an attempt to better understand the lampas weave structure using a pick-up technique to mimic a drawloom harness.

By the 13th century, Lampas-weave had become the dominant technique for the figured silks woven in Italy [1]. Italian lampases were usually woven in a tabby-tabby pattern, though twill patterns were not uncommon. [3]

The samples are woven in 8/2 tencel. Tencel is a cellulose fibre that has a similar shine and dye-absorption to silk, but is considerably cheaper. This thread is also much thicker than that used in extant textiles, but is what was readily available for a price I could afford (especially since I was learning by trial and error).

2 Historical Information

2.1 What is Lampas?

Lampas belongs to that category of fabrics that is often lumped into what most people would call a 'brocade' fabric. Brocading cannot, however, describe a fabric property as it is not in fact a weave pattern but is instead a supplementary technique.

Lampas weave as defined by CIETA vocabulary of 1964 is 'a figured weave in which a pattern, composed of weft floats bound by binding warp, is added to a ground fabric formed by a main warp and a main weft. The ground may be tabby, twill, satin or brocading wefts; they float on the face as required by the pattern, and are bound by the ends of the binding warp in ordinary tabby or twill which is supplementary to the ground weave'. [2]



Lampas Textile (image has been cropped). [1]

The face is shown on the left. The backside is on the right side, showing the doubleweave.

What does that mean, exactly? Lampas consists of two warps (a main warp and a binding warp), and at least two wefts (a main weft, and one or more pattern wefts). In the non-pattern-weave areas these form two separate layers of cloth, one on top of the other, like doubleweave. This is shown in the image in section 1.2, below. Unlike true doubleweave, however, the 'pattern' areas interlace with each other to create one layer of cloth. Note that in this case, the 'pattern area' refers to the area of interlacement rather than a design element. In some cases the pattern area actually makes up the background of the fabric - rather the inverse of what we think of as the pattern.

2.2 Where/When was Lampas Produced?

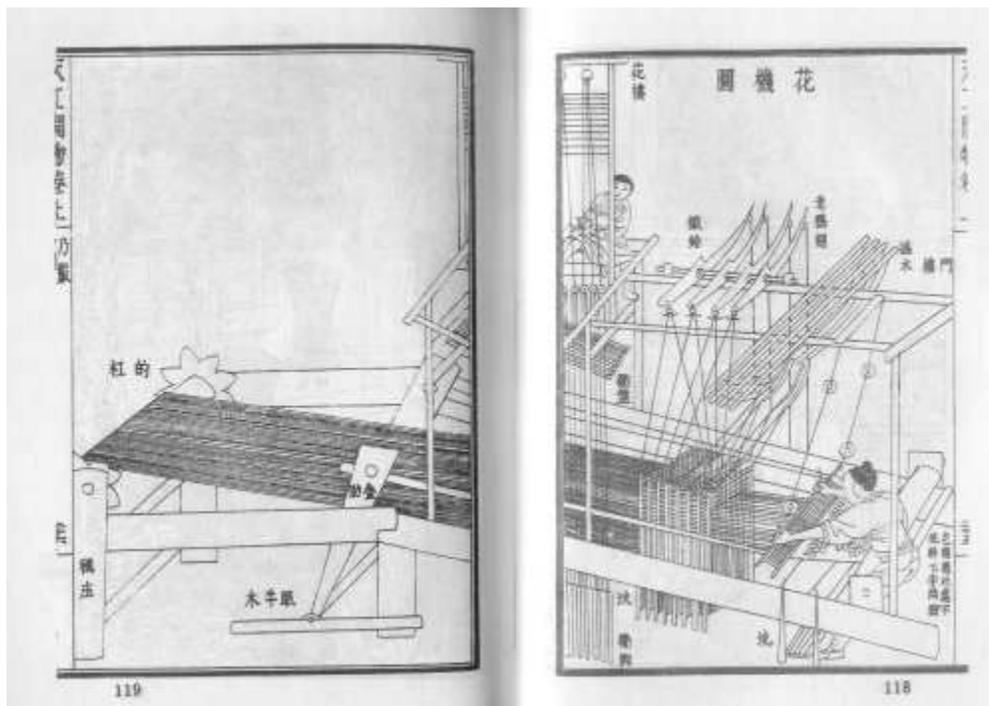
Lampas developed in Central Asia in the 10th century CE, and had reached Islamic Spain by the 12th c. CE [4]. By the 13th century, Lampas-weave had become the dominant technique for the figured silks woven in Italy [1]. These particular silks are often described as diasper ; lampas in which the pattern weave forms the pattern, on a background of doubleweave cloth (as shown in the image above). Italian lampases were usually woven in a tabby-tabby pattern, though twill patterns were not uncommon. [3]

Lampas-weave is often associated with the silk industry, and often incorporated gilt threads. This is not surprising, since such a complex fabric would commonly be woven in expensive materials such as silk and precious metal. There are also, however, many extant examples of lampas woven with a linen main ground, and wool pattern wefts.

