# Appendix L: Curatorial Care of Easel Paintings

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# APPENDIX L: CURATORIAL CARE OF EASEL PAINTINGS

## A. Overview

1. *What information will I find in this appendix?*

This appendix discusses the physical structure of easel paintings and outlines their long-term care and preservation. Easel painting is historically a European technique using canvas or wooden panels for the image support. The main topics covered in this appendix are:

- canvas and panel painting materials, structure, and construction
- agents of deterioration
- handling, storage, display, and transportation of paintings
- working with a conservator when treatment is needed
- specific emergency procedures for paintings

This appendix does not cover works of art on paper, such as watercolors, scroll paintings, or screens. These materials are covered in Appendix J: Curatorial Care of Paper Objects. This appendix also does not include painting techniques typically associated with architecture, such as fresco and mural painting.

2. *Why is it important to practice preventive conservation with paintings?*

Preventive conservation aims to prevent harm to an object before it occurs. This practice will decrease the need for costly and time-consuming conservation treatments. Paintings are very delicate because they are composite objects made up of a variety of materials. Many factors contribute to their deterioration. A painting's rate of deterioration slows significantly with proper preventive care. Practicing preventive conservation also reduces the likelihood of accidents.

3. *How do I learn about preventive conservation?*

Learn about the ***agents of deterioration*** that affect paintings so that you can create a preventive conservation plan. These agents are discussed in detail in section C. Understanding how to protect your paintings from the agents of deterioration will increase the longevity of your paintings. See Chapter 3: Preservation: Getting Started, and Chapter 4: Museum Collections Environment, for a discussion on the agents of deterioration. Also refer to *Museum Handbook*, Part III (*MH-III*), Chapter 7: Using Museum Collections in Exhibits.

4. *Where can I find the latest information on care of these types of materials?*

There are a variety of sources for up-to-date information about paintings:

- Read the NPS *Conserve O Gram* series.
- Review the references in the bibliography. Especially note practical information found in *CCI Notes*, Section 10, Paintings.

- Look up the World Wide Web sources that are listed at the end of this appendix.
- Consult a painting conservator.
- Consult a curator or collection manager of a large painting collection.

## B. The Nature of Canvas and Panel Paintings

Paintings are ***composite*** objects made up of several distinct parts. Artists create paintings by preparing a support and then painting an image on that support. These two main components of a painting are called the ***support*** and ***image layers***. Both the support and image layers are usually composed of two or more parts. These parts often react differently to external conditions, like temperature and relative humidity (RH), placing stress on the object. Because of this complexity, paintings are delicate objects that must receive specialized care in order to remain in optimum condition.

1. *What are the structural layers of a painting?*

**The two principal layers are composed of these parts:**

***Support layer:***

- auxiliary support
  - stretcher or strainer (canvas paintings)
  - mount or cradle (panel paintings)
- support
  - canvas (canvas paintings)
  - wood (panel paintings)

