

Bamboo weave patterns



Roopali Babhulkar

Guide: Prof. A. G. Rao

Objectives

1. To know the fundamental grammar of the weaving structure.
2. To come up with analytical classification of existing weave patterns.
3. To study the visual effect of various elements in a weave pattern.
4. To find out methods to generate new variations in weaving patterns.
5. To come up with an aid to teach and learn the weaving process.

Scope

The weaves, which are used in the three-dimensional objects, are adopted from the basic two-dimensional weaves, but these weaves become complicated.

To start with the process, initially the project deals with **two- dimensional weave patterns** only.

However, this research can be seen as a base for further work.

Methodology

For ‘Generating new weave patterns’

1. Studying existing weave patterns in two-dimensional and three-dimensional objects.
2. Identifying basic elements in the weave structure.
3. Understanding and analyzing the effect of basic elements on overall weave structure.
4. Classifying these existing patterns.
5. Understanding how the variations in basic elements contribute to generate new weave patterns.
6. Developing ways to generate new variations.

For ‘Aid to teach and learn weaving process’

1. Learning the actual weaving process.
2. Decoding existing weave patterns.
3. Observing beginners, how they learn.
4. Observing teachers and how they make beginners understand what exactly has to be done.
5. Analyzing the problems faced in teaching and learning.
6. Developing ideas for the aid for learning.

Weave structure

In most of the weaves two or more sets of elements called the warp and weft (by analogy with textile weaving), interrelate to form a membrane like mat.

However, unlike in textile the individual elements never merge to become transformed, but while retaining their identities they create a new pattern.

Classification

For the ease of understanding weave patterns can be classified at three levels.

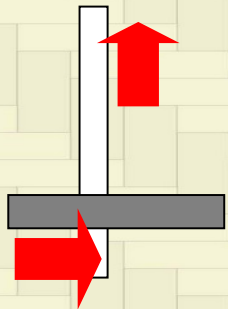
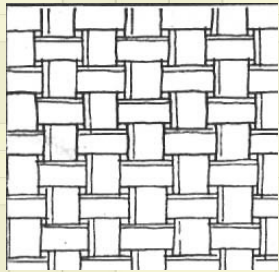
1. On the first level these can be classified broadly in categories, according to the **direction in which the strips are running**.
2. The next level further classifies **variations in a single category**. In each category, there is still enormous possibility for different patterns, depending on **basic module which is repeated**. This module is governed by the arrangement of how many wefts under or over the warps in each row of the weave.
3. The third level classification deals with the possible **variations in a single pattern**. In this single pattern where the decoding of rows as per the warps and wefts (under and over) arrangement remains same, still lot more variations are possible. These variations are because of the variations in the basic **properties of strips** (warps and wefts) like **width, thickness, colour** etc. and also the weaving method.

First level Classification

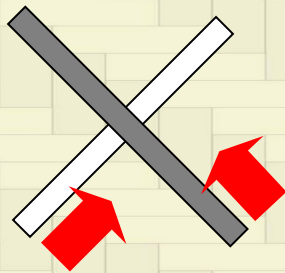
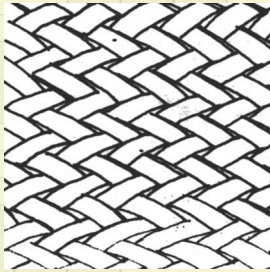
This is according to the **direction** in which the bamboo **strips** (warps and wefts) are running.

Weave patterns

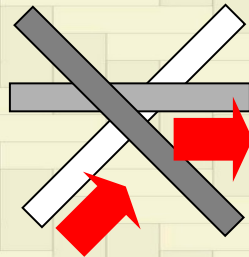
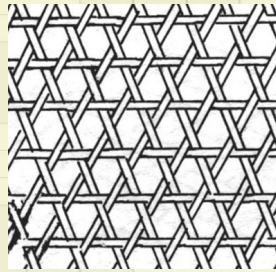
Horizontal
and vertical



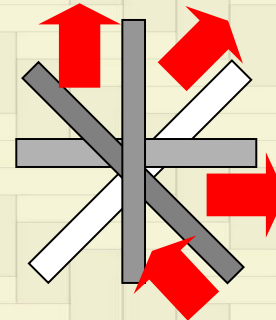
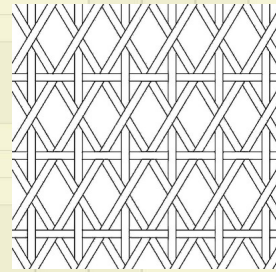
Inclined



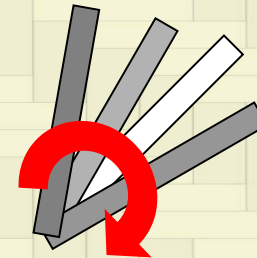
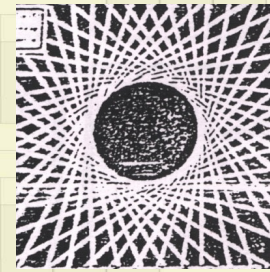
Inclined
and
horizontal/
vertical



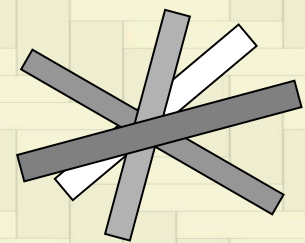
Inclined,
horizontal
and vertical



Circular /
Central



Irregular



Second level Classification

The weaves are classified, according to the decoding of the **warp and weft arrangement**. This is classification further into a single category.

Weave patterns

Horizontal and vertical

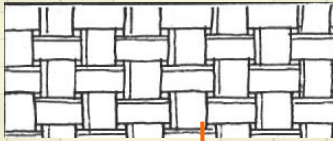
Inclined

Inclined and horizontal/vertical

Inclined, horizontal and vertical

Circular / Central

Irregular



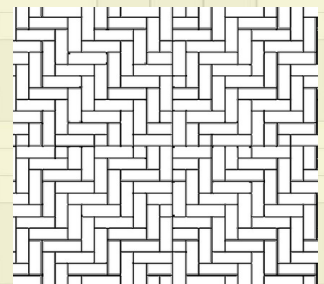
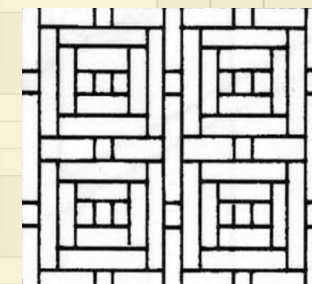
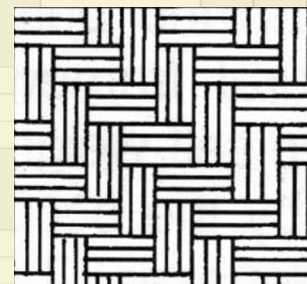
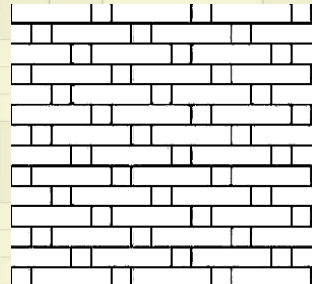
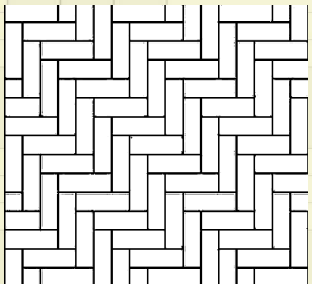
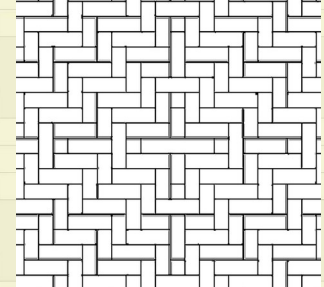
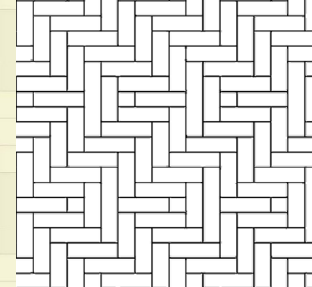
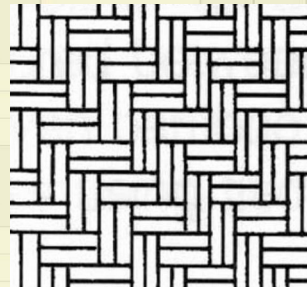
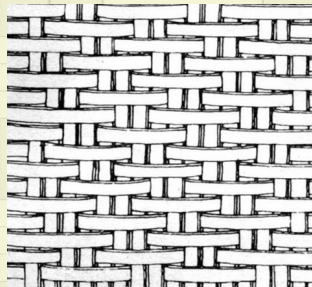
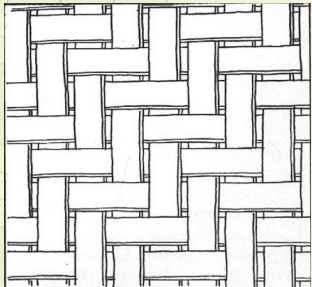
Equal Up-Down

Non-uniform Up-Down

More than one strips as a weft or warp

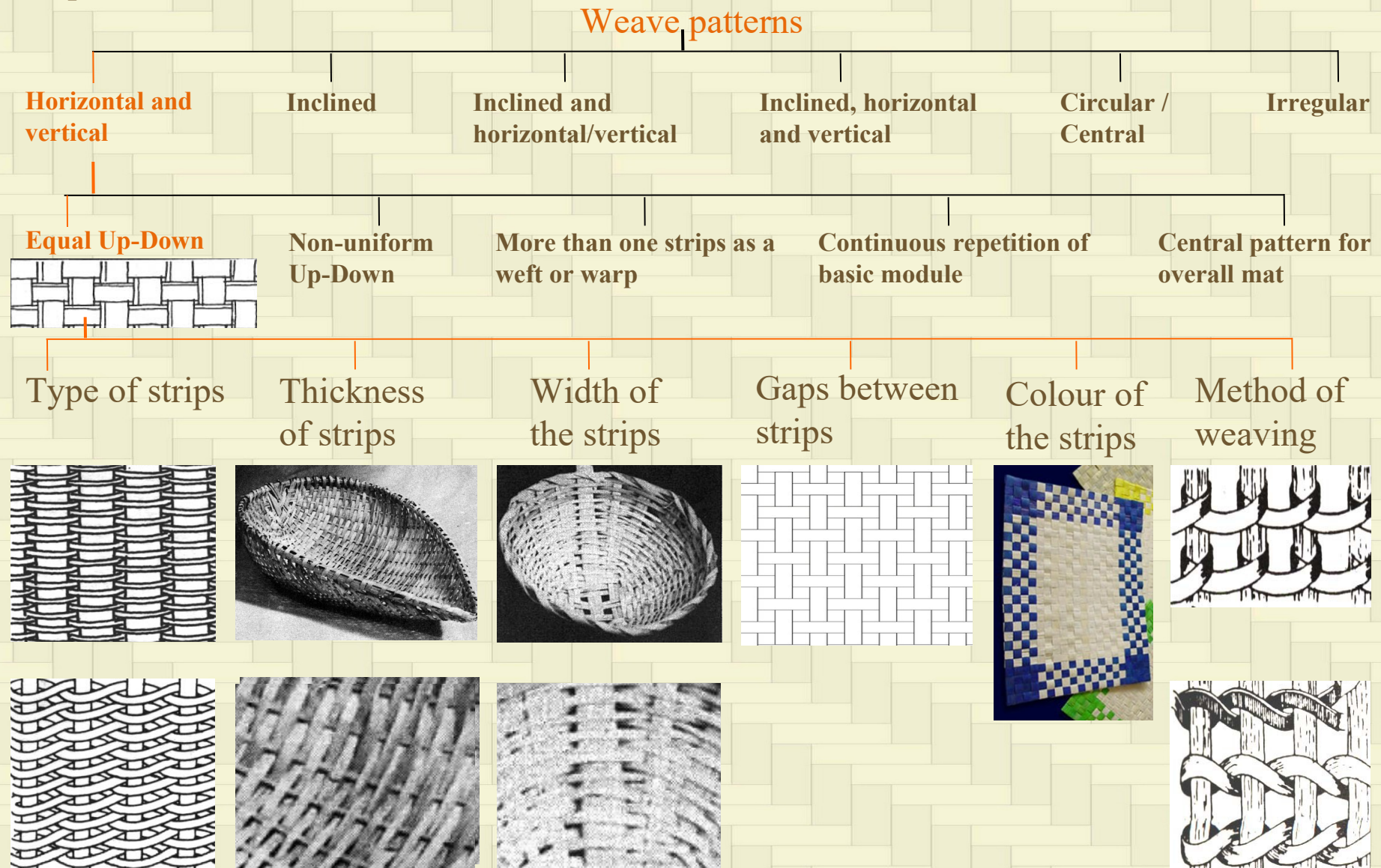
Continuous repetition of basic module

Central pattern for overall mat



Third level Classification

At this level a single pattern can further have variations depending on the properties of the strips like colour, width etc.



