

# Case Study 1

A variety of raw materials,  
technological  
diversity and  
chronological  
landmarks

ARCHAEOLOGICAL PUZZLES  
IN A MUSEUM

Egyptian Fabrics from the 1st Millennium AD  
at the National Museum of Denmark  
(Online Exhibition)

## Case study 1

### A variety of raw materials, technological diversity and chronological landmarks

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The raw material used to make textiles has changed over the centuries and it is the first indicator that allows a fabric to be dated at least approximately. Moreover, the way in which the threads are prepared and spun is fundamental to distinguishing local production from fabrics made in other regions or by craftsmen from other countries.

#### Pharaonic Period

Most ancient Egyptian textiles were made from flax. Fibres from sheep's wool and goat's hair were already known in the Predynastic Period, but their use in Pharaonic Egypt seems to have been limited. Flax was widely cultivated throughout Egypt. The skill of preparing thread from the stem of this plant, although requiring a long and complicated operational process, was known in Egypt from at least the 6th millennium BC. It seems that in Egypt the technique for making linen threads was splicing and twisting with the S-twist, while in other regions of the Mediterranean the yarn was spun and the resulting twist had the Z direction. Splicing made it possible to obtain very thin threads, but it could also be used for coarse fibres.

Until the Second Intermediate Period fabrics were woven in Egypt almost exclusively on a ground loom. In such a loom the warp was mounted horizontally between two beams and held in tension by pegs in the ground. A new type of loom, the vertical two-beam loom, was introduced into Egypt during the New Kingdom. In this loom

the warp is held in tension between two beams fixed in an upright frame.

Regarding Pharaonic Egyptian textiles, more information can be found in the work of Gillian Vogelsang-Eastwood (2000).

#### Ptolemaic Period

It is considered that the large-scale introduction of wool clothing to Egypt came with the Greeks, who settled in Egypt after Alexander the Great's conquest of the country in 332 BC. Sheep's wool was widely used in Greece to produce garments, and the Greeks brought not only their clothing practices from their homeland, but also the appropriate tools to produce suitable fabrics, such as a loom with the warp fixed to the upper beam and held in tension by loom weights. They even imported sheep from Greece and other regions, presumably to obtain wool of a desirable quality. Although throughout the Ptolemaic Period linen garments seem to have predominated amongst the local population, Egyptians gradually adopted woollen clothing customs from the Greek and Macedonian settlers. In consequence, wool appears to have been fairly quickly spun in the same way as Egyptian flax, i.e. using the S-twist, and the vertical two-beam loom was adapted for weaving woollen fabrics. At that time spinning was a common technique used to make linen threads, and it seems that linen yarns produced by splicing were only used for weaving very fine fabrics, called "byssos" in Greek.

For more on fine linen threads, see William D. Cooke, Mohamed El-Gamal, Angela Brennan (1991) and Caroline Cartwright, Hero Granger-Taylor, Stephen Quirke (1998).

#### Early Roman Period

In the Roman Period, wool, linen, and linen fabrics decorated with woollen patterns were widespread in Egypt. In addition, into the 2nd century AD papyrus documents mention the production of "byssos". Goat hair textiles have also been found at many sites with material from the Roman Period and beyond, such as Karanis, Berenike and places in the Eastern Desert. It seems that goat hair was used throughout antiquity for the production of coarse fabrics, mainly for sacking and saddlebags.

On the topic of goat hair textiles in Roman Egypt, see article by Jane Batcheller (2001).

Meanwhile, in the 1st century AD, and probably as a result of contacts with the Nubian kingdom of Meroe, cotton cultivation appeared in Egypt. This spread particularly in the southern part of the country, in the region of the First Cataract and also in the oases of the Western Desert, at Kharga and Dakhla. These areas enjoy good conditions for growing cotton plants: hot, short days and a plentiful supply of water. Such climatic conditions were natural in Nubia, and it was possible to use water from the Nile through irrigation canals, whereas in the oases there had been since the 5th century BC (the first Persian occupation of Egypt) an underground irrigation system ("qanat") that collected water from springs and controlled its distribution. Cotton yarn in Egypt, like other yarns,

had the S-twist, however, cotton fabrics were probably woven in the same way as wool in the Greek tradition, i.e. on the warp-weighted loom. Some cotton textiles found in Egypt were also produced in other regions: certain fabrics found on the Red Sea coast, spun with a Z-twist, most likely come from the Indian subcontinent.

The fabric in the National Museum of Denmark (**Catalogue no. 4**) belongs to a very small group identified as cotton and held in various collections. Others are recorded, for example, in the Skulpturensammlung und Museum für Byzantinische Kunst in Berlin (Fluck, Linscheid, Merz 2000, nos. 154 and 155). That these fabrics are so rare is no doubt due to the fact that cotton never became as widespread as wool or linen in Egypt, and there were simply far fewer examples of such textiles. On the other hand, the very small number of known cotton fabrics may also be due to misidentification: it is possible that some of these fabrics were classified as linen and appear as such in the catalogues and registers of various museums and collections.

The cotton textile from NMD was woven with threads with the S-twist, which may attest to its "local" origin. Cotton textiles from the Roman Period made of S-twist threads and with loop pile similar to those on the NMD fabric, have been found in an archaeological context in, for example, Kellis, Dakhla (Livingstone 2009, p. 84-85) and at El-Deir, Kharga (Letellier-Willemin 2020, p. 42). It is not possible, however, to determine whether the textile from the National Museum was woven in one of the oases or in Nubia, and under what circumstances it was brought to Luxor. We can only assume that this textile, probably a couch or bed cover, was used as a shroud or

pillow in one of the tombs of the Theban region.

More information about cotton in Roman Egypt can be found in the works of John Peter Wild, Felicity Wild and Alan J. Clapham (2008), and Charlène Bouchaud, Elsa Yvanez, John Peter Wild (2019).

### Late Roman and Byzantine Period

The textile production of this period was dominated by linen and wool; cotton is also attested, but on a much smaller scale. Until the 5th century, silk only arrived in the Mediterranean from the Far East and was an expensive, luxury commodity. The Byzantines began to breed silkworms under Emperor Justinian (483-565), which led to a limited production of silk fabrics. However, the importation of silk continued in Egypt and other parts of the Byzantine Empire. The production site of silk fabrics found at Akhmim and other places in Egypt, dating from the 3rd to the 9th century, is still a matter of debate. For more about so-called "Akhmim silks", see **Catalogue no. 9** and **Case study 5**.

### Camel wool: an open issue

The presence of dromedaries and their use in transport is well documented in Egypt from the 5th century BC, but with the exception of Nubia, there is no evidence for the production or use of camel wool textiles. This situation, however, may be due to the very limited research to date on camel wool in Egypt and, perhaps, to the high probability that this raw material has been confused with sheep's wool and goat's hair.

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