***Image layer:***

- sizing
- ground
- paint film
- varnish

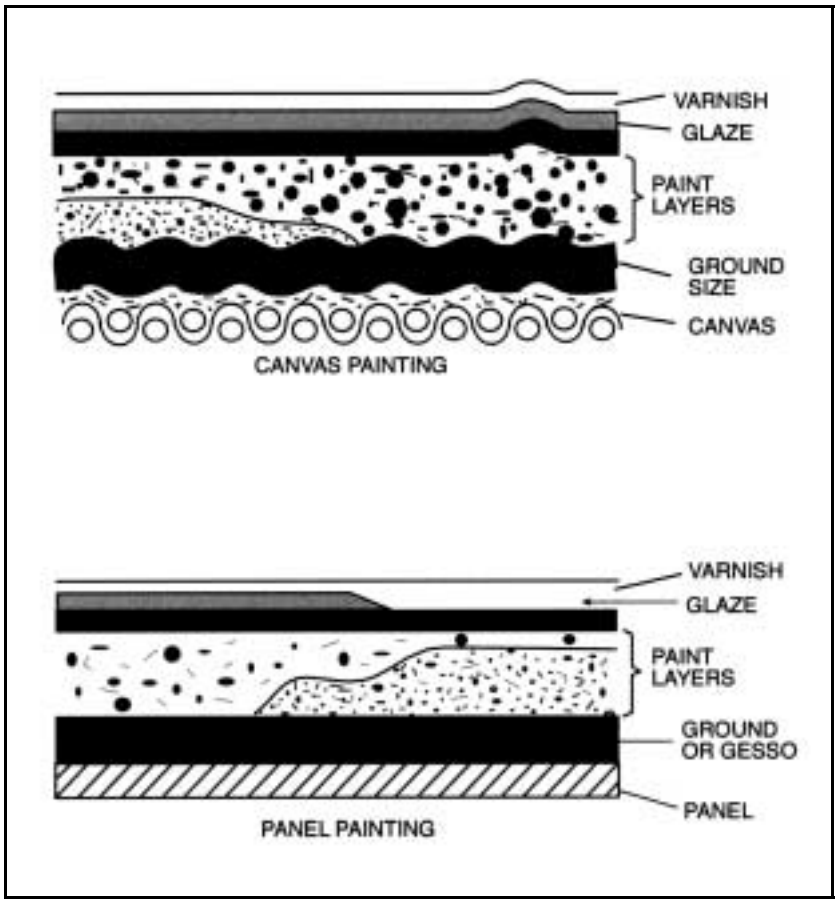


**Figure L.1. A cross-section of a painting**

Not all canvas and panel paintings have all of these elements. For example, many acrylic paintings are not varnished. Folk artists often paint directly onto wood without first applying sizing or ground. Modern artists often incorporate other materials into the image layer, such as pieces of glass, textiles, paper and plants. Some specialized painting techniques will have different image layer elements from those discussed in this appendix. For example, the encaustic method uses paints that contain a beeswax and resin medium. The painted image is fixed with heat after it is applied to the support. Use the information in this chapter as a guideline for identifying your painting's layers, but realize that it doesn't cover every painting technique.

2. *What are the differences between canvas and panel paintings?*

***Canvas paintings*** consist of a piece of fabric—usually linen, cotton, hemp, polyester, or silk—that is stretched over and attached to a wooden strainer or a stretcher. The fabric (canvas) is the support for the image layer, and the stretcher or strainer is the auxiliary support.

A ***strainer*** is a wooden frame with secured corners that are joined with glue, nails, or screws. Strainers cannot be enlarged mechanically.

A ***stretcher*** is a wooden frame constructed to open out at the joints and tighten the canvas. Small, triangular wooden wedges called ***keys*** are fit into slots on the inner joints of the stretcher to tighten it. This action is called "keying out."

If the stretcher or strainer is damaged or warped so that it does not properly support the canvas, the image layer will also be damaged. The structural stability of a painting is dependent on a sound foundation.

***Panel paintings*** are paintings on wooden supports. The cut of the wood, the type of wood, and the age of the wood are just a few of the factors that influence how prone a panel is to warping. Some panel paintings have an auxiliary support called a ***cradle*****.** A cradle is a system of wooden bars that run in a grid pattern along the back of a panel. It has two purposes: to add support to the panel and to prevent the panel from warping. However, sometimes cradles actually cause the panel to warp or crack because they restrain natural movement of the panel due to changes in RH.

3. *What are the parts of a painting's image layer?*

The image layer is the paint film with one or more of the following layers:

- ***Sizing*** is a solution applied to raw canvas or a wooden support to fill in porous surfaces. Sizing reduces the support's absorbency so that the other layers do not soak into the support. If the ground or paint layers sink into the support, the support will become brittle. Traditionally, sizing is made of glue, varnish, starch, or gelatin. Today, acrylics and other synthetics are often used.

- ***Ground*** is an opaque coating that is applied to the support. It provides texture and evens out the painting surface. Painters often add pigment to the ground, which adds an overall tone to the painting. Common colors include red, brown, and gray. A material that has been used for centuries is "gesso," which is often made from chalk mixed in rabbit skin glue. Many synthetic alternatives are currently used.

- ***Paint film*** is the image layer composed of finely-ground ***pigments*** mixed with a ***medium,*** which binds them together. The pigments are what give the paint color. They are either inorganic (minerals, metals, and earths) or organic (vegetal, animal and synthetic dyes). The most common ingredients in paint mediums are drying oils (like linseed and walnut oil), egg yolk (in tempera paint), synthetic resins (like acrylics), and beeswax (in encaustic paintings).

- ***Varnish*** is a transparent, protective film that is brushed onto a dried painting. It protects the paint and saturates the colors. It was traditionally made from natural resins that are dissolved in oil or solvent. Synthetic varnishes and acrylic resins are the most modern varnishes. Varnish should never be applied to a painting that has not dried properly. Because some oil paints can take a long time to dry, artists often sold paintings with the instruction to varnish in a year's time.

The image you see when looking at a painting is created by the interaction of these layers. The image will change as colors darken, become lighter, yellow, or even fade completely. Physical changes such as cracks, crazing, or bulges may distort the surface. Some of these changes are appreciated as patina of age; others are less desirable, especially if there is a chance that part of the image will be lost if left untreated.

