



# Threads Crossing the Warp

## MODULE 1

### Origins of the art of weaving



Partners

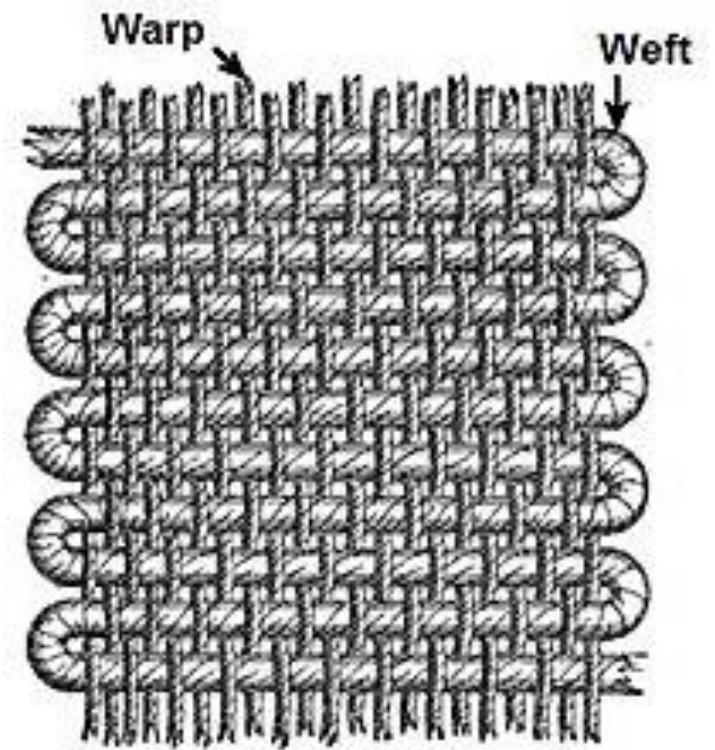


ΧΑΡΟΚΟΠΕΙΟ ΠΑΝΕΠΙΣΤΗΜΙΟ  
HAROKOPIO UNIVERSITY



# DEFINITION OF WEAVING

- **Weaving** is a technique of fabric production.
- It consists of intertwining of two separate yarns or threads at right angles to form a fabric or cloth. These two threads are called warp and the weft.
- The **warp** threads run vertically, or up-and-down, and the **weft**, woof or filling threads run horizontally, or from side-to-side.
- To weave, we move the weft threads over and under the warp threads and that creates fabric (for example, like the fabric used to make clothing).
- Weaving is also used to create baskets, mats, and other items from materials such as willow branches, twigs, and grasses.