Developing new patterns

By using some methodology, generating new patterns can become simpler.

The **methods** explored here can be used as **tools** for generating new patterns by craftsperson, and can make his/her job easier and interesting.

Some new alternatives using these tools are tried here, but one can always try more and More.

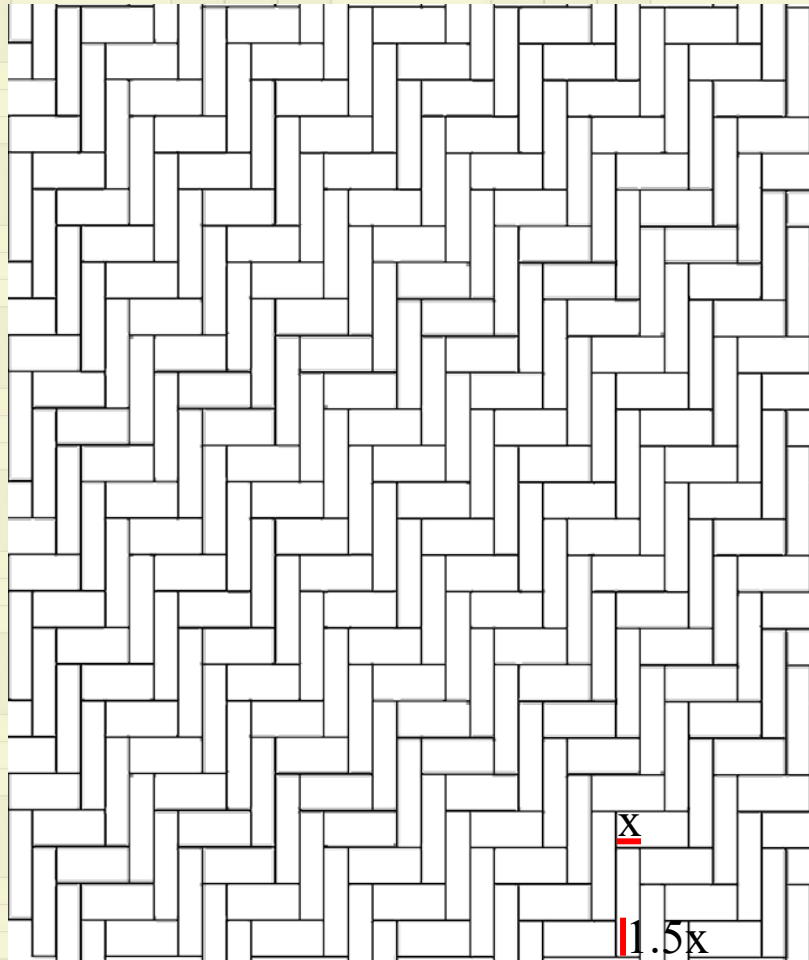
Developing new patterns

These are some of the ways to generate new patterns.

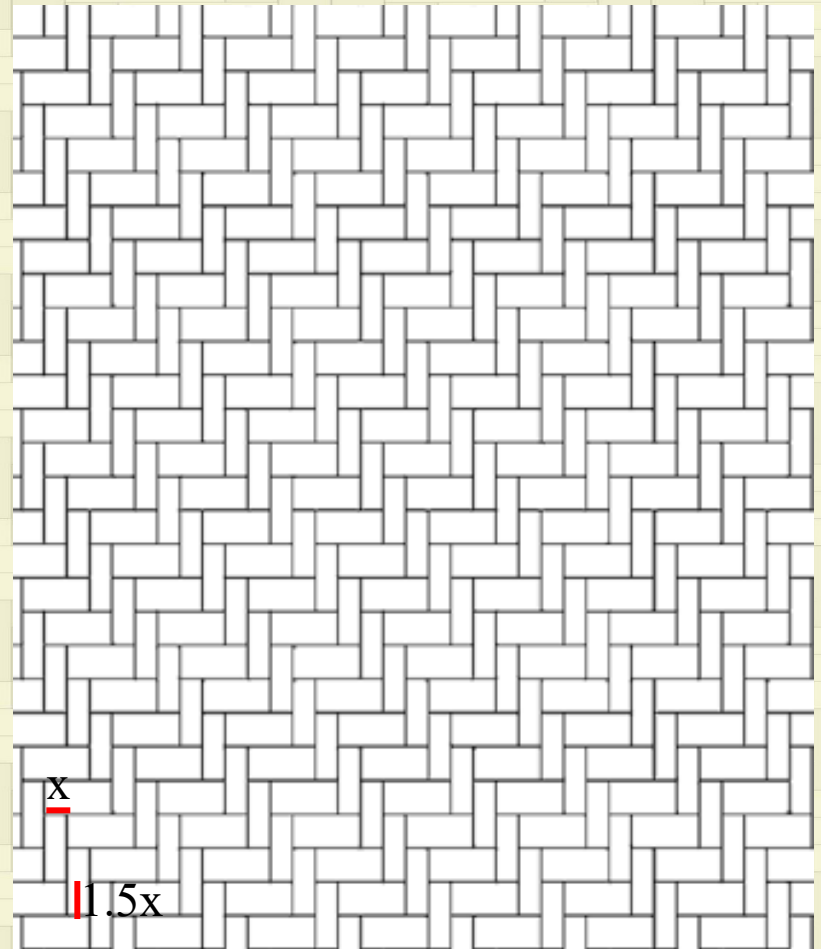
1. Trying variations by exploring the properties of strips used like
 - Width of strips
 - Gap between the strips
 - Colour of the strips
 - Cross-section of strips
2. Finding the mathematics in existing pattern, applying the same logic for other patterns in same category or in the patterns of another category.
 - E.g. Basic module, Repetition strategy
3. Adopting the weave forms from the other weaving areas like fabric or beads weaving.

