



TREATMENT AND STORAGE OF OMANI BLACK VELVET DRESS AND FLOWER-PRINTED SCARF: A CASE STUDY

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Abstract:

This article presents strategies for conserving and storing historical textiles that have deteriorated from exposure to uncontrolled environmental conditions. The focus of this study was to document the treatment and storage process of two specific pieces: an Omani black velvet dress and a flower-printed scarf. Various forms of deterioration were observed, including dust, food and bodily oil stains, and snags. The conservation treatment processes involved repairing the snags, cleaning the oil stains around the neck and arms of the dress, and vacuuming the two objects based on their condition. To provide support, a new fabric was used for the textile. Additionally, a storage system was implemented to ensure long-term preservation. Throughout the entire conservation process, thorough photographic documentation was carried out.

Keywords:

Historical textile
Omani black velvet dress
Omani flower-printed scarf
Treatment
Storage

1. Introduction

Textile is a term originally applied only to woven fabrics, now generally applied to any flexible material composed of thin films of polymers or fibers, yarns, or fabrics or products made of films, fibers, yarns, or fabrics [1]. Textiles are among the most sensitive objects in museum collections due to their organic nature. Their long-term preservation is affected by numerous agents of deterioration, including light, UV, inappropriate RH and temperature, pests, physical forces, and pollutants [2]. All these factors cause damage and decay in both fibers and dyes, which weaken both fibers and dyes, harden and stain fibers, separate parts, and eventually, some parts are lost [3]. Textiles exhibit exquisite historical evidence of our glorious past in the form of fabric, styles, accessories, and decoration. Textiles in museums have

survived for so long owing to their proper care, handling, transportation, and storage conditions [4]. Old textiles, especially those displaying traditional costumes, are essential to the cultural heritage. They must be kept in reasonable condition because they represent individual, local, and national identity elements. Some fabrics can provide valuable information on the everyday context, the status of the society, and its history [5]. Today, we treasure historic textiles because they document art craftsmanship and have a straightforward connection with people of the past. We also save contemporary textiles for their beauty and their significance in our lives. Textiles are one of the most vulnerable art collections. It requires organized facilities that provide stabilized conditions and easy accessibility to the objects. Storage of textile artifacts is a well-laid scientific process where

all environmental factors, like humidity, temperature, light, etc., must be suitable for every artifact. Apart from the microenvironment conditions, storage and design are other important factors that can affect the safety of the objects. There are enough examples of the loss of precious artifacts because of negligent and poorly designed storage. Different textile artifacts need specific storage materials and methods depending on their condition, design, and composition [6]. It is important to understand the value of adequately handling museum textiles so that it is available to future generations for viewing in the same condition as it is now [7]. The first object under study in this paper is an Omani black velvet dress, which is also called *Dhofari (Thall Fustan* - train dress). *Dhofar* is a region in Southern Oman, and the clothing that comes from that region is named accordingly. The Dhofari traditional style dress has continued to maintain its value for the women of Oman even to this present time. Women wear this dress in their daily life for all occasions, with different types of clothes. This style of dress can be plain, but when it is worn on a special occasion, embroidery or embellishments such as rhinestones is added for those who can afford it. The *Dhofari Thall Fustan* - train dress is characterized by its broad-paneled styling with embellishments. It is considered attractive by the women of *Dhofar*, with it being slightly longer in the back and slightly shorter in the front, covering the knee, where it gets its name, *Thall Fustan*. While the tail, which is the longer section in the back, is called *Abu tail*, slang name for the dress. This is done to show off the elaborate embroidery on the women's *Sirwaal* pants. The dresses and the pants are usually embellished with reliefs and prints of various kinds, such as palms, animals, swords, flowers, cloves, diamonds, or any type of message inspired by the environment. These dresses can be made from many types of cloth, including cotton, which is without inscriptions and tends to be