Lampas textiles could be used as clothing, accessories, and liturgical vestments, as well as in furnishings and other household cloths. [3]

2.3 How was Lampas Produced?

It is generally assumed that the development of lampas is concurrent with the development of drawloom technology. This would allow complex patterns to be woven without the use of pick-up, or other time-consuming techniques), making large-scale production more feasible. Drawlooms varied from region to region, but had common defining characteristics. Most importantly a drawloom is a compound-harness loom, as each warp thread passes through two harnesses (the ground harness and the pattern harness)¹. This second harness was controlled by a second person (called a draw-boy) perched on top of the loom.



A Chinese drawloom for figure-weaving, from the *Tiangong Kaiwu* encyclopedia published in 1637 [5]

¹ There is often confusion over the terms 'harness' and 'shaft', and often North American writers will use these terms interchangeably. Please see the glossary in Chapter 3 for definitions.

3 Project Information

As I do not have a drawloom, I have decided to experiment with a pick-up technique to mimic the figure harness. Instead of a separate pattern harness, I am using a pick-up stick to manually choose and lift the pattern warps. As one can imagine, this slows down the weaving process considerably. For this reason I am only weaving small sample pieces of cloth.

These samples are woven in 8/2 tencel. Tencel is a cellulose fibre that has a similar shine and dye-absorption to silk, but is considerably cheaper. This thread is also much thicker than that used in extant textiles, but is what was readily available for a price I could afford (especially since I will be learning by trial and error). 8/2 tencel is generally set at 20-24 ends per inch (epi). As I didn't want the fabric at the back to be too loose, I chose 24 epi (doubled for 48 epi). This produced a sturdy fabric that would hold up to handling.

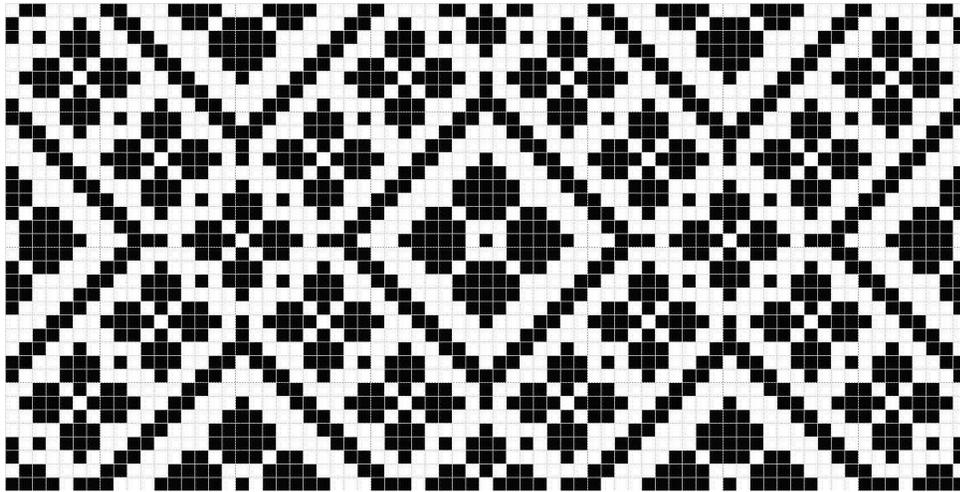
3.1 The Patterns

My goal was to complete two lampas weave samples, a monochrome and a polychrome example of lampas. The purpose of these samples is to explore the diasper lampas weave structure, creating a tangible object as a record of my work, while minimizing cost.

When choosing designs for my samples, I looked to Italian pattern books. Lampas designs, almost as a rule, have no large areas of plain background [1], so this was one of my primary criteria for selecting a pattern.