<https://en.wikipedia.org/wiki/Weaving>

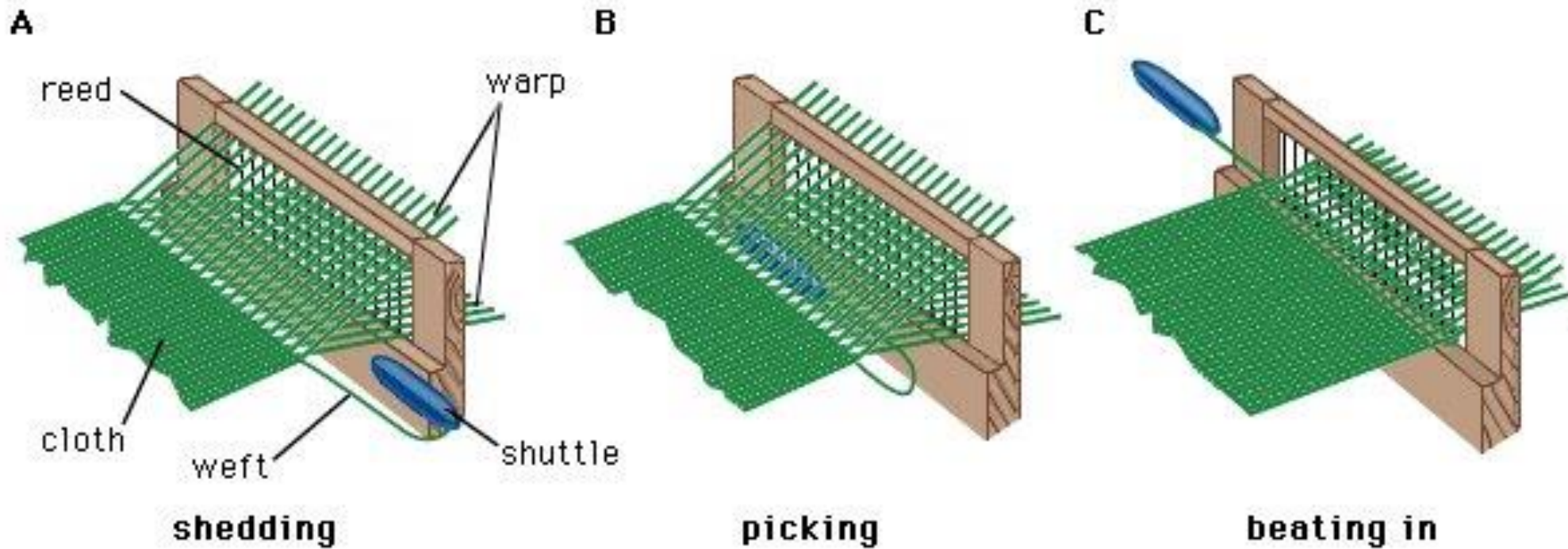
# DEFINITION OF WEAVING

- The method in which these threads are inter-woven affects the characteristics of the fabric/cloth.
- The way the warp and the weft threads interlace with each other is called *the weave*. One warp thread is called an *end* and one weft thread is called a *pick*. The warp threads are held taut and in parallel to each other, typically in a loom.
- Fabric/Cloth is usually woven on a *loom*, a device that holds the warp threads in place while weft threads are woven through them.
- Most woven products are created with one of three basic weaves: plain weave, satin weave, or twill weave.
- Woven cloth can be plain (in one colour or a simple pattern) or can be woven in decorative or artistic design.
- Other methods of fabric/cloth production are knitting, crocheting, felting, and braiding or plaiting.

# DEFINITION OF WEAVING

- Weaving can be summarized as a repetition of three actions, also called the *primary motions of the loom*.
  - ✓ **Shedding:** where the warp threads (ends) are separated by raising or lowering heald frames (heddles) to form a clear space where the pick can pass
  - ✓ **Picking:** where the weft or pick is propelled across the loom by hand, an air-jet, a rapier or a shuttle.
  - ✓ **Beating-in or battening** where the weft is pushed up against the fell of the cloth by the reed.
- The warp is divided into two overlapping groups, or lines (most often adjacent threads belonging to the opposite group) that run in two planes, one above another, so the shuttle can be passed between them in a straight motion.
- Then, the upper group is lowered by the loom mechanism, and the lower group is raised (shedding), allowing to pass the shuttle in the opposite direction, also in a straight motion.
- Repeating these actions form a fabric mesh but without beating-up, the final distance between the adjacent wefts would be irregular and far too large.

# DEFINITION OF WEAVING: SHEDDING - PICKING - BEATING IN



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# DEFINITION OF WEAVING

- The *secondary motions of the loom* are the:
  - ✓ Let off motion: where the warp is let off the warp beam at a regulated speed to make the filling even and of the required design
  - ✓ Take up motion: takes up the woven fabric in a regulated manner so that the density of filling is maintained
- The *tertiary motions of the loom* are the stop motions: to stop the loom in the event of a thread break.
  - ✓ The two main stop motions are the
  - ✓ Warp stop motion
  - ✓ Weft stop motion

Tzachili & Zimi, 2012

<https://textilestudycenter.com/motion-of-loom/>

# THE ORIGINS OF WEAVING

- Weaving is acknowledged to be one of the oldest surviving crafts in the world.
- The art of weaving traces back to the Paleolithic era, about 30.000 to 20.000 years ago.
- The development of weaving forms constitutes the '*human revolution*' in the Palaeolithic era.

<https://www.arch.cam.ac.uk/research/projects/archived-projects/origins-weaving-project>

Adavasio, Soffer, & Klima, 1996, Adavasio, Hyland, & Soffer, 1997, Lupo & Schmitt, 2002,  
Soffer, Adovasio, & Hyland, 2000

# THE ORIGINS OF WEAVING

- Some theories state that the observation of bird nests suggested the idea of interlacing and consequently the invention of weaving, as weaving is essentially **interweaving fibers to create fabric**.
- Early man developed the first string by twisting together plant fibers. Preparing thin bundles of plant material and stretching them out while twisting them together produced a fine string or thread.
- But even before the actual process of weaving was discovered, the basic principle of weaving was applied to interlace branches and twigs to create fences and shelters for protection, and baskets for collecting goods and storing products.

<https://www.arch.cam.ac.uk/research/projects/archived-projects/origins-weaving-project>

Adavasio, Soffer, & Klima, 1996, Adavasio, Hyland, & Soffer, 1997, Lupo & Schmitt, 2002, Soffer, Adovasio, & Hyland, 2000



# THE ORIGINS OF WEAVING

- Initially, plants were used most probably for making cord and nets (*Nadel et al. 1994*).
- It is important to remember that the cold environment of that era led humans to use for their clothing animal skins and furs, which unarguably provided the best protection against the cold.
- The first evidence for the technique of weaving and the known oldest woven textiles are found in the context of the Eurasian Palaeolithic. This suggests that the 'know how' of plant utilisation, beyond their consumption as food, was linked with the cold climate and harsh environment that prevailed at this time.
- However, some theorists claim that it is impossible to tell with certainty the exact time that weaving started, mostly because of the fragile nature of the tools used and the easy deterioration of the products.