## C. Factors that Contribute to a Painting's Deterioration

1. *What agents of deterioration affect paintings?*

Many factors contribute to a painting's deterioration. *These* ***agents of deterioration*** can occur naturally, or they can result from external forces. Avoiding agents of deterioration is the key role of ***preventive conservation***. The agents are:

- direct physical forces, such as shock, vibration, and abrasion
- thieves or vandals
- fire
- water
- pests, such as insects, vermin, or mold
- contaminants, such as air pollution or dust
- ultraviolet and visible light
- high, low, or fluctuating temperatures
- high, low, or fluctuating relative humidity

For more information about these agents of deterioration, see Chapter 3: Preservation: Getting Started.

2. *How do paint films change over time?*

All layers in a painting deteriorate and take on different physical characteristics over time. Paint may become brittle and inflexible, varnish may discolor, and supports may become warped. Changes in temperature and relative humidity affect older paintings more than younger paintings because their materials become less resilient as they age.

***Varnish*** oxidizes with light and air, eventually turning yellow or brown. It can lose transparency, turning milky in appearance. This opacity is called "bloom" and is caused by fingerprints and high relative humidity. Dirt and grime slowly accumulate on the surface, further obscuring the paint layer. Old varnish can also crack, sometimes resulting in damage to the paint layer.

When paintings are in good condition, their ***paint films*** are flexible, and they usually adjust to the expansion and contraction of their supports. However, most paint becomes brittle over time. When an older painting's support changes dimensions, deteriorating paint film may crack. Cracking paint will eventually begin to flake and fall off the support. This loss is irreversible.

3. *Which agents of deterioration will affect my collection the most?*

The following four agents of deterioration are the most likely to cause damage to your paintings:

- temperature

- relative humidity (RH)
- light
  - visible light
  - ultraviolet (UV) radiation
- pollution

Knowing the ideal settings for temperature, RH, and visible light, and knowing how to filter UV radiation and pollution is essential for preserving your collection.

4. *How does the environment affect my collection?*

Temperature, relative humidity, light, and pollution directly affect the rate at which a painting ages. Storing and displaying paintings in areas where temperature and RH are too high or low will increase deterioration rates. Constant fluctuation in temperature and RH is harmful, too, because it causes the materials in the paintings to continuously expand and contract. This often leads to flaking paint. Natural and artificial lighting can cause pigments to fade. Ultraviolet radiation is harmful to all parts of a painting. Atmospheric pollutants can settle onto a painting's surface, masking the artist's image. Pollutants can also break down the chemicals in paint and varnish, acting as a catalyst of deterioration.

Creating an ideal environment for your collection will extend the longevity of your paintings.

Temperature and RH have tremendous effects on paintings. Many structural layers in a painting are ***hygroscopic***--they readily take up and retain moisture. Wood and sizing are particularly hygroscopic. Changes in RH greatly affect these materials. Wood will expand and contract, and subsequently, can twist and warp. Sizing causes a canvas to shrink with dryness and expand with moisture. These changes can be devastating to the entire painting, especially when the paint layer becomes brittle and cannot conform to these changes.

***The key to preserving paintings is maintaining stable temperature and RH levels. You must avoid extreme fluctuations in RH and temperature. If you change a painting's environment, do it gradually.***

5. *What are the ideal temperature and RH ranges for paintings?*

Store paintings at temperatures between 64º and 75º F (18º to 24º C). Temperature is less important for paintings than RH, but sudden temperature changes can harm paintings. For example, moving a painting from a cool to a warm area can cause moisture to condense on the surface. Maintain a RH of 40% to 55%. Low RH levels (under 35%) can embrittle all parts of a painting and encourage cracks and losses. High RH levels (over 65%) encourage mold growth. Decide on a "set point," and keep temperature and RH as close to this point as possible. See Chapter 4: Museum Collections Environment, for a discussion of proper environment and methods to control that environment.

6. *How does light affect paintings?*

Many pigments are sensitive to light and will eventually fade upon repeated exposure to light. Light can also be a catalyst for the deterioration of the paint medium. Light damage is cumulative and irreversible. Light damage depends on the type of light (ultraviolet and/or visible), intensity of the light, and

duration of exposure. Evaluating your collection's lighting conditions and making appropriate adjustments can prolong the life of your collection. Review the natural and artificial light sources in your storage and display areas. Use monitoring equipment to identify levels of UV radiation and illuminance (levels of visible light measured in "lux").

Reduce your collection's exposure to light by storing and displaying paintings in rooms without windows. If this is not possible, use tinted UV-absorbing films on the windows. (Clear UV-absorbing films will reduce UV levels, but will not reduce illuminance.) Cover all windows with drapes or blinds to further protect paintings. Also, avoid storing and displaying paintings in rooms with doors that open to the outside.

For many situations 50 lux is enough light to view a painting. In cases where higher illuminance is needed, don't allow visible light levels to go above 200 lux. All UV light should be filtered. Consider ways to limit the total light exposure, such as automatic dimmer switches or simply turning out lights when visitors are not present.

