

THE DAMASCUS ROOM,
SHANGRI^{LA}

CONSOLIDATION &
DOCUMENTATION

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INTRODUCTION

The consolidation and subsequent documentation there of is Phase III of the ongoing conservation of the Damascus Room at Shangri La. Phase I consisted of a three-day symposium, held at Shangri La in August 2004, attended by conservators, curators and other participants from various museums with similar Damascene interiors in their collections. The symposium focused on the history, construction and conservation of these interiors. Phase II took place over the summer of 2005. It consisted of the examination and documentation of the rooms' condition at that time. It also involved the testing of various consolidation methods and treatment recommendations as it had been determined that the room was in "immediate need of consolidation"¹. The report produced during phase II functions as the base document for the complete conservation of the room and includes an executive summary written by Richard Wolbers, an explanation of Phase I, a history of the room, cross-section microscopy and more.

This report focuses on the consolidation of the room which took place over the summer of 2007 and includes a sample of the digital documentation which was added to the original assessment of the room. The digital documentation shows that in general the needed consolidation in 2007 was more extensive than that which was noted as in acute need of consolidation in 2005. The full digital documentation of the consolidation effort, including the locations of all adhesives used, can be found in the updated versions of the Conservation Assessment and Documentation Volumes II-VI. Phase III also further examined the structure of the room including location of joints, applied ornamentation, and trends in construction.

¹ A. Bagnall, N. Loeblich, R. Wolbers, "Conservation Assessment and Documentation" (Master Report for Damascus Room, Doris Duke Foundation for Islamic Art and the Winterthur/ University of Delaware Program in Art Conservation, 2005) 4.

GOALS

The main goal of Phase III was to consolidate the rooms' decoratively painted surfaces (walls and ceiling) in order to stabilize the paint and materials and to preserve the overall aesthetic of the room. When examined from close-up, the surface topography of many panels (especially on the ceiling) was distorted as a result of lifting, flaking, and tenting paint and decorative materials (mainly gesso). The consolidation effort was also to allow for the future maintenance of the room such as routine dusting.

The Damascus room has been uninstalled since the summer of 2001. The Damascus Room and several others were uninstalled at this time to begin renovation of the entire house. The consolidation and subsequent conservation efforts will allow for reinstallation of the room. Reinstallation is currently scheduled for the fall of 2008 after the completion of Phase IV and will occur during the one month a year that the museum is closed to visitors for maintenance (September). Once reinstalled, the room will be temporarily open to VIP tours only. After further renovations have occurred, it is the long-term goal of Shangri La to include the Damascus Room on public tours. Public tours occur throughout the day, Wednesday thru Sunday, and have high attendance rates. Subsequently, recommendations for ongoing room maintenance as stated in the original report have been summarized and expanded upon in this report.

A second goal of Phase III was to conduct limited pilot treatments for the filling and inpainting of lost paint and *al ajami*. This effort consisted of testing various materials in order to make recommendations for Phase IV of the ongoing conservation effort. Phase IV will involve the inpainting and potential filling of losses and may also address the removal of egregious overpaint. These steps will help to further improve the rooms' aesthetic by achieving overall visual harmony. Only minimal filling and inpainting may be necessary for the ceiling due to viewing distance.

MATERIALS: CHOOSING A METHOD OF APPLICATION

The properties of an ideal adhesive for use as a consolidant on the Damascus Room were outlined in the report produced during Phase II and reads as follows...

- 1) Be deliverable at a high enough concentration to hold materials together effectively;
- 2) Be deliverable in an appropriately viscous solution;
- 3) Be soluble in a range of solvents, with the ability of the solution to wet onto the adherend surfaces effectively;
- 4) Allow moisture to be transmitted through it, but be dimensionally stable in an un-regulated environment.
- 5) Form a flexible film on drying.
- 6) Meet the basic conservation criteria of highest stability and reversibility with time².

There were four unique problems with the decorative materials in the room. The first was that of small flaking paint and friable paint/gesso which would require an adhesive of relatively low viscosity. The second was larger fragments of gesso (used to create *al ajami* decoration) and other materials in need of consolidation. Many of these fragments had become completely detached from the walls/ceiling and would require an adhesive of high viscosity and green strength.