<https://www.arch.cam.ac.uk/research/projects/archived-projects/origins-weaving-project>

Adavasio, Soffer, & Klima, 1996, Adavasio, Hyland, & Soffer, 1997, Lupo & Schmitt, 2002, Soffer, Adovasio, & Hyland, 2000

# THE ORIGINS OF WEAVING

- Stone Age man's early experiments with string and thread led to the first woven textiles. Gradually, people developed great skill in weaving cloth.
- Every household produced cloth for their own needs. Weaving cloth remained an activity associated with the family unit for thousands of years.
- Some of the oldest textile finds are fragments found in the tombs of ancient Egypt. These textiles have been preserved thanks to the dry climate and the sand.

<https://www.arch.cam.ac.uk/research/projects/archived-projects/origins-weaving-project>

Adavasio, Soffer, & Klima, 1996, Adavasio, Hyland, & Soffer, 1997, Lupo & Schmitt, 2002, Soffer, Adovasio, & Hyland, 2000

## Ancient textiles from Egypt

[Textile \(nmec.gov.eg\)](http://nmec.gov.eg)

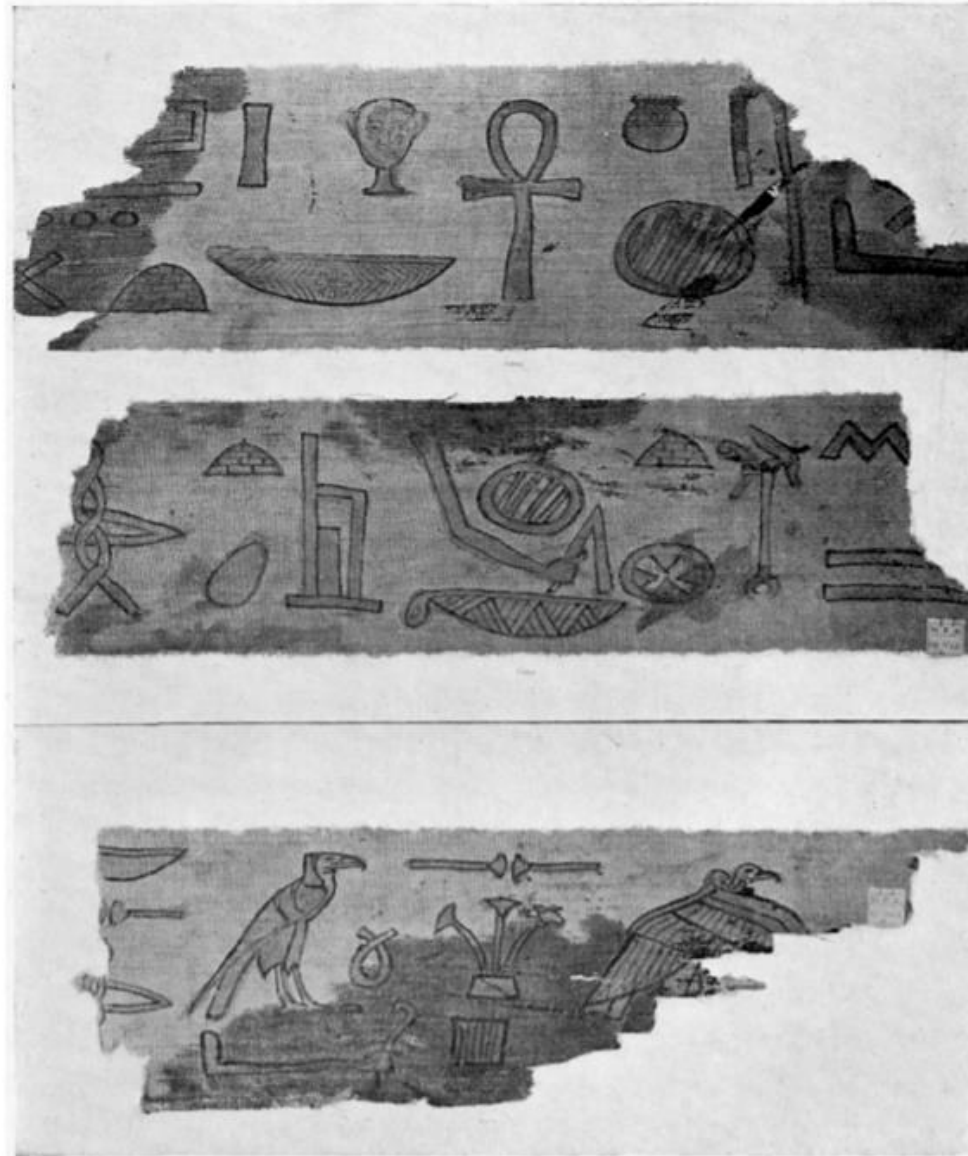


## Linen mummy clothes - Egypt

*Date about 1545-1350 B.C.*

The hieroglyphics are painted yellow and outlined with black

*Walton, 1936*



**ADD LINKS**

## Egyptian tunic – from a grave

The garment was woven with reddish-violet wool and white linen threads. It was made in one piece and sewed together under the arms

1<sup>st</sup> – 7<sup>th</sup> century A.D.