***Don't use traditional picture lights that are hung just over a painting or on the frame. They concentrate light onto a small portion of the painting, creating light and heat damage. When they are mounted on the frame, their weight strains the entire structure.***

7. *What kind of pollution affects paintings?*

Outdoor pollutants, such as dust and pollen, can easily be brought into a museum through open doors and windows. Industrial emissions as well as natural processes of erosion create these pollutants. Cleaning products, asbestos fibers, building materials, paint, carpeting, and other indoor materials can generate pollution within a museum. Cigarette, cigar, and pipe smoke are also harmful forms of pollution.

8. *How can I control pollution in my museum or display area?*

Follow these practices:

- Keep doors, windows, and outside vents closed whenever possible.
- Never allow smoking or fireplace fires in the building.
- Choose new building materials, paints, and carpeting that do not emit harmful gasses.
- Don't use custodial cleaners that emit harmful gasses (for example, ammonia).
- Use appropriate pollution filters in your HVAC system.
- Cover paintings in storage.
- Keep particularly vulnerable objects in sealed display cases. Make sure these cases meet the recommendations in *MH-III*, Chapter 7: Using Museum Collections in Exhibits, and NPS *Exhibit Conservation Guidelines*.

For more information on controlling pollutants, see Chapter 4: Museum Collections Environment.

9. *Are museum pests attracted to paintings?*

Some paintings are extremely attractive to pests, depending on their materials. Termites and other wood-boring pests can damage the wood in panel paintings, in stretchers, and in frames. Rodents have been known to nibble at paintings. Insects, such as moths, silverfish, and beetles, like to eat fabric. The gelatin in size and the egg yolk in tempera paint are also attractive to pests. Mold can destroy canvas. Develop an integrated pest management plan (IPM) to protect your paintings and other objects in your collection to prevent these problems. For more information about IPM and pest infestation, see Chapter 5: Biological Infestations.

10. *How can faulty handling affect a painting?*

Improper handling can affect a painting in various ways:

- Moving a painting suddenly can cause cracks in any of the layers.
- Touching a painting's surface often results in scratches and discoloration of varnish, and can dislodge flaking paint.
- Touching the back of the canvas can undermine the surface layers.
- Picking up a painting by the top of the frame can cause strain to the joints in the frame and stretcher/strainer, damaging the entire painting.
- Picking up a painting that is too large for one person to handle can result in a jolting fall.
- Keying-out a stretcher improperly can over-stretch the canvas, creating cracking and flaking.

***Many things happen to a painting during its lifetime that do not show immediate damage, but will surface as the painting ages.***

Any pressure applied to a painting can cause hairline cracks that will eventually create problems. This pressure may occur when someone marks the back of a painting or glues a label to it. An improperly framed painting will create strain on the canvas that may not be evident for years. These small problems will escalate over time and eventually require treatment. You must take care now so that the objects in your collection will not deteriorate to the point where treatment is needed.

11. *How can past treatments adversely affect a painting?*

The notion of "treatment" has changed significantly through the years. In the past, paintings were taken to "restorers" rather than "conservators." The emphasis was often on restoring the appearance of the painting, and quite often no consideration was given to the historical importance of the piece. Some restorers slapped patches on the back of a canvas, or sloppily glued on a lining. This has often caused the image layer to flake on the front side of the painting. Restorers sometimes repainted part or all of the surface of a painting. This "overpainting" altered the original image. Some restorers covered their overpainting with brown varnish to give the new paint an old look. Many restorers were careless when they cleaned a painting, removing the original paint along with the varnish. Some restorers just added another layer of varnish on top of everything, including the old varnish and dirt.

12. *How do I know if a painting is actively deteriorating?*

The main purpose of examining paintings is to detect problems as early as possible, and to act accordingly. Carefully examine a painting to identify damage and active deterioration. See Section K for a glossary of terms to use when describing the condition of paintings. In particular, when examining paintings look for these indications of active deterioration:

- cracks in the varnish and/or paint layer
- mold on the canvas or frame
- evidence of pest infestation, such as shed skins and droppings collected in the frame
- rusty or loose hooks and hanging wire
- warping in the frame or stretcher
- slackness in the canvas

These are all indications that your painting may have problems. Some of these problems, if left untreated, may lead to irreversible damage.