the common style for everyday use. Some people can have as many as sixteen of these types of dresses within a home. Collected over time from family members and collected from many areas and regions across the country. They can be made from many materials depending on regional esthetics and wealth. One of the distinctive features that is used in the descriptions of cotton cloth is to say it feels like butter, so the Arabic slang word commonly used to describe cotton is actually the same word for butter; so, one can say 'it is like butter' and mean cotton cloth. Velvet is another material used in the making of this type of dress, but it is primarily used for formal occasions such as a wedding, and it can come in a variety of beautiful colors with many embellishments and ornamentation depending upon the wealth of the individual and their taste. The history of the dress under study is an interesting one. A wealthy woman wore this Omani dress with rhinestone embellishment as a formal party dress at a wedding celebration. She would have worn it with pants, *Sirwaal* high heels, and jewelry since it was used in formal settings and celebrations for women. The dress was worn only on special occasions and, as such, was only used once or twice [8]. The second object in this study is a flower-printed scarf, *Aka Shayla* or *Taraha*. It is a rectangular strip of cloth typically wrapped around the head and hanging over the chest. The head scarf is seen in Arab and Muslim women as an accessory and can change color with the season and the fashion of the times. It is something that gives young women the opportunity to flex their personal style, as well as to show how fashionable they are. It can be embellished with prints or embroidery depending on the fashion or wealth of the individual [8]. This paper aims to present the strategies for conserving the two historical textiles from Oman and identify the types of fibers and dyes, stains, dust, and different damages in these objects through different ways of investigation. The paper

reports the conservation treatment of the objects, including removing food and body oil stains, repairing some snags, and brushing and vacuuming dust. Therefore, the project aims to treat and store a formal occasion Omani black velvet dress and flower-printed scarf for historical and cultural educational purposes.

## 2. Materials and methods

### 2.1. Historical description

#### 2.1.1. Omani black velvet dress

The Omani black velvet dress (*Dhofari Thall Fustan* - train dress) was purchased in 1999 and stored when not used. It was taken out of storage in the summer of 2007 and donated for educational and cultural exchange. The dress was shipped from Jeddah, Saudi Arabia, to Ames, Iowa, USA. It arrived in Jeddah by mail from Salalah (Capital), Dhofar, Oman. It was donated to the Iowa State University Textile Collections for educational and cultural exchange. Since this is a special occasion garment, it is still in good condition because it has been used only a few times. The dress is black velvet with embroidered edges and trims on the dress's arms, neck, and bottom. Rhinestones (iron-on) are embellished around the arms, neck, and along the bottom of the dress. The stones are cut very well to reflect the light off the surface of the dress. This indicates the dress's quality and that it is expensive and of good quality and not something that the average Omani could afford.

#### 2.1.2. Omani flower-printed scarf

As for the flower-printed scarf (*Shayla or Taraha*), history shows that it has never been worn. It may have been intended to be worn with the formal Omani party dress for special occasions, such as weddings. It is still in good condition since it has never been worn or laundered. It is a dark blue, with gold printed flowers and small yellow flower stripes in the middle. It has a printed edge with green, blue, yellow, and a black border to frame it. It is not designed well due to faulty industrial standards and mass

production techniques typically applied in the manufacturing of scarfs. It is believed that the scarf was purchased with the Omani black velvet dress, and it has not been used at all because there is no damage or stains, and the finish is still intact. The scarf was received the same way the dress was shipped from Oman to Saudi Arabia and then to the USA. It was meant as a gift to be presented to Iowa State Universities Textile Collections for educational purposes and cultural exchange.

### 2.2. Visual examination

#### 2.2.1. Omani black velvet dress

The condition of the Omani black velvet dress, fig. (1-a) was visually assessed. It showed two food stains on the front of the dress and some dust on the bottom of it, as well as some abrasions in the tail of the dress caused by high-heeled shoes, fig. (1-b). There were some snags on the front of the dress caused by jewelry traditionally worn with it, and wrinkles on the back of the dress caused by sitting and improper storage. Around the neck and arms, there were body oil stains on it that indicated it had been worn. This garment was in excellent condition. This is a plain weave material, fig. (1-c) dyed after weaving [1]. The Omani black velvet dress has a non-fibrous content made of rhinestones and embroidery around the arms, neck, and bottom hem.

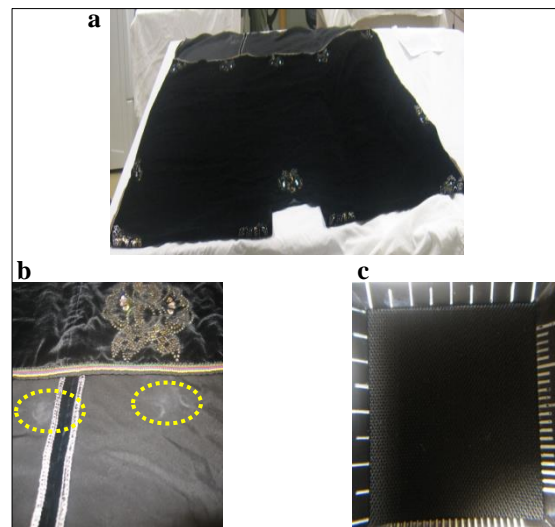


Figure (1) Shows **a.** velvet black Omani dress **b.** food stains on the front of the dress **c.** plain weave material

