CONDITION AND TREATMENT REPORT

DATE: September 19, 2012

CLIENT: United States House of Representatives
Office of Historic Preservation
B-53 Cannon Building
Washington DC 20515-6612

OBJECT: One of a group of two donated American custom designed and manufactured armchairs for the Hall of the House of Representatives, currently in the collection of the United States House of Representatives, known as the "Walter" armchairs, after their designer, Thomas U. Walter. The primary wood is American oak; the secondary wood is oak, manufactured by Bembe and Kimbel of New York, circa 1857.

ACCESSION #: 331833 (old); 2006.18.2 (new).

TREATED BY: Bruce M. Schuettinger and Richard A. Farmer; upholstery treat by Robert Fogle, Thurmont MD.

TREATMENT DATES: July 1, 2011– June 29, 2012

TREATMENT PROPOSAL SUBMITTED: Yes, July 1, 2011.

INTRODUCTION: This document is both a condition report denoting the condition of an object prior to the initiation of the treatment, any historical or material data, a treatment report stating the purpose of the treatment and the techniques and materials used during the course of the treatment. The contents of this document contain both text and photographic documentation embedded in the report to assist the reader in clarification of the condition issues and treatments that had been undertaken. As well as additional historic and or analytical data uncovered during the course of the treatment. The existing condition portion as well as the treatment portions of the document discuss the structural and presentation surface damage and loss as well as the condition and successfulness of the previous repairs. A copy of this report has been printed or Archival Premium Glossy Photo Paper on an Epson Stylus Pro 4800 printer utilizing Epson archival Ultra chrome K-3 inks. Some of the conducted analysis or historical data may be imported into the document or maybe included as an addendum. This report and

all of the digital images are included on a MAM-A gold archival grade DVD-R. There are many more digital images that were taken which either further compliment the images in this document or illustrate different aspects of the treatment but should be viewed to understand the full treatment. The final potion of this document discusses the existing condition and subsequent treatment of the upholstery, describing in text with accompanying images of the upholstery treatment performed. This report also contains documentation from the analysis by Richard Wolbers, coatings analyst, and Frank Kallista, upholsterer and treatment notes from Schuettinger Conservation Services, Inc.

Samples of the retained, removed and added under upholstery and show coverings have been placed in labeled plastic pouches and included in this condition and treatment report for future reference.

OBJECT DESCRIPTION

Outside Measurements:

Side to side	Front to back	Height
25”	24”	41 1/4”

Left: United States House of Representatives Thomas U. Walter Armchair, circa 1857, before treatment.

Left: Chair during treatment, after the structural and coating treatments have been completed.

Right: Chair after treatment with structural, coating and upholstery treatments completed.

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MATERIALS:

Primary Wood: American white oak (*Quercus* spp.) identification by non-aided visual means only.

Secondary Wood: American white oak (*Quercus* spp.) original seat frame and back frame components and a variety of poplar or tulip for the added box section of the seat frame, identification by non-aided visual means only.

Coatings: There appears to be four generations of non-original oil and oleo-resinous coatings. The initial layer is a natural oleoresin clear coating with a oil based stain containing carbon pigment. There are at least three subsequent coating: an oil coating and 2 layers of oleo-resinous clear coatings. See Coating Analysis by Richard Wolbers included in this report.

Upholstery: Non-original, second or third generation woven show cover, over non-original under-upholstery layers, note additional information in this condition and treatment report.

Unusual Construction Techniques: A distinctive notched corner block was used in the seat frame of this chair, a signature of an individual cabinetmaker (right).

Labels/Writings: Cellophane label affixed to back of chair with accession number printed on it “331833” (below left).

On the back frame, under the upholstery, there is a period ink inscription , *“No 114”* (below right), probably either production number or seat position within the hall.

HISTORY OF THE OBJECT

When the House of Representatives first moved to their new House Chamber in December, 1857, they used 262 desks and chairs designed by Thomas U. Walter, Architect of the Capitol for use by the House members in the new Chamber. The desks were furnished by Doe Hazelton Company of Boston, MA; 131 chairs were furnished by the Desk Manufacturing Company of Boston and 131 chairs were furnished by Bembe and Kimbel of New York. The distribution of the contracts was supervised by Captain Montgomery C. Meigs, the Superintendent of Construction at the Capitol.

There are minor differences in the sizes and variations in the carved elements of the chairs from the two different manufacturers. According to House documents, Captain Meigs followed the specifications of the chief artist of the Capitol, Constantino Brumidi regarding the upholstery. Brumidi specified: “cushions, not tufted, to be covered with dark goat red goat-skin morocco. The whole to be finished in the strongest and most artistic-like manner.”

This system is different than the upholstery system illustrated on Thomas Walters’ original drawings for the chair, which shows a pleated and buttoned system in a diamond pattern for both the back upholstery and the removable upholstered seat cushion.

The chairs remained in the House Chamber until 1859, when they were removed in favor of circular benches radiating out from the Speaker’s desk. In 1860, the chairs and desks were reinstalled in the chamber, and remained there until 1873 when they were replaced by new desks and chairs.

The chair currently under treatment by SCSI has been firmly attributed to the group of chairs originally manufactured by Bembe and Kimbel in New York in 1857. The pleated and buttoned style of upholstery chosen for this treatment is illustrative of a style which survives on a Bembe and Kimbel chair owned by the House of Representatives currently in storage. Upholstery conservator Frank Kallista examined the example in storage and estimated that the upholstery system dates to the 1930s, note enclosures.

Note enclosures of this report for additional information regarding the historical upholstery of the period through original drawings of and illustrations from various English design sources from the 1830 through the 1850’s.

PURPOSE OF TREATMENT

The treatment of the chair was undertaken to ensure that the structure wooden and upholstered structure of the object was suitable for handling and public display. Also that the wood, upholstered, and metal presentation surfaces were to be treated so that they represented an historically appropriate surface and the physical evidence uncovered during the treatment and analysis phases of the treatment, while preserving any older or original appropriate materials, particularly the upholstery materials. As part of this treatment regime, the investigation of the existing coatings through various forms of analysis were conducted to not only aid in this treatment regime, but also to establish for the record the coatings and their basic composition including the presence of a potential red brown toned staining layer, which was found on the Desk Manufacturing Company chair that we have treated previously, (note the enclosed analysis documentation in this report). The wood and metal show surfaces achieved in this treatment are based on the above mentioned coating analysis, the treatments we have previously conducted on another example of the "Walter" chairs, and the historical and physical data available during the course of this treatment found on this chair as well as the chair which retains an older possibly original presentation surface that is housed at artex. New Moroccan goatskin upholstery was applied to the chair seat and back frame to illustrate the Thomas U. Walter's original drawing (copy enclosed in this report) and in this way there are examples in the collection of the U.S. House of Representatives that display both Brumidi's cushioned upholstery system and Walter's buttoned and tufted upholstery. Due to monetary constraints, only one of the two chairs was treated during this treatment regime.

