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Care of Furniture Finishes – Canadian Conservation Institute (CCI) Notes 7/2

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Caution!

This Note discusses actions that will physically affect an object, as well as procedures that involve using chemicals. Exercise caution, follow recommended safety procedures and seek qualified assistance if in doubt.

Introduction

The “finish” of a piece of wooden furniture refers to the surface of the wood and how it may have been changed cosmetically by the builder or altered through use. In most cases, the finish is a discrete coating that protects the wood from soiling, provides some moisture resistance and alters the appearance of the surface. Original furniture finishes have historical, aesthetic and financial value and, as such, should be maintained.

Prior to application, furniture finishes may be fluids, solids or semi-solids; in addition, the fluids may be single substances (e.g. oils) or they may take the form of solutions, emulsions or suspensions. Liquid and semi-solid finishes cure to solid form in a variety of ways. A finish may dry by solvent evaporation, by polymerization, by coalescence or by a combination of these processes. Because of this variety of types and the wide range of application techniques, discussions of surface finishes are very complex. A detailed discussion of all surface finishes is beyond the scope of this Note; however, general directions on basic preventive care and cleaning for certain types of coatings found on wooden furnishings are provided.

Dry pigment

One of the simplest ways to modify the surface of a wooden object is to apply raw pigment (examples include natural earth pigments such as ochres and umbers, black wood ash and white clay). These coatings have no binder; the pigment is applied either dry or in a slurry with water. Dry pigments initially adhere easily to wood because it is porous. They do not form an intact film so are unaffected by wood movement due to fluctuations in relative humidity.

The surface of dry pigment finishes is often fragile and powdery and can be easily smeared or removed by handling. Because the surface is so vulnerable, furniture finished in this manner should not be handled directly but instead lifted and moved with a support such as a tray or trolley. Such furniture should also be covered to protect it from dust, which may become indistinguishable from the powdered pigment upon unaided visual inspection. As even light brushing to remove dust can loosen the pigment, only an experienced conservator should clean furniture with a dry pigment finish.

This kind of finish is rarely encountered on North American furniture, where any application of dry pigment was probably followed by the application of a binder.

Paint

Paints also use pigments for colour and surface effect, but they include a binder such as a drying oil or a resin in solution to hold the pigment more firmly to the surface. A wide array of synthetic polymers have been used as binders since the middle of the 20th century. However, prior to that, most paints in Western cultures were made with boiled linseed oil or other drying oils as the basis for the binder, making them opaque varnishes. Casein protein from milk was another option that produced an equally intractable but more matte finish.

Painted wooden surfaces can be quite durable because the paint penetrates into the wood and produces a strong bond. However, because paint forms a complete film on wooden objects, it is prone to cracking and loosening as the wood expands and contracts in response to changes in environmental conditions. Adhesion between the paint and the surface may fail with time, causing flaking and loss. Deterioration of the binders in paints is primarily due to light (both visible light and ultraviolet [UV] radiation), which can cause breakdown of the film, powdering and changes in colour. It is therefore important to minimize the amount of light, both in intensity and hours of exposure, that is allowed to fall on a painted surface. Painted surfaces are also susceptible to changes in taste and fashion, and it is not uncommon to find painted furniture stripped and refinished with clear coatings.

If cleaning of the painted surface is deemed necessary and if, after close visual inspection, the surface is considered stable (no flaking or powdering paint), cleaning can be accomplished by removal of loose dust and dirt with a soft cotton cloth or by using a soft brush and vacuum. Refer to CCI Note 7/1 *Care and Cleaning of Unfinished Wood* for more information on dry cleaning techniques. Mechanical techniques may be all that is required for cleaning, but it may be determined that aqueous or solvent cleaning is also necessary to remove more stubborn deposits of dirt. Since many painted surfaces are sensitive to water and other solvents, aqueous and solvent cleaning should only be conducted by a conservation professional. Refer to CCI Note 10/1 *Cleaning Paintings: Precautions* for more information on cleaning painted surfaces.

Paint finishes that have deteriorated must be handled carefully to prevent loose pieces from being caught on gloves and clothing and subsequently lost. If the flaking is suspected to be related to wood movement, control of relative humidity may be important; in such cases, it is best to seek advice from a conservator. Flaking paint surfaces can sometimes be consolidated by introducing a suitable consolidant under the flakes, but this should only be done by an experienced conservator with good facilities.

