RECONTEXTILEIZE: Byzantine Textiles from Late Antiquity to the Present demonstrates that Byzantine Egyptian textiles contain more than their fragmentary states suggest. While these woven fragments are often overshadowed by more monumental objects, a closer look reveals their technical and historical complexity. These textiles help us understand the people who produced, wore, and repurposed them in life and in death. Simultaneously, they allow us to narrate a modern-day history of excavating, collecting, and exhibiting.

During the late nineteenth century and early twentieth century, European archaeologists working in Egypt unearthed Early Byzantine textiles as they sought to discover Pharaonic and Greco-Roman antiquities. These textiles eventually found their way into public institutions and private collections, including Jefferson University in Philadelphia, from which the majority of the objects in this exhibition come. Herman Blum (d. 1973), former Trustee of the institutions that later became Jefferson University, is believed to have assembled—and later donated—this collection.

Currently on loan to Bryn Mawr College, these textiles became the subject of a year-long, multi-disciplinary 360° Course Cluster, “Textiles in Context: Analysis, Interpretation, and Exhibition.” Students conducted original technical and historical research on Early Byzantine textiles in the fall semester (2018) and conceived, produced, and installed this exhibition in the spring semester (2019). RECONTEXTILEIZE stages an interdisciplinary engagement with these fragments across the Bryn Mawr College campus. Please visit all of the exhibition spaces in the Canaday Lobby, the Coombe Suite (located on the 2nd floor of Canaday), and the Science Crossroads in the Park Science Center.

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The curators thank the Textile and Costume Collection of Jefferson University for generously loaning the Early Byzantine textiles on display in this exhibition.

This exhibition contains content on death, child mortality, burial practices, and colonialism.
Try Your Hand at Weaving

This small, modern loom is provided for you to try your hand at weaving. During the Early Byzantine period, looms often were much bigger. Their larger size allowed them to accommodate tunics, curtains, cloaks, and shawls that were woven as single pieces. Early Byzantine looms or images that document their exact appearance have not survived, but images dating to later periods of Byzantine history depict looms similar to the one before you. This illumination from a thirteenth-century Byzantine manuscript depicts two women, one spinning (right) and the other weaving on a simple loom that is similar in form to ours (left).

Produce a plain weave structure on the loom with materials at right. Follow these instructions:

1. Tie the end of a piece of yarn to the side of the loom (the vertical wooden bar); this is your weft (horizontal string)
2. Pull the yarn “under” the first warp (vertical) string
3. Pull the yarn between the first and second warp strings (towards you), and then pull it “over” the second warp string (away from you)
4. Continue the “under-over” pattern until you reach the other side of the loom
5. To create a new line of weft, if your last motion was “under,” make the yarn go “over” the warp string for your new weft; or, if your last motion was “over,” make the yarn go “under” the warp string for your new weft
6. Repeat steps 2–5 until you have used up the length of yarn

Early Byzantine weavers employed additional weaving techniques to produce more complex patterns. Some of these weave structures are shown below. Follow the diagrams to see if you can imitate these patterns. Look for these weave structures in the Early Byzantine textiles on display upstairs.

<table>
<thead>
<tr>
<th>Slit Tapestry</th>
<th>Interlocking Joins</th>
<th>Dovetail Joins</th>
<th>Eccentric Wefts</th>
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<tbody>
<tr>
<td><img src="image1.png" alt="Slit Tapestry Diagram" /></td>
<td><img src="image2.png" alt="Interlocking Joins Diagram" /></td>
<td><img src="image3.png" alt="Dovetail Joins Diagram" /></td>
<td><img src="image4.png" alt="Eccentric Wefts Diagram" /></td>
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Women weaving and spinning, Book of Job, Constantinople, second half of the thirteenth century, Jerusalem, Greek Patriarchate Library, cod. Taphou 5, fol. 234v

RECONTEXTILEIZE The exhibition continues upstairs in the Coombe Suite Gallery
Piecing Together the Byzantine Tunic

The standard item of clothing in Early Byzantine Egypt was the tunic. People of all sizes, ages, and genders wore this simple garment, either belted or loose. The body of the tunic was typically woven from linen, a breathable and flexible fabric. Linen, however, does not hold dye effectively, so decorative elements were usually woven with wool, which absorbs pigments more successfully. Any given tunic can display an array of colorful decorations. These woolen decorations, called *segmenta*, vary widely in terms of style and patterns. However, they were usually arranged on the tunic in standardized ways. *Segmenta* were found not only on tunics, but also on shawls, curtains, blankets, pillows and wall hangings.