*Walton, 1936*



# THE ORIGINS OF WEAVING

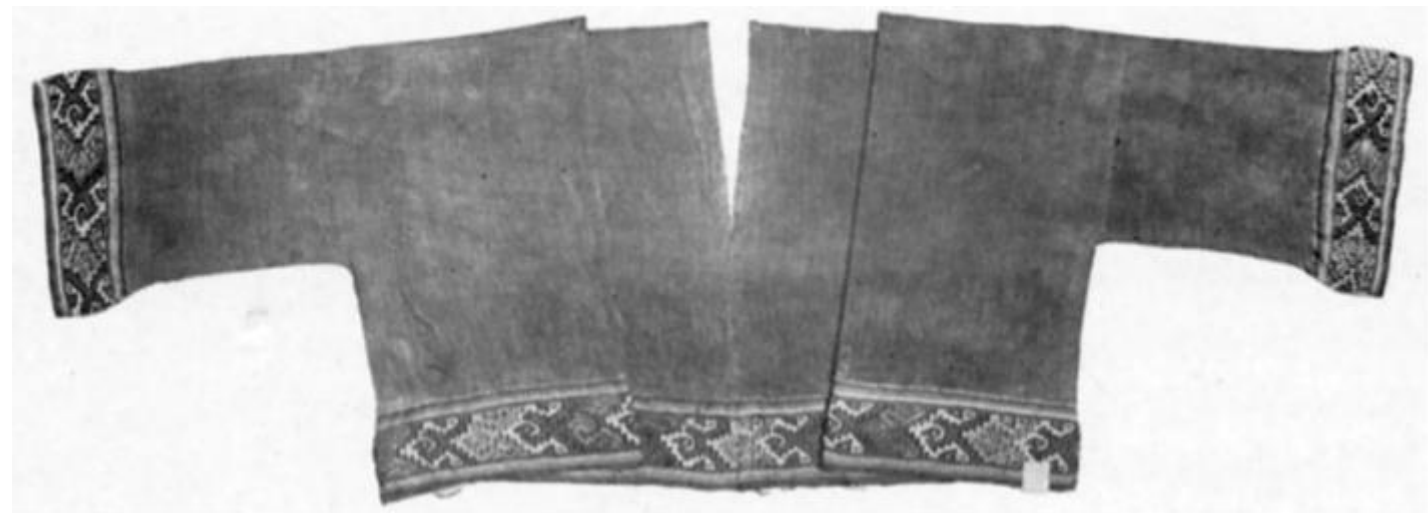
- Of similar workmanship, very fine linen, were the fabrics discovered in Peru, also among the oldest archaeological remains.
- Indians and Peruvians created the first cotton fabrics.
- Mesopotamia produced wool fabrics.
- The Chinese were the first to produce silk since the first centuries of the third millennium B.C. Before the Qin dynasty (221-206 BC), Chinese cultivated and processed fiber plants, and had acquired the techniques of spinning, weaving, and dyeing. The spinning wheel for silk appeared in two types: one operated by hand, and another operated by foot. The foot operated spinning wheel gave the opportunity to weavers to work with both hands and to enhance the quality and quantity of their silk products.
- Chinese also invented the multi-treadle loom which could weave complicated and geometric patterns.

## Peruvian tunic (before the Spanish Conquest)

The garment was woven with cotton and decorated with coloured wools. The red wool was dyed, while the yellow and brown are the natural colours of alpaca wool.

1<sup>st</sup> – 7<sup>th</sup> century A.D.

*Walton, 1936*



# THE ORIGINS OF WEAVING

- **Spinning** was developed first, followed by weaving.
- The warp weighted looms used by the ancient Greeks were the oldest types. Looms were probably developed during the Minoan period. At the beginning of that period cloth would have been scarce and very valuable. Pictures which show ancient Minoan women wearing flounced skirts are deceptive. Because of the difficulty of weaving without a loom these skirts were probably not made of cloth. They were probably made just of string. The material used in clothing should have been a minimum.
- The loom probably increased the quality and decreased the cost of the cloth made. After the loom was invented clothing covered more of the body, but since the loom produced cloth that was rectangular the clothing also had that shape.