Developing new patterns

Variation in the width of the strips

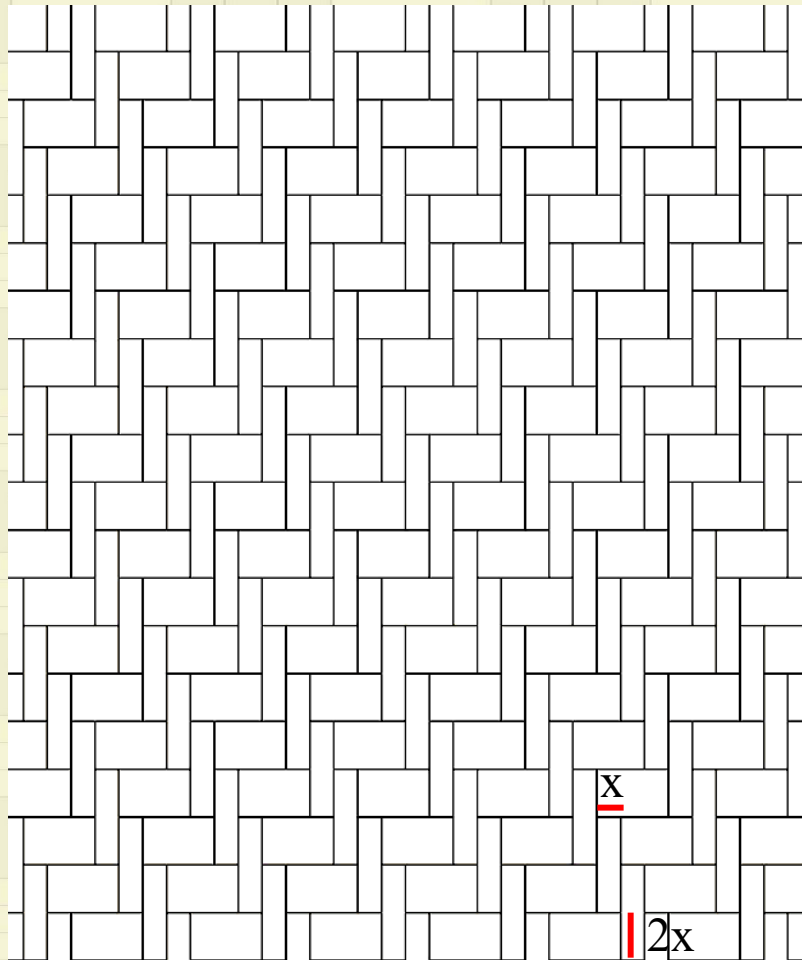


3 Up – 3 Down



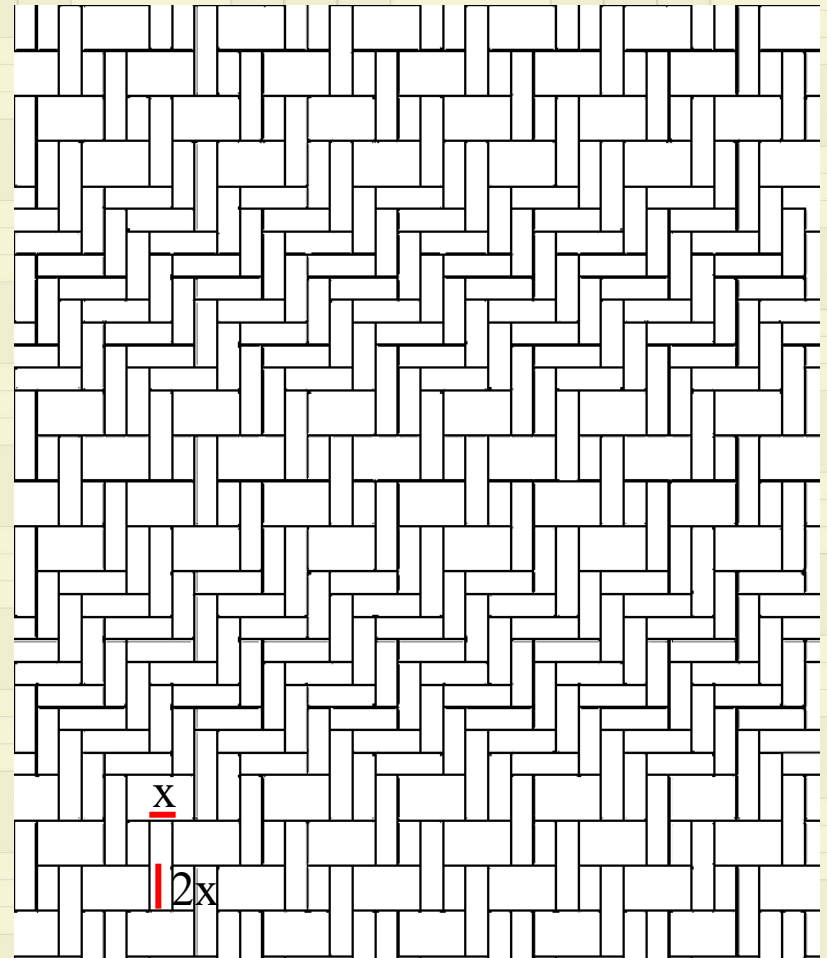
Developing new patterns

Variation in the width of the strips



3 Up – 2 Down

3 Up – 3 Down



Developing new patterns

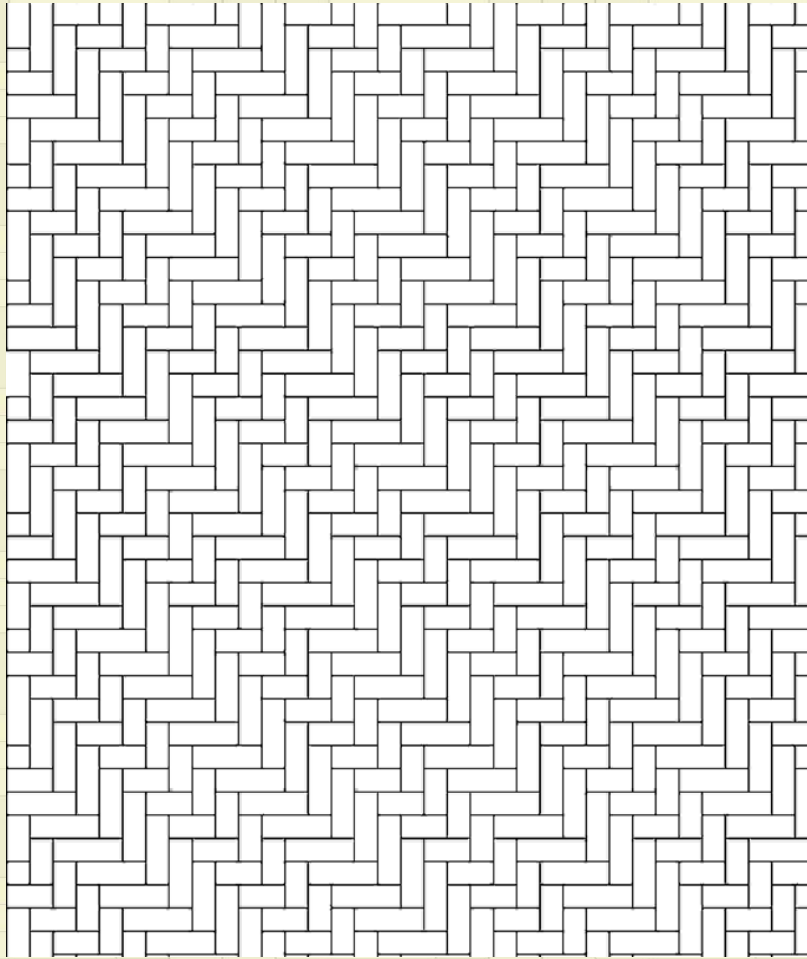
Variation in the gap between the strips

3 Up – 3 Down with gaps between
wefts only



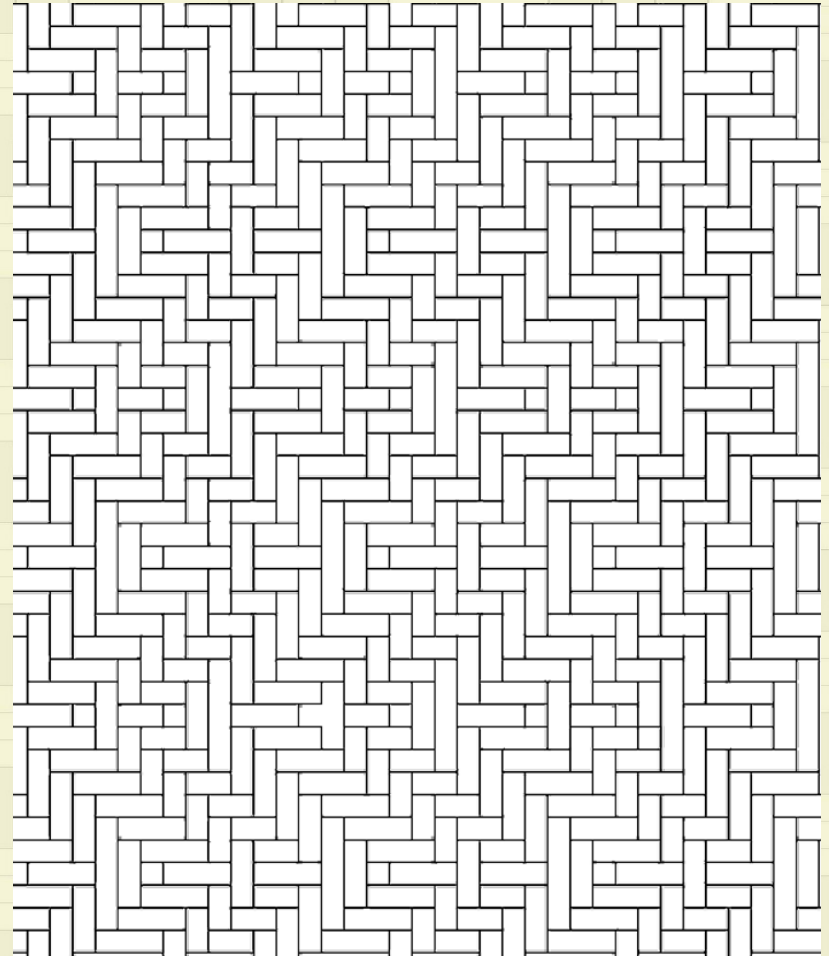
Developing new patterns

Overlay of one pattern on the other



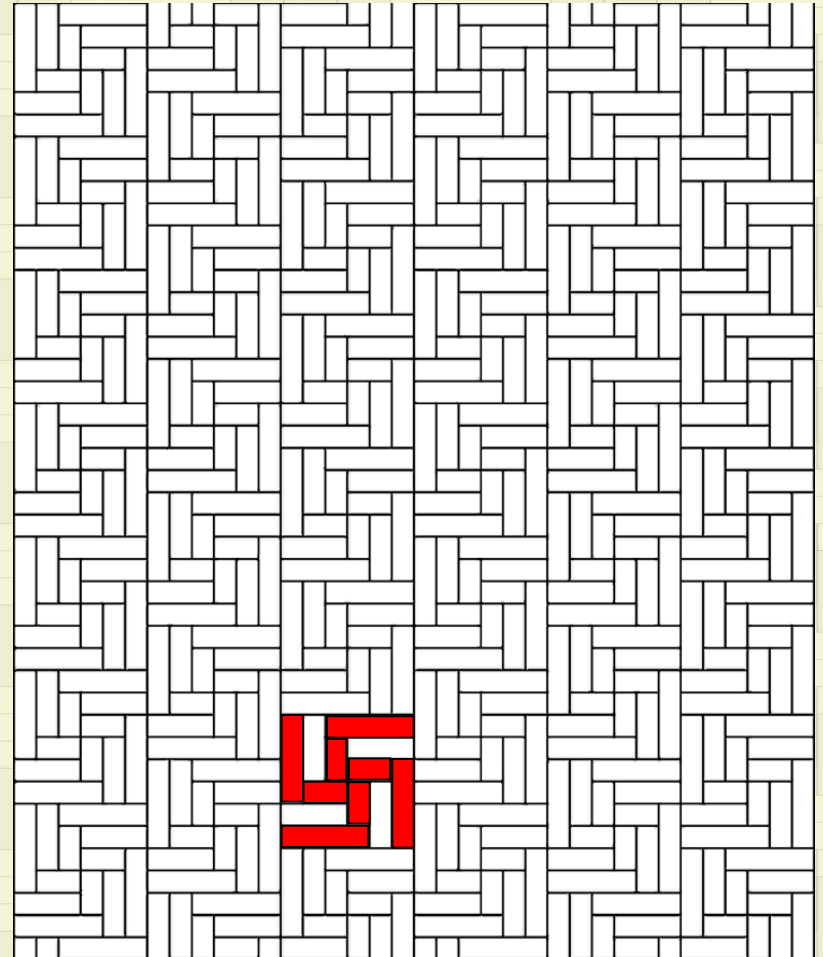
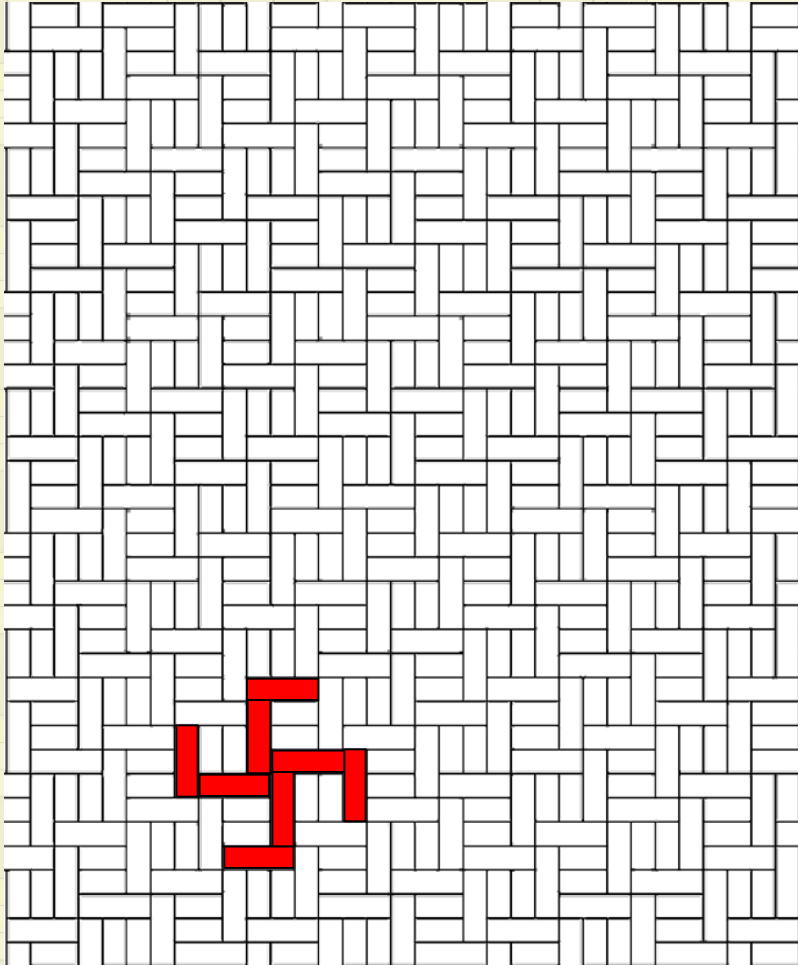
3 Up – 3 Down, 2 Up- 2 Down

