

Caring for Textiles

Preserve Your Story **Workshop Series**

Workshop 3 | 30 January 2021
Women's Art Register

Presented by

Robyn Ho and Eleanor Vallier
c/o Studios
www.careofstudios.com
[@careofstudios](https://twitter.com/careofstudios)

c/o Studios

**WOMEN'S
ART REGISTER**



Aims of the workshop

The long-term preservation of textiles is complicated by their diversity: in material composition, the methods of construction and their use. Textile objects can range from two-dimensional flags to three-dimensional costumes to oversized carpets and tapestries.

- 1 What are textiles and what are they commonly made of?
- 2 What are the common types of degradation?
- 3 How should I store these objects?
- 4 What are the key preservation approaches?
- 5 What resources are available to me?
- 6 Q&A session

c/o Studios **WOMEN'S
ART REGISTER**

The long-term preservation of textiles is complicated by their diversity: textiles are made from one or a combination of different natural and manufactured materials. Adding to this are dyes, finishes and decorations - such as buttons, metal threads and zippers - all used in the one textile, so you can begin to see the range and complexity of this field. Textile objects also have varying construction and functions, ranging from two-dimensional flags to three-dimensional costumes to oversized carpets and tapestries.

This workshop aims to only provide a brief overview, as each object can have very complex needs, and the field of textiles conservation is a vast one.

1 Textile fibre types

Textile materials are often made of fibre materials that can be classified as:

- **Natural fibres** - plant or animal
 - Cotton
 - Linen / flax
 - Hemp
 - Wool
 - Silk
- **Manufactured fibres** - modified organic or synthetic
 - Nylon
 - Acrylic
 - Rayon
 - Polyester
 - Viscose



Natural cotton (left) and synthetic fibre (right)
Image: <https://textileapplied.blogspot.com/2016/04/what-properties-natural-fiber.html>

c/o Studios **WOMEN'S
ART REGISTER**

The fibres that make up most textiles are classified as either:

- natural fibres; derived from plant or animal, or
- manufactured fibres; which are modified organic or synthetic polymers.

The type of fibre influences how the textile object may degrade, therefore it is good to know what sort of fibres you have in your collections.

Natural fibres

Natural fibres originate from plants or animals. Plant fibres may be classified as stem, leaf or seed fibres, depending on which part of the plant provides the fibre. Common examples include cotton, linen or flax and hemp.

Animal or protein fibres are obtained from the coats of animals, such as sheep, or from the exudates of certain insects, such as the silk moth larva.

Manufactured fibres

Manufactured fibres are made by extruding a liquid polymer through small holes in a spinneret (a device much like a shower head). The extruded polymer emerges as long filaments, which can either be twisted to form yarns or cut into short lengths for spinning into staple yarn.

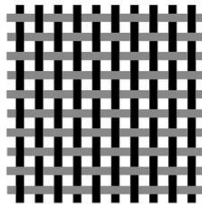
Modified natural polymer fibres are made from materials that exist in nature, such as the cellulose from plants, for example rayon. Synthetic fibres are created directly from chemicals rather than from naturally existing polymers and have been in use since their creation in the 19th and 20th centuries. Examples of synthetic fibres include nylon, polyester and acrylic.

1 Textile structure types

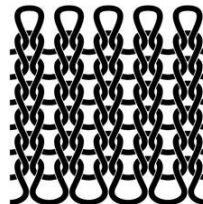
The way the fabric is constructed also influences the durability of the textile with use and handling over time.

The main ways textiles are constructed are:

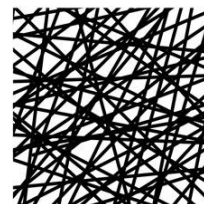
- **Woven textiles**
- **Knitted textiles**
- **Non-woven textiles**
- **Other techniques**
e.g. lace making, netting, crochet



woven



knit



non-woven



c/o Studios **WOMEN'S
ART REGISTER**

The way the fabric is constructed also influences the durability of the textile with use and handling over time.

The main ways textiles are constructed are: woven, knitted, non-woven and other techniques.

Woven textiles

Woven textiles are produced by interlacing two sets of yarn. One set of yarn, the warp, is put under tension and kept parallel. The weft yarn is woven over and under the warp. There are three basic weave patterns: plain, twill and satin.