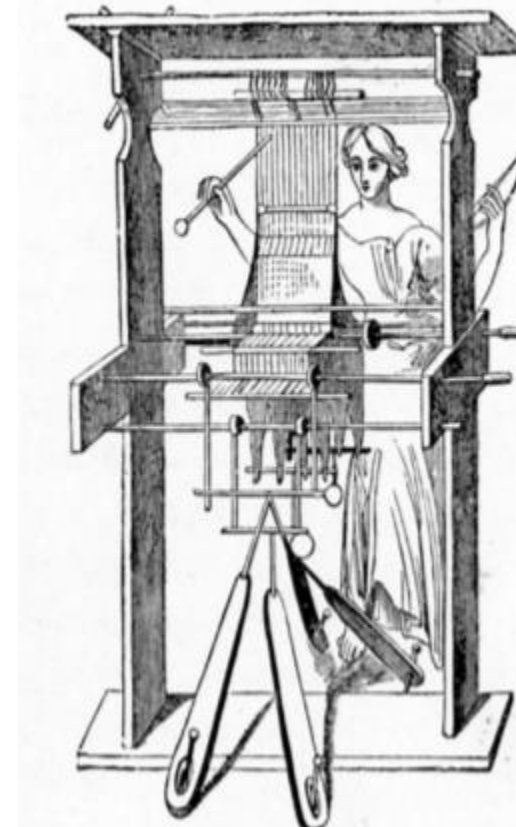
# THE ORIGINS OF WEAVING



Spinning

Greek and Roman  
method of spinning and  
weaving

*Walton, 1936*



Weaving

# IMPORTANCE OF WEAVING IN SOCIETY & RELIGION

- As the art of weaving started to flourish, the rich production of artefacts was echoed by the symbolic importance of weaving. In ancient years, weaving was destined for Gods, queens, and the upper-class of society.
- The importance of weaving was depicted with the birth of myths. Gods protecting weaving existed in all civilisations, declaring the creative force that governs the world, as well as this particular art.
- In Egypt, Neith was considered to be one of the oldest deities. She was said to be the creator of the universe and all it contains; she also governed how it functions. In addition, she was the goddess of weaving, water and rivers, mothers and childbirth, wisdom, hunting and fate. As such, Neith was worshiped as the weaver goddess and the symbol of the eternal feminine and nature.

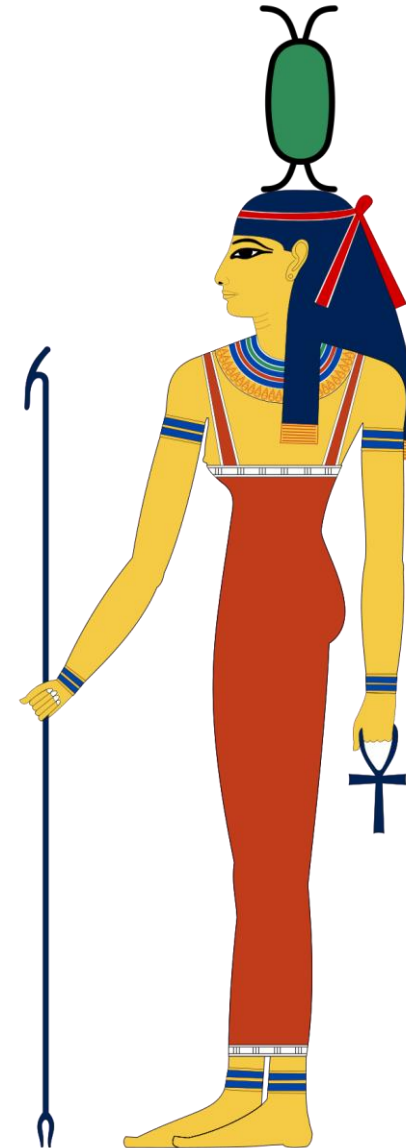
# WEAVING IN SOCIETY & RELIGION ACROSS THE AGES

## Egyptian Goddess Neith

Neith was one of the oldest deities in Egypt. She is believed to be self-created at the time of creation. She is the goddess of weaving and other domestic arts.

Her symbols were: bow, shield, crossed arrows, ankh, loom, mummy cloth

<https://egyptian-gods.org/egyptian-gods-neith/>



# WEAVING IN SOCIETY & RELIGION ACROSS THE AGES

- In Ancient Greece, weaving was a recreational activity for gods, queens, and the upper class.
- Athena was the Greek goddess of wisdom, the protector of feminine works and weaving.
- She was a very capable weaver herself and very proud of her ability in weaving.
- In the Iliad, Homer mentions that Athena wears a dress that she wove herself (*Zimi & Tzachili, 2012*)

# WEAVING IN SOCIETY & RELIGION ACROSS THE AGES

- Penelope, a queen of Ithaca, was another famous weaver from antiquity. According to *Odyssey*, a Homer's poem, Penelope was waiting the return of her husband Ulysses from Troy for many years. To avoid the several suitors who urged her to marry one of them, she declared that she would marry when she weaved a shroud for her father-in-law. Each night she undid what she had woven during the day and thus postponed the marriage until the return of Ulysses.
- In the *Odyssey*, woven clothes with certain patterns were recognised as the product of her weaving technique by the queen of Faiakes (inhabitants of the Corfu Island). Thus, when Ulysses arrived at the Palace of Alcinous (Faiakes' king), Homer writes: "White-armed Arete (the queen) was the first to break the silence. For in the fine cloak and tunic she saw him wearing she recognized some clothes that she herself had made..."