3 Up – 3 Down, 2 Up- 2 Down



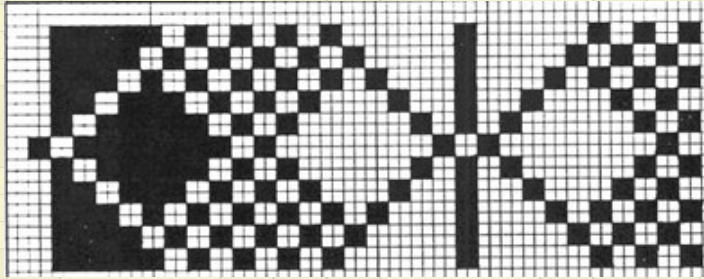
Developing new patterns

Using a metaphor

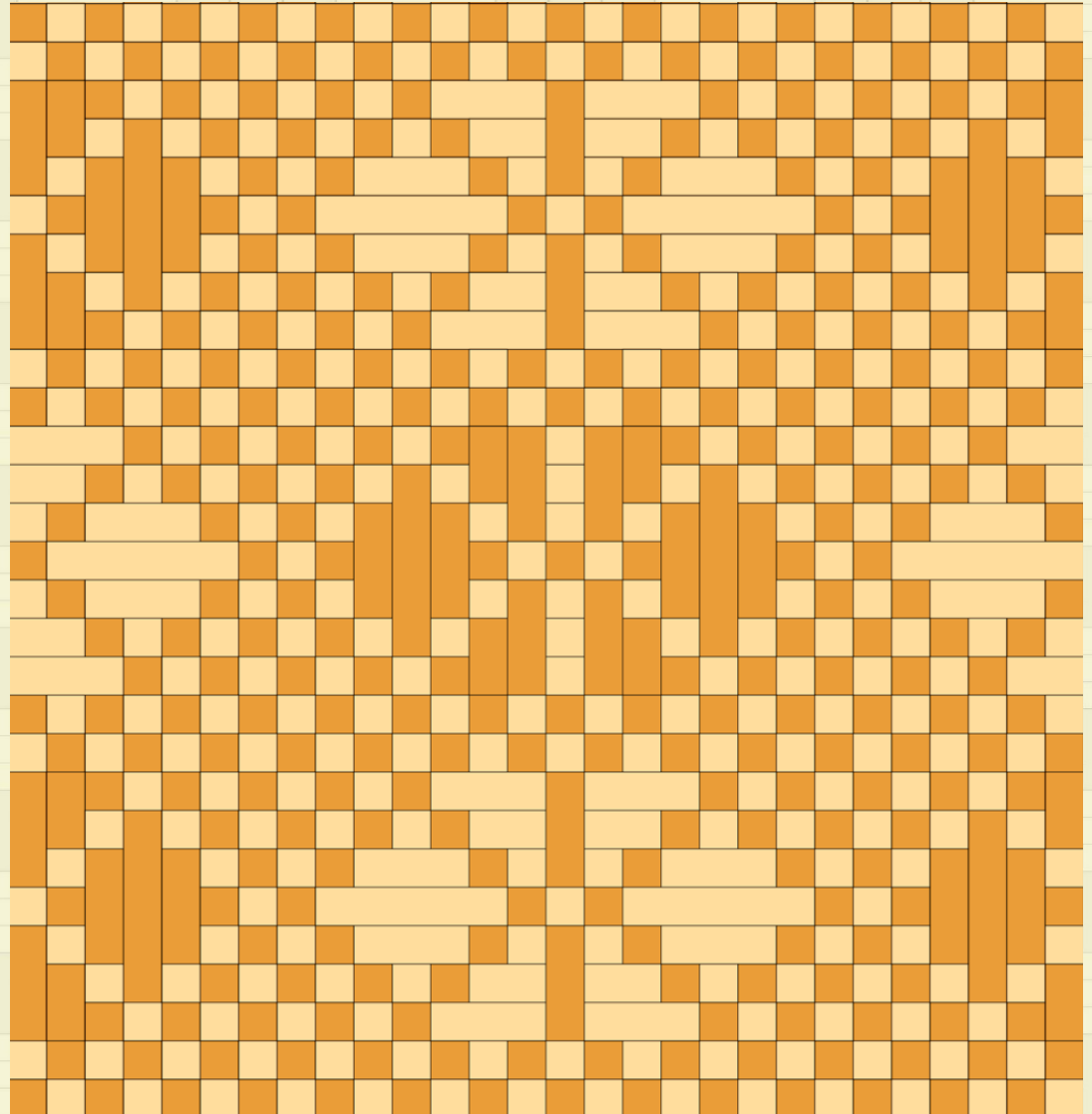
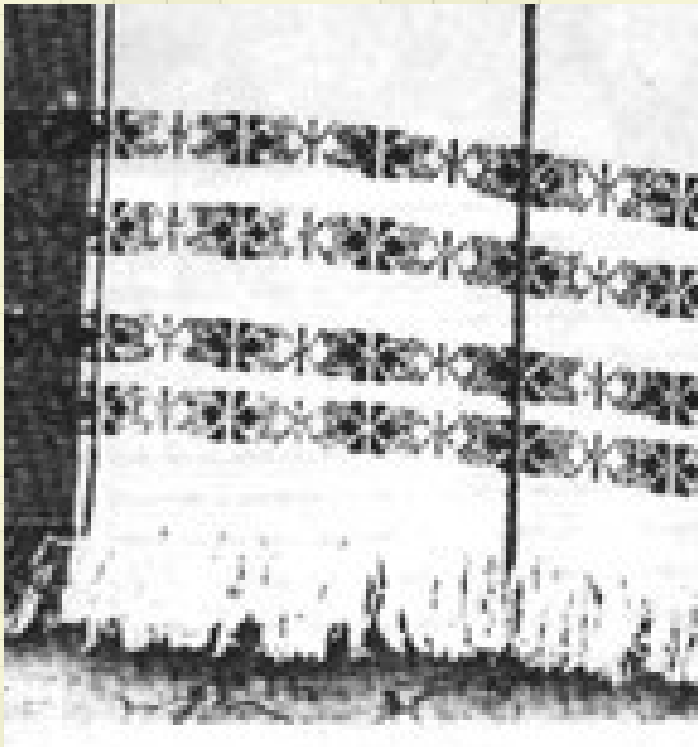