Because of the fragmentary state of Byzantine Egyptian textiles today, it is impossible to know for certain if the *segmenta* on display here were originally parts of garments or home furnishings. Still, the systemized nature of tunic decoration allows us to speculate about how these *segmenta* might have once decorated a tunic. The fragments on display in this exhibition provide a sense of the diverse stylistic and iconographic possibilities of Early Byzantine tunic decoration.

Common *segmenta* types found in this exhibition include:

- **Arm bands**: rectangular strips around the sleeve located on the upper arm or wrist
- **Clavus** (pl. *clavi*): long bands running vertically down the chest
- **Gammadion** (pl. *gammadia*): L-shaped elements positioned at the corners of the hem
- **Neckband**: rectangular strip that runs horizontally at the neckline
- **Orbiculus** (pl. *orbiculi*): circular shaped decorations; typically located at the knee, shoulder, or near the hem
- **Tabula** (pl. *tabulae*): square-shaped decorations typically located at the knee, shoulder, or near the hem

Can you identify some of these *segmenta* in the photo of a complete tunic nearby?
Orientation in Time and Space

Because of its agricultural bounty and advantageous position on the network of trade routes across the Mediterranean, Egypt was a key province of the Roman Empire. Roman control of the territory was established in 30 BCE, after Octavian (the future emperor Augustus) defeated Cleopatra (the last Hellenistic ruler of Egypt) and Mark Antony.

The period during which the textiles in this exhibition were created is commonly referred to as the Early Byzantine era (ca. 300–700 CE). Modern historians typically date the transition from the Roman Empire to the Byzantine Empire to the fourth century, when society increasingly abandoned polytheistic religion and adopted Christianity. Egypt was, however, a center of the Christian church from as early as the second century CE.

No single moment marked the change to a Christian society. Key elements of Roman culture, including the Greco-Roman pantheon and mythological tradition, remained important even as Egyptian society gradually transitioned to Christianity. Christian symbols, foremost the cross, appeared on diverse objects of daily life including textiles like those displayed in this exhibit. Other staples of Egyptian life from the Roman and pre-Roman periods, including images of the Nile River and local flora and fauna, were consistently referenced on clothing and everyday items, even as political and religious control of the region changed. For this reason, “Late Antiquity” (ca. 100–700 CE) is a useful term for characterizing the period and society from which these textiles originate because it encompasses both the Roman and Byzantine eras, recognizing their complex cultural overlap.

In 640 CE, political control shifted dramatically with the conquest of Egypt by Muslim armies, which experienced significant military success following the death of the Prophet Muhammad in 632 CE. Fustat was founded as the first Islamic capital of Egypt in 641 CE. Throughout the Islamic era, many aspects of Roman and Byzantine culture persisted in the region.
Egypt in Focus

The map to the left shows Egypt in greater detail. Running north to the Mediterranean Sea is the Nile River—the source of Egypt’s agricultural prosperity and the facilitator of trade and transportation across the region. Cities along the Nile, like Alexandria, Panopolis (Akhmim), and Antinoöpolis (Antinoë), benefitted from access to the River. However, trade was not limited to these communities. Settlements clustered around large oases, including vibrant commercial and cultural hubs like Trimithis (Amheida) in the Dakleh Oasis. Although smaller than their urban counterparts on the Nile, these regional centers produced goods for export to the rest of Egypt and the greater Mediterranean, and served as key stopover points along Egyptian trade networks. During the nineteenth and twentieth centuries, these regional centers were among the sites explored by European archaeologists who unearthed many textiles like those on display here.
Reading Images: Identifying and Interpreting Motifs in Byzantine Egyptian Textiles

The images and patterns found on Byzantine Egyptian textiles were more than simply decorative—they conveyed meaning for their owners, expressing their identities, hopes, and worries. We can read these elements as a language of symbols, themes, and motifs. Understanding the subject matter displayed through the ornamentation of these textiles offers insight into the values of Early Byzantine people.