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The following pages detail specific condition issues and treatment of the House of Representatives Bembe and Kimbel chair.

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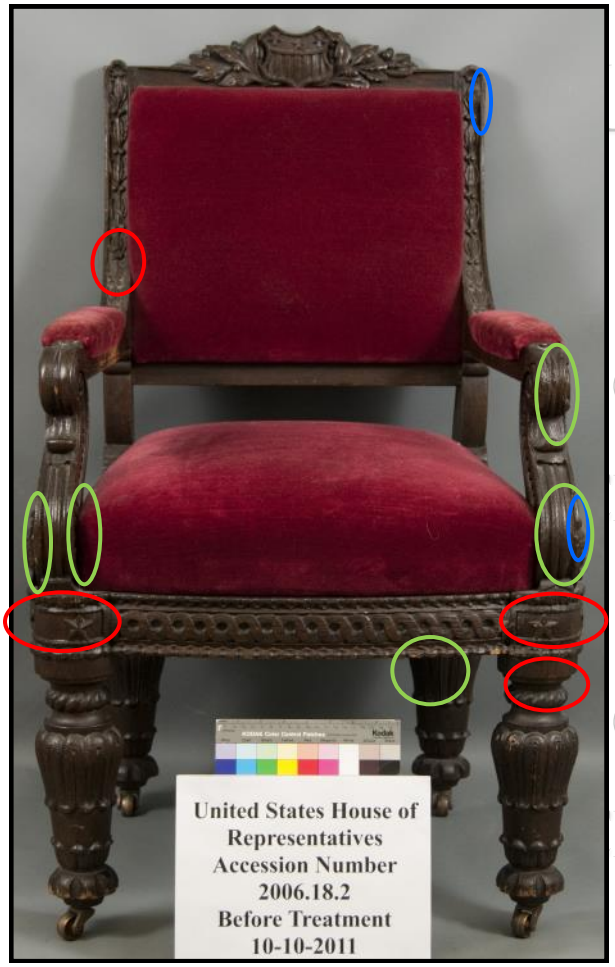
Existing Condition and Treatment of Structural Elements

There was a major fracture on the proper left stile of the chair. Previous attempts had been made to secure the fracture, using dowels and glue, but these attempts failed to make the chair structurally sound. The old adhesive and dowels were removed and the dowels discarded.

These images, left and right show the stile before treatment, illustrating the previous attempts at repair. Below left and right show the fractured stile cleaned of the old adhesive and the dowels removed, in preparation for treatment.

To consolidate the previous fracture, Araldite 2015 structural epoxy was used to adhere the fracture, a barrier layer was not used because of the required strength of the joint. A new hard wood dowel was used to fill the holes left from the previous repair regime and was secured with fish glue. Acryloid B-72 20% in toluene was used as a barrier and the area was infilled with Acryloid B-72 color chips applied via a heat system. These areas were incoated with de-waxed blond shellac as a binder, Oresol dyes and ground natural pigments as colorants in a denatured alcohol and de-waxed blonds shellac as the vehicle. Approximately 6 layers were required to achieve the level depicted in the image above right. (see p. 25 for a full coatings treatment).

Schematic of Existing Condition and Treatment for wood losses



The green circles signify areas of wood infill utilizing wood of like kind and quality to the original. The areas were shaped to fit the existing area of loss and secured with fish glue or a fish glue barrier and Araldite 2015 structural epoxy. These areas were in coated with de-waxed blond shellac as a binder, Oresol dyes and ground natural pigments as colorants in a denatured alcohol vehicle.

The blue circles signify areas where Acryloid B-72 20% in toluene was used as a barrier and the area was infilled with Acryloid B-72 color chips applied via a heat system. These areas were incoated with de-waxed blond shellac as a binder, Oresol dyes and ground natural pigments as colorants in a denatured alcohol vehicle.

The red circles signify areas where Araldite 1253 structural epoxy was applied in the area of wood loss, and carved to match the surrounding surfaces. These areas were in-coated with de-waxed blond shellac as a binder, Oresol dyes and ground natural pigments as colorants in a denatured alcohol vehicle.

Schematic of Existing Condition and Treatment—wood loss

The green circles signify areas of wood infill utilizing wood of like kind and quality of the original. The areas were shaped to fit the existing area of loss and secured with fish glue or a fish glue barrier and Araldite 2012 structural epoxy. These areas were incoated with de-waxed blond shellac as a binder, Oresol dyes and ground natural pigments as colorants in a denatured alcohol vehicle.