### 2.2.2. Omani flower-printed scarf

The condition of the Omani flower-printed scarf, fig. (2) indicated that it had never been worn and that it still had all its finish, indicating it had never been washed. It is a balance plain weave fabric [1]. The manufacturing quality of this scarf is poor due to the clumping of the yarns together during the weaving process.



Figure (2) Shows a flower print scarf

### 2.3. Microscopic examination

Some fibers were retrieved from the dress and observed under the microscope. It is a manmade fiber–filament yarn. The filament yarn was visually identified as a semi-dull fiber, indicating it had undergone a delustering process. The fiber seemed to have a circular, uniform diameter shape, fig. (3).



Fig (3) Shows microscopic examination of fibers from the Omani black velvet dress

## 3. Preservation Techniques

### 3.1. Omani black velvet dress

The best preservation techniques used for the Omani black velvet dress would be to

first brush clean it in one direction, vacuum clean in the same direction, and gentle spot cleaning with a Q-tip in the same direction. This proved to be an effective preservation technique for the dress [4]. Repairing the garment snags would require a needle hook. It would be needed to reverse any snags on the front of the dress. Wet cleaning was not used because of the abrasions on the hem of the dress that could have become unnecessarily stressed by the force of the wet cleaning process, causing the dress to become more damaged. This was consistent with previous research [9] who avoided wet cleaning, because while wet, the textile is soft and can easily be damaged during handling. Dry cleaning would be the best technique to eliminate the oil stains around the neck and arms of the dress, but it was impossible to clean it that way in the lab. It was best at this point to only spot-clean it when necessary [10] due to the delicacy of the velvet dress. Some materials were used, including brown tissue paper, fiberglass screening, muslin (clean), Orvus solution, paper towels, Q-Tips small beaker, soft bristle brush, and vacuum [4]. The dress was then tested for color fastness. A small piece of muslin on top of a paper towel was used, and then a section of the dress was placed face down (bottom hem) and was tested with water. After a few minutes, the muslin and the paper towel were checked, and it was found that no color bleeding had occurred [4]. It was then brushed with a soft-bristled brush in a one-directional downward motion, fig. (4-a), brushing the dust onto brown paper for disposal. The garment was repaired with a needle hook to reverse a snag on the front of the dress caused by heavy jewelry, fig. (4-b). Then, the stains on the dress's front and back were cleaned with Orvus solution. This was done with a Q-tip in one direction so as not to damage the fabric, fig. (4-c). This was the best method for cleaning the stains from the garment. This was done to

avoid any unnecessary damage to the velvet and rhinestones attached to the dress. A fiberglass screen was then placed on the dress to protect the fabric from any damage that could occur during the vacuuming process. The garment was then vacuumed with a hand-held vacuum cleaner, making sure to go in the same direction with the fibers and not against the grain, fig. (4-d). The dress was placed on the clean muslin, but there was a problem with small staple fibers from the muslin attached to the velvet dress. This occurred three times before; therefore, it was decided that the dress must be covered with acid-free tissue paper to eliminate the problem [11,12]. This was a very effective measure in eliminating the problem with the staple fibers attaching themselves to the garment.

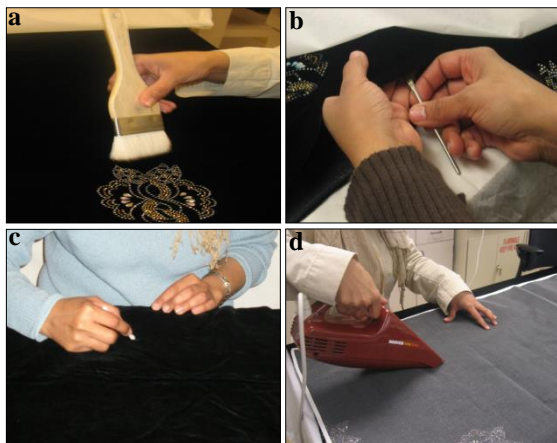


Figure (4) Shows **a.** brushing the Omani black velvet dress with a soft-bristled brush, **b.** repairing the garment with a needle hook, **c.** cleaning the stains on the dress's front and back, **d.** vacuuming the garment with a hand-held vacuum

### 3.2. Omani flower-printed scarf

The Omani flower-printed scarf, fig. (5), was brushed with a soft bristle brush in a one-directional downward motion on the front and back, brushing the dust onto brown paper for disposal. After this, a fiberglass screen was placed over the scarf and vacuumed on the front and back. These were the only methods needed to clean the scarf, as it had never been worn. The scarf was never worn, so the res-

toration was minimal, requiring brushing and vacuuming.