A third issue was the horizontals of the room which looked white in appearance. The horizontal edges of panels and some decorative elements accumulate dust at a higher rate than the rest of the room. It was observed that horizontal edges on walls across from the two doorways leading to outside pavilions received the most dust accumulation due to airflow patterns. Lower horizontal edges also collected more dust than higher ones for the same reason. This had a disturbing visual impact on the harmony of the room. Accumulated dust retains moisture against the surface, thus increasing the possibility for mold and/or blanched varnish. The blanching of a varnish can be caused by the partial dissolution of the film³. It is known that some of

²A. Bagnall, N. Loeblich, R. Wolbers, "Conservation Assessment and Documentation" (Master Report for Damascus Room, Doris Duke Foundation for Islamic Art and the Winterthur/ University of Delaware Program in Art Conservation, 2005) 86.

³ CCI notes 10/11, 2.

the emulsion varnish coatings present on the walls and ceiling are water sensitive.

The final issue was that of blanched paint and design material on the ceiling due to previous water damage which had resulted in the loss of water sensitive design medium. These areas would need to be resaturated with a low molecular weight resin. The same areas were also in need of consolidation as the paint materials and wood had become unstable.

The Ceiling Grid Areas G4 and F4 as well as Makai Wall Grid Areas A6, B6, and C6 were treated during the consolidation tests conducted in the summer of 2005. These Grid areas were treated mainly using a PVA emulsion applied via a syringe (with a #18 gage needle) and brushes. These areas were reassessed in the beginning of the summer of 2007 and were found to be stable.

While the PVA emulsion proved to be effective for larger fragments, an alternative adhesive of lower molecular weight was required to address smaller flaking and friable paint and gesso. Sturgeon glue, Aquazol and Plextol 500 were all previously tested (Phase II), but were found to not be ideal for various reasons⁴. B72 was found to be a good adhesive but did not meet the requirement of allowing for the transfer of water. Thus, using it as an overall consolidant could accelerate further damage to the decorative materials. However, the use of B72 on selective areas could prove to be beneficial.

Beva 371 is a thermoplastic resin that is soluble in low polarity solvents. This was an important issue as low polarity solvents were required in order to not disturb the varnish coatings/ paint. The Beva 371 was put into solution with xylene at a 30% by weight solution and a 13% by weight solution. Both solutions were of a workable viscosity that could be applied via brush or syringe (#20 gage needle). The 30% solution was found to work well as an overall consolidant for flaking and tenting paint. The 10% solution of Beva 371 in xylene was appropriate for selective areas of powdery/friable design material as it had excellent wetting capabilities.

⁴ A. Bagnall, N. Loeblich, R. Wolbers, "Conservation Assessment and Documentation" (Master Report for Damascus Room, Doris Duke Foundation for Islamic Art and the Winterthur/ University of Delaware Program in Art Conservation, 2005) 86-88.

PAST TREATMENTS

The ceiling and walls are likely from two different Damascene interiors and their history varies as a result. The condition of the walls is notably better than that of the ceiling and this may be partially attributed to the fact that it has been more heavily restored over time, receiving both new panels and retouching. The Damascus Room has undergone several restoration campaigns in the past. The first campaign occurred upon its original installation into a Damascene home. This would have been a routine procedure as decorative elements can be damaged upon installation. These “touch ups” would have likely been carried out in a traditional method using the techniques and materials of the time and thus appearing the same or similar to that which is original.

The second major known event in the history of the room is its installation at Shangri La in 1955. Both the ceiling and walls received restoration before being shipped to Shangri La and after installation. Because these restoration campaigns occurred so close together in time it is difficult to distinguish between the two. New panels were constructed in order to make the room fit the space in Shangri La. Images taken by the dealers Asfar and Sarkis, and sent to Doris Duke; show both the walls and ceiling with the new panels included. Visual examination and cross-section analysis shows that several of these panels have under paintings. In some cases a green color was painted over in beige⁵, and floral motifs were painted over with new floral motifs that matched that of the rest of the room. These panels may have originated from yet another Damascene interior. Bronze powder was used in creating the metallic look of the *al ajami*⁶ on the new panels of the ceiling.