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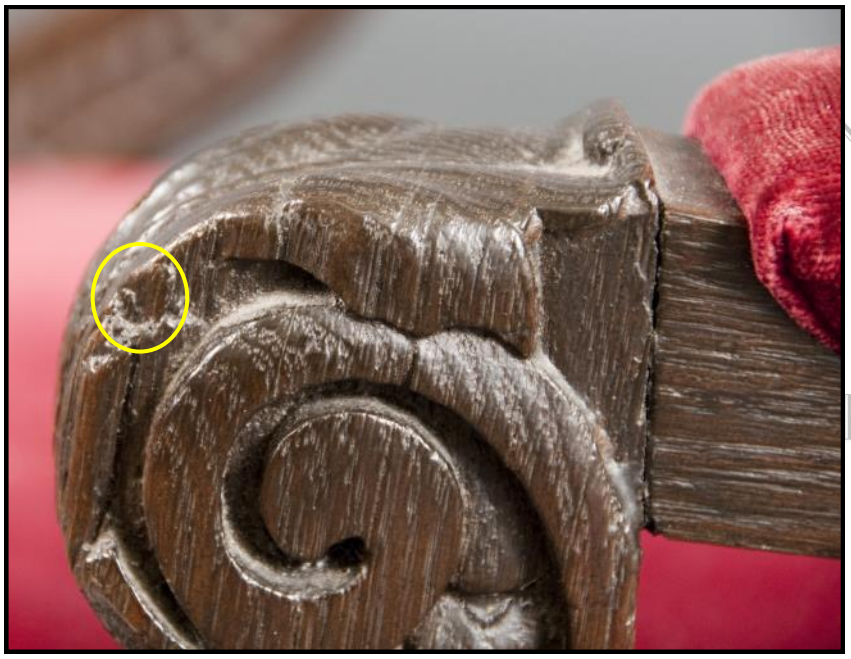
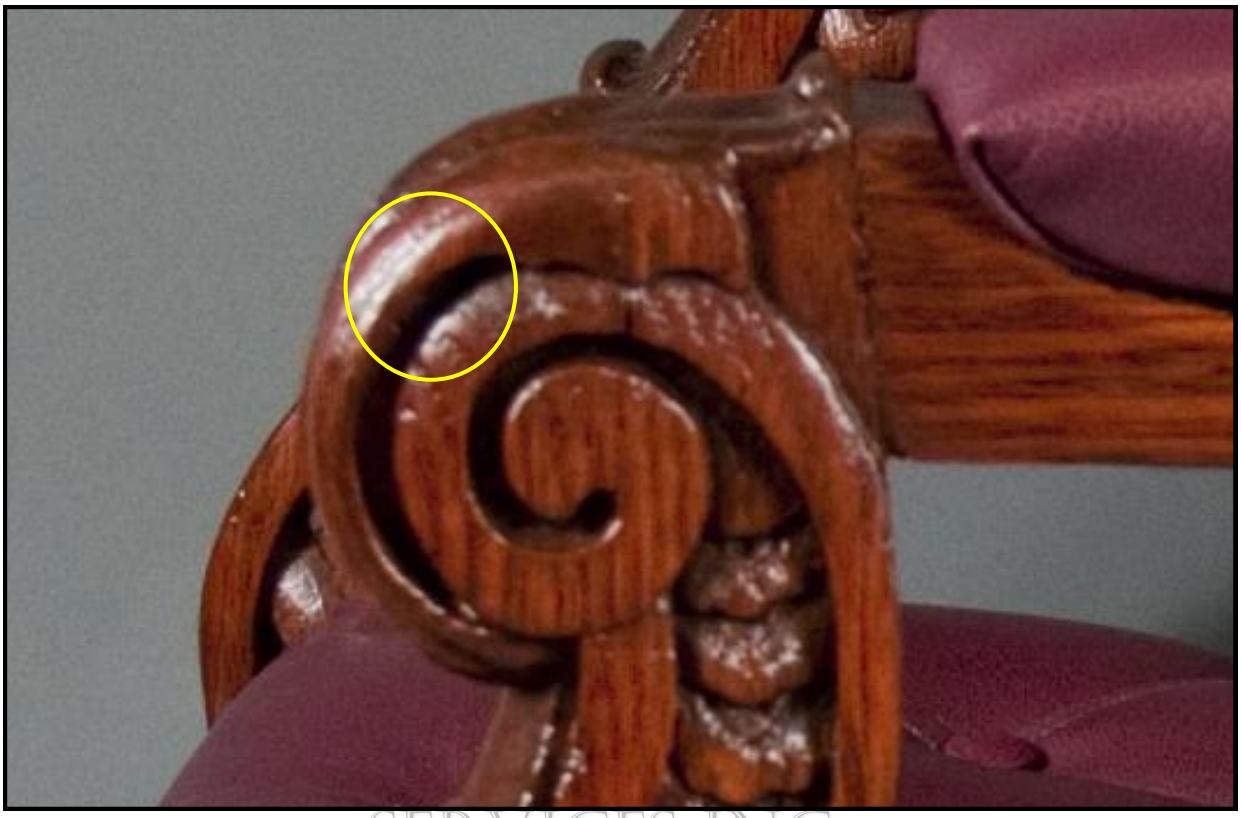
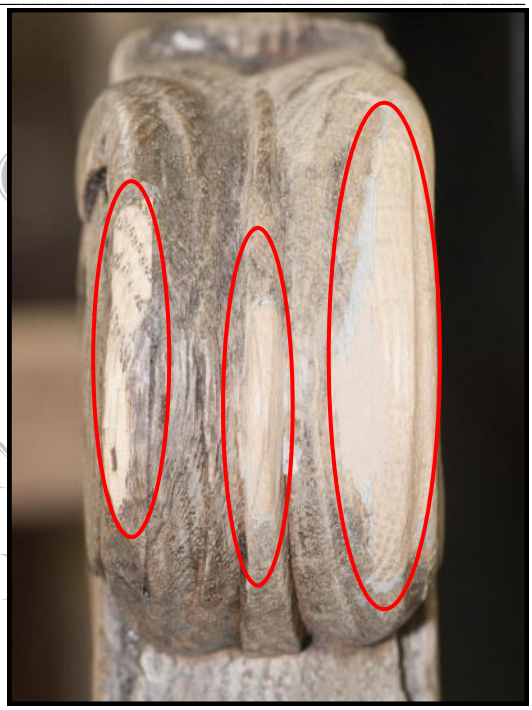


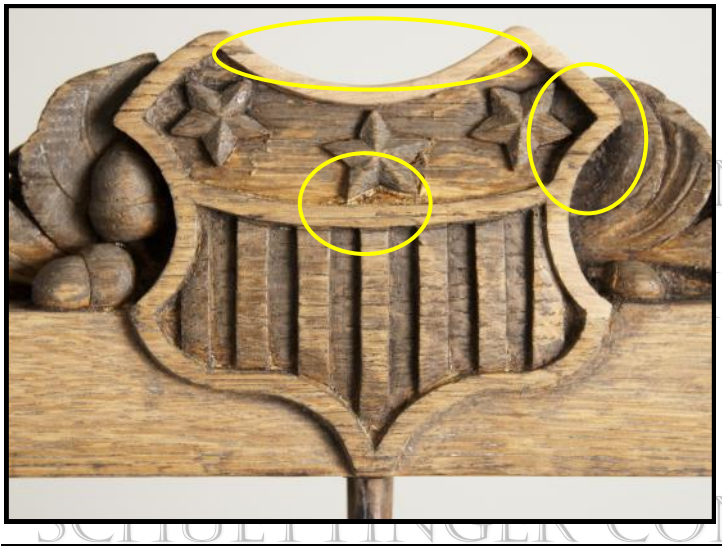
The wood loss on the carving of the arm terminal was infilled with wood of like kind and quality. Due to the strength requirements, Araldite 2015 structural epoxy was used to adhere the wood infills. These areas were in coated with dewaxed blond shellac as a binder, Oresol dyes and ground natural pigments as colorants in a denatured alcohol vehicle. (see p. 25 for a full coatings treatment).