Certain aspects of fabric structure have implications for preservation. Yarns may easily be pulled out of alignment, changing the lustre and even the colour of the fabric, sometimes irreversibly.

Some fabrics are prone to shrinking due to the type of fibre, yarn or weave. Loose weaves will shrink during washing and drying. Shrinkage is often irreversible.

Knitted textiles

Knits are made by interlooping yarns by hand or machine. The structure makes knits quite wrinkle-resistant, form-fitting and stretchy. However, they are easily deformed and can stretch out of shape if they are hung vertically. Often, this distortion becomes irreversible.

Non-woven textiles

Non-woven textiles are made directly from fibres by interlocking fibres either mechanically, thermally, with adhesives or with a combination of these techniques. While non-woven textiles do not fray if cut, they are inelastic and do not regain their shape if stretched. Felt is an example of a non-woven textile. Historically,

felts were made of wool, however, modern-day felts can be made of blends of natural and synthetic fibres.

Other textile techniques

Textiles are made with a variety of other techniques, including crocheting, lacemaking, netting and braiding. Netting is commonly found in veils and lace, and are usually delicate fabrics with many open areas that can snag and tear easily.

1 Textile dyes and embellishments

Other materials are also added to textiles, such as:

- Dyes
- Embroidery and applique
- Beads, sequins and other ornamentation
- Chemical or mechanical treatments to impart certain fabric qualities e.g. appearance, drape, performance etc.

Treatments to the original fabric that can exacerbate deterioration:

- **Weighted silk**
- **Metal dyeing mordants**
- **Bleaching**



Corroded gold-coloured metal thread embroidery

image:<http://museum.wa.gov.au/explore/blogs/wwmnh-nohl/conservation-17th-century-chalico-veil-new-norcia>



Deteriorated weighted silk flag

image:<https://www.canada.ca/en/conservation-institute/services/preventive-conservation/guidelines/collections/textiles-costumes.html>



Deterioration of fabric using iron mordant (dark colours)

image:<http://ciravintageclothing.com.au/2011/02/the-perils-of-vintage-iron-mordant/>

c/o Studios **WOMEN'S
ART REGISTER**

Since antiquity, textiles have been coloured by means of dyes. Until the late 19th century with the introduction of synthetic dyes, all dyes were naturally sourced from plants, shellfish and insects. Dyes are applied usually by immersion in a dye bath. Mordant may also be added to fix the dye to the fibre. Thickening agents can be added to dyes to form printmaking pastes for screenprinting. Artists paints have also been used to embellish objects, such as flags and banners.

Textiles may also be decorated using stitching techniques, such as embroidery and appliqué. Surface ornamentation may include a host of other materials, such as beads, sequins, metal threads, feathers and paper.

A great number of processes have been applied to fibres, yarns or fabrics from the 20th century onward to alter their properties. These processes can be chemical (for example the weighting of silk) or mechanical (such as moiré silk, napped woollens) and can either be permanent or impermanent. Some are applied for aesthetic reasons, to alter texture, lustre or drape, and others for functional reasons, to improve ease of care, comfort and durability, or to provide protection (such as fire retardant). A variety of materials, including starches, waxes, glues and clays, have also been applied to textiles as finishes.

Intrinsic vulnerabilities

These processing techniques can often create intrinsic vulnerabilities in the object. Intrinsic vulnerabilities are degradation factors that arise from original manufacturing techniques, materials and use of the object. The following processes are common ways in which textiles have intrinsic vulnerabilities.

Weighted silk

Some manufacturing and finishing processes have disastrous consequences for the preservation of textiles. A classic example is the weighting of silk with metallic salts that contain metals such as iron and

tin, which were used widely in the 19th and 20th centuries. These agents are added to silk to improve drape and to restore the weight that it loses as a result of processing the silk for dyeing. Unfortunately, the metallic salts lead to acidic deterioration and greatly increases silk's sensitivity to light damage. As a result, many weighted silks and the costumes made from them are extremely weak, brittle and fracturing—a condition known as “shattered silk”.