## D. Proper Handling and Storage of Paintings

1. *What do I need to consider before handling a painting?*

Following are a few guidelines:

- Never touch the paint surface or push on the canvas from the reverse.
- If loose paint is present, carry the painting flat.
- Wash your hands before handling a painting.
- Always wear clean white cotton gloves.
- Clean all surfaces that the painting will touch.
- Check the stretcher keys to ensure that they are secure.
- Carry paintings with both hands on either side. Don't lift the top of the frame or stretcher.
- Carry only one painting at a time.
- Never carry a large painting by yourself. Get another person to help. If it is still too large to handle, place it on a trolley or cart that is well padded and in good condition. An old, rickety cart may produce enough shock to damage a painting.
- Know the painting's destination before you handle it. If you are moving it to hang it, have the mount prepared. If you are moving it to pack it for transport, have the packaging prepared for it. If you are moving it for

examination purposes, make sure you have set padded blocks on your table for its arrival.

- Never stack paintings on top of each other.

***Proper handling of paintings is very important. As a general rule, do not handle a painting (or any other museum object) unless it is absolutely necessary.***

For more information on handling, see Chapter 6: Handling, Packing, and Shipping.

**Figure L.2. Proper way to carry a small painting**

2. *What do I need to know about the storage of paintings?*

Improper storage of paintings can be a catalyst for deterioration. Consider the elements that affect a painting in storage.

- Control the agents of deterioration.
- Choose appropriate storage space and equipment. See Chapter 7: Museum Collections Storage.
- Ensure that proper security and fire detection and suppression equipment is installed and maintained. See Chapter 9: Security and Fire Protection.

3. *Where should I store my paintings?*

Your collection size is an important consideration when you determine where to store your paintings. If you have many paintings, consider creating a dedicated storage room. If you have only a few paintings in your collection, dedicate a space in your museum storage area for your paintings:

***Never store paintings:***

- in attics and basements
- against exterior walls
- near furnaces or heating/air conditioning vents
- in spaces below water pipes
- near sources of asbestos, such as old insulation or wiring
- in areas of extreme vibration, such as well-traveled walkways

Always store paintings at least four inches from the floor to minimize dirt and dust collection on surfaces and to protect them from flooding.

***Always remove hanging wires, hooks, and all other hanging devices from a painting before storage. These can easily pierce canvas, and can scratch varnished surfaces and frames.***

4. *How should I store my paintings?*

There are three main ways to store paintings:

- Hang them from storage screens.
- Place them on storage shelves.
- Stack them vertically against an interior wall or side of a cabinet.

Do not stack paintings against a wall or cabinet unless you have no other option. ***Never lean paintings against exterior walls.***

However you store paintings, it is helpful to fit canvas paintings with protective backing boards (see *CCI Notes* 10/10, Backing Boards for Paintings on Canvas). Backing boards prevent damage by blocking the reverse of the canvas with a rigid material so it cannot be knocked or pierced. It also buffers RH and temperature next to the canvas. The board is attached to the back of the frame using stable metal screws and plates. Don't use this technique on important historic frames. Contact a conservator if you have questions about attaching backing boards.

***Storage screens*** are constructed of a vertically standing wooden frame onto which fencing material or rigid wire mesh screening is attached. Paintings in good condition are then hung from the screens by rigid hooks. This is a particularly useful painting storage method if your storage area is in an earthquake zone. Paintings without frames, of course, cannot be stored on storage screens because these paintings aren't equipped for hanging.

*Conserve O Gram* 12/1, Storage Screens for Paintings, provides instructions for constructing storage screens.

***Note:*** Paintings that are not in good condition, especially paintings with flaking paint, should not be stored in a vertical position. Lay damaged paintings flat on shelves.

***Storage shelves*** can be constructed of coated wood or metal and can be either horizontal or vertical (sometimes called storage bins). Storage shelves are recommended for smaller painting collections because empty shelves can be used to store other museum objects. (See *CCI Note* 10/3.) It is inadvisable to store more than one painting in each vertical compartment, but if you must, protect the paintings by placing heavy-duty, acid-free cardboard between them. The cardboard must be larger than the largest painting in each compartment. Never stack paintings horizontally.

***Stack paintings vertically*** against a wall. This method is for temporary storage only and only for paintings in good condition. Lean them against a wall, resting on skid-proof, padded blocks. Make sure the blocks are at least four inches from the ground to avoid potential flood damage. Separate paintings from each other with heavy-duty, acid-free cardboard. The cardboard must be larger than the largest painting that will rest against it. Keep paintings of relatively the same size together, and never stack more than a few paintings on each set of blocks. The stacking angle is very important. Keep the stack's angle as close to vertical as possible, but make sure that the paintings can't topple forward. If the angle is too great, the paintings may collapse backwards onto each other. If an unframed painting has to be stacked in this manner, construct a temporary frame. You can place dust covers of washed cotton muslin over the paintings as additional protection. Do not allow the fabric to touch painted surfaces.

