western association
waac
for art conservation
Newsletter

January 2008 Volume 30 Number 1

President's Letter

Susanne Friend

As incoming president, I extend my thanks to all who voted for me and to all those who did not, thinking, justifiably, that I was out of my right mind when I agreed to run for office. Membership in this wonderfully quirky and dynamic organization is a delight, and I am honored to participate at this level.

I doubt that I would be writing this letter were it not for an epiphany I experienced some six years ago. At that time I was feeling jaded, exhausted, and fed up with conservation. I thought twenty years was too long to be doing any one profession and that the daily stresses of private practice were just too much. In short, I felt dangerous.

Contents

President's Letter 1
Regional News 3
Health & Safety 9
Technical Exchange 10
Strip 'Teas' - Solubility Data for the Removal (and Application) of Low Molecular Weight Synthetic Resins Used as Inpainting Media and Picture Varnishes 11
by Gregory Dale Smith and Ronald Johnson
Edge Finishing Silk Crepeline 20
by Yoonjo Lee
Working with Daylight in the Museum Environment 22
by Steven Hefferan
Annual Meeting Abstracts 25
Jobs 30
Membership 30
AYMHM 31

Then my partner and husband, Duane Chartier, was asked to go to New York to look at some paintings to provide scientific support to aid in the process of authentication. I decided he could not possibly do without my help and that our small children needed some time with a much beloved baby-sitter.

That was a fateful weekend. The art part of it went from bizarre to ludicrous as we looked at a shady Gauguin by the light of a swinging naked bulb in a dusty corridor of a 19th-century Upper East Side warehouse, a man from the Isle of Man with a Goya told us that tea leaves had brought us together, and a famous dead artist's former girlfriend tried to bully us into having the art world accept the last painting he did for her... by the end of the weekend we did not know whether to laugh or despair. So we saw the play *Art,* and then we went to dinner.

The restaurant we chose had a magnificent cheese cart, which I espied lurking regally in the back. As we ate, I kept looking at that cheese cart. I watched the maître fromager glide from table to table, the cart absolutely a mountain of the most gorgeous cheeses from all over the world. After a sumptuous meal I whispered to Duane that I wanted that cheese cart. The maître fromager approached, leaned over, and asked me how I felt, what cheeses I liked, and observed what wines we had been drinking. He then turned around and put together a plate of five cheeses -- a custom selection based on my tastes, the wines in my glasses, my personality -- for me. It was incredible. Duane, who is lactose intolerant, looked at me from across the table with bemused wistfulness. I looked around the restaurant, the world suddenly very simply divided into those who love cheese and those who just eat it.

When we returned to Los Angeles, I couldn't stop thinking about what had happened at the restaurant. The maître fromager had literally psychoanalyzed my cheese psyche. He profoundly knew what each person would like. I realized that I wanted to do that! What fun, I thought, to not only spread cheese, but spread the gospel of cheese, to propagate passion. I felt like a religious zealot. I jumped up and down on our bed, shouting to Duane and some bewildered visiting cousins, "I am going to teach people about the power of cheese, I will do people's cheese profiles, and take them on cheese tours, and, and, and . . . " and then, I realized I knew nothing about cheese.

I resolved to learn more about this incredible substance. At first I bought books, reading about cheese making and different milk types and cheeses of the world. We made a list of all restaurants in Los Angeles that had cheese plates and went to each one, carefully making notes. All in the interest of research, of course. This was expensive and nothing close to what I had experienced in New York. I eventually tracked down the source of the cheeses, which was the Cheese Store of Beverly Hills. I began buying from them and started a cheese database. At that time, however, the Cheese Store was the only resource in town, and the only way to really learn was to be there. One day I worked up my courage and telephoned the owner and asked him for a job. I told him of my passion for cheese and desire to do a "cheese internship" and, to my surprise, he said yes.

President's letter, continued

Every Saturday, for the past six years, I sell cheese. That one day per week surrounded by hundreds of glorious artisanal delicacies (professionalism dictates they all be tasted, of course) gives me sanity and balance. I have enjoyed my work in conservation much more since then and have redoubled my efforts in the field. Which is why I am here today. You elected me on a cheese platform, whether you knew it or not!