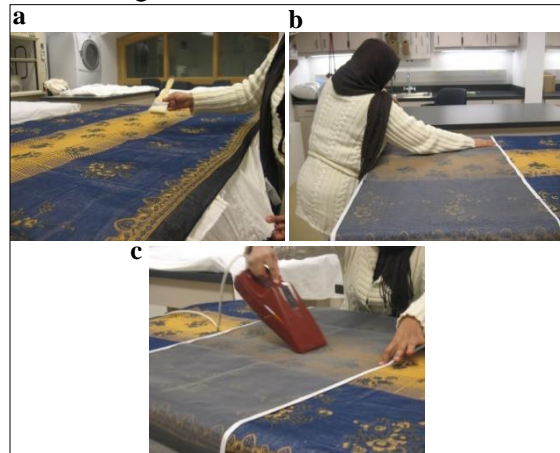


Figure (5) Shows **a.** brushing the Omani flower print scarf with a soft-bristled brush, **b.** cleaning the stains on the front and the back of the dress, **c.** vacuuming the scarf with a hand-held vacuum.

## 4. Storage

### 4.1. Storage environment

After completing the preservation process of the Omani black velvet dress and flower-printed scarf, and according to many previous studies [13-15], they were prepared for storage. Both of two artifacts were stored in a storage environment that applied the established international criteria for light, T, RH, pests, physical forces, and pollutants which contribute to a textile's pre-servation or deterioration, depending on their intensity. The museum environment's relative humidity was maintained between 50-55% because if RH drops very low, the brittleness of the fibers increases and elasticity of the fibers decreases [3], in addition to the fact if the RH is above 70%, it would provide favorable dampness for molds and fungi to grow [11]. In addition, the two pieces were kept at low temperatures (5°C and lower) as such degree has many benefits for textiles. Besides reducing chemical decay, pest frequency is significantly reduced. In fact, -30°C is the preferred method of non-toxic pest treatment for textile collections, and several

studies have failed to find any harmful side effects [7]. An illumination value currently being recommended for museums allows a maximum of 150 lux for moderately sensitive objects and not more than 50 lux for very sensitive objects [3]. It is the total light exposure that is important. The object will incur the same amount of damage from exposure to bright light for a brief period as from low light for a long period. Light damage can be reduced by half by reducing light levels by half (e.g., from 100 lux to 50 lux) or by decreasing the duration of light exposure by half. If blocking or eliminating the UV component is impossible, levels should not exceed 75  $\mu\text{W}/\text{lm}$  (microwatts of UV per lumen of light) [7]. The illuminance, or light intensity, is measured in lux. The two pieces were kept at 100 lux.

#### 4.2. Storage methods

The main objective of the textile storage method should be to protect the object from the agents of deterioration. When storing textile collections, they can be divided into flat, three-dimensional, and rolled storage. Textiles that are stored flat include tapestries, wall hangings, carpets, household linens, bed coverings, curtains, flags and banners, embroidery, and lace [12], fig. (6-a). At the same time, rolled method is also an option for the long-term storage of many textiles whose shape or treatment would be best served this way, fig. (6-b). The three-dimensional storage includes upholstery, costumes, and accessories, fig. (6-c).



Figure (6) Shows **a.** flat storing, **b.** rolled storage, **c.** three-dimensional storage.

The storage method for the Omani dress would be flat storage, while the Omani scarf would be best stored rolled. *Flat storage* allows the textile fibers the opportunity to relax on a horizontal surface. Knitted or heavily decorated garments should be stored flat. Fragile historic garments should also be stored flat<sup>(9)</sup> [12,16]. *Rolled storage* was chosen for the Omani scarf to protect it from dust and harm. Rolled is an option for the long-term storage of many textiles whose shape or treatment (eg. the ironed-on rhinestones) would be best preserved this way. These storage methods were chosen because they would create the safest and best technique for preserving and storing those textiles for future generations. Not all clothing can be stored on hangers [12]. The garment needs to be in good condition, and the fabrication technique needs to be considered.