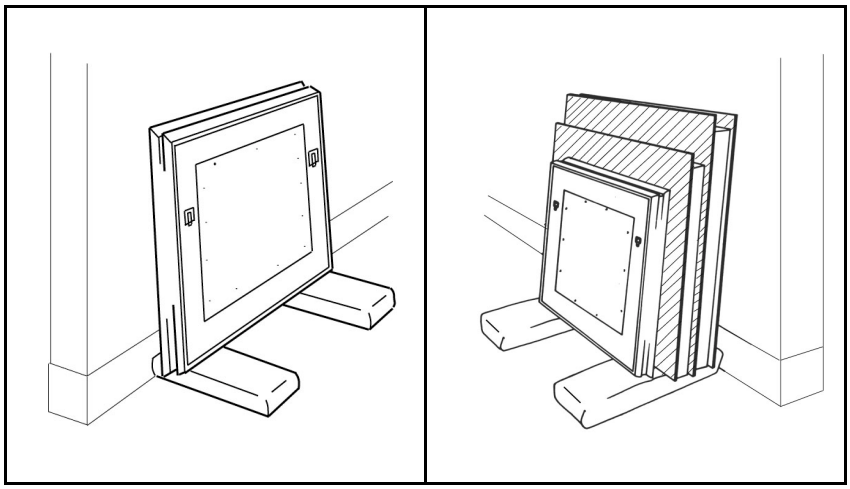

**Figure L.3. Paintings stacked against a wall. Redrawn from *CCI Notes* 10/2, Figure 1, and 10/3, Figure 1.**

***Never stack a damaged painting against a wall.***

## E. Exhibiting Paintings

1. *What do I need to consider when I am planning an exhibit?*

When you prepare for an exhibit, you need to consider many factors. Refer to *MH-III*, Chapter 7: Using Museum Collections in Exhibits. In addition to factors such as environmental conditions and painting stability, think about:

- placement of paintings
- flow of traffic
- protection from touching and vandalism
- housekeeping requirements

2. *What do I need to consider when installing the exhibit?*

It is very important to make sure that the placement of paintings will not put them in jeopardy. Follow this advice when installing the exhibit:

- Hang paintings away from doors, furniture, or other objects that could bump into the painting.
- Set up the display in a way that is conducive to the optimal movement of visitors.
- Hang paintings in open areas to lessen the chance of visitors brushing up against them.
- Hang paintings away from heat sources, like vents, radiators, and light sources.
- Ensure the security of the paintings.
- Ensure that light sources will not emit UV and that visible light levels on paintings are below 200 lux.

3. *How do I properly hang a painting?*

Use extreme caution when hanging paintings. Improper hanging procedures can allow a painting to fall or allow a theft. Periodically check your paintings to make sure that hangers, hooks, nails, screws, "D"-rings, and all other hanging hardware are securely fastened and not rusty. Make sure that the wall where you hang paintings is strong enough to support the weight. Hang paintings with picture hooks (not nails) and use two hooks for heavy paintings. Drill holes in concrete walls or in studs, not in plaster or sheetrock.

Many paintings are hung by "hanging wire" that is secured to the back of the painting. Hanging wire can become loose if not properly attached and can rust easily, so check it often. To improve security of hanging paintings see *Conserve O Gram* 2/7, Fabricating Secure Hangers for Framed Works of Art.

4. *How do I prevent touching and vandalism?*

Paintings on exhibit are tempting targets for touching and vandalism. Follow these guidelines to prevent the possibility of these hazards:

- Station an employee or security guard in the display room.
- Use guard rails, ropes, platforms, or other deterrents.
- Place "Don't Touch" warning signs near paintings.
- Install security alarms wherever appropriate.

5. *How do I do safe housekeeping?*

If paintings and frames become dusty, you may dust them, but first, carefully examine each painting for loose or flaking paint. If the surface is stable, dust with soft, white-bristle Japanese brushes, or sable or badger-hair brushes. Don't use feather dusters that can scratch paintings. Never try to wet clean a painting yourself or use any liquid or commercial cleaners on a painted surface. Commercial preparations can cause irreparable damage to the fragile layers of a painting. Explain the potential dangers of dusting and cleaning paintings to all staff.

Avoid using pesticides, foggers, air fresheners, or furniture sprays near artworks. Remove paintings from a room before painting, plastering, or steam cleaning carpets or wallpaper. Make sure that cleaning staff are careful with mop and broom handles, which can scratch or puncture a painting. Never use spray cleaners, aerosols, or plant misters in the display rooms because the cleaner or water can settle on the paintings' surfaces. Avoid using very wet mops that can raise the RH.

Refer to Chapter 13: Museum Housekeeping, for additional information.

## F. Proper Shipping of Paintings

Unlike people, paintings will live longer if they lead a sedentary life. Shipping a painting increases the likelihood of damage, which could decrease its lifetime. Improper handling, vibration, shock, and uncontrolled temperature and RH are all potential threats to paintings during shipping. In most cases, the reason to ship paintings will be to loan them to another museum or gallery for an exhibition or to a conservator for treatment.