3.1.1 Monochrome

The design for this sample was taken from *La Vera Perfectione del Disegno* (Giovanni Ostaus, 1561), compiled by Kathryn Newall. For my first attempt at lampas I wanted a repetitive pattern to reduce the complexity of the pick-up, and I thought this suited my needs very well.



3.1.2 Polychrome

The design for this sample was also taken from *La Vera Perfectione del Disegno* (Giovanni Ostaus, 1561), compiled by Kathryn Newall. I liked the vining design and thought the flowers and acorn would give a nice opportunity to add additional colours to the piece.



3.2 The Result

As I wove each sample I encountered both anticipated and unanticipated challenges. These being sample pieces, it was a fantastic opportunity to adapt as I went in order to try to produce the desired results.

3.2.1 Monochrome

This was my first sampler piece, and it went surprisingly smoothly. I used the same shuttle for both the pattern and the ground weft. This produced a tube of fabric, with the pattern elements binding the doubleweave together. I had hoped to get more bloom in the pattern weft after finishing the fabric, but did not get the coverage I had hoped for.

3.2.2 Polychrome

Because I wasn't happy with the coverage I was getting with using pattern weft threads of all the same thickness as the ground weft, I looked for solutions. In most historical examples, the pattern weft is usually thicker. I considered switching my ground to use a 2/20 tencel, leaving the 2/8 for the pattern warp, which would have been the ideal solution. However, at 48 epi in a 12 dent reed, each pattern block of four threads fits neatly into one dent, making picking up the pattern reasonable. With 2/20 tencel I'd sett it at 80 epi, which would work out perfectly at 4 ends per 20 dent reed. Unfortunately, I don't have a 20 dent reed, and a new reed was not in the budget. Instead, I decided to double the pattern warp to get more coverage. This is a common practice in overshot and other supplementary weft weaves. I would eventually like to try using 20/2 tencel for the ground and 8/2 tencel for the pattern weft, but it will have to wait until I have a drawloom apparatus – finer threads would be nightmare to weave as pick-up.

One problem I did not anticipate was the draw in at the edges of the back 'pattern weft' fabric. Now that I was using two distinct wefts, the fabric had separated into its distinct layers at the edges, and because of the spaced binding warp the draw in was much greater on the edges of the lower layer. I tried adding a pattern block to the very edge of each selvedge, but was even unhappier with the results. My final solution was to ensure that the two wefts interlaced at each edge to bind the layers of fabric together. This seems to be the best solution I have found.

4 References

- [1] Becker, John, and Donald B. Wagner. *Pattern and loom: a practical study of the development of weaving techniques in China, Western Asia and Europe*. Copenhagen: Rhodos, 1987. Print.
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- [4] Jenkins, D. T.. *The Cambridge history of western textiles*. Cambridge, U.K.: Cambridge University Press, 2003. Print.
- [5] "Tiangong Kaiwu Drawloom." *Tiangong Kaiwu Drawloom*. N.p., n.d. Web. 10 Feb. 2013.
<http://commons.wikimedia.org/wiki/File:Tiangong_Kaiwu_Drawloom.jpg>.
- [6] "Weaving Glossary." N.p., n.d. Web. 12 Feb. 2013.
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Appendix A) Glossary

Binding warp: The binding warp interlaces with pattern weft.

Doubleweave: (also called double cloth) a woven textile in which two or more sets of warps and one or more sets of weft or filling yarns are interconnected to form a two-layered cloth.

Drawloom: A two harness loom. The first harness created the ground fabric and the second harness creates a pattern by using a set of shafts or units.

End: One warp thread.

Ends per Inch (epi): The number of warp threads per inch as threaded on the loom. This may not equal the number of warp threads per inch in the finished fabric due to shrinkage during finishing.

Face: The front of the fabric.

Figured weave:

Float: Warp or weft threads that do not intersect. They are "skips" that occur in woven cloth. [6]

Ground fabric:

Harness: A group of shafts or other lift units. A standard loom will have several shafts, but only one harness.

Pick: One weft shot. [6]

Pick-up: Using a pick-up stick to lift warp threads and create a shed.

Pick-up stick: A pointed implement used in weaving to lift warp threads.

Satin: A weave where warp floats over the weft in a broken pattern to hide the weft.

Shaft: A frame with heddles which moves up and down to form sheds.