<https://www.rwaag.org/weaving#:~:text=Weaving%20was%20an%20important%20tradition%20for%20women%20in,Athena%20owears%20a%20dress%20that%20she%20wove%20herself>



COLLECTION: CHIUSI, MUSEO CIVICO  
NAME: VASE OF THE PENELOPE PAINTER - DRAWING OF SIDE A, SHOWING  
PENELOPE AT HER LOOM, WITH TELEMACHOS IN ATTENDANCE  
CA.430 B.C. (HIGH CLASSICAL PERIOD, SHAPE: SKYPHOS)

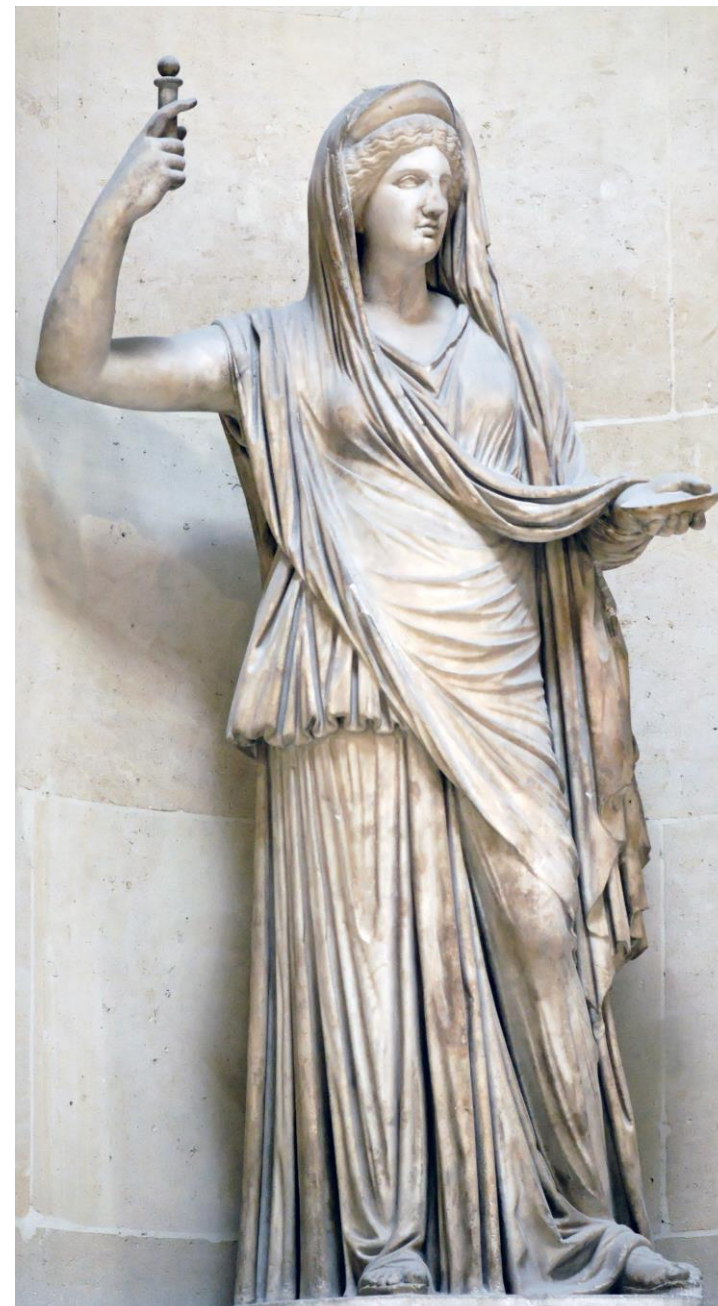
# WEAVING IN SOCIETY & RELIGION ACROSS THE AGES

- According to Scheid and Svenbro (2001), weaving was also a form of Olympic Games for “maidens”, called Heraea, that was held at Hera’s temple. Women wove a robe for goddess Hera, Zeus’ wife, every four years, as a gift for the continuation of peace.
- Thus, weaving cloth becomes a metaphor for unity, harmony, and peace.
- As Hera was the goddess of marriage, as well as the father of gods’ wife, she was the ideal deity to represent unity and peace woven from conflict and war.

# WEAVING IN SOCIETY & RELIGION ACROSS THE AGES

Statue of Hera – Louvre Museum

<https://www.icysedgwick.com/weaving-in-mythology/>





# WEAVING IN SOCIETY & RELIGION ACROSS THE AGES

- Even today we use expressions, such as “the thread of one’s life was cut off”, meaning that someone died, that originate from Ancient Greece and the Moires (Fates).
- Moires (Fates) in Greek mythology were three weaving goddesses who defined the destiny of each mortal at birth.
- The three Fates, Clotho (the Spinner), Lachesis (the Alloter) and Atropos (the Inflexible), had great power and even Zeus was unable to recall their provisions.
- Each Fate had a different task: Clotho spun the thread of life, Lachesis measured its allotted length, and Atropos cut it off with her shears.