Metal mordants

Another example of a harmful manufacturing process is the use of iron salts in dyeing. Dark, brittle textile fibres can sometimes be dyed using an iron mordant. Iron causes acid deterioration and catalyzes the photooxidation of the organic materials in textiles, resulting in significant loss of strength over time. Other metal mordants (e.g. aluminum) have been used to a more limited extent and can have similar damaging effects.

Bleaching

Most bleaches are harmful to textiles. Despite this, they were used to whiten fabrics either during manufacture or use. For example, silk was sometimes bleached with sulfur to remove any original yellowness.

2

Inherent vulnerabilities of textiles

Textiles pose complex challenges to their conservation due to their general characteristics that can make them susceptible to damage:

1. **Organic (or inorganic) nature**
2. **Fibrous structure**
3. **Flexibility**
4. **Absorbency**
5. **Handling / familiarity**



c/o Studios **WOMEN'S
ART REGISTER**

Textiles pose complex challenges to their conservation due to their general characteristics that can make them susceptible to damage:

- **Organic (or inorganic) nature:**
Organic materials are prone to natural processes of deterioration as well as through use and wear. Textiles can also be made from some inorganic materials or incorporate components such as glass, asbestos and metal.
- **Fibrous structure:**
Fibres are long, fine, rod-like structures capable of being twisted together to form yarns. In a textile, a large surface area of fibres is exposed, making it susceptible to the effects of harmful substances in the environment.
- **Flexibility:**
Textiles are very flexible and generally do not retain their shape without the aid of a support. They are prone to distortion and creasing, which can form splits in the fabric over time. Textiles, especially costumes, may be stored flat, but they are usually displayed three-dimensionally and, as a result, have different needs in terms of volume, dimension and support.
- **Absorbency:**
Most textiles are absorbent and porous, and they can readily become stained.
- **Handling:**
Everyday textiles are often treated with a degree of familiarity not applied to works of art. Precious or historic textiles should not be handled or cleaned in the same way as everyday clothing without the risk of damaging them.

2

Common types of degradation

Examples of textile degradation:
(from top-left; clockwise)

1. **Insect damage**
2. **Distortion and tears (from heavy beading)**
3. **Folds and yellowing**
4. **Mould**
5. **Fading**
6. **Stains**
7. **Oxidised perspiration stains**
8. **Shattered weighted silk**



c/o Studios **WOMEN'S
ART REGISTER**

Images <https://www.canada.ca/en/conservation-institute/services/preventive-conservation/guidelines-collections/textiles-costumes.html>

Due to their inherent material qualities, textiles are commonly vulnerable to a range of physical and chemical damage.

Physical damage includes:

- insect attack;
- shrinkage;
- tears;
- splits where textiles have been folded or creased;
- inappropriate repairs
- worn areas; and
- damage from lack of proper support during storage or display.

Common chemical deterioration includes:

- fading and discolouration due to exposure to UV and high lighting levels;
- weakening of fibres initiated by light and UV;
- mould growth;
- damage from pollutants in the storage and display environment; and
- damage caused by perspiration, blood and other stains.

All the most common types of damage to textiles are generally caused by:

- poor handling;
- poor storage methods;
- inappropriate display methods;
- chemical changes in the textiles themselves;
- chemical changes caused by contact with other materials, or the environment; and

- various combinations of any and all of these.

3 Ideal physical storage conditions

Ideal museum conditions are difficult to achieve at home, so choose a space to store your objects that is:

cool - dark - dry - stable

	STORAGE	DISPLAY
Temperature	18°C - 22°C	18°C - 22°C
Relative Humidity	45% - 55%	45% - 55%
Light	Dark storage	Less than 50 lux

Source: <http://culturalmaterials.net/wp/28-2/cultural-material/textiles/>
Refer for updated guidance: AICCM Environmental Guidelines, <https://aiccm.org.au/conservation/environmental-guidelines/>

c/o Studios **WOMEN'S
ART REGISTER**

The best way to care for any of these materials you may have in your home is by keeping them in appropriate storage conditions.

The ideal environmental conditions are listed in this slide, however these museum conditions can be difficult to reproduce at home.

Therefore, any storage area at home should be clean, cool, dry, dark, and stable from drastic changes in temperature and humidity. It is also best to set aside one dark drawer or chest of drawers just for the storage of family heirlooms.