Sometimes in the day to day drudgery of providing for piano lessons and filling the gas tank, it is easy to forget what a wonderful profession we have. I almost did that. As we open this new year, I have to say I am profoundly grateful for all that I have and, indeed, for the perspective I have gained. Conservation may be repetitive at times, but I am certain that we never experience the boredom of most jobs. I am most especially grateful for the convivial embrace of the WAAC membership that permits personal and professional interchange and growth.

Which brings me to matters of business. I extend thanks on all the membership's behalf to Camilla van Vooren, last year's WAAC president, for arranging such a seamless, informative, and relaxing meeting in Denver. We had a wonderful time and enjoyed the new Denver Art Museum. Those singing sinks will forever remain impressed upon my memory, lest I forget to wash my hands...

Thanks should also go to all those who generously offered their services to this organization and ran in last year's election. Congratulations and welcome to Scott Carrlee, our new Vice President and to our new Members-at-Large, Dana Senge and Marie Laibinis-Craft. Since Scott was a Member-at-Large last year, Camilla van Vooren takes his place for the balance of his term. Natasha Cochran has agreed to take over as Treasurer and Terri Moreno continues as Secretary. Leslie Rainer will be missed for her insightful contributions as outgoing Member-at-Large. A special thanks to Beverly Perkins who helped me put together a balanced and interesting slate.

Please set aside the weekend of October 24-26, 2008, for this year's annual meeting at the Getty Villa in Malibu.

Following a major renovation, the Villa is now an educational center and museum dedicated to the study of the arts and cultures of ancient Greece, Rome, and Etruria. New construction highlights include the 450-seat outdoor theater, the auditorium, and scientific labs for conservation analysis and treatment.

Bordered by coastal mountains and the Pacific Ocean, the Villa evokes the classical world in both its landscape and architecture. Modeled after the Villa dei Papiri, a first-century Roman country house, the original villa building has been reimagined as an artifact discovered in an archaeological excavation. The renovated J. Paul Getty Museum features more than 1,200 antiquities on view in 23 galleries devoted to the permanent collection. The Villa's four gardens are planted with species known from the ancient Mediterranean. The site is also home to the UCLA/Getty Master's Program on the Conservation of Ethnographic and Archaeological Materials, which opened in 2005. The partnership combines the resources of the Cotsen Institute of Archaeology at UCLA and the Getty Conservation Institute, and is closely connected to research activities at the Villa.

With so many interesting things going on in the museum scene in Los Angeles, I thought it time for us to return to this great city. By the time you come, the new Broad Contemporary Art Museum (BCAM) of the Los Angeles County Museum of Art will be open. BCAM is part of renowned architect Renzo Piano's master plan to transform and expand LACMA and significantly alters the focus of this encyclopaedic museum towards contemporary art. Hopefully these things and other wondrous treasures, such as the Museum of Jurassic Technology, as well as Los Angeles' diverse cultural and culinary scene, will entice you to attend!

Stay tuned...

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WAAC Newsletter

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Deadline

Contributions for the May *Newsletter* should be received by the Editor before **April, 2008**.

Western Association for Art Conservation

The Western Association for Art Conservation (formerly, the Western Association of Art Conservators), also known as **WAAC**, was founded in 1974 to bring together conservators practicing in the western United States to exchange ideas, information, and regional news, and to discuss national and international matters of common interest.

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Susanne Friend

VICE PRESIDENT

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Individual Membership in WAAC costs $35 per year ($40 Canada, $45 overseas) and entitles the member to receive the WAAC Newsletter and the annual Membership Directory, attend the Annual Meeting, vote in elections, and stand for office. Institutional Membership costs $40 per year ($45 Canada, $50 overseas) and entitles the institution to receive the WAAC Newsletter and Membership Directory. For membership or subscription, contact the Secretary.

Internet

Articles and most columns from past issues of WAAC Newsletter are available on-line at the WAAC Website, a part of CoOL (Conservation OnLine) hosted by Stanford University Libraries, at http://palimpsest.stanford.edu/waac/.

Regional News

ALASKA

Ellen Carrlee of the Alaska State Museum has been focusing on basketry treatments, including the development of a new PEG protocol for the treatment of waterlogged basketry. (She is eager to discuss this protocol with any interested colleagues!) She will soon begin a conservation survey of the museum's Natural History collection. Ellen led increased IPM vigilance for the Alaska State Library and Archives following the destruction of a nearby building with a large rodent population.