Developing new patterns

Adopting patterns from other weave forms

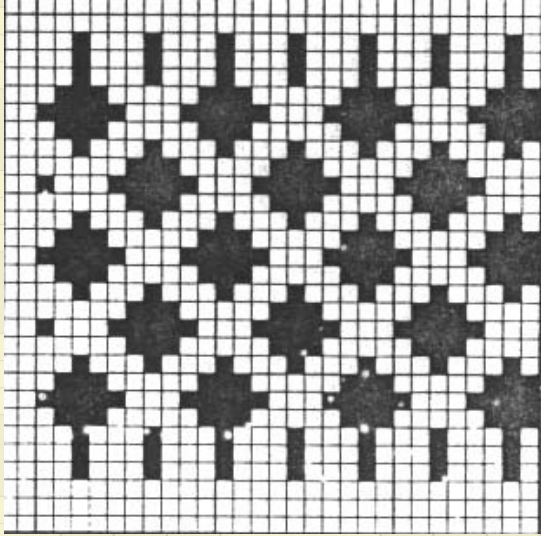


Shawl from Manipur

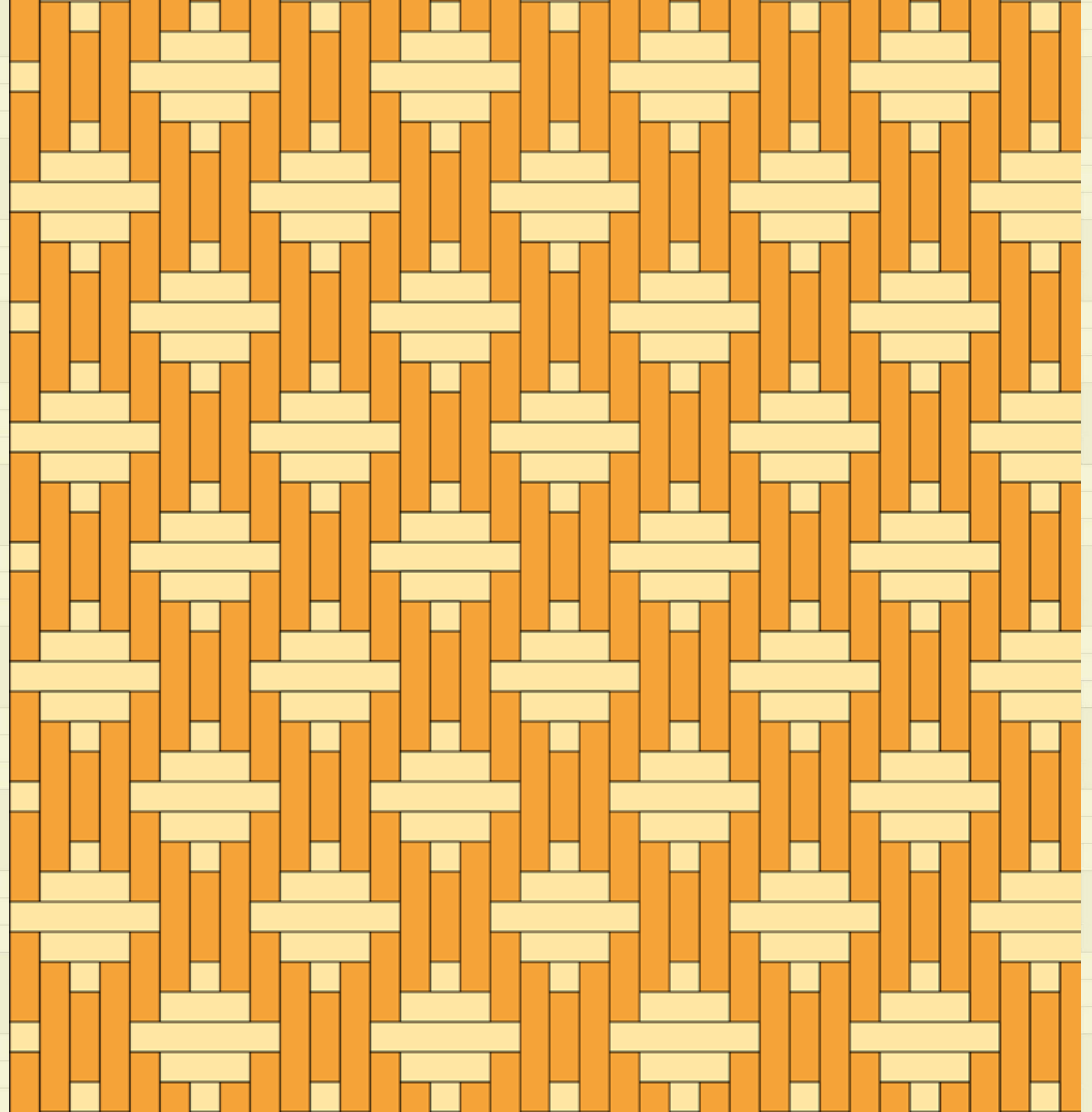


Developing new patterns

Adopting patterns from other weave forms

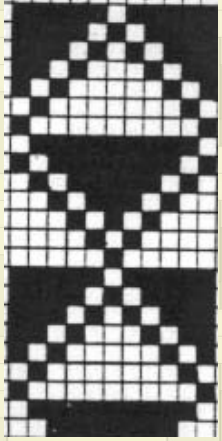


Garment from Manipur

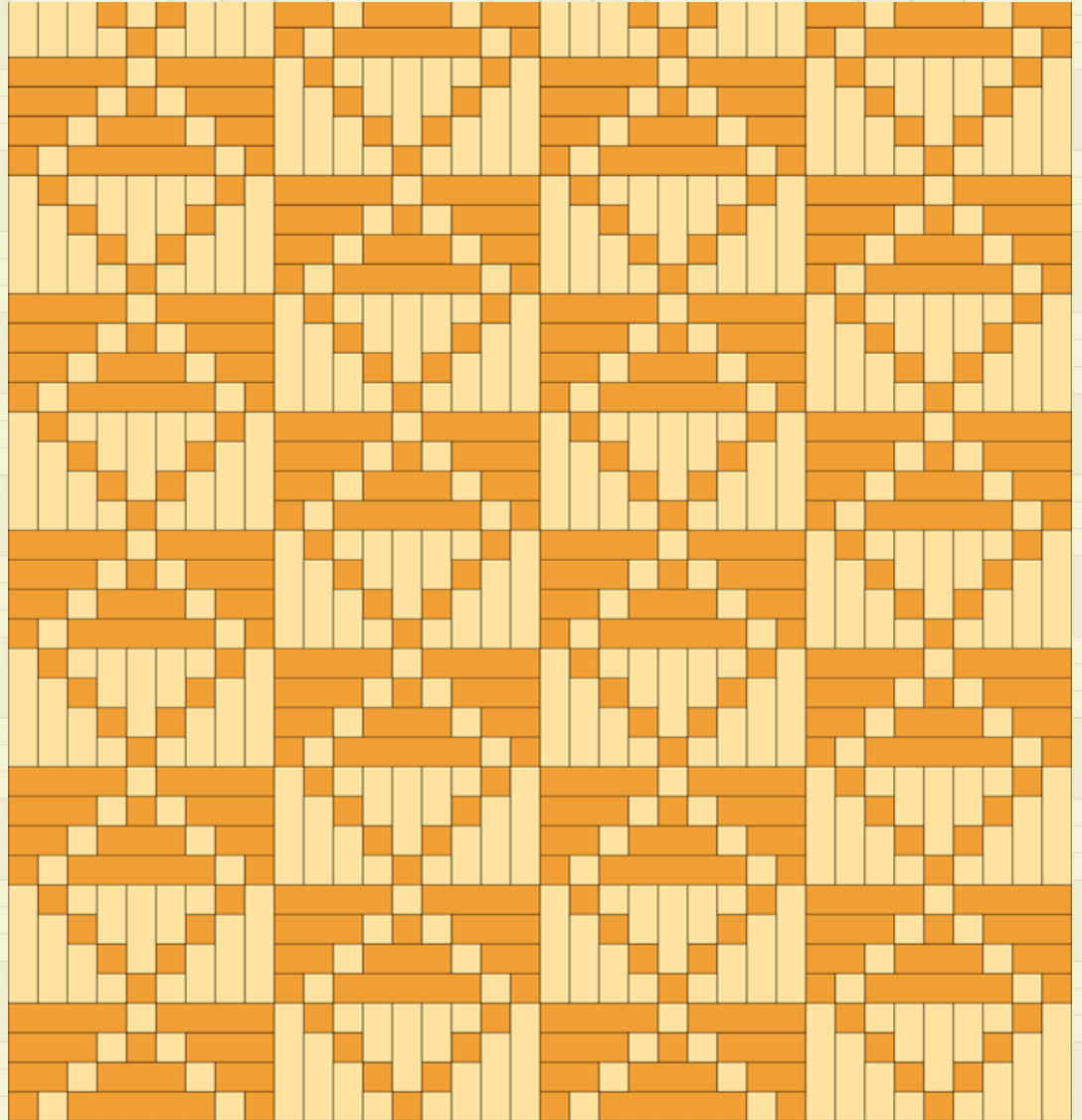
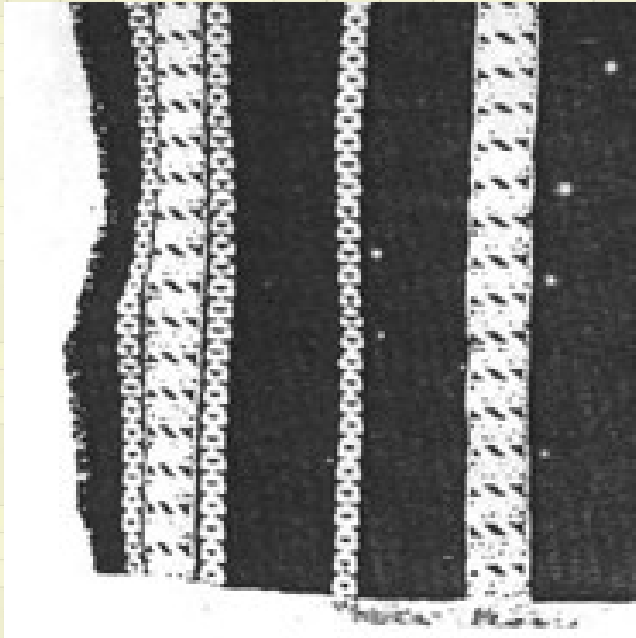


Developing new patterns

Adopting patterns from other weave forms

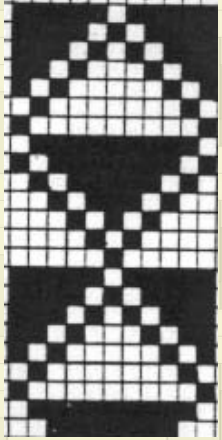


Garment from Manipur

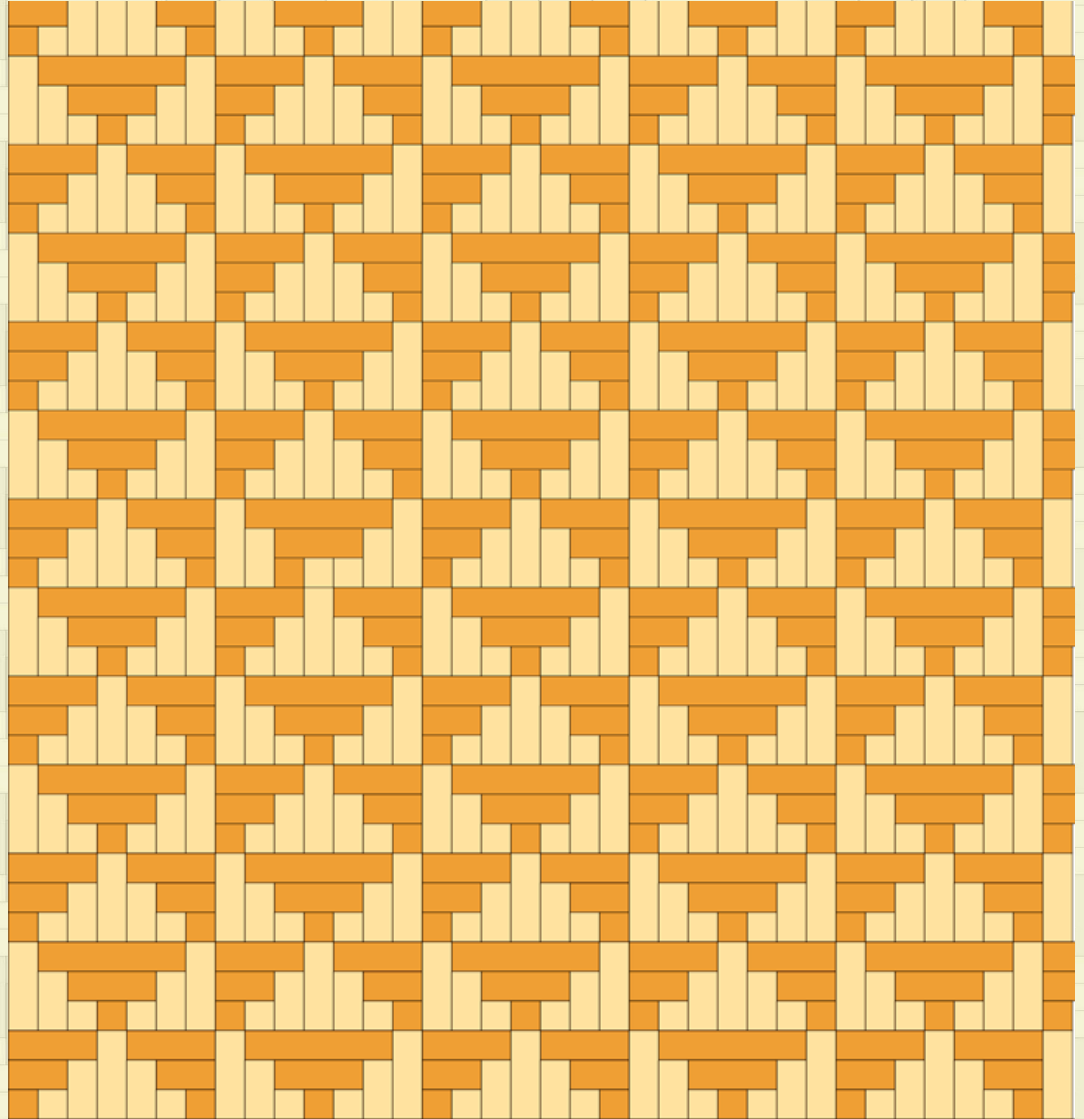
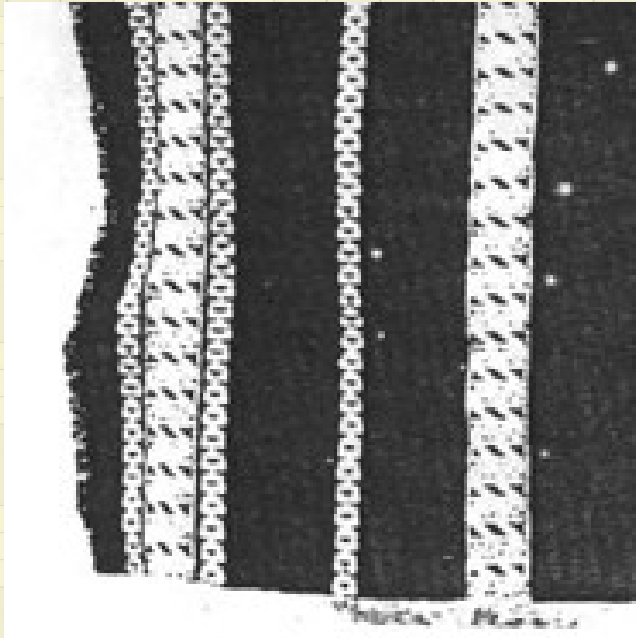