Just as our choices in clothing and adornment reflect aspects of who we are, Byzantine Egyptians used visual elements to communicate aspects of their identities, such as gender, social status, economic class, age, and education. Some of these iconographic elements were also believed to be imbued with supernatural power to protect the wearer from evil spirits and ensure fortune, prosperity, and good health. The information provided in this section will help you read the symbolism displayed in this selection of textiles from Jefferson University.

1. Clavus with Tree of Life
   Egypt
   ca. 300 – 700 CE
   Wool
   1974.52.14
   The prominent decorative roundel on this fragment includes a motif of a candelabra tree, sometimes called a Tree of Life. The square knot at the center of the roundel is known as a Knot of Solomon and was believed to be a magical, protective symbol. Knots, such as the one depicted on this fragment, were included with the power to trap evil spirits. Protective motifs, including knots, were often placed on tunics covering vulnerable regions of the body, like the chest or at the juncture between limbs.

2. Orbiculus with Dionysian Figures, Possibly Maenads
   Egypt
   ca. 300 – 700 CE
   Wool
   1980.1.20 A-B
   This fragment depicts centaurs (mythological creatures with the head and torso of a human and the lower body of a horse) and maenads (the female followers of Dionysus). Their prancing poses are typical of Dionysian figures, who are frequently shown in a state of ecstatic revelry. The centaurs hold disks, which are likely tambourines. Such Greco-Roman imagery continued to appear in Early Byzantine textiles well after Christianity entered Egypt. This iconography symbolizes “the good life” and could even indicate the Christian wearer’s paideia (knowledge of classical tradition).

3. Armband with Imitation Jewels
   Egypt
   ca. 300 – 700 CE
   Wool and linen
   1987.1.20
   The delicate geometric motifs woven into this armband may have been intended to imitate actual jewelry. Gem-like textile patterns evoked the luxuries available to the wealthiest echelon of society through the more modest materials of dyed and woven yarn.

4. Armband with Nilotic Iconography
   Egypt
   ca. 300 – 700 CE
   Wool
   1989.1.30.4
   The motifs in this armband resemble the aquatic plants of the Nile region, for example, the lotus. Egyptians held great respect for the Nile as the sustainer of life. As a result, Nilotic motifs were associated with natural abundance. These motifs can therefore be understood as symbols of good fortune.

5. Armband with Knots
   Egypt
   ca. 300 – 700 CE
   Wool
   1980.1.19
   The intricate weave structure of this armband was more than just beautiful; complex geometric patterns were also thought to ward off evil spirits. Byzantine Egyptians believed that demons could attack them by entering through the openings in their clothing, which is why these motifs often appear near hems. Complex patterns on the armbands or neckbands of tunics were understood to function like nets, entangling demons and protecting the wearer.

6. Armband with Crosses
   Egypt
   ca. 300 – 700 CE
   Wool
   1988.1.1
   The crosses depicted running across the decorative stripes of this armband may have announced the Christian identity of the owner. Through their association with Christ, crosses were also believed to be protective motifs, which could defend the wearer from demons.

7. Tabula with Pyrrhic Dancers
   Egypt
   ca. 300 – 700 CE
   Wool
   1980.1.24
   The human figure depicted at the center of this tabula appears to rise, elbows bent in opposite directions, and stands on his toes. These lively gestures imply he is dancing. Figures like these were sometimes referred to as pyrrhic dancers (participants in an ancient Greek war ritual). The image of the pyrrhic dancer became symbolic of victory and good fortune for the wearer of the textile. Dancers were also associated with Dionysus (the Greek god of wine and revelry).
Mummies and Textiles: Wrapped Bodies and Early Byzantine Burials

Many aspects of Pharaonic Egyptian burial practices continued into Late Antiquity, including mummification. The embalming process was sometimes simplified, but the importance of wrapping the corpse in textiles remained. Corpses were dressed in multiple layers of textiles, including articles of clothing and soft furnishings (such as curtains, rugs, hangings, and bedding), which served as shrouds. These layers were then bound with long strips of plain fabric.

The dry climate of Egypt decelerated bodily decay and preserved the fragile textiles that wrapped the dead. The majority of Early Byzantine textiles held in museums and private collections today, including the ones in this exhibition, were stripped from bodies buried in Late Antique Egyptian cemeteries.

