

The Weaving Process

Weaving is the overlapping of vertical (warp) and horizontal (weft) threads in an alternating sequence so that they hold together. This contrasts with knitting, which creates a fabric of interlocking loops made from a single thread.

Weaving in Tokamachi began approximately 7,200 to 5,400 years ago with a simple cloth called Echigo *angin*. It used thread made of rough plant fibers, usually ramie, a type of nettle that grows abundantly in the Shinano River Basin. The earliest weavers used a horizontal proto-loom that consisted of comb-like notches carved into a wooden beam. The warp threads were held in place by the notches and the weaver passed a single weft thread through them before flipping the warp threads over it to form the weave.

Advances in spinning and weaving technology later made it possible to create a finer, more tightly woven cloth, known as Echigo *jofu*. By twisting ramie fibers on a spindle, weavers could produce a stronger, thinner thread. Also, around the second century BCE, looms with heddles were introduced. Heddles are rods inserted across the weft to lift a whole series of warp threads simultaneously and allow a shuttle bearing the weft thread to pass through. This made weaving faster and more efficient.

The finished fabrics were placed on pure, white snow to strengthen and bleach them with reflected ultraviolet rays. This process is called *yukizarashi*—an unusual approach that continues to define Echigo *jofu* today.