Developing new patterns

Adopting patterns from other weave forms

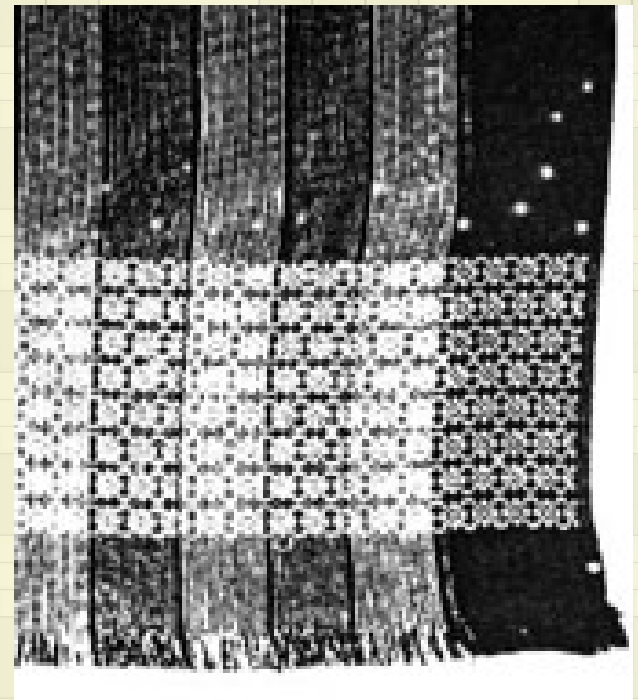
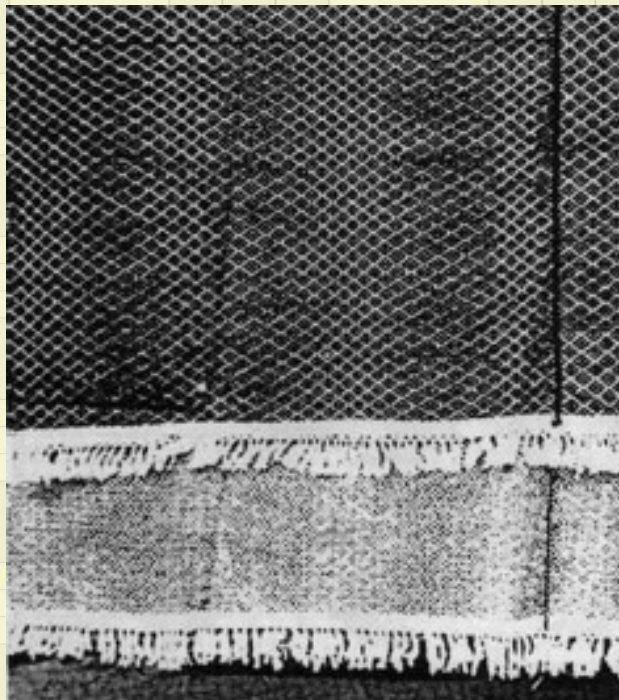
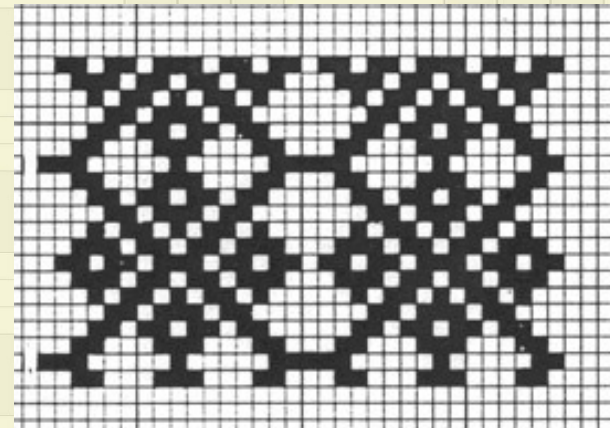
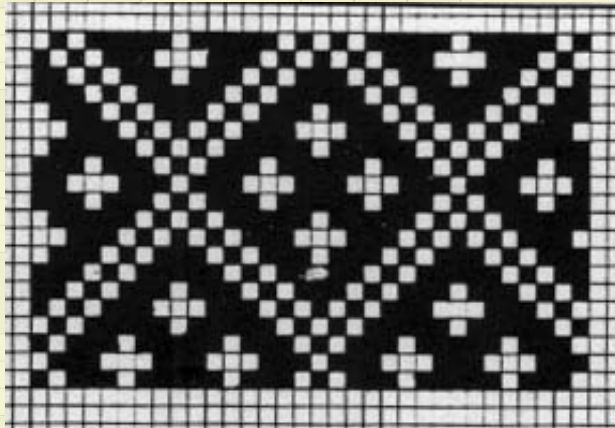


Garment from Manipur



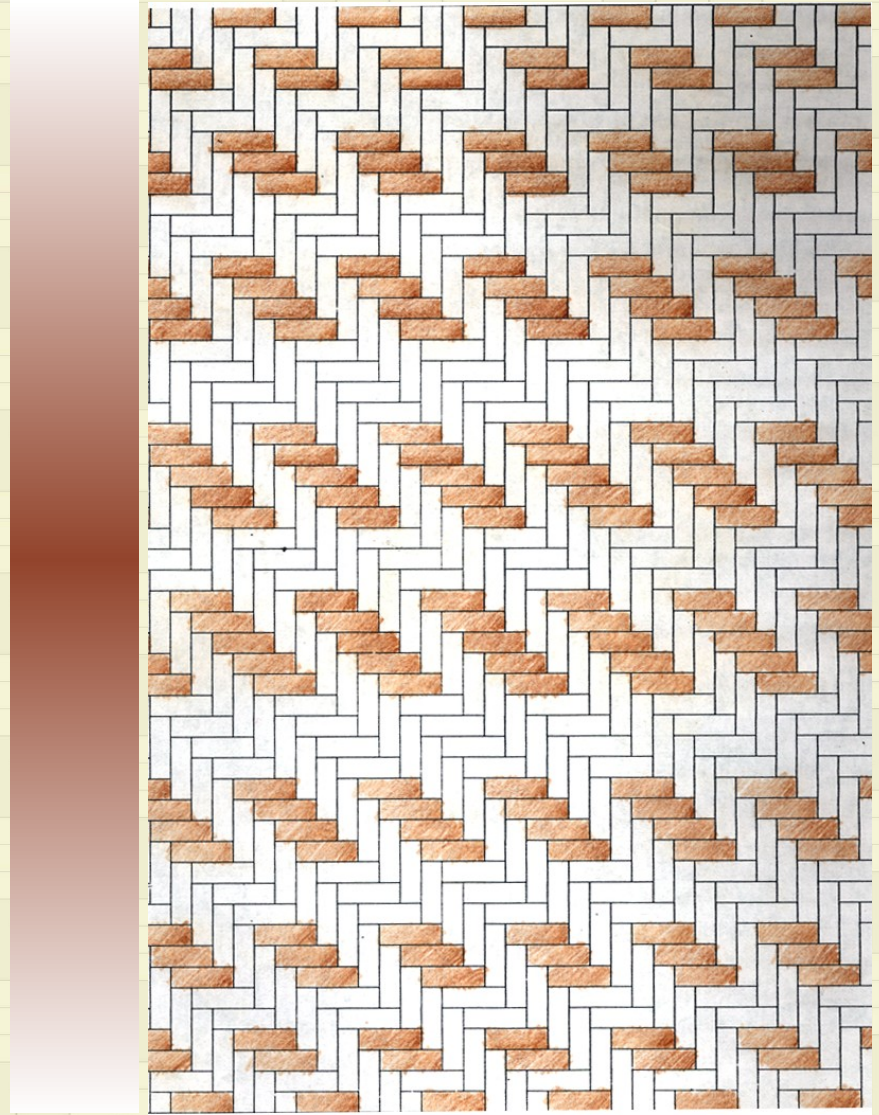
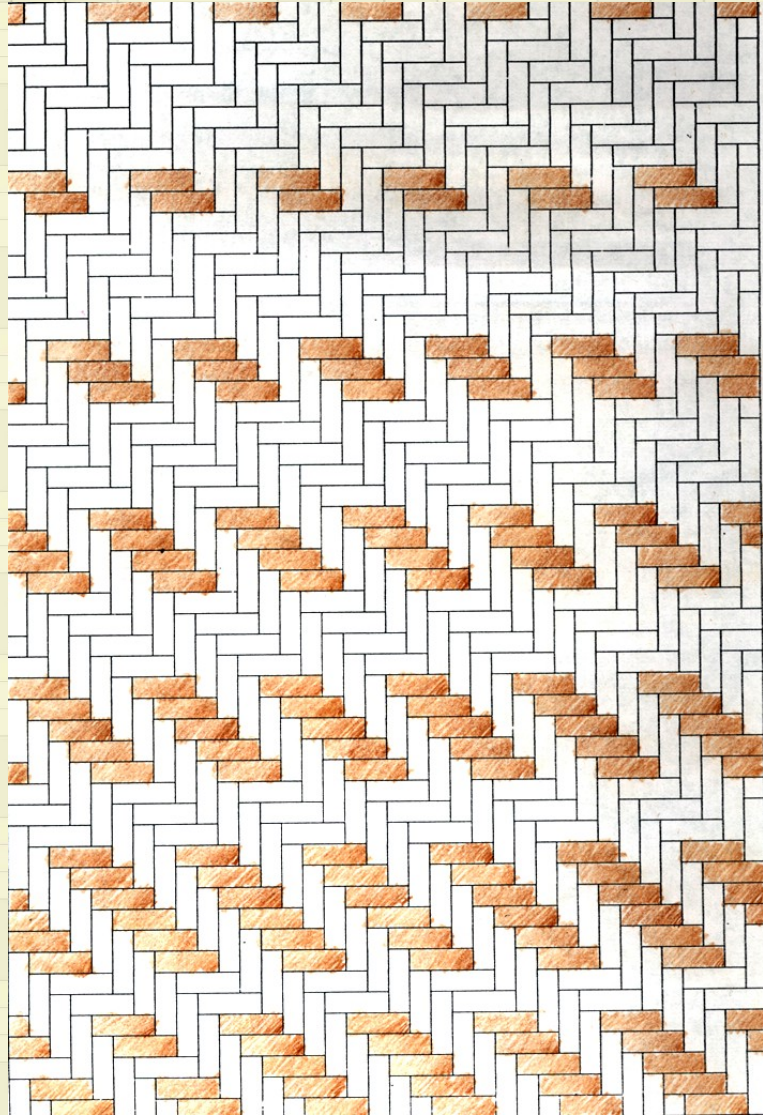
Developing new patterns

Adopting patterns from other weave forms



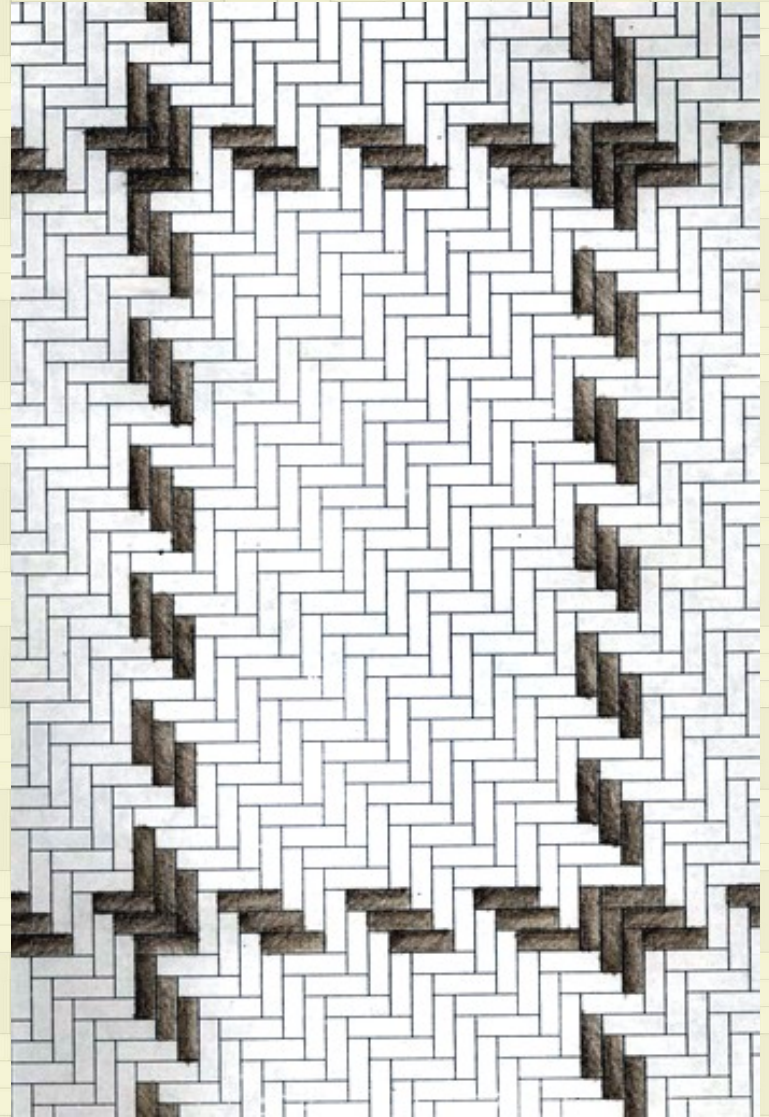
Developing new patterns

Variations in the colour of the strips.



Developing new patterns

Variations in the colour of the strips.



Developing new patterns

Variations in the colour of the strips.

To come up with meaningful new patterns one method is to adopt some metaphor which can be related.