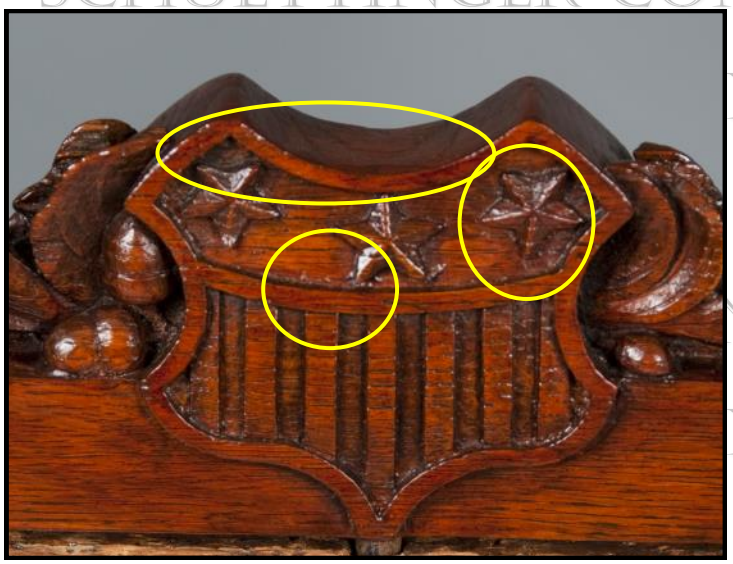


The front facings of the arm terminals also suffered wood losses. These were infilled with wood of like kind and quality. Due to the strength requirements, Araldite 2015 structural epoxy was used to adhere the wood infills. These areas were in coated with de-waxed blond shellac as a binder, Oresol dyes and ground natural pigments as colorants in a denatured alcohol vehicle, followed by dewaxed blonde shellac and the colorants as required for visual integration. (See p. 25 for a full coatings treatment).

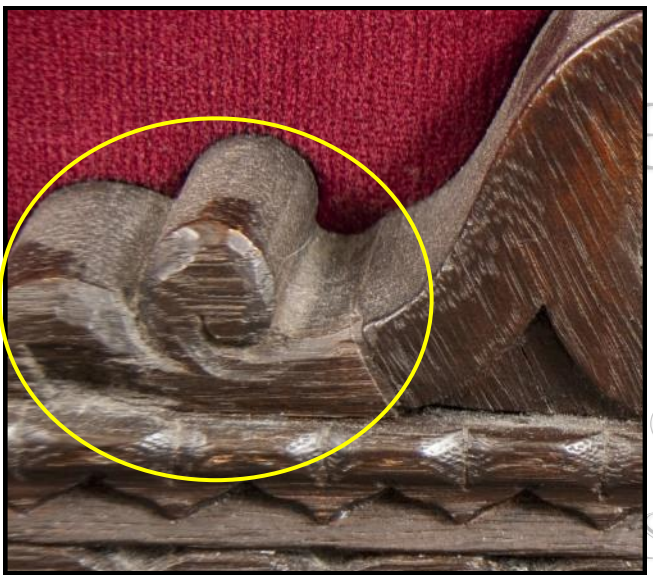
There were minor areas of wood loss to the carved shield on the back of the crest rail, as well as areas of complete coating loss.



The wood loss was infilled with wood of like kind and quality. Due to the strength requirements, Araldite 2015 structural epoxy was used to adhere the wood infills.



These areas were in coated with de -waxed blond shellac as a binder, Oresol dyes and ground natural pigments as colorants in a dena-tured alcohol vehicle. (See p. 25 for a full coatings treatment).

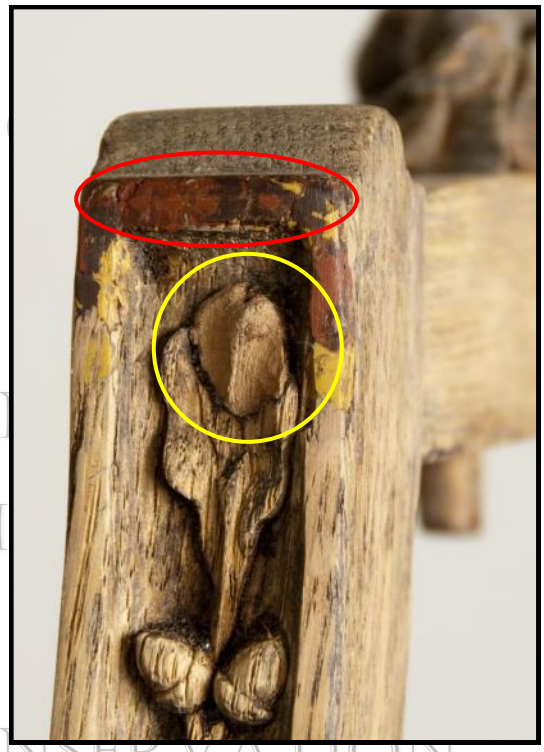


There was a poor previous attempt to replace the wood loss of a carved element on the area where the proper left stile meets the seat rail.

The previous poorly executed wood infill replacement was removed and discarded. A new carved element was fabricated of wood of like kind and quality and adhered with fish glue. The existing carved wood infill could not be retained and re-carved because its size and proportions were insufficient.

This area was incoated with de-waxed blond shellac as a binder, Oresol dyes and ground natural pigments as colorants in a denatured alcohol vehicle followed by de-waxed blonde shellac tinted with the above mentioned colorants as need for visual integration. This regime was utilized as both an initial staining layer and subsequent tinting layers. (See p. 25 for a full coatings treatment).

During a previous repair regime, a dowel was used to secure the joint between the stile and crest rail. The joint remained weak. The joint was disassembled, and the dowel discarded and the areas cleaned of old adhesives. A new, smaller dowel was used as a replacement and adhered with fish glue. Due to the loss to the carving, Araldite 1253 structural epoxy was applied to the area of wood loss and carved to match the surrounding surfaces, (yellow circle). The wood losses on the outside face of the stile were infilled with Acryloid B-72 color chips with a barrier of Acryloid B-72 20% in toluene applied via a heat system (red circle).



These areas were incoated with de-waxed blond shellac as a binder, Oresol dyes and ground natural pigments as colorants in a denatured alcohol vehicle followed by de-waxed blonde shellac tinted with the above mentioned colorants as need for visual integration. (See p. 25 for a full coatings treatment).