The most recent restoration campaign took place at Shangri La by Doris Duke and/or her staff. This campaign is most evident in the large paint applications intended to fill areas of lost *al ajami*. It is likely that this campaign did not happen all at one time, but rather was an ongoing effort by Doris Duke to preserve the room as a presentable interior living space.

⁵ A. Bagnall, N. Loeblich, R. Wolbers, “Conservation Assessment and Documentation” (Master Report for Damascus Room, Doris Duke Foundation for Islamic Art and the Winterthur/ University of Delaware Program in Art Conservation, 2005) Sample 4 of cross-section analysis.

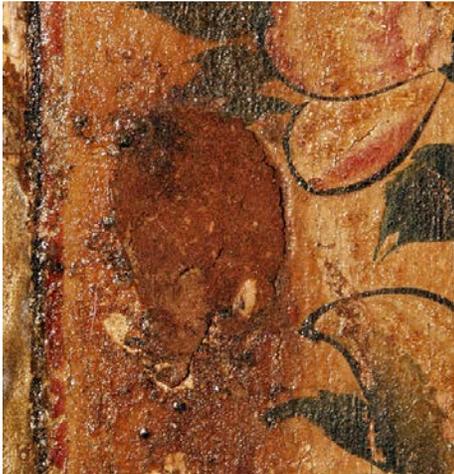
⁶ A. Bagnall, N. Loeblich, R. Wolbers, “Conservation Assessment and Documentation” (Master Report for Damascus Room, Doris Duke Foundation for Islamic Art and the Winterthur/ University of Delaware Program in Art Conservation, 2005) Sample 20 of cross-section analysis.



Underpainting of floral motif seen in loss. Located on new panel. By Asfar & Sarkis?



Glossy brown fill material. By Doris Duke?



Coarse Red Putty Fill.



Glossy Caramel-like fill. By Doris Duke?

From the time of the 1955 installation to 1993, which marks Doris Duke's passing, maintenance of the room consisted of weekly dusting carried out by two house maids on Ms. Duke's staff. Feather dusters were used with no cleaning products. Most frequently, the walls would be dusted only within arms reach. Dusting was carried out in a mind-set towards house cleaning rather than preventive conservation. The full room would be dusted only periodically. Remnants of feather from the dusting were found throughout the rooms' walls and ceiling. In 1999 Objects Conservator Laura Goreman assessed the current maintenance practices and called for a stop in the dusting of the room. Dusting was completely ceased in 2001. The decorative surfaces have received no maintenance since that time⁷.

⁷ Moore, Owen. In person interview. Shangri La, Doris Duke Foundation for Islamic Art. 6/2007.

TREATMENT: PHASE III

Consolidation issues of the ceiling were addressed first followed by the consolidation of all four walls. (Scaffolding was employed to access the ceiling and upper portions of the walls.) The treatment methods used were the same for both. The flaking, cupping and tenting paints were consolidated using Beva 371 30% solution in xylene. The adhesive was applied using a combination of syringes (needle gage #20) and brushes. The tips of the needles were ground down using a 10.8 Volt, variable speed Dremmel tool. This prevented the adhesive from dripping from the needle tip during application. Lint-free cotton pads were used to dab away any excess adhesive from the surface.

A solution of 13% Beva 371 in xylene was used to consolidate areas of friable and powdery paint and gesso. The 10% solution was applied via a brush and was allowed to wick into gesso in need of consolidation. The 10% solution was also applied via syringe in selective areas. These areas consisted of very fine cupping and friable paint. The syringe allowed the 10% solution to flow in behind the paint layer.

A PVA emulsion (Elmer's Glue-All) was used in a 50% solution in water to secure areas of larger flaking paint and design materials such as gesso and carved wood elements. The PVA emulsion was delivered using syringes. The application of the Beva 371 solution prior to the application of the PVA emulsion on any one given area increased the wetting capability of the PVA emulsion. This was only so if the BEVA 371 solution had not yet dried. The solvents in the Beva 371 solution helped to lower the surface tension of the water in the PVA emulsion. In some locations previous restorations were carried out using water soluble glue (likely animal glue of some kind). This glue was partially solvated by the PVA emulsion. In such cases the extraneous animal glue was removed using mechanical means such as a micro spatula. In other selective instances the PVA emulsion acted to slightly soften the paint and decorative material thus allowing for the reduction of cupped, flaking, and tenting paint. This was especially prominent on the recessed ceiling panels. The PVA emulsion was not used overall in order to limit the amount of water brought to the surface as water can introduce the risk of mold and other hazards.