This section includes discussion of death, child mortality, and bodily fluids. Textiles on display include areas of dried bodily fluids, such as blood.
Stains and Staining

The preparation of the corpse for burial in Byzantine Egypt involved dressing the body in textiles, including articles of clothing that might have been worn in life and furnishings from the home. Because these textiles were used to clothe corpses, many contain extensive staining from bodily fluids as well as materials used in the embalming process. With the use of modern scientific techniques, it is possible to identify the probable substances of individual stains, for example, blood.

Stains are among the best evidence to suggest that a textile was used in a funerary context. They also underscore the humanity of these textiles’ original owners. Stains remind us that the textiles on display were made and worn by real people in both life and death.
Children’s Clothing and Protection in the Afterlife

The small size of these tunics indicates that they were likely meant to be worn by children. A high child mortality rate in Late Antique Egypt resulted in a large number of children’s burials. The care invested in the burial of children is clear from the highly decorative tunics in which they were interred. Certain motifs and colors are thought to have offered protection to both the living and the dead. These powerful protective devices are often found on children’s clothing, indicating the parents’ desire to care for their child, even in death.
Socks with Sandals

Wearing socks with sandals is not only a fashion trend in recent years. It was also a popular style in Late Antique Egypt. Early Byzantine socks feature a divided toe, allowing them to be worn with thonged sandals. Socks were created using a technique known today as \textit{nålbinding}, which employs a single needle to connect short lengths of yarn in a process similar to modern-day crochet.

Examples of adult socks show variations in material, size, and color. The shroud of an affluent Roman-Egyptian woman depicted nearby portrays her wearing vibrant red socks of delicate construction. Children’s socks were also recovered from Late Antique burials. They are often made from yarn of varied colors, but they show relatively little evidence of wear, possibly implying a more decorative than practical use. Overall, Byzantine Egyptian children’s socks create more questions than they answer. Were they elite objects, or worn by children across socio-economic classes? Were they worn in life, or created specifically for burial? Were they specially made by grieving parents, who wanted to bury their children with something colorful to keep their feet warm and remind them of how much they were loved?

We encourage you to interact with the socks on display by examining, imagining, discussing, and even touching them.
Let’s Talk Socks

These replicas of Byzantine Egyptian socks were created by one of the curators of this exhibition, Alexandra Stern (HC’20). They are made to be touched.

Please pick up one of these socks:

How does the material feel?

Explore the inside of the sock. While you should not try it on your foot, you can imagine how wearing it would feel.

Test its stretch by carefully pulling the material. Pull in as many directions as possible.

Compare these socks to the ones that you typically wear. Look at the socks depicted in the images nearby. Do the differences between these socks and the ones you wear say something about the wearers or their societies?

Are you reminded of other textiles in the exhibition? Walk around the exhibition to find similarities.

These socks are slightly scratchy and uncomfortable, but likely very warm, which would have been welcome at night in the desert climate of Egypt. Compared to modern day socks, these socks are not as stretchy, nor do they conform as easily to the shape of the foot. Unlike today’s universal sock sizing, Late Antique socks had to be made using the measurements of a specific foot.

The custom-made nature of Late Antique socks indicates the amount of care that went into their creation. Even today, the gifting of socks, bought or homemade, continues to be a demonstration of love and good wishes for the recipient.
When the French general Napoleon Bonaparte led an invasion of Egypt in 1798, his forces were accompanied by a group of scholars who sought to document the people, landscape, and history of Egypt. The publication of their work in the multi-volume *Description de l’Égypte* (1809–1829) included romanticized illustrations of monumental ancient ruins. This publication inspired other European scholars to visit Egypt in search of Pharaonic, Greek, and Roman artifacts.

While excavating these sites, archaeologists also encountered Early Byzantine material, including textiles, which were often unearthed in extremely poor condition. Some fragments were simply discarded, while more desirable pieces were often cut from the larger textiles to which they belonged and sold to museums and collectors. As a result of these practices, many of the surviving examples are fragmentary, and their original contexts are unknown. Although these pieces remain enigmatic, modern art historical and scientific methods allow us to recontextualize these objects and reconstitute their histories.
Excavation as Decontextualization

Our fragmentary understanding of Early Byzantine textiles results from archaeological practices during the nineteenth and early twentieth centuries. After unearthing burials, European excavators kept only the most intact and visually pleasing parts of the textiles they uncovered. For example, French archaeologist Albert Gayet (1856–1916), in his excavations at the site of Antinoöpolis, employed methodologies that were, by the archaeological standards of today, unethical. Gayet uncovered an astounding number of burials but only preserved the artifacts that he judged to be the most valuable. He disposed of the remaining historic materials, often without recording where individual artifacts had been found or with which burial they were associated. These excavation practices created problems for the future study and interpretation of these materials.