Some of the metaphors can be

Nature – Flower, leaf, tree, branches, waves, shell, creeper, hills, fire

Geometry – Spiral, continuity, crossed, interlocking

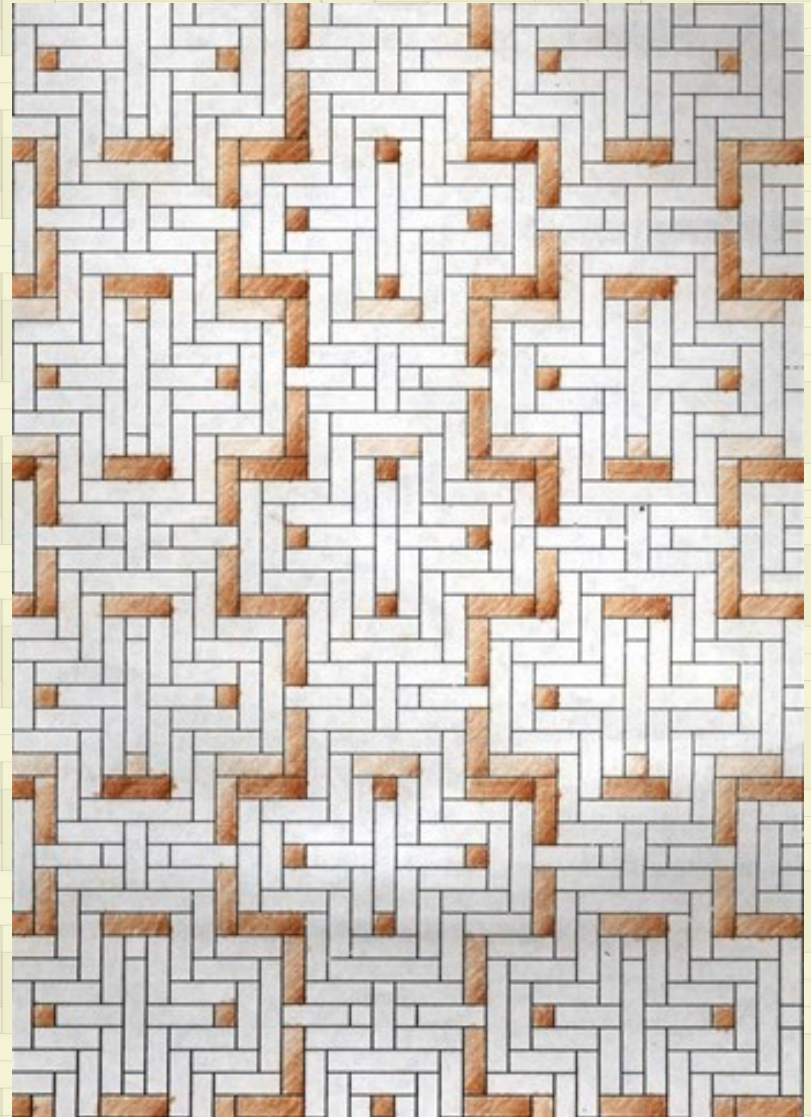
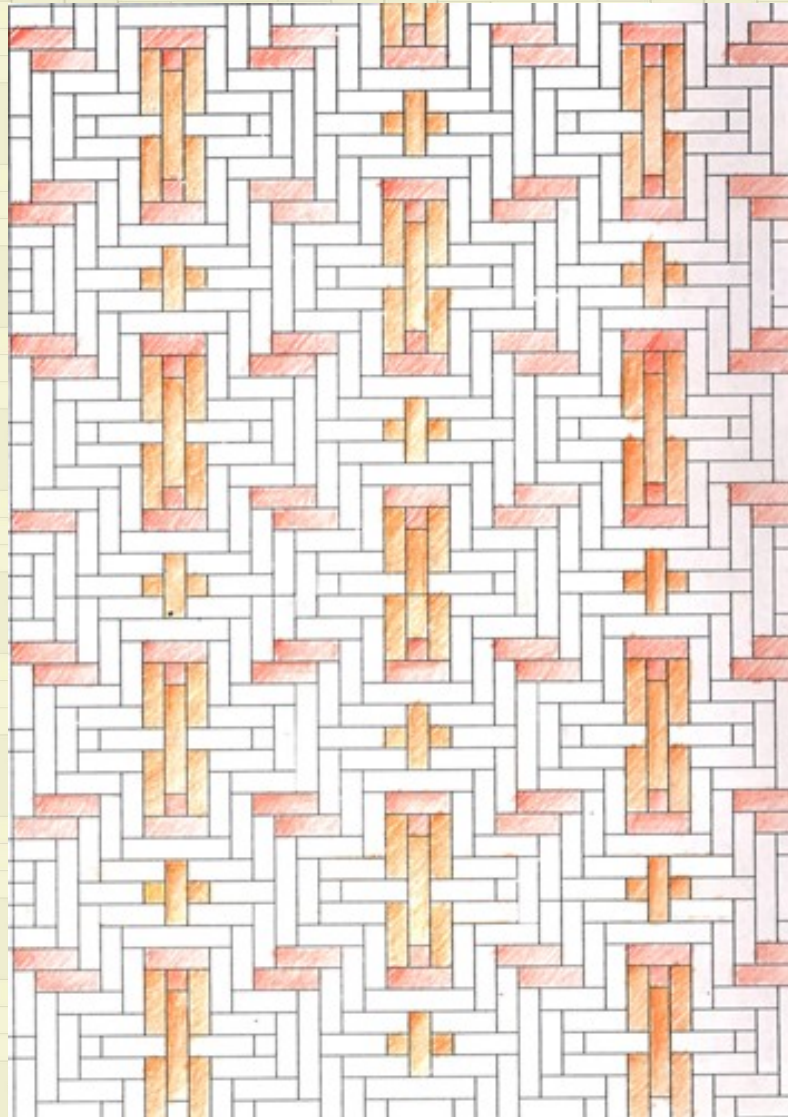
Qualities – Freshness, Stable, heavy, energetic

Relationship – Intimacy, closeness, loneliness, formal, informal

Traditional motifs – Swastika, torana, koyari

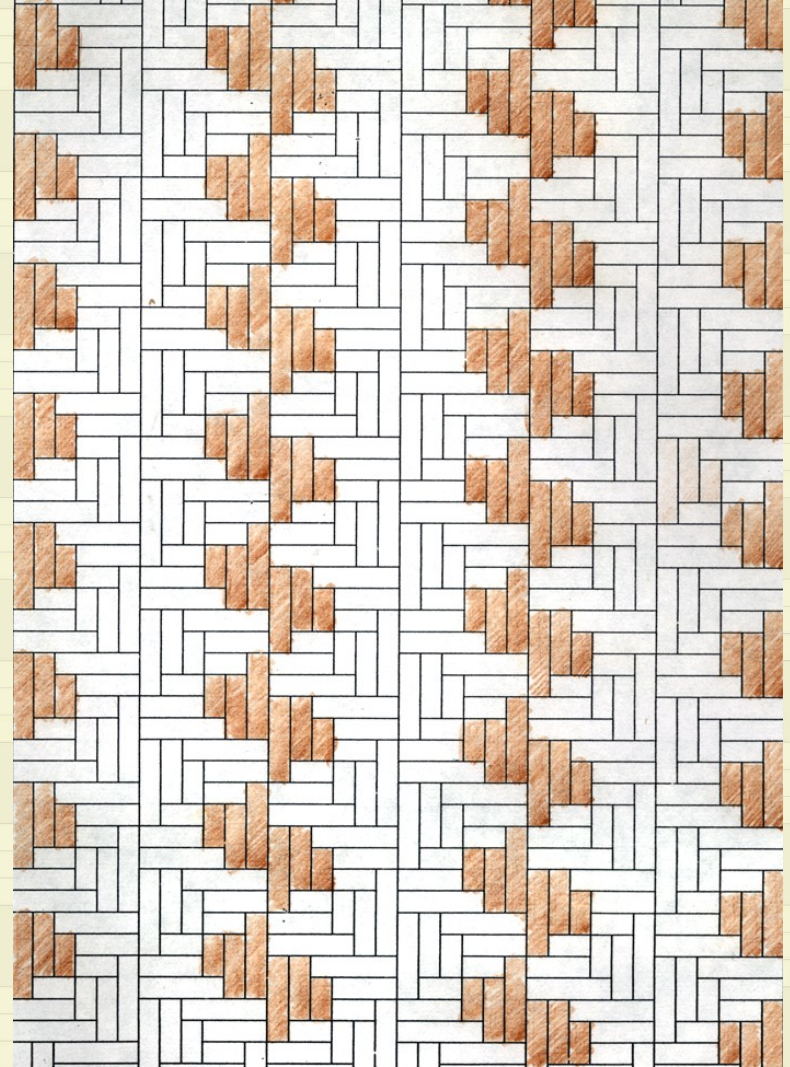
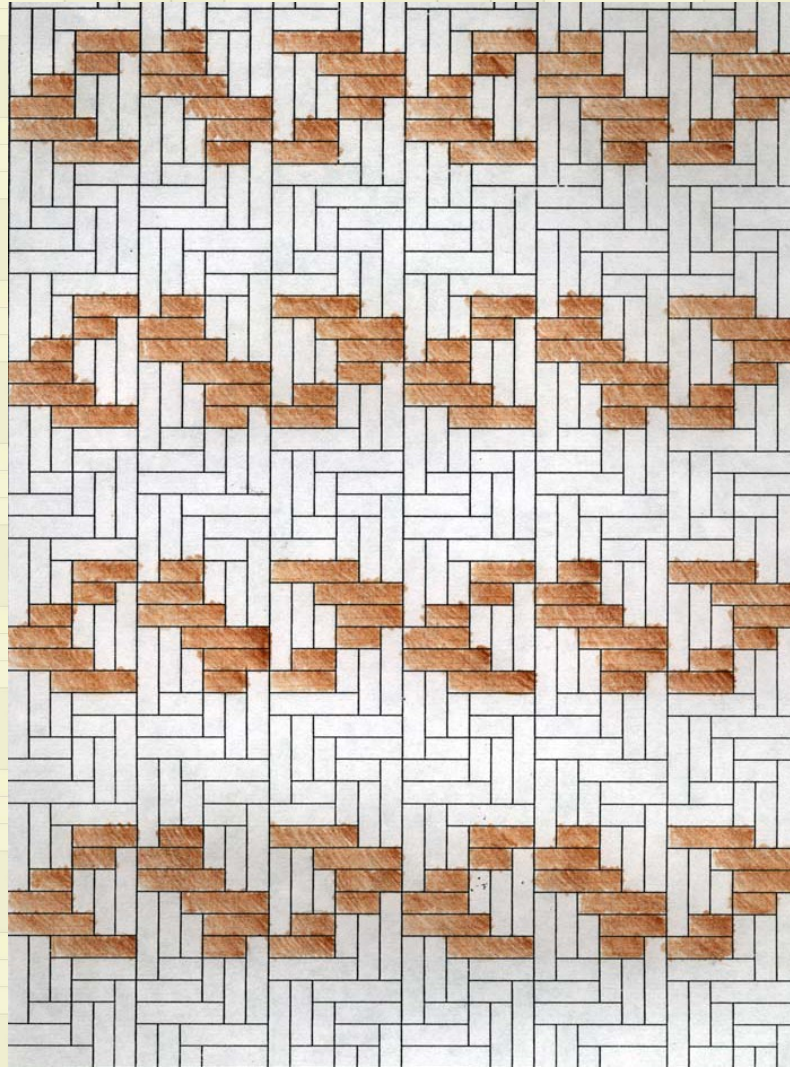
Developing new patterns

Variations in the colour of the strips.



