

Weaving Structure Classification Derived from Emory

Why is important to learn the weaving structure classification?

Even if you are copying a project from a publication, knowing that Bronson Lace, for example, is different than Crackle allows you to understand the decisions that the original fiber artist made and the choices that may be available for changing them, for example, yarn.

Furthermore, knowing the weaving structure of a particular projects aids in avoiding errors in threading and treadling. And if errors are made, they are more easily recognizable and corrected before it's a lot harder or even too late. As I always like to say, Middle Age monks wrote beautifully but didn't know how to read; a lot of errors crept in their writing which they couldn't recognize. Those errors have hunted historians ever since.

It is helpful to look at the big picture first, so we know the derivation of the terminology.

The structure names under each classification and subgroups are my deduction, except for the obvious plain weave, twills, satins, etc.

Weaving

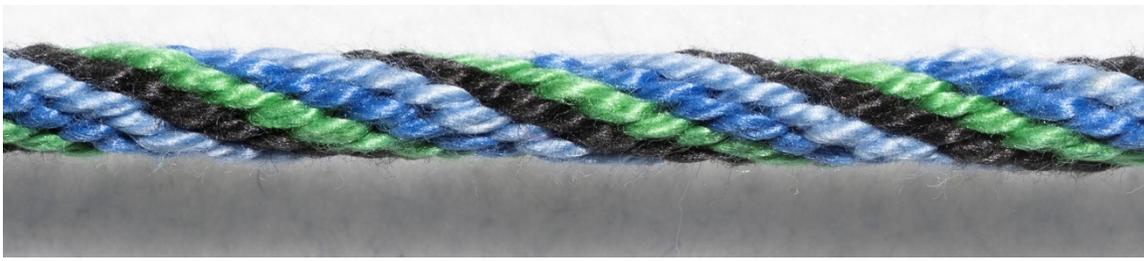
Weaving is classified as a fabric with *interworked elements* with *two or more sets with interlacing warp and weft*.

Interworked distinguishes all fabrics from true felting (picture on the left) where the fibers, not yarns, are interlocked together. (Knitted and woven "felt" are not true felts, they are full fabrics.)



The *two sets or more elements* distinguishes weaving – at least one warp and one weft – from single elements fabrics as in knitting (picture on the right).





Sets means that the two or more elements of each set do different things – the warp vs. the weft; this is in contrast to those fabrics where there may be more elements, but they are all part of the same set because they do the same thing; true plaiting or braiding (see Kumihino braid above) for example.

Interlacing warp and weft distinguishes weaving from knots, twining, etc. which may be done on a warp, but where the weft is not interlacing.

Interlacing warp and weft are further divided into two categories: *simple weaves* and *compound weaves*.

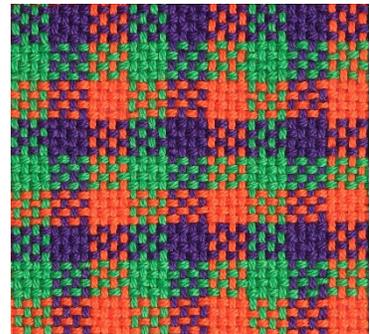
A fabric usually belongs to one category, even though it may not seem to. With more shafts, we can have hybrids, but generally within the same classification.

The fabric, not how it is woven, defines the structure classification.

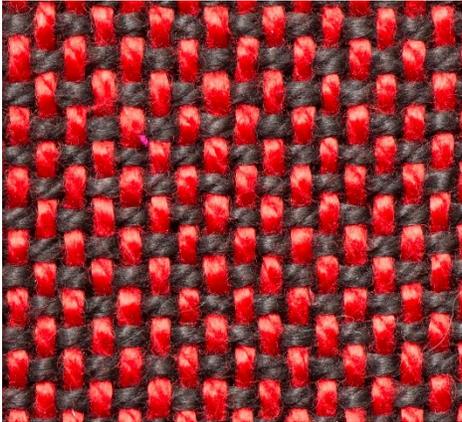
Simple Weaves

Simple weaves are those that require the interlacing of only *one warp and one weft*. They are not necessarily “simple” in terms of complexity.

If the weaving uses more than one weft, for example in plaids (picture on the right), or in color-and-weave effects, these weaves are still classified as simple because the two wefts are part of the same set and not a different set as in the compounded weaves (see below).



Simple weaves are subdivided into **plain weave** and **float weaves**; those, in turn, are subdivided into twills, satins and float weaves derived from plain weave.



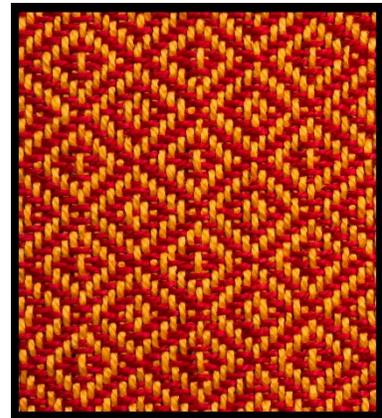
Plain Weave

Plain weave (picture on the left) has the maximum number of interlacing, that is, no floats. Plain weave ranges from weft-faced to warp-faced fabrics and everything else in between. The weft can also be discontinuous as in traditional tapestry. A perfectly balanced plain weave – same number of warp ends and picks per inch – is called a tabby.