1. *What do I need to consider before loaning my paintings?*

Before agreeing to loan your paintings, you must first assess their condition, and then decide if they can handle the move. If a painting is in good condition, it will probably survive travel with little harm, provided that it is packed and transported properly. Fit the painting with a protective backing board (see *CCI Notes* 10/10, Backing Boards for Paintings on Canvas). Backing boards will protect the canvas. Keep the following in mind:

- In general, travel will impact small, light paintings less than large, heavy paintings.

- Don't loan paintings that are fragile, have flaking paint, or are otherwise in poor condition.

- Canvas paintings that are too slack or that have uneven tension can be easily damaged during transportation because the canvas moves easily. Correct any problems with tension before shipping the painting.

- Paintings with holes, tears, or other damage should not travel because of their vulnerable state.

- Large panel paintings, especially those with separate pieces of wood bonded together, are more likely to bend and flex with the vibrations of transport.

See *MH-III*, Chapter 1: Evaluating and Documenting Collection Use, for information on loans. For in-depth information on proper packing procedures, materials, and supplies, see Chapter 6: Handling, Packing, and Shipping (this volume).

## G. Conservation Treatment

1. *Why should I contact a conservator?*

There are many reasons to contact a painting conservator, who is trained to examine, analyze, stabilize, and treat paintings. See Chapter 3: Preservation: Getting Started, for information on choosing and contracting with a conservator. Be sure you check references and question the experience and background of any conservator you choose. Talk over any recommended treatments and be sure you understand what is planned and why it is necessary.

***Only experienced conservators who agree to follow the AIC Code of Ethics and Guidelines for Practice should be allowed to treat paintings.***

Only an expert should clean a painting that has discolored. Flaking paint and tears in the canvas will only become worse without conservation treatment. Water-damaged paintings require immediate conservation treatment. Fire-damaged paintings will usually have blistered paint, as well as a soot covering, and need expert care.

***Never attempt to clean paintings or to treat damaged paintings yourself.***

2. *What might a conservator be able to tell me about my painting upon examination?*

When conservators thoroughly examine paintings, they will make a number of observations. Conservators will identify the paint medium, the type of varnish, and the type of sizing. The examination may reveal underpainting below the visible image. Conservators are also able to judge the state and extent of deterioration in your paintings and to recognize past conservation/restoration treatments. This knowledge combined with their art historical understanding, enables conservators to make treatment proposals for your paintings.

3. *What might a conservator do to stabilize my painting?*

There are hundreds of treatment procedures involved in painting conservation. The treatment(s) your conservator uses will decrease your painting's rate of deterioration. Conservation treatments for paintings involve methods that will stabilize and/or restore paintings.

There are many variations in the treatments that conservators do, but typical stabilization might include one or more of the following:

- ***Framing or reframing*** to give structural protection to the painting
- ***Minor repairs to the canvas*** to remove dents or bulges or patch small holes
- ***Minor repairs to panels*** to mend splits or loose joins in the wooden support
- ***Consolidation*** to reattach loose paint to its support with appropriate adhesive
- ***Facing,*** or attaching tissue to the paint with a suitable adhesive. Facing is a protective measure that holds flaking paint in place until the painting can be treated.
- ***Lining,*** or attaching a new piece of fabric or other support material to the back of the original canvas to reinforce it, thus preventing loss that can occur due to a painting's structural weaknesses.
- ***Removing old repairs,*** such as removing patches and tape from the back of a canvas or old cradles on panel paintings that are contributing to a painting's deterioration.

4. *What might conservators do to restore my painting?*

Conservators will choose from among hundreds of restoration techniques, depending on your painting's condition. Restoration includes:

- ***Cleaning:*** This involves removing surface dirt and usually involves removing the varnish. Cleaning methods are chosen based on the type of paint and varnish used on a painting.
- ***Filling:*** This includes filling any losses to the ground layer.
- ***Inpainting:*** This involves painting in areas of paint loss or new fills so they are not obvious. Inpainting is done for aesthetic reasons, so that losses don't detract from the painting's overall appearance. Conservators will usually choose paints that can be easily removed so that future conservation treatments won't have to include difficult paint removal.
- ***Removing old paint:*** This involves removing paint from past "restoration" treatments. Restorers often painted on top of the original paint, known as "overpainting."
- ***Transfer:*** This is an extreme treatment that involves moving the image layers to a new support. This is done only if the existing support is contributing to the image layer's decay. This is a complicated procedure that involves removing the support from the back of a painting.

## H. Procedures for Handling Paintings During Emergencies

Chapter 10: Emergency Planning, gives information about planning for emergencies and minimizing damage. This section gives specific information on caring for paintings damaged in an emergency.