Scott Carrlee of the Alaska State Museum participated in the AIC Collections Emergency Response Training in Seattle in November. There were a number of WAAC members at the training.

Two out of state conservators worked in the Alaska this fall. **Dana Senge** of DKS conservation in Seattle was in Kodiak cleaning and repairing a large skin covered Baidarka (kayak). **Malcolm Collum** from the Henry Ford was in Anchorage surveying a significant historical aircraft at the Alaska Aviation Heritage Museum.

Monica Shah of the Anchorage Museum spent the better part of a week in Bethel Alaska de-installing a large show of Yup'ik Eskimo artifacts called *Yupik Science*. She is busy at the moment treating objects from that show such as a squirrel skin hood, a swan feather whisk broom, and a fish skin parka.

Regional Reporter:
Scott Carrlee

ARIZONA

Martha Winslow Grimm is coordinating an Angels Project, a yearly activity of Costume Society of America, at the Jackson Barracks Military Museum in New Orleans. During hurricanes Katrina and Rita, the museum was under 15 feet of water which stayed for three weeks. The building was condemned and the museum is now in temporary quarters. Two years later there is still much to be done to get the museum up and running. The artifacts desperately need help and the Angels Project volunteers will be vacuuming, labeling, documenting, and photographing the objects for new storage facilities. If you would like to assist, please contact Martha Winslow Grimm, Textile/Costume Conservator, mwgrimm@cox.net.

Gloria Fraser-Giffords is finishing the conservation/restoration on paintings and frames at the University of Arizona's Museum of Art - objects affected by a broken steam pipe last January that filled

2007 Paul Banks and Carolyn Harris Preservation Award Presented to Walter Henry

The Preservation Award was established to honor the memory of Paul Banks and Carolyn Harris, early leaders in library preservation. The award is given to recognize the contribution of a professional preservation specialist who has been active in the field of preservation and/or conservaiton for library and/or archival materials. Criteria for selection of the winner are determined by the person's accomplishments, as they relate to preservation leadership in such activities as:

- Leadership in professional associations at local, state, regional, or national level;
- Contributions to the development, application, or utilization of new or improved methods, techniques, and routines;
- Evidence of studies or research in preservation;
- Sinificant contribution to professional literature;
- Training and mentoring in the field of preservation.

(By those standards, it's safe to say he's five for five. Congratulations Walter.)

the rooms with steam and melted the wax on the cork floors!

At the Intermountain Region Museum Services Program, **Brynn Bender** is busy working as lead conservator for new exhibits at three National Park Service sites in Arizona. Brynn, **Audrey Harrison,** and **Maggie Kipling** are performing treatments for leather, beadwork, and textiles from the Vernon collection of Native American items that belong to Grand Teton National Park. Maggie performed a condition survey for objects from Tonto National Monument and continues treating textiles from Montezuma Castle National Monument.

Nancy Odegaard finished her fall sabbatical semester at the Getty Center as a GCI Scholar and made presentations at the Symposium 2007 conference in Ottawa and the recent international biocidal seminar in Berlin.

Teresa Moreno continues as acting head of the Arizona State Museum's Preservation Division while Nancy is on sabbatical and is overseeing a number of ongoing projects including research and conservation of objects for upcoming exhibits and loans. She, Gina Watkinson, Melissa Kingston (U of A undergraduate student), and Stephanie Ratcliffe (U of A graduate) are working on the conservation of a collection of Native American silver jewelry and other metal-smithing paraphernalia in preparation for the *Set-in-Stone* exhibit scheduled to open in February.

Teresa is also heavily involved with the Arizona State Museums and University of Arizona's planning process in the design of a new museum building that will be constructed as part of the city of Tucson's Rio Nuevo Downtown Development. The museum will play an instrumental role in the interpretation of the city's historic and prehistoric origins.

Chris White continues his research and work on the ASM's Pottery Project. Local conservator **Marilyn Pool** and **Norine Caroll**, who relocated here from of the DC area, have been hired to work with Chris and continue the condition survey and the conservation treatment of the whole vessel collection.