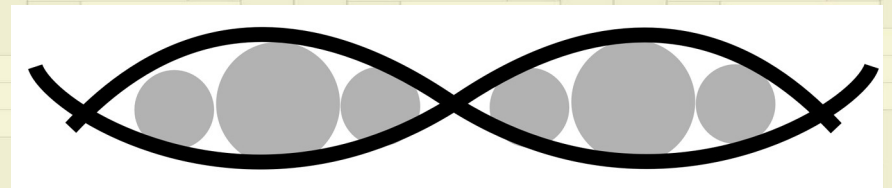
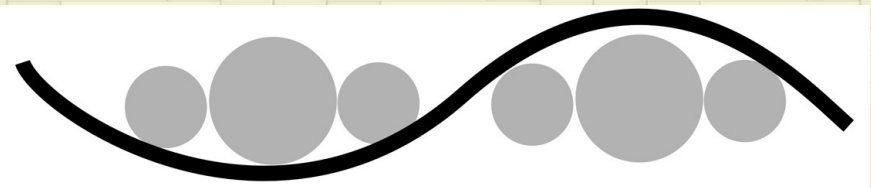
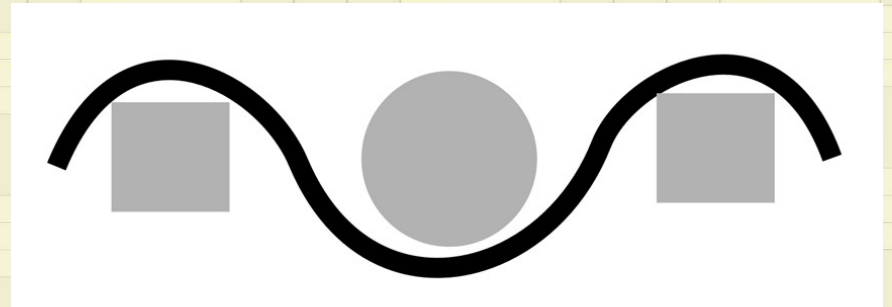
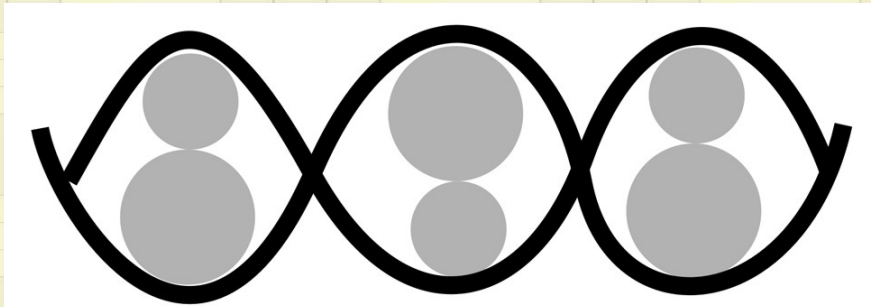
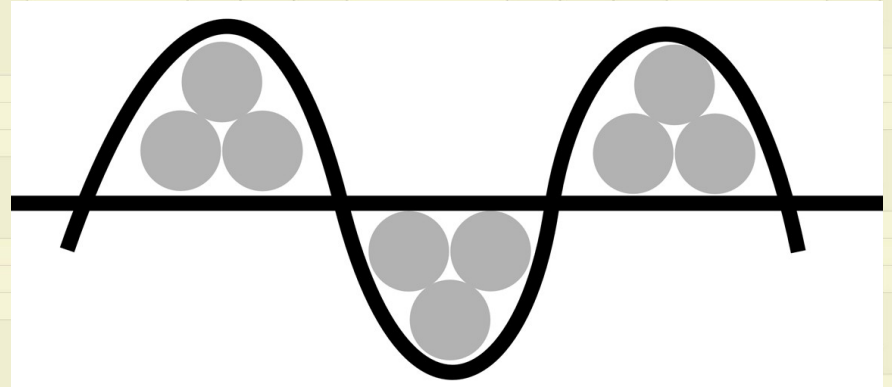
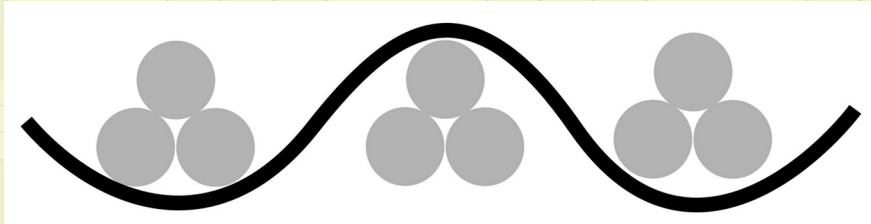
Developing new patterns

Variations in the colour of the strips.



Developing new patterns

Variations in the cross-section of the strips



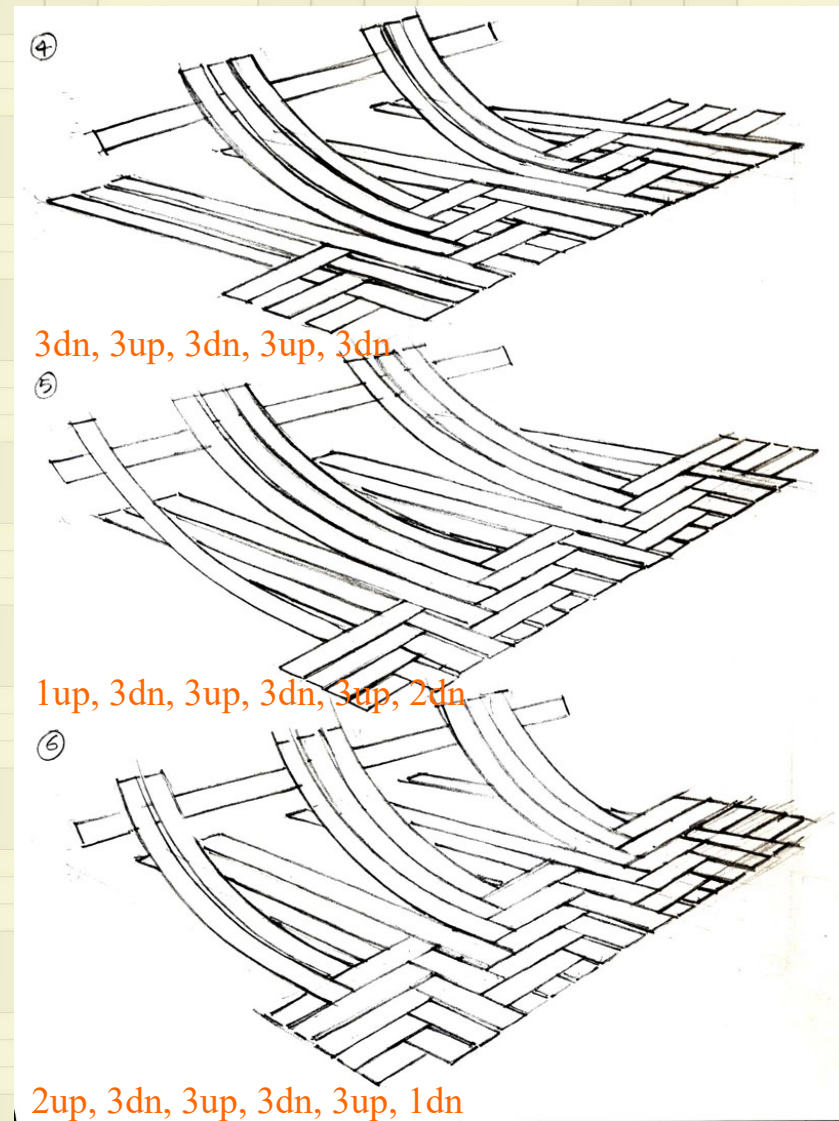
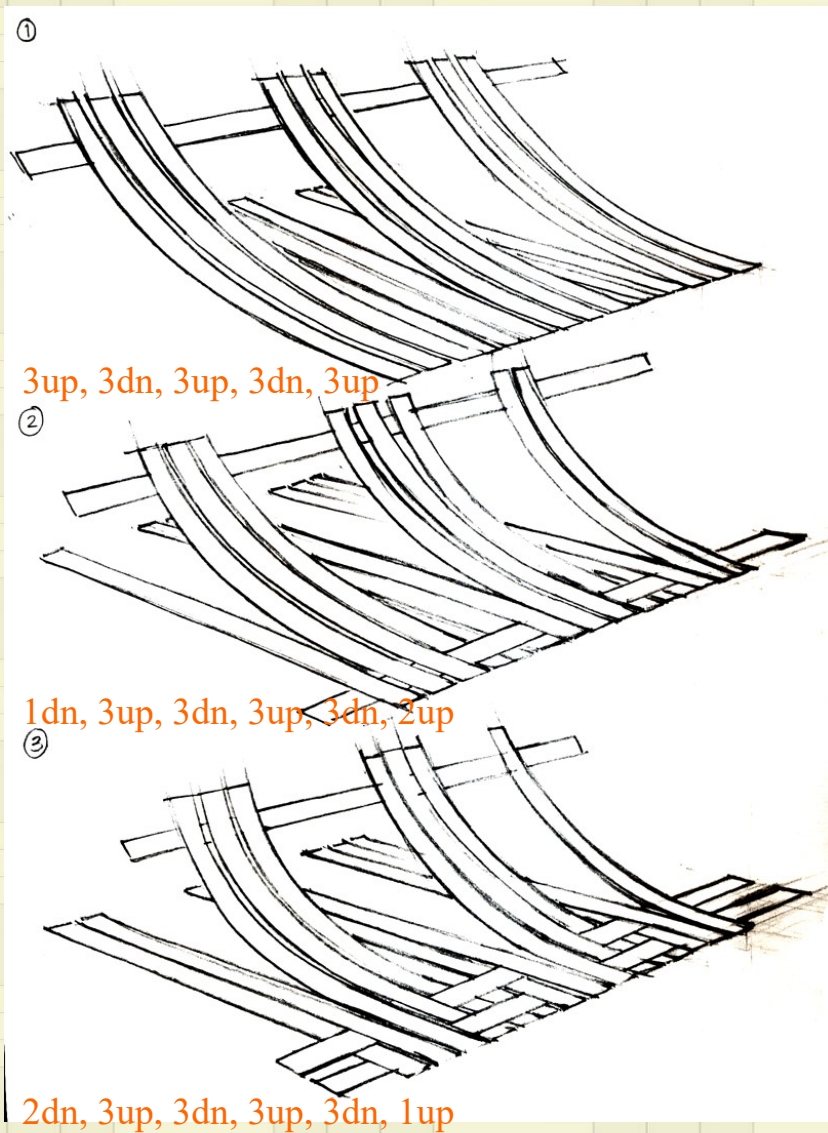
Aid to learn or teach weaving process

Weaving process

Following is the step by step sequence of a simple weave with only horizontal and vertical strips.

1. Take manageable vertical elements (warps) of desired length.
2. As per decoding, start picking up and keeping down the warps.
3. Insert the weft through the warps.
4. Again repeat the same process of picking up and keeping down the warps, as per next rows decoding. And insert the warp.
5. Continue this process till all the wefts are weaved.
6. Then turn the mat in 90 degrees.
7. Now all the wefts become warps. Again follow the same procedure and insert the wefts as per decoding, till the mat is completely woven.

Weaving process- Row by row Decoding for 3up – 3 down weave.



Aid to learn or teach weaving process

There is common terminology of ‘up and down’ or ‘over and under’, which the craftsperson follows while actually making a weave, in spite of his region. This is common all over. It actually refers to how many warps have to be picked ‘up’ and how many has to be kept ‘down’, while inserting a weft. This same terminology can be used further to aid the teaching and learning process.

There are two types of learners.

1. Those who are learning the weaving process for the first time.
2. Those who know weaving process, but are learning new pattern or new method of weaving.

The aid for learning has to be different for these two different groups.

For novice users it can be some video demonstration along with the notation. While for the second user group it can be just the notation. Notation has to universal, so it will be same for both the groups.

Conclusion

The classification developed here, makes understanding of the weaves in a simpler way.

The methods explored for new weaves pattern generation can be used as tools to explore new patterns in a fast and systematic way.

The aid, can help the craftsperson reduce their time to learn new weaving process. It can help master/ tutor to communicate in better way. Further work can be done on this.

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