Float Weaves: Twills

Twills (picture on the right) are described as progressive successions of floats in diagonal alignment. Some twills, for example, broken, can have disruption of the diagonals; however, somewhere in the repeat of the pattern, there will be a progressive succession.

Twill blocks are still simple weaves, because there is still the interlacing of one warp and one weft.



Float Weaves: Satins

Satins (picture on the left) are described as intermittent progression of floats and suppression of the appearance of diagonals. Even if there appears to be diagonals, they are not true diagonals because the elements (warp ends or weft pick) are not adjacent.

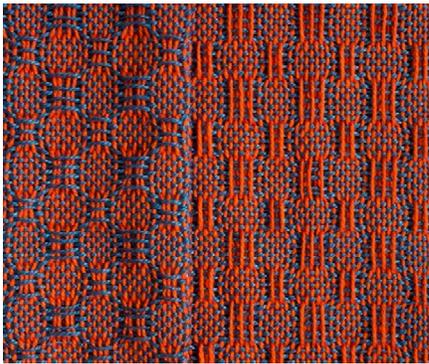
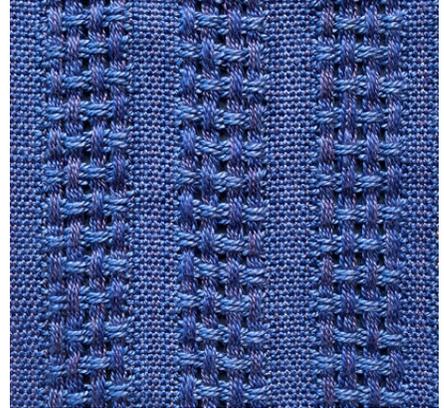
Float Weaves Derived from Plain Weave (Rectangular Float Weaves)

These structures have an alternation in the alignment of floats or a rectangular, rather than diagonal, arrangement.

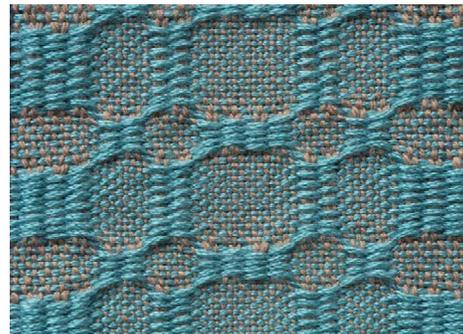
This group includes the following that we generally subcategorize:

Group weaves that form lacey weaves: Huck, Huck Lace (picture on the right), Swedish Lace, Myggtjäll.

Unit Weaves that form lacey weaves: Lace Bronson (picture below) and Spot Bronson.



Other grouped weaves not necessarily forming lace floats: M's & O's (picture below), canvas weave.



Compound Weaves

These are structures that have one warp and two or more wefts, two or more warps and one weft, or two or more warps and two or more wefts. They are further divided into those where the **compounding is formed by adding sets of elements** and those where **the compounding is formed by combining weave structures**.

Weaves Compounded by Adding Sets of Elements

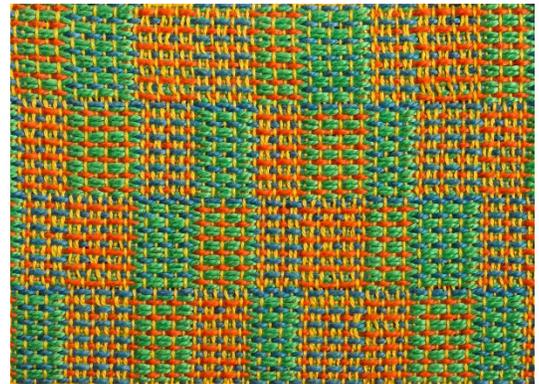
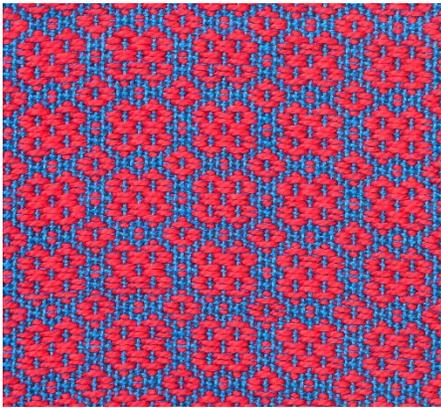
These structures are divided into **supplementary** sets and **complementary** sets.

Compounded weaves with supplementary sets include those where the additional – supplementary – warp or weft are not needed for the underlying structure, but generally form the design or motifs. They include:

Supplementary weaves: overshot (picture on the right), Monk's Belt.