1. *In what ways can a disaster affect my paintings?*

Unfortunately, accidents and natural disasters occur and cause damage to museum collections. For paintings, water damage is very serious and requires immediate treatment. Water causes wood to swell, creating instant pressure on panels and stretchers. Water can also dissolve sizing, causing the image layer to separate from the support.

Other accidents and disasters can leave torn, burned, sooty, or muddied paintings. In these cases, the damage to the paintings has already occurred. Contact a conservator immediately. Don't attempt to clean mud, dirt, or soot or to mend a ripped painting. You can increase the damage to the painting.

Fire can blister the paint layers. Never try to press the paint back down into place. A trained conservator will usually apply heat to flatten the blisters before attempting to clean the painting, which is a very delicate procedure.

2. *What do I do if my paintings are water damaged?*

Act quickly. Water can seriously damage paintings in a matter of minutes. Immediately contact a conservator if one is available. If not, salvage your collection in order of priority identified in your park's disaster plan. Salvage paintings that have the highest value in your collection first.

- ***Remove frames***. **Don't** remove canvas from stretchers.
- ***Remove excess water*** by gently tilting each painting to let the water run off the surface.
- ***Set up a work area where there is no danger of further damage***. Paintings with flaking layers should be dried face-up on a table, and should not be touched.
- ***Keep wet paintings horizontal*** and paint side up.
- ***Place fans around the work area*** to increase circulation and decrease drying time.
- ***Use dehumidifiers*** to assist in the drying process. Maintain a RH of 60% to 70% to avoid over drying.

3. *What should I do in the case of an emergency that is NOT water-related?*

In most cases the damage will already be done, so there is no need to rush as you would in the case of water damage. However, be aware that some damage, like rips and tears, usually become worse over time.

- ***Don't touch anything***, if possible.
- ***Contact a conservator*** as soon as you can.
- ***Contact your regional/SO curator*** for additional technical assistance.

- ***Move the paintings only enough to be sure they are not in a vulnerable position that could cause further damage***, such as perched at the edge of a table or hanging crookedly on the wall.

- ***Remove anything that may have fallen onto your paintings***.

## I. Glossary of Terms Used for Condition Reporting When Examining Paintings*

***Blanching:*** irregular, obtrusive, pale or milky areas in paint or varnish; not a superficial defect like **bloom** but a general scattering of light from increased porosity or granulation in aged films

***Blister:*** a separation between layers appears as an enclosed, bubbled area

***Bloom:*** a whitish, cloudy appearance in the varnish layer caused by exposure to moisture or resulting from deterioration of wax-based media; sometimes called efflorescence

***Buckling:*** waves or large bulges in a canvas from non-uniform tension around the stretcher or strainer

***Chalking:*** loss of a paint or emulsion layer by powdering off

***Check:*** splitting of wood along the grain, from the edge of a board or panel for a part of its length; usually in response to repeated dimensional change brought on by fluctuations of temperature and humidity

***Cleavage:*** a separation between the paint layers and the support producing tenting (gable-like ridges) or cupping (concave flakes); caused by the contraction of the support, forcing the paint layer up off the surface

***Crackle:*** a network of fine cracks; also found in other materials such as lacquer, and glazed ceramics

***Crazing:*** a fine system of crackling in a varnish layer, usually found in aged films in the final stages of drying and embrittlement

***Cupping:*** see ***cleavage***

***Dishing:*** a defect in the stretcher caused by the torque of a drawn fabric; if the stretcher members are twisted out of a common plane, a shallow angle is formed at the corners

***Draw:*** a local distortion at the corner of a painting, marked by diagonal cockling from the corner toward the center of the mount

***Fill:*** the material used to replace areas of loss; fill is then inpainted

***Flaking:*** lifting and sometimes loss of flat areas of the surface layer

***Inpainting:*** new areas of paint to restore design or color continuity; restricted to areas of loss

***Overpainting:*** areas of repainting over existing original paint

***Split:*** a rupture running along the grain of a piece of wood from end to end, usually caused by exterior mechanical stress

***Stretcher crease:*** a crease or line of cracks in the ground and paint layers of a painting on fabric, following the inside edges of stretcher members or the edges of cross-members; caused by the flexing of the fabric against the edges of these members

***Tenting:*** see cleavage

***Warp:*** in a panel, the planar deformation of the support caused by changes in relative humidity

***Wrinkling:*** small ridges and furrows of crawling paint or varnish caused by improper methods or materials

*Terms taken from Demeroukas, 1998

## J. Selected World Wide Web References

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Conservation OnLine, Resources for Conservation Professionals: <http://palimpsest.stanford.edu>.

*Conserve O Gram* leaflets: <http://www.cr.nps.gov/csd/publications/index.htm>.

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