##### 4.2.1. Flat storage (*Steps for storing the Omani black velvet dress*)

The Omani dress was stored in flat storage to allow it to rest in a horizontal position, permitting the fibers to relax and the textile object itself to maintain its natural tension [16]. The reason for not choosing to use custom hanger storage for the Omani dress had to do with the fact that it would have caused the shape of the shoulders on the dress to distort, causing creasing, uneven stress, isolated abrasion, and eventually splitting of the velvet fabric. The reason for not rolling the dress was because the ironed-on rhinestones might be stressed during the storage process over time, in addition to some special needs

of velvet during the rolling process. When storing items for flat storage, they should be placed on flat trays made of nonreactive materials, such as aluminum, as well as with acid-free paper surrounding them for their protection. The trays used for conservation at the textile department at Iowa State University are made of painted nonreactive aluminum. The advantage of painted aluminum containers is that they create a surface that will not harm or damage the fragile textiles over time [12,16]. The textile was prepared by first gently spot cleaning, and then it was brushed and then vacuumed (see treatment). It is preferable to store the textile flat without folding it, when possible, but if, as in this case, the Omani dress was much too large to be stored in this manner. Therefore, the storage of this item needed to incorporate a tube so that there was no crease made from folding it, as well as some pillows to support it while in storage so no damage would be created from it hanging from the tube. Firstly, the drawer, in which the dress was to be placed into was measured to ensure a proper fit in the cabinet, fig. (7-a). Then, the board that the dress was to be placed on was cut out to fit into the cabinet drawer. Then, the board was covered with clean muslin fabric and sewed onto the board. To prevent any of its fibers from transferring to the textile, acid-free tissue paper [9] was placed on the board before the Omani dress was placed on it. This was done to ensure that it was a clean surface to store the dress on and that no damage would occur inadvertently due to contact with the board and the muslin. To ensure a safe environment and give structural support for the velvet fabric, a stockinette was used, fig. (7-b), as well as pillows with acid-free tissue paper surrounding it to fold the dress onto, fig. (7-c). Pieces of acid-free tissue paper were waded up and added to the corner created by the folded corner of the dress for structural support. This was done to ensure that no damage would occur from folding and to provide extra structural support for the item during

storage. Acid-free tissue paper surrounded the Omani dress from all sides, and no other cloth or item directly touched it [17]. Two folds on the item were used, starting from the bottom up, and from there, the second fold was from left to right over the first fold. Acid-free tissue paper was placed over the dress in such a way as to allow a corner of it to be flipped up for easy inspection of the dress while it is in storage, fig. (7-d). The overlapping muslin fabric was then placed over the dress covered in acid-free tissue paper. There was a gap in the muslin created by the pillows that supported the dress, fig. (7-e). This problem was resolved by sewing an extra piece of clean muslin onto the existing muslin supporting the dress, fig. (7-f). The purpose of the muslin is to secure and support these items in drawers so that they can be safely and easily moved from one location in the building to another if needed. This is an essential step in the preservation process because it ensures safe and secure storage and transport of the textile during its life [17,18].



Figure (7) Shows **a.** measuring the drawer, which the dress was to be placed into, **b.** stockinette, **c.** pillows, **d.** acid-free tissue paper, **e.** a gap in the muslin created by the pillows, **f.** sewing an extra piece of clean muslin onto the existing muslin.