These images show Gayet’s problematic excavation practices at Antinoöpolis, including both the large number of bodies disinterred and the separation of unwanted textiles from more profitable burial goods.

Exhibition as Decontextualization

As Egypt increasingly became the subject of Western fascination in the nineteenth and early twentieth centuries, European archaeologists uncovered thousands of ancient artifacts and shipped them to Europe and North America for sale and display. Textiles like the ones in this exhibition were displayed at World’s Fairs, such as the Exposition Universelle in Paris in 1900, and eventually entered private and museum collections.

Early museum displays of Byzantine Egyptian textiles typically emphasized the aesthetic values of these artifacts rather than their social-historical value. It was common practice for dealers to remove the decorative *segmenta* from Byzantine Egyptian garments and soft furnishings, which allowed them to make more sales from a single find and facilitated the textiles’ display as art objects. Collectors, in turn, often framed textile fragments under glass and displayed them on walls in a fashion similar to paintings.
ReconTEXTILEization in the Twenty-First Century

Today, scholars seek to reconstruct textiles’ original circumstances of production and use in order to reunite surviving fragments. Early Byzantine textiles are studied as three-dimensional, functional objects rather than flat images. Modern scientific techniques also aid scholars in understanding these artifacts. Chemical analysis can help determine the materials with which textiles were made, providing information about their possible origins and historical contexts. In some cases, this information also allows scholars to approximate the date of a textile. When used together, scientific and art historical analysis can even demonstrate whether two fragments were originally cut from the same larger textile.

RECONTEXTILEIZE

This exhibition continues at the Science Crossroads in Park Science Center, where more information can be found about the scientific analysis conducted on the textiles in this exhibition.
Over the course of the fall 2018 semester, students from the 360° Course Cluster, “Textiles in Context,” performed extensive scientific analysis on Jefferson University’s collection of Late Antique textiles using techniques such as Thin Layer Chromatography (TLC), Polarized Light Microscopy (PLM), Liquid Chromatography-Mass Spectrometry (LC-MS), and X-ray Fluorescence (XRF). These techniques are commonly used by professional object conservators and can provide insight into the age and production of a textile. Conservation science also assists art historians and curators in understanding an artifact’s historical context and determining the safest conservation treatment to use.

These images of the same textile were taken under both visible light (left) and ultraviolet (UV) light (right). UV light makes it easier to discern a more varying range of colors, even if they appear the same under visible light. Three sections of this fragment are labelled in the accompanying images. Under visible light (left) the three sections appear to have been woven from the same tan-colored thread. However, ultraviolet light imaging (right) reveals a slight difference in color between the three sections. This indicates that the thread used in these sections may have been dyed separately or with different dyes, prompting further dye analysis.

Scientific analysis can also provide information about potentially hazardous substances, such as pesticides, that may have come in contact with the textiles. The 360° course used non-destructive or minimally destructive methods of analysis to preserve the textile’s integrity.
Blue Dyes

Indigoid dyes were used in many ancient civilizations around the globe. Indigoids are extracted from a woad or indigo plant and then processed into the blue powder you see here. Indigoids are a vat dye (a dye that does not require a metal-based mordant to stay locked onto fibers). The exact color can be changed via the manipulation of the pH during dyeing. Like other dyes, indigoids transfer pigment most effectively to wool but can be used to dye almost any textile material.

Yellow Dyes

Turmeric was a widely accessible yellow dye in Byzantine Egypt. It is very effective and colorfast when used with a mordant such as aluminum sulfate. Turmeric roots are dried and then ground into highly pigmented powder. Weld, which colors textiles yellowish-brown to bright orange, starts as fibrous plant matter and then is extracted into the powders you see here. Like turmeric and other yellow dyes, weld requires a mordant to remain colorfast.

Purple Dyes

The most famous dye used in Byzantium was Murex (commonly known as Tyrian Purple). This exorbitantly expensive dye was closely controlled by the state. Tyrian Purple was produced by extracting the mucus from the glands of the Murex sea snail. Like indigo, Tyrian Purple is a vat dye that requires no mordanting.