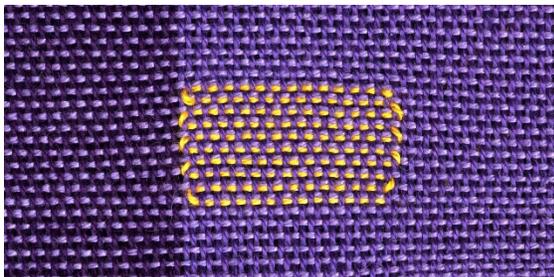


Tied-Unit Weaves: Summer and Winter (picture below), Barley Corn (same threading as Spot Bronson).



Hybrid: Crackle (characteristics of both overshot and Summer and Winter, picture on the right)).

In-lays (picture below).



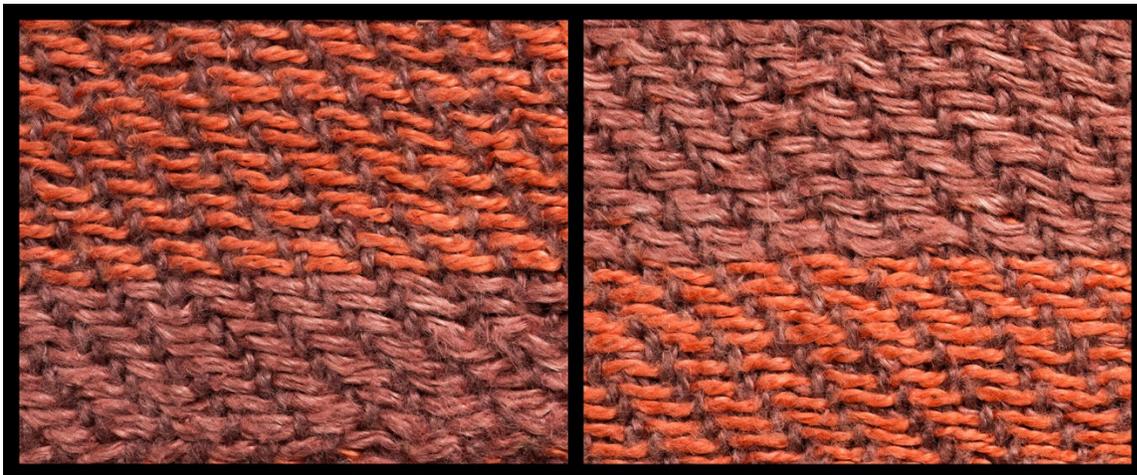
Woven piles (picture on the right).



Supplementary Warp: either added as decorative element (picture on the left) or a turned draft from a supplementary weave.

Compounded weaves with complementary sets are the double-faced cloths.

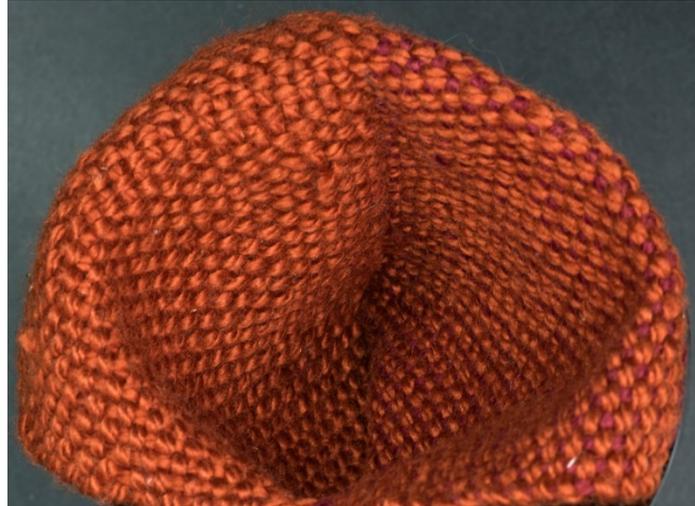
These structures have three or more sets of elements which are co-equal in the fabric structure. They are double-faced and thus more prominent if the fabric is weft-faced. An interlocking 1/3 twill is an example (picture below, front and back of fabric with wefts reversed).



Weaves Compounded by Combining Complete Weave Structures

Because these structures are compounded by combining two or more complete weave structures, they require a minimum of 4 sets of elements, 2 warps and 2 wefts. They are divided into **interconnected weaves** and **integrated weaves**.

Compound weaves with interconnected weave structures include tubular weave (picture on the right), double-width cloth and stitched double weave. These fabrics are considered two weave structures even if the weft for both layers of the double weave are the same; the weave structures forming the compound weaves can themselves be simple, but they don't have to be. The two layers can also have different weave structures.



Compound weaves with integrated structures are those where two complete weaves are completely interwoven in one fabric so that the two structures are not separate and both faces of the fabric are integrated combinations of the two weaves. An example may be overshoot patterned double weave (picture of two sides of the cloth below).