A white mold was found to be present on areas of dark paint on the ceiling. These areas were cleaned using mineral spirits applied with a lint-free cotton pad. This treatment removed the mold growth, but did not kill or remove mold spores. It is important to note that given the right environment these spores will continue to grow.

Horizontal edges of the room were dusted using soft Japanese brushes and cosmetic brushes starting with the upper most and working downwards. Additional dirt and grime was removed using lint-free cotton pads moistened with mineral spirits. This treatment was limited and done gently as the red paint on several of the horizontal surfaces proved to be slightly sensitive to the mineral spirits when tested.

Horizontal edges that had become blanched were treated with a 10% solution of B72 in xylene. The selective areas were coated using a small soft sable brush. Horizontal edges above doors and display shelving which were the most blanched received up to three coats of the 10% B72 solution. This helped to resaturate the varnish layer and greatly reduced the white haze caused by the blanching.

Selective areas of *al ajami* which had also blanched due to the same causes were treated using the same methods as the blanched horizontal edges of the room. Like the blanching of the horizontals, the blanching of the *al ajami* was most problematic in lower areas of the walls. Again, the blanching was greatly reduced via resaturation, but was not completely removed.

Areas of the ceiling which had suffered water damage were consolidated using the Beva 371 solution, PVA emulsion, or a combination of the two via the methods as described above. Once consolidated, they were stable but still appeared to be blanched. Therefore they were also treated using the 10% solution of B72 in xylene. The areas were coated up to three times with the solution using a small soft sable brush. This helped to reduce the blanched effect and the area no longer draws the eye of viewer.

Adobe Illustrator CS2 software in conjunction with an Intuos3 Wacom professional pen and digitizing tablet were used to record the exact locations of the B72, Beva 371 and PVA used in the consolidation phase of treatment. This was recorded as a series of overlays for the 103 existing visual records. Hard copies were printed out and added to the master report as well as backed up with digital files. A sample of the overlays created is included with this report.

MATERIALS LIST

Beva 371
B 72
PVA emulsion (Elmer's Glue-All)
Syringes with number 20 gage needle
Small soft sable brushes
Lint-free cotton pads
Mineral spirits
Xylene
Nitrile Gloves (powder-free)
Soft Japanese brushes
Soft cosmetic brushes

TREATMENT TIME

Consolidation of the Damascus room took a total 357 man hours.
Documentation of the work took a total of 70 man hours. The conservation effort of 2007 also included documentation and testing which is not included in this time estimate.

SAMPLING

Samples 1-48 were collected and analyzed during Phase II (summer 2005). Additional samples, 49-52, were collected in Phase III (summer 2007). Samples 49-51 were taken of fibers that were used as fill material between boards in various areas of the ceiling. The samples were collected using a scalpel with a #13 blade and micro tweezers. Sample 52 was taken from bloom believed to be mold growing on areas of dark paint on the ceiling⁸ and was collected using a scalpel with a #13 blade. The samples were put into polyethylene bags and labeled accordingly.

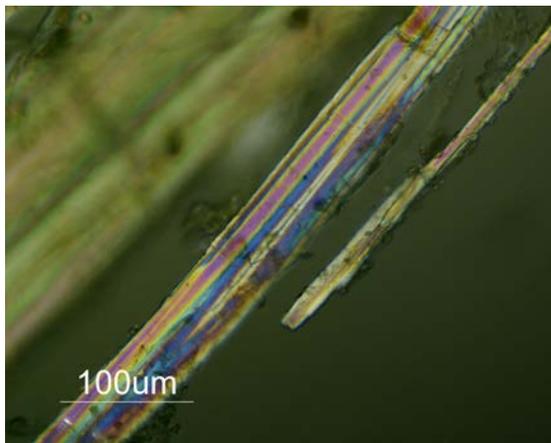
The samples were analyzed at the Conservation Laboratories of the Winterthur Museum by Richard Wolbers using a Fluorescence Microscope:

⁸ See appendix for sample locations.