Natural resin coatings

Natural resins have been used to form coatings on wooden objects for millennia, with much evidence of their use in ancient Egypt and China. These transparent finishes were traditionally defined as either lacquers or varnishes: lacquers consisted of resins or gums deposited from solution; varnishes were similar but also contained drying oils. Today, these names do not have clearly separate definitions in furniture finishing, and these types of finishes are now categorized as being either evaporative finishes (also called solvent-release finishes) or reactive finishes. The first category of finishes dries by evaporation of the solvent and includes shellac and sandarac spirit varnishes; the second type cures, with or without solvent loss, by polymerization. Oil varnishes are a common example of a reactive finish. Natural resin coatings may include pigments or dyes to modify the colour of the surface—they differ from paints only in being transparent.

Characterizing old, natural resin coatings is very difficult because over the centuries many different recipes that include resins, waxes, dyes and oils have been used (many through boiling at very high temperature) in innumerable combinations to produce coloured and colourless transparent finishes, according to fashion. A common gloss finish frequently found on mahogany furniture from the 19th century is French polish, which consists of multiple layers of shellac applied by rubbing it on the wood surface with a wadded cloth. Another common 19th-century natural resin finish was copal oil varnish. In Asia, reactive finishes highly regarded for their rich lustre and durability were those based on the resins of “lacquer” trees from the Anacardiaceae family. One of the most well-known Asian lacquers is Japanese “urushi” lacquer.

Natural resin finishes form a complete film on wooden objects and are thus susceptible to cracking and loosening as the wood expands and contracts in response to changes in relative humidity. Exposure to light leads to slow and insidious degradation that eventually causes the finish to discolour, crack and become loose. As with painted surfaces, it is therefore important to minimize exposure to light. Water usually produces rapid and obvious damage. If furniture collections are in use for interpretation or in a living museum, it is important to avoid contact with water, for example, by spilling drinks or placing potted plants or flower vases on horizontal surfaces. Likewise, wet mopping floors or dampness rising through floors can create problems for the feet and legs of furniture finished in this manner.

Intact natural resin coatings can be quite durable and can often be successfully cleaned with both dry and wet cleaning methods. Dry cleaning should be conducted in the same manner as for painted surfaces. Highly degraded surfaces are likely to be more soluble than intact surfaces, and solubility can also vary widely between original and repaired surfaces (and past interventions may be well hidden). Cleaning of degraded, natural

resin coatings and Asian lacquered surfaces should always be referred to an experienced conservator.

A sound natural resin finish can sometimes be safely cleaned by damp dusting with a cotton swab or cloth and water; however, many of these finishes, especially in a degraded state, can be water-sensitive, so it is important to conduct a solubility test first. Begin by dampening a cotton swab in warm water. Squeeze excess moisture from the swab until it is almost dry, and then rub it gently on a small, unobtrusive area to test that the coating is not soluble in water. Check the swab for any finish residue (usually yellow to brown in colour), and wait several minutes for the area to dry to ensure that the surface does not blanch (turn white or cloudy). If no finish residue is visible on the swab and no blanching occurs, cleaning with a scant amount of water on a barely dampened cotton cloth or swab can proceed. A few drops of a mild detergent such as Orvus WA Paste may be added to the water to help lift more stubborn soiling; however, another solubility test with the altered cleaning solution should be conducted first. If detergent is used, it will be necessary to clear detergent residue from the surface by wiping or swabbing again with clear water only. It is very important that the surface is dried immediately after damp cleaning using a clean, cotton cloth.

Odourless paint thinner (e.g. Varsol or mineral spirits) may also be an appropriate option for cleaning many natural resin coatings in good condition. First, moisten a cotton swab with the solvent and roll it across the finish in a small, unobtrusive area. If it proves safe (i.e. there is no yellow to brown residue on the swab after several seconds), slightly dampen a cotton swab or soft, lint-free cloth with the solvent and proceed as above, replacing swabs or cloths as they become dirty. Paint thinners will give off hazardous fumes, so it is very important to work in a well-ventilated area or outdoors, to refer to the relevant safety data sheet (SDS) and to use appropriate personal protective equipment (PPE). Paint thinner should lift off wax and greasy dirt; if dirt is not removed, discontinue the process.

As with painted surfaces, care must be taken when handling objects with loose or flaking varnish. For treatment of objects in this condition, it is best to consult a conservator. In some cases it may be possible to re-adhere delaminating lacquers and varnishes. Degraded resinous finishes can sometimes be polished or reamalgamated, thus re-establishing an intact surface. However, in recent years this approach has become more controversial as some conservators object to any alteration of the macroscopic surface characteristics of the original coating.

