

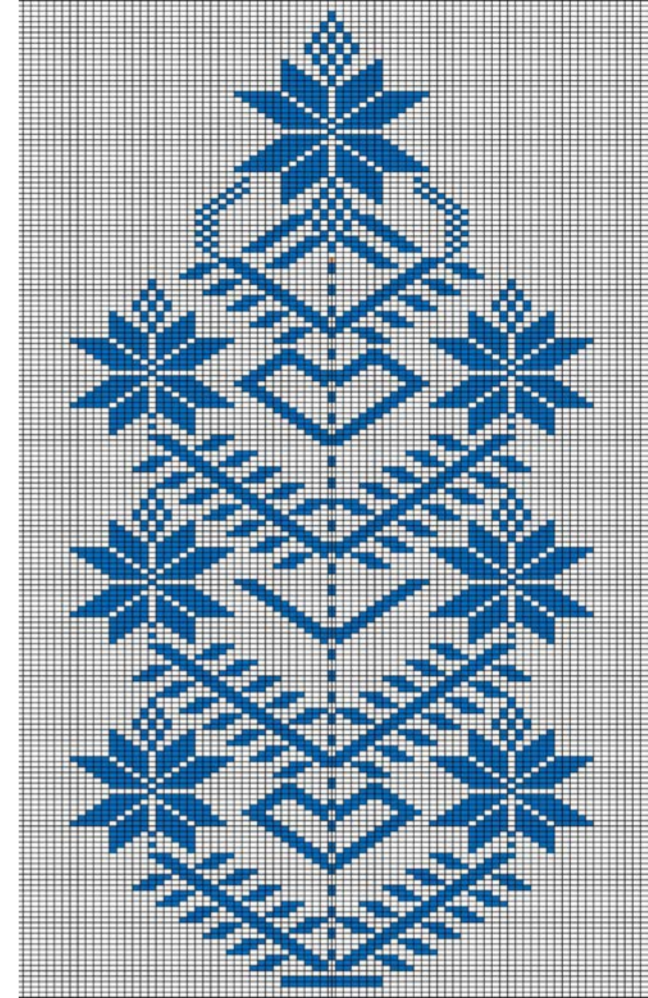
# Through the Loops: Documentation of Knitted Silk Stockings from Seventeenth-Century Jena, Germany



The pair of stockings from Jena collegiate church graveyard after vacuum cleaning; Jena (Germany), Friedrich-Schiller-University Jena (inv. no. 50971 / project no. FB 654a + b).



The clock is made of a combination of recto of simple knit as a ground fabric and reverse loops for the pattern, creating a damask-weave like effect.



The pattern drawing shows a branching tree with seven eight-pointed star-shaped blossoms.

Submitted by: Nao Saito  
Master of Arts in Conservation-Restoration  
Specialisation: Textiles  
Advisor: Dr. Regula Schorta  
Co-advisor: Corinna Kienzler  
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## Abstract

Three pairs of silk stockings were excavated from the seventeenth-century collegiate church graveyard in Jena, Germany. They provide excellent information about the vestimentary culture of academic elites in the Holy Roman Empire, as professors, their family members, and selected students are buried in attire that reflects their social status and cultural affiliation. This thesis focuses on detailed documentation and technical analysis of these knitted stockings using a proposed protocol and an agreed-upon terminology to offer reliable, descriptive records of early knit work for scholarly discussion. Accurate recording with colorful illustrations, preceded by an initial micro-aspiration cleaning, revealed that stockings of the same pair are not knit identically. Furthermore, it showed significant variations in construction and shaping techniques among the three pairs, suggesting that each pair is hand-knitted in different workshops or by different hands. Textile conservators play a crucial role in collecting such qualitative data and evidence based on a standardized system to identify specific phenomena for mapping the knitting geography and putting them in the context of early knitting history.

## Condition assessment and cleaning

The three pairs of stockings and accessories underwent a condition assessment upon arrival. In addition to the soils, fungi spores, and traces of a corpse such as bones, hairs, and hardened body fluids cover the stockings. Damages such as folds and distortions disabled further analysis of their surface structure and the technique used for their construction. Vacuum cleaning with a water filtration system and a

disinfecting agent is chosen as the initial surface cleaning method due to the fragility of the three-dimensional structure of a dry and brittle knit surface and fungi spores. The stockings were wholly or partly turned inside-out to clean the verso and recto sides as a room humidifier gradually introduced more humidity. The surface of all stockings is much cleaner and improved, and has regained flexibility.

## Documentation of the stockings

A set of vocabulary and protocol for analysis published in *Archaeological Textile Review* N° 60, in 2018, which aims to be equivalent to that of the Centre International d'Etude des Textiles Anciens (C.I.E.T.A.)'s for woven textiles were employed and tested to provide complete, accurate evidence for scholarly discussion and further research on historical knit work. The time restraint allowed only the exemplary analysis of the pair with the most elaborated pattern (project no. FB 654a and b). The stockings are knit with one yarn, S-ply from two slightly z-spun ends of gummed silk, and a multiple is combined as one knitting yarn. Two z-spun ends are knotted to produce a continuous yarn. The fabric structure is a combination of the recto of simple knit as a ground fabric and reverses loops for the pattern, creating a damask-weave-like effect on the fabric. This structure suggests the stocking is hand knitted despite having an extremely high gauge of 66 or 67 wales and 111 courses in a 10 x 10 cm<sup>2</sup>. The knitted loops average 1.59 mm in height and width with loop spacing of 0.88 or 0.99 mm, indicating the knitting needles' diameter to be smaller than 0.88 mm.

The work was knitted from the cuff with 217 loops in rounds. Increases and decreases for shaping took place alongside the false seam on the back at regular intervals. Two types of decrease that are mirror images of each other are present, while there is only one type of lifted-leg increase. The shaping on the right side of the false seam took place one course before the shaping on the left side to avoid jogs. Once the leg reached the ankle area, the foot was knitted following the pattern for cloth hoses used in the sixteenth century. The heel flaps were knit back and forth and bound off at the bottom, leaving a seam inside. FB 654a measures 53.0 cm from

the cuff to the toe with 576 courses and 51.0 cm with 569 courses for FB 654b. The loops for gussets and sole were picked up, and together with instep loops, once set aside, the foot was again knit in the round, using the yarn from the sole bind-off. The toes were shaped with decreases in short intervals and bound off with the same method used for the sole. FB 654a has 187 courses, and FB 654b has 181 courses for the foot. The yarn material, construction, pattern, and shaping techniques are identical. However, the final count of the wales and courses before the bind-off and the occurrence of the shaping differ greatly between two stockings of the same pair.

## Future prospect

The proposed protocol and terminology provide excellent guidance for recording knit work, though they still require visual illustrations and vocabulary to describe a specific phenomenon. The documentation of the two other pairs of stockings must be conducted with that in mind. Furthermore, conservation treatment must continue beyond vacuum cleaning. Insignificant folds, creases and wrinkles shall be flattened by introducing humidity and consolidation, such as stitching damaged areas and loops to support fabric, must be considered. Finally suitable mounting, storage, and display are needed for the stockings' long-term preservation and conservation, and their communication.