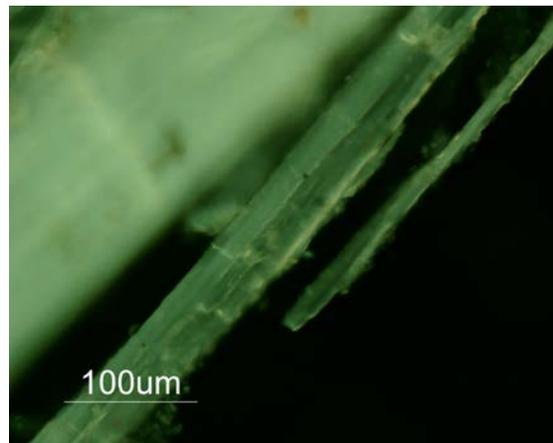
Nikon Eclipse 80i Binocular Microscope
Nikon Excite 120 Mercury Lamp – reflected visible light
Blue Excitation – Nikon B-2A cube, EX 450-490 nm, BA 520 nm
Digital Eclipse DXM 1200f Nikon Camera in conjunction with the Automatic
Camera Tamers (ACT-1) control software

Sample 52 was cast in Extec Polyester Clear Resin (methyl methacrylate monomer) and polymerized with a methyl ethyl ketone (MEK) catalyst under a tungsten halogen bulb with a curing time of approximately 10-12 hours. It was then sanded using Micro-Mesh Inc. abrasive cloths and was stained with a fluorochrome stain (Lectin FITC L 4895) made by Sigma Aldrich for mold detection.

Sample Number: 49
Sample date: July 5, 2007
Elevation: Ceiling D3
Decorative element: fiber-fill
between boards
Sampled by: Louise Groll
Examined by: Richard Wolbers



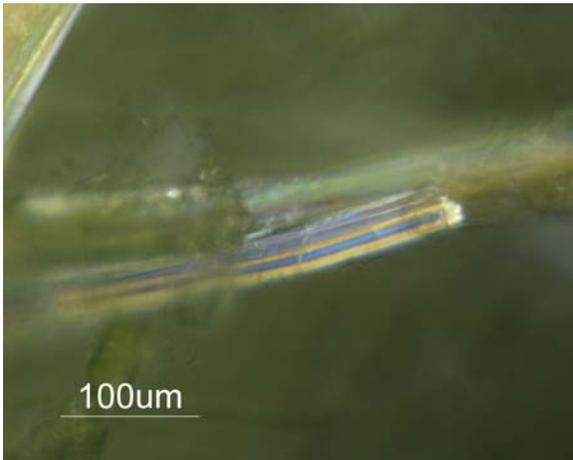
100x Visible light



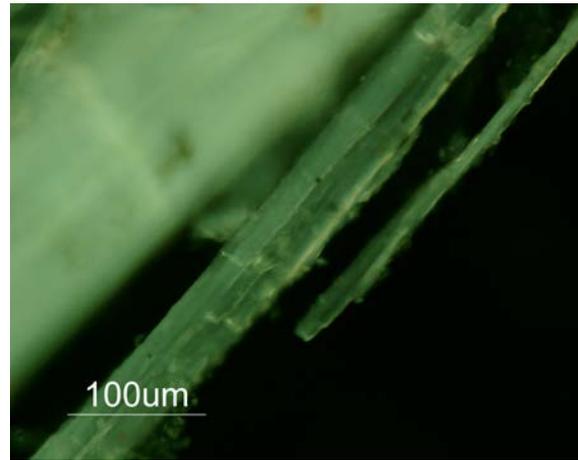
100x Violet

Results: Bast fiber such as hemp or flax.