Techniques to produce “false purple” dyes were developed to imitate Murex. These methods usually consisted of over-dyeing fabric with both red and blue dye to achieve a purplish color. However, “false purple” was not as bright as Tyrian Purple at the time of dyeing and faded more quickly.

Red Dyes

Madder was the most common red dye used in Byzantine Egypt. Like turmeric, it is extracted from a plant root. Other red dyes include Kermes, which also was common across the Mediterranean, and Cochineal, which was rarer. Both Kermes and Cochineal are produced by grinding up the bodies of scale insects that reside on specific plants. Cochineal required one-tenth as many bugs for the same amount of dye as Kermes, but it was not as readily accessible in Byzantine Egypt. Madder, kermes, and cochinuel all require mordants to retain their bright colors.
Fibers of Byzantine Egypt

Byzantine Egyptian textiles were woven from linen, silk, wool, and cotton. These fibers have distinct structural properties, which are observable under Polarized Light Microscopy (PLM). These properties help explain many of the fibers’ physical attributes, for example, the luminous sheen of silk or the ease with which wool can be dyed. Linen, silk, wool, and cotton can all be formed into long threads, spun into yarn, and woven on a loom. In Late Antique Egypt, weaving was done by individuals in homes as well as by professional weavers participating in organized guilds. Even the least refined Late Antique fabrics were valuable because of the labor-intensive nature of their production.

**Silk**

When preparing to pupate, the silkworm (*Bombyx mori*) spins a cocoon of one long saliva thread around itself. Because of this, under Polarized Light Microscopy the fibers appear to have lengthwise stretchmarks and a triangular prism shape. Traditionally, the cocoons were boiled to kill the insect inside and loosen the threads. The cocoons were then carefully unraveled. One cocoon provided about 1,000 yards of silk filament, and about 2,500 cocoons were needed to produce one pound of silk fabric. In Late Antiquity, silk was an extremely expensive and luxurious fabric. It was not produced in the Roman-Byzantine world until the sixth century. Prior to this date, silk was imported from China.

**Wool**

Wool was most likely introduced to Egypt by the Greeks during the Hellenistic period (323 BCE–31 CE) and was common in Late Antiquity. Wool takes dye easily because it has a central core that captures the pigment. Often, colorful elements of a garment were woven in vibrant wool thread, while plain elements were woven in linen. In the Byzantine era, most wool came from sheep. After being sheared from the animal, wool was washed and dried, then combed and spun into yarn. Under Polarized Light Microscopy, wool can be identified by its scale-like appearance and medullo (dark core).

**Flax**

“Linen” is a term applied to many types of plant-based fabrics. In Egypt, flax has been spun into linen since the Neolithic era. Linen is a lightweight and cool material and was the most affordable option in Byzantine Egypt. It does not absorb dye effectively, however, and was usually used in a natural or bleached state. Flax grew in the Nile floodwaters. After the seeds were removed, the stalks were soaked and beaten to separate the wood fibers. The fibers were then combed and spun into yarn. Flax is identified under Polarized Light Microscopy by nodes (horizontal lines) that run along the shaft of the fiber.

**Cotton**

Cotton is a far more labor-intensive crop than linen to harvest and is not as well-suited to the Egyptian climate. Still, there is evidence that cotton was grown in the Nile Delta for millennia before the Early Byzantine period. Cotton was harvested by hand and processed to remove the seeds from the fibers. Fibers were then cleaned, beaten to make them more malleable, and combed before being spun into thread. Under Polarized Light Microscopy, cotton has a ribbon-like appearance.
Textile Twins? A Case Study

Although the depiction of a bird in each of these textiles is quite different, their similarities in color and external border design made students Alexandra Stern (HC ’20) and Miranda Johnson (HC ’19) wonder if they were cut from the same original textile. Both fragments come from Jefferson University’s Textiles and Costumes Collection, but limited documentation required further analysis to substantiate the connection. Stern and Johnson worked together to perform scientific analysis on these textiles over the course of the fall 2018 semester. X-ray fluorescence (XRF) spectra from both textiles showed high iron levels in the beige and purple decorative design, while the darker, orange borders showed high levels of bromine. Liquid-Chromatography-Mass Spectrometry (LC-MS) was also performed, and the spectra of the orange backgrounds displayed peaks corresponding to madder and weld dyes. Based on scientific tests such as these, Stern and Johnson were able to conclude that these textiles were likely “cut from the same cloth.”