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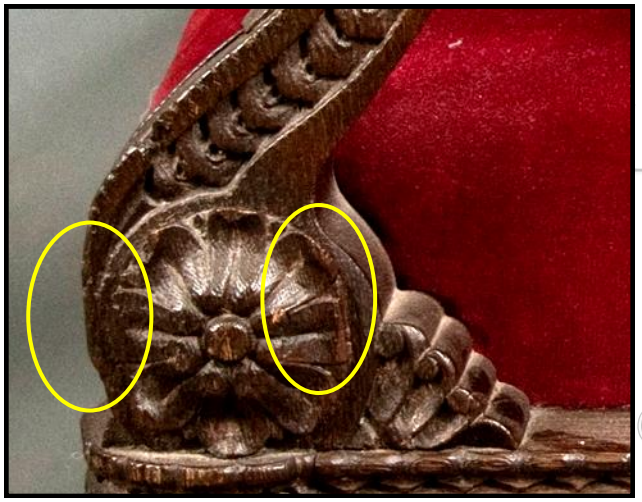
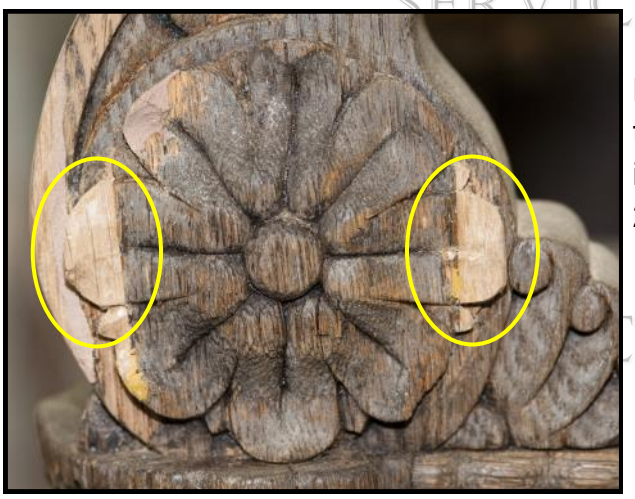


This image illustrates the area of the proper left arm rail where it meets the seat, before treatment. There were areas of wood loss to both sides of the carved floral element

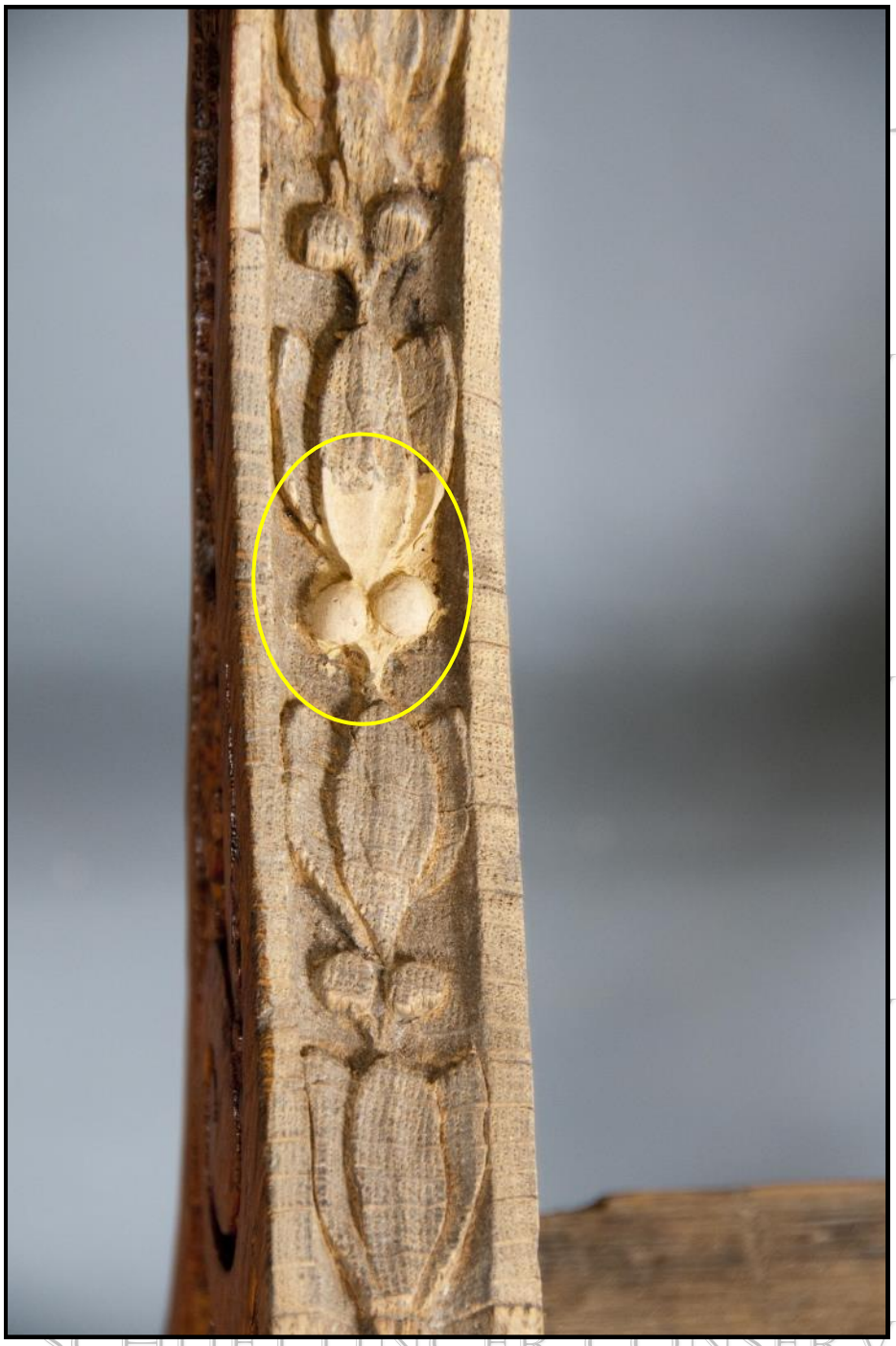


New elements of wood of like kind and quality were fabricated and shaped to fit the existing areas of loss and secured with Araldite 2015 structural epoxy and a fish glue barrier.

These areas were incoated with de-waxed blond shellac as a binder, Oresol dyes and ground natural pigments as colorants in a denatured alcohol vehicle followed by de-waxed blonde shellac tinted with the above mentioned colorants as need for visual integration. (See p. 25 for a full coatings treatment).

Above left: Area of the proper right arm rail where it meets the seat before treatment. There were areas of wood loss to both sides of the carved floral element.

Above right: Areas of loss were infilled with wood of like kind and quality to the original. The areas were shaped to fit the existing area of loss and secured with Araldite 2015 structural epoxy. Below: These areas were incoated with de-waxed blond shellac as a binder, Oresol dyes and ground natural pigments as colorants in a denatured alcohol vehicle followed by de-waxed blonde shellac tinted with the above mentioned colorants as need for visual integration. (See p. 25 for a full coatings treatment).



There were areas of loss to carved elements on the stiles of the chair. Araldite 1253 structural epoxy was applied in the area of wood loss, and carved to match the surrounding surfaces. These areas were in-coated with de-waxed blond shellac as a binder, Oresol dyes and ground natural pigments as colorants in a denatured alcohol vehicle followed by de-waxed blonde shellac tinted with the above mentioned colorants as need for visual integration. (See p. 25 for a full coatings treatment).