Sample Number: 50
Sample date: July 5, 2007
Decorative element: fiber-fill
Between boards
Elevation: Ceiling E1
Sampled by: Louise Groll
Examined by: Richard Wolbers



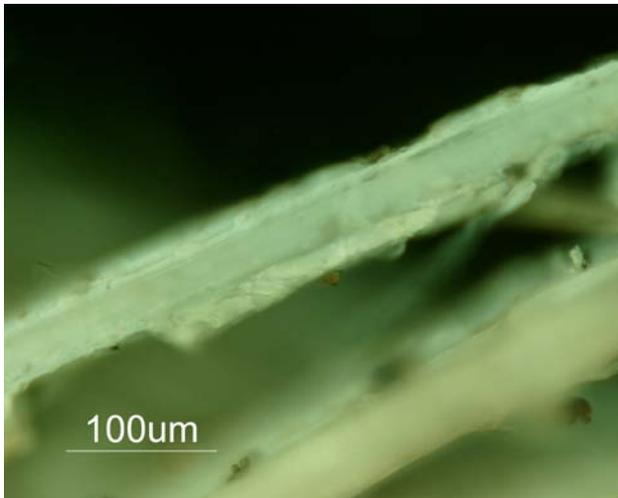
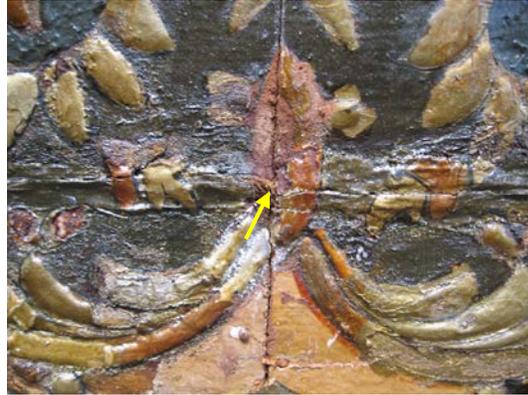
100x Visible light



100x Violet

Results: Bast Fiber such as hemp or flax.

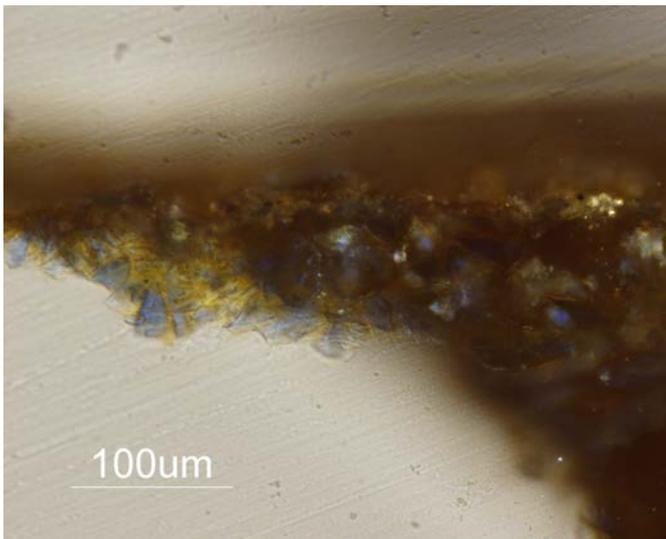
Sample Number: 51
Sample date: July 5, 2007
Decorative element: fiber-fill
between boards
Elevation: Ceiling D2
Sampled by: Louise Groll
Examined by: Richard Wolbers