Oils

Drying oils are often applied to wooden objects to saturate the colour of the wood and to add a small measure of protection. The most common of the traditional finishes in the West was linseed oil, but tung oil (once called “China wood” oil) was also used,

although more so in Asia. Linseed oil is inexpensive, needs no complicated equipment to apply, offers some protection to the surface and provides a pleasing yellow colour to light woods — although in time it turns darker woods almost black. Tung oil serves the same purposes but without the dramatic colour changes. A wide range of other drying oils has recently become available.

Reapplying linseed oil to furniture originally finished with it was, and still is, a traditional method of care. Where there is no doubt that furniture was originally finished with linseed oil, continued use might be acceptable. Unfortunately, much old furniture that was not originally finished with linseed oil has been darkened and disfigured by ill-advised application; it is often seen poorly applied and thickly puddled, especially in cracks and low areas and around hardware.

Linseed oil and other similar drying oils change chemically over time by a process called "crosslinking." This lowers their solubility and can make them very difficult to remove. Treatment of surfaces finished with oil should be limited to the cleaning methods outlined above for resinous finishes. If more extensive cleaning is required, consult a conservator.

Waxes

The bare surfaces of some wooden objects are treated with wax after completion, and these are usually maintained during use with further coats of wax. A wide range of waxes (from hard materials such as carnauba to soft ones such as beeswax) can be used. Wax coatings are also commonly applied over existing furniture finishes such as French polish, varnishes and oil finishes.

Excess wax coatings that have built up around hardware, in carvings or in other less accessible areas can be removed with a wooden applicator stick. Old wax can be made more soluble with mineral spirits. If the whole surface of the piece has been heavily waxed, this method can be used to clean the entire object. When removing old wax with mineral spirits, follow the procedures outlined previously: test the procedure on a small unobtrusive area of the object and take adequate precautions with ventilation and handling of the solvent. Cleaning will be more effective if the hardware can be removed.

Re-waxing, if necessary and appropriate for the object, should be done with a soft, lint-free cloth, using a furniture paste wax that is free from colorants and perfumes. Apply the wax thinly and evenly, and rub it in well. Work in small sections. After the wax has dried to a matte appearance, buff it vigorously with a clean cloth, making sure to work well into less accessible areas. Wax polishing should not be done frequently; a thorough waxing will last for many years with only an occasional buff with a pure cotton cloth.

Commercial furniture finish restoration products and polishes

Application of commercial furniture restoration mixtures or polishes to museum wooden objects is not recommended. Contrary to what many of these product manufacturers claim, wood does not need to be “fed” with these mixtures to replenish “natural oils” or moisture. Although there are many furniture restorers’ nostrums available on the market today, they usually contain waxes, oils or silicones, which can create a sticky build-up on surfaces that attracts dust and dirt, leading to deterioration of the finish by in turn attracting atmospheric moisture and contaminants to the surface. These products can also create compatibility issues with additional coatings that may be applied to the surface during future conservation treatments.

Summary

A variety of materials have been used to protect the surface of wooden objects and to enhance and modify their appearance. Surfaces of furniture often show a great deal of previous intervention from the cleaning, polishing and refinishing they have received over the years. Preventive measures such as careful handling to avoid abrasions and limiting exposure to light and moisture should be taken to ensure the long-term preservation of historic furniture finishes. Before cleaning a coated wooden surface, it is necessary to determine what type of coating it is, whether or not it is stable, if it has been modified or refinished and what the effect of the cleaning technique will be. Effective cleaning and presentation of an acceptable appearance for a furniture finish in good condition can often be as simple as damp dusting followed by buffing, complemented with careful, infrequent waxing.

Suppliers

Note: The following information is provided only to assist the reader. Inclusion of a company in this list does not in any way imply endorsement by the Canadian Conservation Institute.

Paste waxes, polishing cloths and mineral spirits:

Paste waxes, polishing cloths and mineral spirits can be found at local hardware stores (be cautious of special products made for furniture care; if in doubt, check with a conservator).

Mineral spirits is one name for a commercial petroleum product composed of chemicals with a narrow range of boiling points. Other similar products are known as odourless paint thinner, Stoddard solvent, Varsol and, in the United States, VM & P Naphtha.

Lint-free, white cotton polishing cloths can be obtained in bundles from specialty finishing stores. Squares cut from white cotton t-shirts and cloth diapers may be appropriate for cleaning and polishing as well.

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