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The lower portion of the four original legs to which the original cup form casters were secured were cut in an early repair regime, probably first half of the 20th century. The existing non-original plate caster, which was not a historically correct form of caster, was removed and returned to the US House of Representatives upon completion of the treatment. A new wooden infill was turned to match the original profile of the reproduction cup and to fit into an existing hole in the bottom of each leg. The wood infills that included a turned wooden tenon were then secured to the enlarged existing hole with fish glue and Araldite 2015 structural epoxy where needed.

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Existing Condition and Treatment of Upholstery

This chair on the left was manufactured by the Desk Manufacturing Company with the caned, or summer seat., which our firm treated in 2011. The upholstery system for this chair was determined based on the physical evidence found in the original under upholstery materials existing with the chair and the upholstery system developed by Michael Mascelli in 2005 as well as the historical evidence present in his condition and treatment report.

The chair on the right was manufactured by Bembe and Kimbel, and may have the original undisturbed coating history and a second generation of upholstery that most closely resembles the button and pleat upholstery pattern shown on Walter's design drawings. Upholstery conservator Frank Kalista examined this chair at the Artex Storage facility. Because of the nature of the webbing, coil springs and interior coverings and filling materials, he determined that the existing button and tufted upholstery treatment appears to be like those manufactured around 1930. He also noted that there were very few holes in the seat frame, so that the chair had likely not been reupholstered more than the one time in the 1930s.

Several questions are raised by the comparison of these two chairs. Since the chairs are from the two different manufacturers have different details and a different upholstery system, it is probable they were upholstered at each manufacturer's facility rather then at the Capitol.

There are also questions raised about the coating histories of the chairs from the two different manufactories. Based on the visual inspection, the micrographs and the coating analysis that were completed for the chair on the left that we treated (April 2011), when compared to the Bembe example on the right, it appears that the original coatings are very similar, if not identical, between the two different manufacturers. How were the coating colors matched? Did General Meigs specify a particular coating or staining product with the order? Were they finished by the manufacturers or the Capitol Cabinetmaking Shop?

The coating analysis from Richard Wolbers indicated that the existing coatings for the chair covered in this report were an oil based staining layer with a carbon black colorant (see Appendix 1) and a synthetic varnish. However, based on the analysis of other chairs and desks from the larger Walter designed group which originally contained a reddish brown colorant, it is likely that the carbon black residue found in the sample was not associated with the coatings on the chair, but may have been residue from the coating removal regime undertaken on these chairs at the time of their donation in 1968 or were part of a heavily pigmented dark brown stain used to conceal the grey wood from the lye based stripper used in the coating removal process.

This caustic coating removal regime left no material from the original coating layers present. The chair was likely dipped in a caustic stripping agent like sodium hydroxide or a heated lye solution. The existing coatings are composed of a dark synthetic overvarnish poorly applied to the wood show surfaces embedding significant amounts of particulate in the crevices of the carvings. This varnish was probably applied by the Capitol Cabinet Shop.

This overvarnish was removed with a commercially available methylene chloride with a methylcellulose gel, followed by a denatured alcohol wash. A pH test was performed at that point for a base reading.

The wood was then treated with an oxalic acid solution in water with a pH of 3.5% , thickened to form a gel and applied with a brush where the silver greying of the wood was present. Two to four applications of this solution were applied. A pH test of the wood surface was performed where the bleaching solution was applied. These areas were neutralized with two clear water rinses and a buffer solution with a pH of 10.5%. This was followed by two clear water rinses and a dry towel wipe. The final pH test resulted in a pH of 6.8 to 8%.

These images above illustrate the greyish color of the wooden elements of the chair after the existing coating had been removed with the methylene chloride solution. The grey color of the wood surfaces as a result of the stripping would have been a reason for the application of a dark pigmented opaque staining layer indicated in Richard Wolbers report indicating a first generation. It would also explain why the dark pigmented staining layers appears integrated with the wood pores.

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These images illustrate different areas of the chair after the application of the oxalic acid solution and the clear water rinses applied to remove the silver-greyish color remaining from the ca. 1968 coating removal regime.

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After the coatings were removed, the chair was abraded with 150 grit sandpaper in areas to lessen the fracturing of the wood resulting from drying affects of the ca. 1968 lye solution. All areas were abraded with a 220 and 320 grit sandpaper in preparation for the application of the new coatings.

A sealer coat of thick de-waxed blonde shellac was applied as a barrier to the entire chair to prevent added colorants from infiltrating the porous wood surface. All areas of wood, Araldite and B-72 color chip infill and remaining areas of severely grey colored wood were then incoated with Mixol colorants, Oresol dyes and ground natural pigments in a dewaxed blond shellac and denatured alchol vehicle. (See pages 14-23 for individual examples).

A reddish-brown tinted layer of dewaxed blond shellac was then applied. Minor adjustments to the incoating were made using more transparent and less opaque layers of color; certain areas were faux grained for visual integration. Subsequent layers of tinted shellac were applied as necessary for visual uniformity—up to eight total layers of coatings. Between applied layers of coating, the surfaces were abraded where necessary with 800 grit silicon carbide and a fine 3M abrasive pad. The final layer of coating was dewaxed blond shellac abraded with a 3M fine abrasive pad and 4/0 steel wool. A layer of Harrells Traditional Wax in antique finish was applied.

This image depicts the chair with the structural and coating treatments completed, and newly constructed seat and back frames adhered in preparation for new upholstery.

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Existing Condition and Treatment—Upholstery

These two images display the non-original reddish brown toned woven fabric on the chair prior to our treatment. Samples of the fabric and the gimp are contained in labeled poly bags supplied with the treatment report. This show fabric appears to be the third or fourth generation of upholstery.

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This “winter seat” (as opposed to the summer cane seat) is probably from another chair manufactured by Bembe and Kimbel in 1857. The width of this seat frame was increased with the addition of a strip of wood on the proper right side to improve the fit of the seat frame into this chair. The seat frame is composed of 4 shaped oak rails joined at the corner with a visible mortise and tenon joint (see below left). The frame rails were notched 1/2” to be recessed into the chair seat frame (below right).