#### 4.2.2. Rolled storage (Steps for Omani flower-printed scarf)

The cardboard roll was first measured and then cut to ensure a proper fit for storage, fig. (8-a). The cardboard roll was placed on the table and covered with plastic, fig. (8-b). This was done to preserve the fabric from possible acid transferred from the cardboard roll. A stockinette was placed over the cardboard roll covered in plastic, fig. (8-c). The excess stockinette was pushed into the cardboard roll to eliminate any extra fabric from showing and stabilize the structure [12], fig. (8-d). In the rolled storage, the Omani scarf was laid out onto flat, clean muslin covered with acid-free tissue paper, ensuring it was face-down. The weave of the scarf was straight, and it was made sure that the weave of the fabric was not warped. The scarf was then covered with a layer of acid-free tissue paper, checking to make sure there were no creases in the tissue: these can cause corresponding creases in the scarf and damage it. After preparing the textile, the covered stockinette roller was placed onto the protruding end of the tissue, and the rolling started, fig. (8-e). A firm pressure was used so the scarf remained straight and firm when rolled onto the stockinette. The weave was kept straight while the scarf was being rolled. Once the scarf was fully rolled, it was covered with plastic. The cover was then secured by tying the ends with washed muslin, fig. (8-f). It was not tied too tightly, which can distort the scarf's edges. The scarf was then labeled clearly to identify it in storage. Labeling of Omani dress and scarf will include the information of provenance, date, technique, donor, and an accession number corresponding to the numerical record files giving more specific information regarding the dress and scarf [12]. It was understood that this dress and scarf would be stored under Arabic women's dress. Pins or adhesive tape were never used to avoid damage, and the number was not directly written on the textile [16].

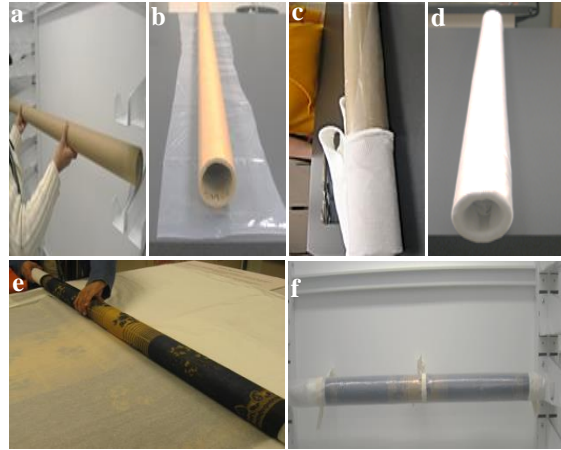


Figure (8) Shows **a**, measured and then cut the cardboard roll to ensure a proper fit for storage, **b**, placing the cardboard roll on the table and covering it with plastic, **c**, placing a stockinette over the cardboard roll covered in plastic, **d**, pushing the excess stockinette into the cardboard roll, **e**, placing the covered stockinette roller onto the protruding end of the tissue, **f**, securing the cover by tying the ends with washed muslin.

## 5. Conclusion

*This case study demonstrated effective treatment and storage methods for two historical Omani textiles: a black velvet dress and a floral printed scarf. Appropriate conservation treatments were developed through documentation, investigation, and condition assessment. For the dress, gentle cleaning techniques such as brushing and spot treatment were employed to remove dust and stains while avoiding further damage to the delicate velvet fabric and rhinestone embellishments. Being in near pristine condition, the scarf only required light dust removal via brushing and vacuuming. Both artifacts were then placed into storage environments designed according to international preservation standards. Temperature was maintained below 20 °C to reduce risks of chemical degradation and pest activity. Relative humidity was stabilized between 40-50% to prevent damage from fluctuations while inhibiting mold growth. Light levels in the storage areas did not exceed 50 lux to minimize fading and weakening of fibers over time. Ultraviolet light was completely blocked. Air quality control systems helped maintain low pollution levels and filtered particulate matter that could soil and abrade the textile surfaces. Special cabinets and sealed containers further isolated the artifacts. Pest management included regular monitoring and trapping. Low tempera-*



tures made the environment inhospitable for most textile-feeding insects. The closed containers also acted as a physical barrier. Through precise regulation of these key environmental parameters - temperature, relative humidity, light, and pollution - the storage conditions closely followed recommended international practices for organic cultural heritage materials like the Omani dress and scarf. This will optimize their long-term preservation and condition stability when not on display. Appropriate storage methods were selected according to the needs and composition of each textile. The dress was stored flat to allow the relaxation of fibers without creasing, supported by tissue, stockinette, and pillows. The scarf was rolled for its shape on an acid-free stockinette inside a cardboard tube. Proper documentation, investigation, treatment, and storage ensured the long-term stabilization and preservation of these important historical and cultural artifacts from Oman. The treated dress and scarf can now be safely maintained for future educational and research purposes. This case study demonstrates how effective conservation practices protect textile heritage and allow access to artifacts that illuminate traditions.

## Endnotes

(\*) Storage Handout by Kadolph, S. covered everything about museum restoration and storage of textiles. It was very helpful because it showed detailed steps to follow in the process of restoring and archiving textiles. This step-by-step plan allowed me to understand the procedures involved in the process. It was helpful as a guide in this process. The information was very condensed and developed for anyone interested in learning about the restoration process. It was used in the restoration and storage process as a guide to help keep on track with what was to be done.