# WEAVING IN SOCIETY & RELIGION ACROSS THE AGES

- Weaving was known to several parts of the known ancient world.
- Despite the distance between Greece and Scandinavia, similar tales have been registered, establishing the importance of weaving in every culture.
- The Norns were the weavers of fate in Norse mythology. According to the poem *Völuspá*, the three Norns representing the Past, the Present, and the Future respectively, were Urdr, Verdandi, and Skuld.
- The three Norns corresponded to the three Fates of Greek mythology, as they weaved humans' reality in tapestries, and nobody could alter the picture of one's tapestry, and thus, one's fate.
- The Norns were not worshipped by the Vikings, who used them to explain or make sense of seemingly random or chaotic events (McCoy, 2016). Thus, in the Viking poems, people blame the Norns for every misfortune.

# WEAVING IN SOCIETY & RELIGION ACROSS THE AGES

Norms weaving destiny  
By Arthur Rackham (1912)

<https://www.icysedgwick.com/weaving-in-mythology/>



# WEAVING IN SOCIETY & RELIGION ACROSS THE AGES

- Even in the folklore-inspired literature, centuries later in the United Kingdom, weaving is also present. The Tale of Lady of Shalott is one such example.
- The Lady of Shalott appears in the Arthurian legends as Elaine of Astolat. She is a mysterious Lady who lives in a castle in the middle of a river. She was cursed to never be able to look out of the window at the real world, but only its reflection through her mirror. The Lady weaves scenes of daily life on her loom. One day, she sees Lancelot in her mirror, and she is so taken with his beauty that she abandons her weaving to look out of the window. At that moment, the curse cracks the mirror and she is thrown out of the castle. The Lady heads to Camelot, but she dies before she can get there.
- The legend was presented in one of Alfred Tennyson's lyrical ballad.

# WEAVING IN SOCIETY & RELIGION ACROSS THE AGES

The Lady of Shalott  
By WM Egley (1858)  
[Public domain]

<https://www.icysedgwick.com/weaving-in-mythology/>



# WEAVING USES THROUGH THE YEARS

- In the Bronze Age, the beginnings of a creative interplay among different materials, patterns, colours and their combination with metal emerged. Recently analyzed finds from the Bronze Age mines at Hallstatt (1500-1200 BC) give the first examples for advanced weaving techniques, spin pattern and dyeing.
- Weaving has usually been associated with women, as a women's craft in many cultures and times.
- Weaving was an important tradition for women in ancient Greece and it was an occupation for the ladies of the highest status. For the average households, weaving was a means of producing simple everyday garments.
- In the Mycenaean Culture weaving produced one of the major exports and women who could weave were in high demand.

# WEAVING USES THROUGH THE YEARS

- In the Byzantine era, workshops controlled by the empire produced textiles of excellent quality. Initially, linen and wool textiles were mainly produced, as well as silk textiles, with the raw materials imported from China. However, around 553-554 A.D. two monks brought silkworm eggs from the East, and the production of silk started in the Byzantium.
- The Byzantine textiles were decorated with woven geometric patterns, animals, birds and plant motifs.
- As these textiles were of excellent quality, they were an ideal diplomatic gifts for missions in the West.
- At that time, woven products included clothes and artifacts for the household, but also tapestries and coloured carpets, decorated also with pagan or Christian iconography.

# WEAVING USES THROUGH THE YEARS

- By the 11<sup>th</sup> century, most of the weaving patterns used today have been invented.
- Meanwhile, weaving started to move away from the family unit to specialized workplaces.
- During the Industrial Revolution (1760-1815), together with the invention of steam and water powered looms and the fly shuffles, weaving became a mechanized industry.
- John Kay of Bury in England, invented the flying shuttle in 1733 which speeded the process of weaving, doubling the textile production. The flying shuttle is a long, wooden, narrow canoe-shaped instrument, which holds the bobbin.

<http://www.weavedesign.eu/weaving-history/>



<http://lcohickchapter9.blogspot.com/2011/02/flying-shuttle.html>



# WEAVING USES THROUGH THE YEARS

- The technological innovations made during the Industrial Revolution changed dramatically the role of weavers who were among the founders of modern labour movements.
- Weaving has been developed to a manufacturing industry, producing large amounts of inexpensive textiles and using automated machines to produce fabrics, despite the strong competition from cheaper products from China and India .
- Nowadays, however, there are weavers worldwide, that use looms at home or at small workshops and keep alive the skills and traditional patterns of their ancestors.

# WEAVING USES THROUGH THE YEARS

- Some of the weaving uses from the antiquity to the most recent years were to produce textiles for:
  - ✓ Daily life at the house (clothes, headdress, blankets, pillows, etc.)
  - ✓ Daily life (tents, nets, chords, bags, etc.)
  - ✓ Religious reasons (offerings to the gods, deity's clothes, etc.)
  - ✓ Funerary (shrouds, etc.)
- Weaving was time consuming, but at the same time it provided opportunities for socialization.
- Quite often, the textile products were decorated with traditional embroidery, composed of different motifs, and using even silver and gold thread.
- Skills and patterns were safeguarded and transmitted from one generation to the next.