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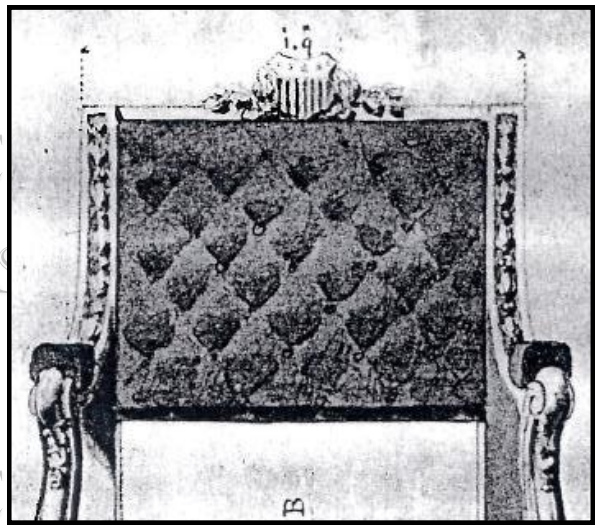
The nailed soft-wood box was added in the 4th quarter of the 19th century when springs were applied to the seat to create a cavity in which the springs would reside. At least two separate upholstery regimes were undertaken using this applied box system.

For this treatment, the existing oak frame was retained, and the 1860-1890 poplar addition was removed. A new oak inner frame was fabricated (for both the seat and the back). This new oak strip was used as a rail to adhere the traditional upholstery materials in a minimally intrusive manner.

A new webbing system was fabricated to form the base of the cushion and back, and the oak frames were covered in a burlap fabric.

Horse and hog hair was used to build up the edge rolls along the borders of the seat and back, and the frames were covered in a 2nd layer of burlap.

A width of goatskin wide enough to cover the chair's frame and seat and allow for the extra width necessary for the button tucking system could not be found. A piece of cordovan goatskin leather was sewn on top of a thin layer of urethane foam. The diamond pattern was drawn on the leather, and the two materials were sewn in a tufting pattern to simulate a pleating pattern based on the period drawings and illustrations previously noted as well as to simulate the number of tufts and buttons in Thomas Walter's drawing. The number of pleats in the Walter illustration was not practical to duplicate, as they would have been spaced very closely. The new pattern was a compromise between the historical examples and Walter's pattern.



These images depict the existing layers of upholstery on the back seat frame, including the show cover (top), a muslin under layer (middle) and a hog/horsehair layer (bottom).

The images at left illustrate the later stages of the upholstery treatment on the seat back of the Bembe and Kimball Walter chair. Burlap was applied to the seat frame on top of which hair and batting layers were applied. The entire frame was covered in muslin and then the pre-pleated leather strip was applied. Self covered buttons were placed in the center of the “pleats”.

Once the faux pleated show cover was attached to the frame with stainless steel stables, the buttons were secured to the webbing with twine in the traditional manner.

The completed show cover system in place.

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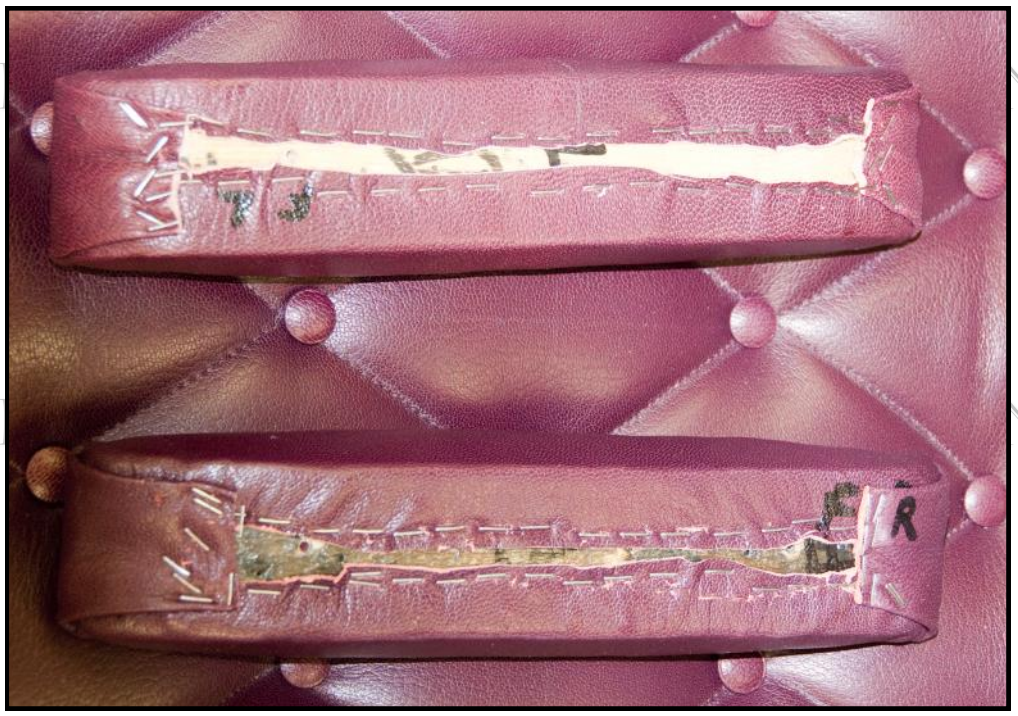
These images depict the various layers of existing upholstery on the arm sections.

The show cover was removed from the arms, but all of the existing under upholstery materials were retained and re-used and additional horsehair and cotton were added. The arms were covered with the Morocco goatskin



PHOTOGRAPHIC DOCUMENTATION

Embedded in the Condition and Treatment report and contained on an MAM-A gold archival DVD-R disc.

Color Prints: Yes Transparencies: No B&W Prints: No

Digital Images: Yes

Full view: Yes

Details: Yes

Ultraviolet: Yes

Infrared: No

Micro: Yes

EXAMINATION METHODS

Naked Eye: Yes

Hand Lens: Yes

Ultraviolet Light: Yes

Infrared Light: No

Microscopy: Yes

Chemical Tests: Basic solvent tests to determine the general composition of the coatings

Additional Recommended Testing: None at this time

RECOMMENDED MAINTENANCE:

The chair should be inspected once a year to determine the wear to the wax maintenance layer and if found deficient should be waxed with appropriate high quality beeswax based paste wax. Normal dust removal should be performed with a soft dry cloth using no commercial cleaners or polishes. If the object is to be stored, it should be protected from dust etc.