Excessive light and UV exposure can cause fading of colourants, discolouration and weakening of fibres. At high humidity, fibres swell as they absorb water vapour and, at low humidity, fibres shrink as they release it. High relative humidities greatly accelerates the corrosion of decorations such as brass buttons and zippers.

3 Storage and display

Protect your textiles from pollutants, dust and insects by storing in acid-free enclosures like:

- Flat board supports
- Costume boxes with padding
- Padded hangers
- Rolled storage

Avoid tight folds by padding

Textiles can be displayed for limited periods in the following ways:

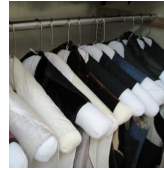
- Flat and horizontal
- Suspended vertically on padded dowel or velcro
- Padded mannequin



Flat storage



Costume boxes with padding



Padded hangers



Rolled storage



Flat display



Suspended display on padded dowel/rod or velcro



Padded mannequin display

c/o Studios **WOMEN'S
ART REGISTER**

Protect your textiles from pollutants, dust and insects by storing in appropriate enclosures like acid-free boxes, padded hangers and wrappers. Depending on what the textile object is - if it is a flat or three dimensional object - or how much storage space you have, will determine how you might choose to store and display your objects.

Here are some key tips to storing your textiles:

- Prewash all fabrics for packing, cushioning or mounting textiles before use (e.g. dust covers, linings).
- Store small flat textiles with as few folds as possible in boxes or drawers.
- To prevent tight folds, pad them out with crumpled acid-free tissue, lightweight cotton sheeting, soft nylon tulle or cotton knit tubing stuffed with polyester.
- Line boxes with padding, with the objects interleaved if they must be stacked. If possible, limit the stacking of textiles.
- Store larger textiles, such as quilts and rugs, rolled on a padded tube.
- Hang costumes on padded hangers or store them flat if they are very fragile, heavy or beaded.
- Use stable acid-free materials for supports and boxes
- Protect textiles from dust with acid-free tissue or cotton sheeting covered with plastic sheeting (e.g. Mylar or Tyvek). The plastic sheeting will also protect from water leaks.

If you are thinking of displaying your textiles, there are some general approaches you should take:

- Flat textiles can be framed and displayed on padded mounts
- Oversized flat textiles can be supported by a custom hanging system, such as Velcro, or a

- sealed dowel and casing attached to the back of the textile.
- Garments on display should have a custom mannequin, padded to support the shape of the textile.
- Display textiles for limited time periods (e.g. a three-month maximum). Keep some representative objects out of the rotation so that they remain pristine indefinitely, for future research and to make reproductions.
- Use display cases when possible as they protect against dust and pollutant exposure.

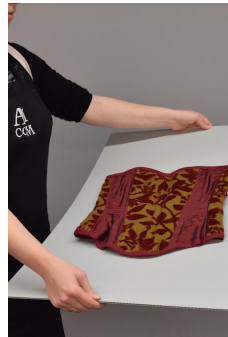
3 Handling

Inappropriate handling and use can also accelerate the degradation of textiles, so here are some tips for handling any textile object:

- Minimise handling to only what is necessary
- Try to avoid wearing objects
- Used washed hands or wear gloves
- Hold from the support, mount or hanger and not the object
- Carry objects supported on a board or in a box



Pick up from the hanger and support lower half



Carry objects on board supports



Carry objects from the box to avoid touching the object

c/o Studios **WOMEN'S
ART REGISTER**

Inappropriate handling and use can also accelerate the degradation of textiles, so here are some tips for handling any textile object:

- Try to avoid wearing historical garments as damage such as tearing and staining can occur.
- Identify fragile textiles that require special handling and supports.
- Use pencils for documentation rather than ink.
- Wash hands before working with textiles, or wear clean gloves to avoid soiling.
- Handle textiles only when necessary, making gentle, planned movements, thus minimizing the risk of physical damage to objects that may be weaker than they appear to be.
- For small textiles, provide flat supports or custom padded boxes which are large enough to adequately support the entire textile before moving it.
- Handle the flat support, hanger or mount, rather than the textile itself.
- Pack textiles with adequate cushioning to prevent abrasion and vibration when moved.
- Provide custom supports for handling oversized textiles. Rolls or tubes also make useful tools for turning over large flat textiles and for handling.
- Prepare a large enough space for objects before moving them.
- Oversized textiles often require two or more people to handle them.