## References

- [1] Kadolph, S. (2017). *Textiles*, 12<sup>th</sup> ed., Macmillan Publishing Co. NY.
- [2] El-Gohary, M. (2020). Air quality and its impact on indoor and outdoor archaeological sites: Luxor museum (Egypt) and Amman citadel (Jordan) as case studies, *ICAAQSE*, KISR, Kuwait, pp. 95-102
- [3] Koka, V. (2018). Role of museum environment for textile conservation and restoration. *J. of Home Science*, Vol. 4 (2), pp. 281-282.
- [4] Ahmed, H. (2018). Restoration and storage procedures of a rare historical textile in the Museum of the Faculty of Applied Arts of Helwan University, *EJARS*, Vol. 8 (1), pp. 35-43.
- [5] Tawheed, H. (2023). Recording and documentation of historical textiles and their role in conservation and sustainability processes, Ch. 6, in: Ahmed, H. & Al-Zahrani, A. (eds.) *Preservation and Restoration Techniques for Ancient Egyptian Textiles*, IGI Global, USA, pp. 119-142.
- [6] Sachdeva, K., Suri, M. & Bhagat, S. (2020). Effect of fabric construction on the longevity of aged cotton fabric. *Int. J. of Engineering Research and Applications*, Vol. (10), pp. 49-61.
- [7] Bhagat, S. & Sachdeva, K. (2022). Ideal storage conditions for museum textiles, Ch. 7 in: Jose, S., Thomas, S., Pandit, P., et al. (eds.) *Handbook of Museum Textiles*, Wiley, UK, doi: 10.1002/9781119983903.ch7
- [8] Al-Qatari, S. (2017). Al torath al taqlidi li aziaa al nesaa fi saltanet Oman (The traditional heritage of women's fashion in the Sultanate of Oman), in Redwan A. (ed.) *Proce. of the 20<sup>th</sup> Conf. of: Studies in the Antiquities of the Arab World*, ArabArch, Cairo, pp. 1093-1126.
- [9] Aslanidou, D., Tsiopstias, C. & Panayiotou, C. (2013). A novel approach for textile cleaning based on supercritical CO<sub>2</sub> and Pickering emulsions, *J. of Supercritical Fluids*, Vol. 76, pp: 83-93.
- [10] Osman, E., Zidan, Y. & Fahim, N. (2017). The determination of conservation state of archaeological Moroccan kilim by physical, analytical methods, *IJCS*, Vol. 8 (1), pp. 51-58.

- [11] Omar, A., Taha, A. & El-Wekeel, F. (2019). Microbial degradation of ancient textile housed In Egyptian Textile Museum and methods for their control, *EJARS*, Vol. 9 (1), pp. 27-37
- [12] Canadian Conservation Institute. (2020) Caring for textiles and costumes – Preventive conservation guidelines for collections. <https://www.canada.ca/en/conservation-institute/services/preventive-conservation/guidelines-collections/textiles-costumes.html> (10/5/2023)
- [13] Amin, E. (2019). The documentation and treatment of a Coptic child's tunic in Egypt, *EJARS*. Vol. 9 (1), pp. 1-11
- [14] Abdel-Kareem, O., (2011). Investigation and conservation of a historical woman's coat decorated with fur parts, *J. of Textile and Apparel, Technology and Management*, Vol. 7 (2), pp. 1-12.
- [15] Rowe, S., Ravaioli, F., Tully, C., et al. (2018). Conservation and analysis on a shoestring: Displaying gut parkas at the polar museum, Cambridge, *J. of Conservation and Museum Studies*, Vol. 16 (1): 2, doi: 10.5334/jcms.157
- [16] Smithsonian Institution. (2021). How do I store antique textiles at home?, <https://www.si.edu/faqs/antique-textile-storage> (22/5/2023)
- [17] Aroa, Z. (2023). The use of muslin in archaeology and conservation. Nancy's Notions, <https://nancysnotions.com/the-use-of-muslin-in-archaeology-and-conservation/> (7/11/2023)
- [18] Aleksić, G., Cigula, T., Pasanec, S., et al. (2022). An analysis of targeted properties of materials used for preservation and storage of heritage collections, *JGED*, Vol. 13 (1), pp. 5-12.