Tabby: Also called plain weave. A simple weave structure. One weft passes over one warp end and under one warp end. The adjacent warp end and weft pick reverse the actions of the first. [6]

Twill: A type of weave where the user passes the weft thread over one or more warp threads and then over one or more warp threads to create a pattern of diagonal ribs.

Warp: Vertically aligned threads that attach to the front and back of the loom. [6]

Weft: The threads that pass through the shed from selvedge to selvedge. Weft threads align horizontally and are perpendicular to the warp. [6]

Appendix B) Loom Setup

In 'Pattern and Loom', John Becker proposes a way to weave lampas with a pick-up technique on a four-shaft loom as a doubleweave set-up. When a pattern row turns up in the draft, a fifth patterning treadle is used to lift the whole of the main warp. The pattern is then picked out with a shed stick. The stick is held flat against the reed while the treadle for one of the binding warps is raised. A new shed stick is inserted behind the reed. The end result is a shed that consists of the pattern and one half of the binding warps. The pick is thrown and the stick is removed. I have used a similar method.

I have set up my loom with shafts 1 and 2 for the binding warp, and 3 and 4 for the ground. It has been threaded in a repeat of 3,4,3,2,4,3,4,1 – beginning and ending with 1.

The treadles have been set up as follows:

- B1: 2 up, 1 down, 3+4 centre
- G1: 1, 2, 3 down, 4 up
- B2: 1 up, 2 down, 3+4 centre
- G2: 1, 2, 4 down, 3 up.
- P: 1+2 down, 3+4 centre.

Appendix C) Weaving the Samples

Each pattern grid (one block in the pattern graph) consists of four warp ends and four weft picks.

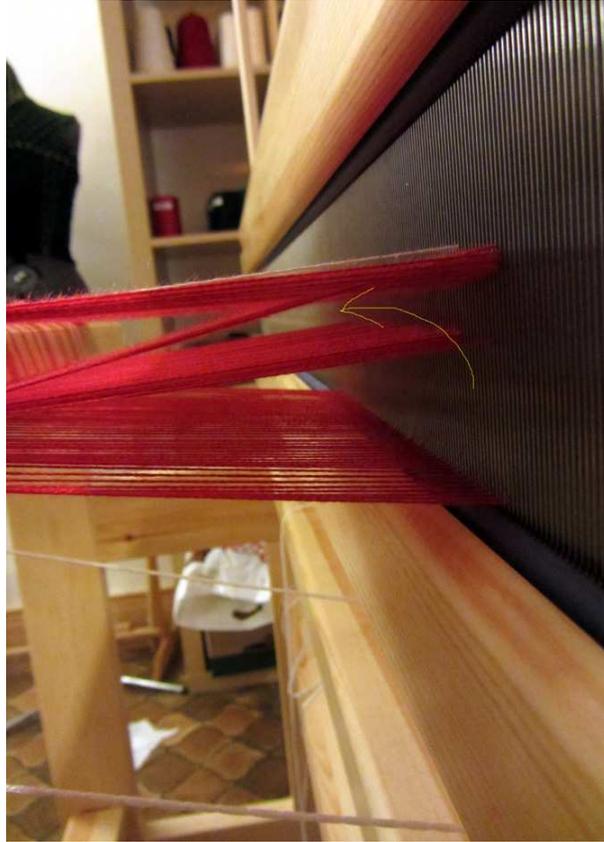
The steps to weave each row of the pattern grid are as follows:

1. Treadle P: this lowers the binding warps out of the way. Pick up the pattern following the grid using a pick up stick. Over the threads equals pattern, under the threads equals background fabric.



2. While maintaining the pick up stick, treadle B1. This raises half of the binding warps. The combination of this and the pick p stick creates a small secondary shed (see yellow

arrow in picture below) – this is where we run the pattern weft shuttle though.



3. With no treadles pressed, transfer the picked up pattern via pick-up sticks to the back of the loom, behind the heddles (this saves it for the second pattern pass). Remove all pick up sticks on front of the heddles. Beat.
4. Treadle G1 (this is a normal weaving shed) and weave.
5. Using pick up sticks, bring the 'saved' pattern back to the front of the loom. This should bring us back to the same place as step 1.
6. While maintaining the pick up stick, treadle B2. This raises half of the binding warps. Carry the shuttle through the small secondary shed.
7. Remove the pick up stick and treadle G2 (this is a normal weaving shed) and weave.