4

Preservation approaches

The best way to preserve your objects:

1. **Store in archival quality enclosures and conditions**
store in padded hanger, box or roller, avoiding tight folding and stressing the fabric
2. **Regularly monitor condition**
esp vulnerable dyes, natural materials, fragile decorations
3. **Housekeeping & pest control**
esp woollens for moths; quarantine new items; brush vacuum clean
4. **Contact a conservator**
AICCM 'Find a Conservator'



c/o Studios **WOMEN'S
ART REGISTER**

The complexity and variety of materials that comprise textile objects means that conservation techniques must be applied on a case-by-case basis. However, there are some simple approaches that will help you maintain your objects at home for years to come.

- Store in archival quality enclosures in a stable, dark, cool and dry location. Interleave or pad vulnerable elements such as beading or decorations, making sure the object is either on a padded hanger, box or roller, avoiding tight folding and stressing the fabric.
- Regularly monitor condition - and particularly pay attention to materials that may be the most vulnerable such as dyes and colourants, natural materials and metal components.
- Housekeeping and pest control - keep storage areas dry and clean. Ensure woollens and other keratinous objects in the collection are regularly inspected for the presence of insect pests (in particular clothes moths and carpet beetles). Quarantine any new textiles in a freezer before you integrate it into your collection to ensure that pests are not inadvertently introduced.
- Contact a conservator - You can look up the AICCM directory. If you do identify a degrading object, quarantine it from your collection and contact a conservator for advice.

5

Useful resources

Collections care advice

- Western Australian Museum 'Collections Care Manual'
<http://manual.museum.wa.gov.au/>
- reCollections:
<http://culturalmaterials.net/wp/28-2/cultural-material/textiles/>
- Australian Institute for the Conservation of Cultural Materials (AICCM):
<https://aiccm.org.au/conservation/collectio-n-care/>
- Canadian Conservation Institute:
<https://www.canada.ca/en/conservation-institute/services/care-objects/textiles-costumes.html>
- V&A Museum, 'Caring For Your Possessions':
<http://www.vam.ac.uk/page/c/caring-for-your-possessions/>

- US National Parks Service, Conserve-O-Grams:
https://www.nps.gov/museum/publications/conservoogram/cons_toc.html
- US National Parks Service curatorial guide, Textiles Appendix K:
<https://www.nps.gov/museum/publications/MHI/Appendix%20K.pdf>

Preservation techniques videos

- Minnesota Historical Society 'Conservation of Heirloom Textiles' Series:
 - Materials needed:
<https://youtu.be/WBo2G18v74A>
 - Making a padded hanger:
<https://youtu.be/8WD-kk-mxvs>
 - Storing costumes in boxes:
<https://youtu.be/4emRz2k296M>
 - Storing flat textiles in boxes:
<https://youtu.be/OYI5ExSdUHs>
 - Storing quilts:
https://youtu.be/6PZTx_MUBqw
 - Rolling textiles in a tube:
<https://youtu.be/qJz7-mzzxM>

- Western Australian Museum 'Textile Storage'
<https://manual.museum.wa.gov.au/textile-storage>
- Preparing objects for storage
<https://youtu.be/qRe7Gh6i0N0>
- Brush vacuum cleaning:
<https://manual.museum.wa.gov.au/dust-and-brush-vacuuming>
- Rolling and hanging textiles:
<https://youtu.be/oBMbwlR1xLY>
- How to protect textiles from moths:
<https://youtu.be/QBRJQCNONBM>
- CCAHA 'Care of Textiles' webinar:
<https://youtu.be/WHUR9qpuBYQ>

Find a Conservator

- AICCM directory:
<https://aiccm.org.au/find-a-conservator/>

Thank you

Contact Us

c/o Studios

www.careofstudios.com
careofstudios@gmail.com
[@careofstudios](https://www.instagram.com/careofstudios)

c/o Studios

WOMEN'S
ART REGISTER