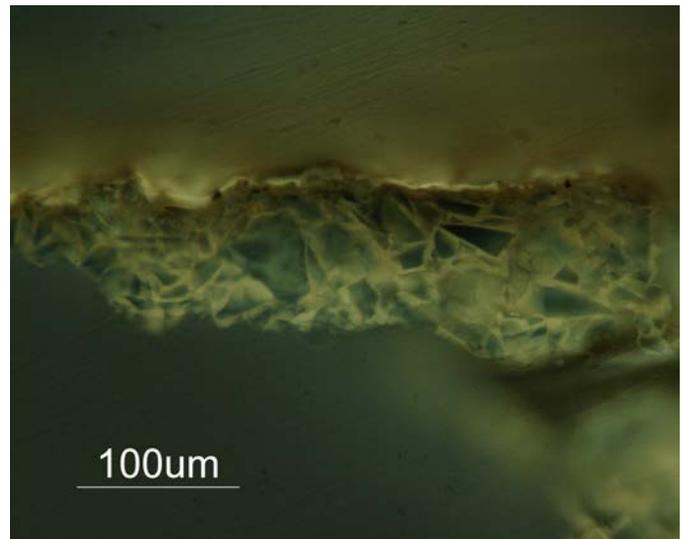
100x Violet

Results:
Bast fiber such as hemp or flax

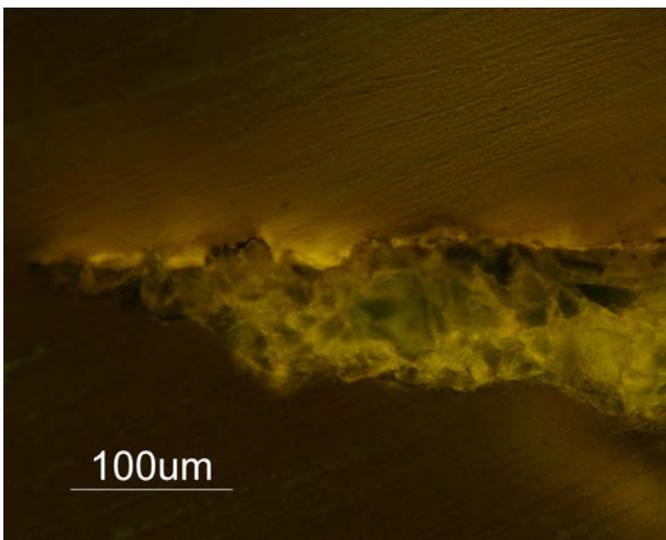
Sample Number: 52
Sample date: July 5, 2007
Decorative element: White bloom (mold?)
Elevation: Ceiling C2
Sampled by: Louise Groll
Examined by: Richard Wolbers



100x Visible light



100x Violet



100x blue Lectin FITC

RESULTS:
Stained positive for mold.

PILOT TREATMENT FOR PHASE IV

Pilot treatments for filling and inpainting were conducted on the Diamond Head wall Grid Areas C1 and B1. Microcrystalline wax with an MSA resin component was to be used as a fill material but was too soft in the temperature of the Damascus Room (in the mid 80's on average during summer of 2007).

Losses to the paint layer did not receive fills. Although the slight topographical difference created by areas of lost paint is visible upon close examination, it is not distinguishable from viewing distance. Therefore the decision was made to not fill losses in the paint layer. For inpainting of losses that did not require filling, an isolation layer of Golden MSA Varnish with UVLS (Satin), thinned 1:1 varnish/mineral spirits, was applied using small sable brushes. Once dry, a base coat of Reeves Acrylic Colour was applied with soft sable brushes. MSA colours were then applied, using mineral spirits as the solvent. The acrylic color functioned as a barrier coat between the isolation layer and the MSA paints. To achieve proper finish (gloss) thinned Golden MSA Varnish with UVLS was applied. This achieved the needed gloss well, but sometimes disturbed the inpainting. A Golden Acrylic varnish may be used as an alternative surface coating.

Areas of lost *al ajami* decoration were toned using the same technique. This greatly decreased the visibility of the losses, especially from viewing distance.

RECOMMENDATIONS FOR PHASE IV

Inpainting should be done by addressing the largest and most distracting losses on the walls first. Large and distracting losses on the ceiling will also need to be addressed. The decision of the degree to which inpainting is carried out should be made in conjunction with the appropriate staff at Shangri-La. Examples of minimal and extensive inpainting can be found in the tests carried out during 2005. These areas are indicated in the Adobe Illustrator CS2 overlays that were created in the summer of 2007.

The inpainting techniques and materials as described in the previous section were successful and easy to work with and are recommended for Phase IV. Phase IV should begin by examining the test areas and assessing their stability and any aesthetic changes.

Microcrystalline wax with an MSA resin component was found to be too soft at the temperature of the Damascus Room. An alternative fill material must be found for the purpose of filling areas of lost *al ajami* and other decorative elements.

ONGOING ROOM MAINTENANCE

A section on the maintenance of the room was included in the master report. This section will address issues not discussed in the previous report only. For general information on climate, lighting and pest management please refer to the master report. It has been recommended in the past that the doors and screens to the room be kept shut while not in use. However, the discovery of mold in the room indicated that air circulation is necessary in the space. The use of fans, on a low setting, during a relatively cool time of day such as the morning may help to deter or slow the growth of mold.

It is also important to avoid fluctuation of temperature and relative humidity in the room. Temperature and relative humidity should be monitored while trials are done with a fan. Monitoring can be done with a HOBO data logger, which the museum has in its possession. Windows and doors should not be opened during inclement weather such as a rain storm.