Bruce M. Schuettinger Date

President and Wooden Artifacts Conservator

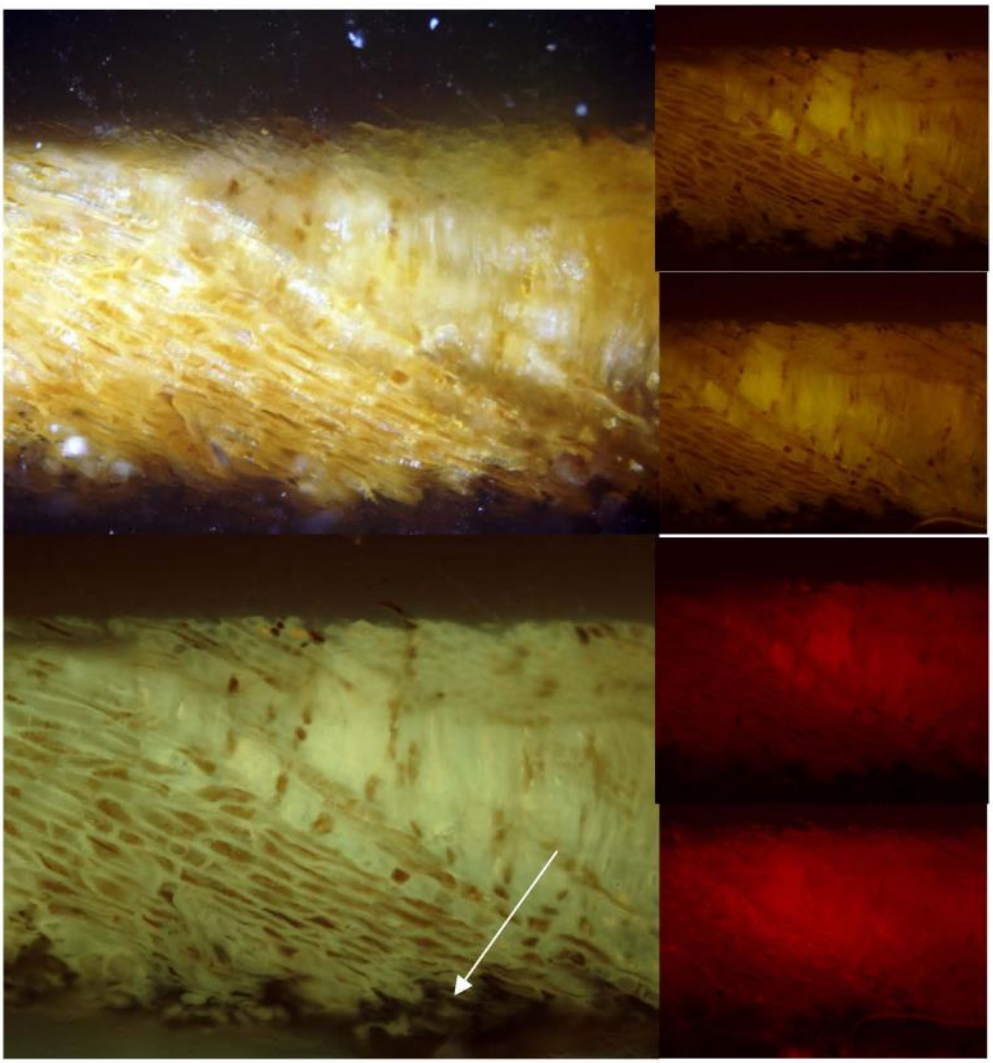
Schuettinger Conservation Services, Inc.

17 NORTH ALLEY P.O. BOX 244 -- NEW MARKET, MD 21774
PHONE 301 865 3009 -- EMAIL BSCHUETTINGER@VERIZON.NET

Appendix 1: Results of Coating Analysis
Performed by Richard Wolbers, Associate Professor, Coordinator of Science and Adjunct Paintings Conservator, University of Delaware

Sample A:

Location: *US Capitol/ Armchair/Bembe and Kimbel House of Representatives #331833 (2006.18.2) Proper Right Rear Seat Rail*
Magnification: *100x*
Equipment: *Nikon Eclipse 80i*
Normal Light View: *Nikon Excite 120 Mercury Lamp; Cross polarized*
Other View(s): *Violet Excitation (Nikon BV-2A Cube; EX 400-440, BA 470nm)*
Blue Excitation (Nikon B-2A cube; EX 450-490, BA 520nm)
Green Excitation (Nikon G-1B cube EX Band pass 545/10, BA 590nm)
Camera Type: *Nikon DXM 1200f Digital Camera*
Imaging Software: *Nikon Act I*
File Type: *JPEG*



Top Left View: Normal Light. Bottom Left View: Violet Excitation. Top Right View: Blue excitation only. Top Middle Right: Blue excitation, stained with Alexafluor 488 succinimide in a pH 9.0 Borate buffer (chartreuse fluorescence=positive for proteins). Bottom Middle Right: Green Excitation only. Bottom Right View: Green excitation, stained with Rhodamine B in ethanol (red-orange fluorescence = positive for drying oils).

Sample summary from Richard Wolbers (12/14/11)

Sample A appears to have lost it coating materials per se, but there is evidence (here at the bottom of the mounted sample, white arrow) of the initial oil/carbon black stain found in the samples taken from the second chair, accession #331834.

Both chairs #331833 and #331834 (treated in 2011 by SCSI) were stripped of their original coatings when they were dipped in a lye based solution before the existing coatings were applied. According to Wolbers, it was an oil type of stain that saturated the wood surface, and likely left the black/carbon residue in the wood pores. There was also an initial natural oleoresin clear coating. At least three subsequent coatings appear to have been applied over the original coating/staining materials; an oil coating; an oleo-resinous clear coating; and an additional oleo-resinous clear coating.

The blue arrow indicates where the coating sample was taken.

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APPENDIX 2: MATERIALS LIST

Natural ground powder pigments

Conservation Support systems

924 W. Pedregosa St.

Santa Barbara, CA 93101

Orasol dyes

Conservation Support systems

924 W. Pedregosa St.

Santa Barbara, CA 93101

De-waxed blonde shellac flakes

Sapp Leaf Products

381 Park Avenue South

New York, New York 10016

Araldite 1253 structural epoxy

Huntsman Advanced Materials Americas

5121 San Fernando Road West

Los Angeles, CA 90039

Araldite 2015

Huntsman Advanced Materials Americas

5121 San Fernando Road West

Los Angeles, CA 90039

Fish glue

Lee Valley

1090 Morrison Drive

Ottawa Ontario K2H 1C2 Canada

Acryloid B-72 color chips

Conservation Support systems

924 W. Pedregosa St.

Santa Barbara, CA 93101

Liberon wax sticks

W*.S. Jenkins & co., Ltd.*

Jeco Works

Tariff Road

Tottenham London N17 OEN

Mixol Universal Colorants

Mixol Producte

Diepold GMBH

Denatured alcohol

Toluene

Harrell's Wax Polish

W*.S. Jenkins & co., Ltd.*

Jeco Works

United States House of Representatives
Thomas U. Walter Armchair, Ca. 1857

Tariff Road

Tottenham London N17 OEN

UPHOLSTERY MATERIALS

Poly webbing

Stainless steel staples

Upholstery buttons

Horsehair and hoghair filling

Burlap fabric

Cotton batting

Cotton muslin fabric

Cambric fabric

Supplied show leather fabric: Moroccan goatskin