# WEAVING ACROSS AGES - AT A GLANCE

- From the pre-historic era to the pre-industrial societies, weaving was one of the main household activities. It provided families with the essential everyday life fabrics.
- It was related mostly but not exclusively to women, and the weaving products were intended for several uses within the house (clothing, linen, carpets, etc.).
- In addition to its important religious and social aspects, weaving has been central to women's financial contribution to their households.
- Later, weaving workshops that also produced fabrics emerged in various parts of Europe.
- The industrialization of weaving resulted in the mass production of inexpensive fabrics, but also in the decay of handweaving.
- However, the art of weaving still exists and continues from generation to generation.
- Today, individuals continue to weave either for fun and recreation (i.e., as a hobby), for cultural identification, or out of necessity.

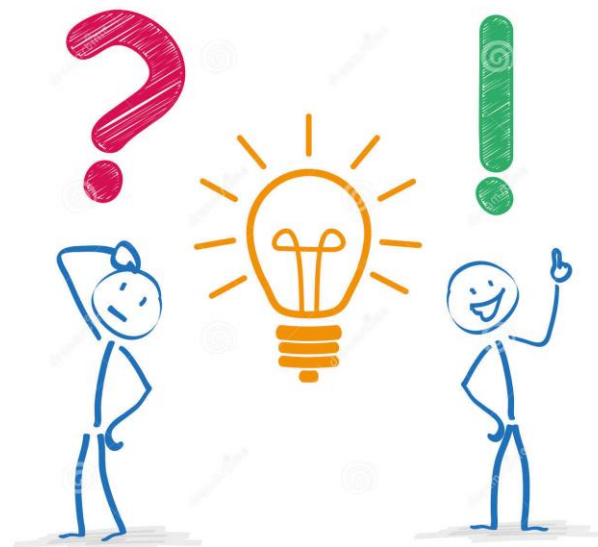
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# Time for questions...



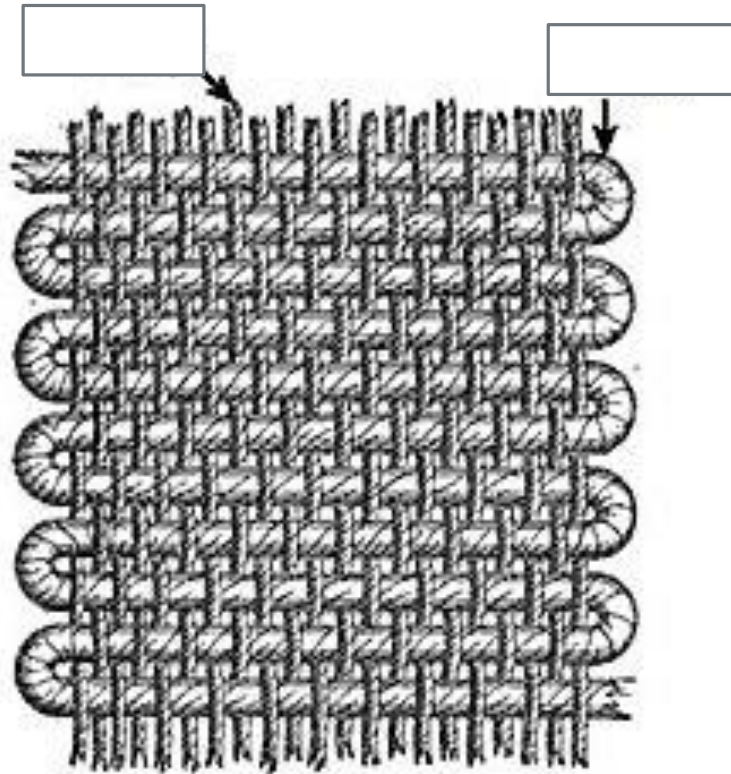
<http://clipart-library.com/clipart/kcMKrBg5i.htm>



<https://www.dreamstime.com/stock-illustration-stickman-question-bulb-answer-white-background-image51960894>

# QUESTIONS

1. Can you identify the warp and the weft in the following picture?



# QUESTIONS

2. Write the missing words and complete the following sentences:
- ✓ Observation of \_\_\_\_\_ gave early man the idea of weaving, as weaving is essentially interweaving fibers to create fabric.
  - ✓ But even before the actual process of weaving was discovered, the basic principle of weaving was applied to interlace branches and twigs to create \_\_\_\_\_ for protection, and \_\_\_\_\_ for collecting goods and storing products.
  - ✓ Some theorists claim that it is not possible to tell with certainty the exact time that weaving started, mostly because of the fragile nature of the \_\_\_\_\_ used and the easy deterioration of the \_\_\_\_\_.

# QUESTIONS

3. Could you name some of the uses of the weaved textiles from the antiquity to the most recent years?

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<https://www.britannica.com/technology/loom>