Keeping the screens closed at all times will help to limit the amount of dust and debris entering from the out of doors. This will in turn reduce the frequency with which the room needs to be dusted. Dusting should be carried out using only small soft brushes such as Japanese brushes or cosmetic brushes. Dusting should be done from top to bottom with a HEPA filter vacuum. This will prevent the dust and grime from immediately redepositing on surfaces in the room. Objects in the room may need to be moved or covered during maintenance. Dusting of the walls should be conducted about once a month by a conservation technician. The full room, including the ceiling, needs dusting less frequently, (perhaps biannually). The rate of dust accumulation should be monitored by the conservation technician. The data collected should help to inform an effective dusting schedule. Unnecessary or excessive dusting can cause abrasion and wear to the object. Until reinstallation of the room, the room should be kept clear in order to allow for proper monitoring of the rooms surfaces (mainly watching for any further loss).

Future plans for the room include treatment of the hardware, installation of a security system, updating of the electrical system, and treatment of the wooden doors. The original carpets that were once in the room will not be reinstalled as they do not allow space for walking. Replicas of the original carpets may be fabricated for the space. The niches in the room will be relined with fabric. Synthetic materials are recommended as they will not react with the moist environment and will not be vulnerable to pest infestation. Textiles and ceramics will then be installed in the niches. Low light levels and lights that do not generate heat such as LCD lights, are recommended for the niches.

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- Molly Lambert, Consulting Architectural Conservator, included us in the architectural survey of Shangri La which was being conducted at the time of the consolidation effort, adding to our understanding of the room's history and behavior. Molly's team also loaned us a boroscope for the use of examining the assembly of the Damascus Room.
- Deborah Pope, Executive Director; Sharon Littlefield, Curator; Ann Svenson Perlman, Textile Conservator; Linda Gue, Collections Technician; Maja Clark, Collections Technician; Sahra Indio, Collections Technician; Celeste Ohta, Executive Assistant; and the rest of the staff at Shangri La who made us feel welcome and were so enthusiastic about the project. We would like to thank Jin de Silva, especially, for all the stories and Pari mangoes.

BIBLIOGRAPHY

- A. Bagnall, N. Loeblich, R. Wolbers, "Conservation Assessment and Documentation" (Master Report for Damascus Room, Doris Duke Foundation for Islamic Art and the Winterthur/ University of Delaware Program in Art Conservation, 2005)
- Baumeister, Mechthilde. "Conserving the Nur-al-Din Room." PowerPoint presentation and notes for *Preserving a Sense of Awe, The History and Conservation of Interiors from Ottoman Damascus*, symposium. Shangri La, Honolulu, May 24-16, 2004.
- "Duke, Doris Photographs / Damascus Room, Georges Derzi 1954." Archive file of photographs.
- Keenan, Brigid. *Damascus: Hidden Treasures of the Old City*. New York: Thames and Hudson, 2000.
- Kirsh, Andrea, and Rustin S. Levenson. *Seeing Through Paintings: Physical Examination in Art Historical Studies*. New Haven: Yale University Press, 2000.
- Littlefield, Sharon. "Doris Duke: Collector, Displayer, Restorer." PowerPoint presentation and notes for *Preserving a Sense of Awe, The History and Conservation of Interiors from Ottoman Damascus*, symposium. Shangri La, Honolulu, May 24-16, 2004.
- Littlefield, Sharon. *Doris Duke's Shangri La*. Honolulu: Doris Duke Foundation for Islamic Art, 2002.
- Moore, Owen. *In Person Interview*, Shangri La, Doris Duke Foundation for Islamic Art. Honolulu, HI. July, 2007.
- Prial, Frank J. "2 Old Syrian Rooms to Go on Display" *New York Times*, 1974, p. 33 & 46.
- Trench, Lucy. *Materials and Techniques in the Decorative Arts: An Illustrated Dictionary*. Chicago: University of Chicago Press, 2000.
- Wolbers, Richard. "Damascus Room: Characterization and analysis of Decorative Materials." PowerPoint presentation and notes for *Preserving a Sense of Awe, The History and Conservation of Interiors from Ottoman Damascus*, symposium. Shangri La, Honolulu, May 24-16, 2004.