Caitlin O'Grady is continuing her PhD research and the work she is doing in preparation for ASM's *Journeys of Our Ancestors* exhibit, which is in development for installation at the new ASM Rio Nuevo facility in a couple of years. Her research includes the development of portable XRF calibrations for copper alloy objects. In addition she continues her research on the ASM's archaeological ceramics collection looking at historic Mexican restoration fills on Casas Grandes pots.

Rachel Freer has also joined the ASM team as the Samuel H. Kress Foundation Conservation Fellow for 2007-2008. Rachel will be working together with Caitlin on the conservation of objects for the *Journeys of Our Ancestors* exhibit. Rachel is focusing her research on the textiles and organic materials that have been selected for display.

Regional Reporter:
Gretchen Voeks

HAWAI'I

The Honolulu Academy of Arts opened their exhibition on modernism in Hawaii, *Hawaiian Modern: The Architecture of Vladimir Ossipoff*. You can check out the exhibition web micro-site at hawaiianmodern.org. The show is up through the end of January; it then travels to Frankfurt and Yale.

Regional Reporter:
Lynn Ann Davis

GREATER LOS ANGELES

After almost two years of volunteer work, **Victoria Blyth Hill** has completed the book *Care and Handling of Thangkas: A Guide for Caretakers*. The basic guide for monastery collections and monks is printed with color illustrations and is translated into Tibetan. (Chinese translation is planned for next year.) With the support of a private trust, the guide will be distributed free of charge to over 10,000 monks gathering in Bodgaya, India for their annual Monlan celebration. Victoria and her husband Charles participated in the celebration and screened the limited edition DVD on the subject of rolling thangkas.

Victoria has also completed the conservation treatment of a very large 17th-century Tibetan thangka, *Yama and Yami*, for LACMA, which is now on display in the South and Southeast Asian Galleries. LACMA is planning a website on the conservation treatment. Victoria is very grateful for all of the assistance from the paper conservation department and museum staff on this thangka project.

LACMA conservators are busy preparing artworks for the opening of the Broad Contemporary Art Museum. Works on display will include loans from the Broad Foundation and the Broads' personal art collection. **Paul Gardiner** arrived at LACMA in September 2007 for a Mellon internship in paintings conservation at LACMA. Paul completed a three-year postgraduate Diploma in the Conservation of Easel paintings from the Courtauld Institute of Art in 2007. He was previously Head of the Department in Art and Design at Enfield College, London and in 1997 finished a degree in Visual Studies at Camberwell College, London.

NYU student **Lalena Vellanoweth** joined the textiles conservation lab and the research lab at LACMA in July-August 2007 for a Frost Summer Internship. She worked on a wide variety of projects during her stay.

Janice Schopfer has almost completed a full year in sunny southern California as the head of the paper lab at LACMA. After four long years **Chail Norton** has completed a Masters of Art degree concentrating in paper conservation. **Erin Jue**, the 2007 4th year intern from NYU, has been a great help to paper conservators at LACMA in preparing for the new opening of the modern art galleries, conducting a research project on Duchamp's *The Box in a Valise* and preparing the work for display.

In September 2007 **Terry Schaeffer** attended the conference "Printed on Paper" in Newcastle-upon-Tyne, England, and presented a talk entitled

"Printed on Supports Other than Paper: Light-Induced Changes in Media and Support."

Aitchison and Watters is continuing to work on a large collection of Fragonard drawings for the Norton Simon Museum in addition to other ongoing projects.

Cara Varnell and **Irena Calinescu**, with the help of several assistants, spent a good part of last summer working on a collection relocation project for the city of San Fernando's Casa de Lopez Adobe. The 1881 home of the prominent Lopez family, among the first residents of San Fernando, is registered as a National Historical Site and was opened to the public in 1975. Grants from Save America's Treasures and the California Cultural and Historical Endowment will fund preservation of the Adobe next year. First, a detailed move plan for the collection of over 2,500 historic artifacts was developed and a collection database was set up. Then, everything was inventoried, tagged, photographed, condition surveyed, cleaned, and packed by the conservation team in preparation for transport to temporary storage. After the structure undergoes preservation, the artifacts will be returned to the Adobe, and the city plans to re-open it as a "house museum."

The Sculpture Conservation Studio finished the *History of Transportation* WPA mural. The 60 panels were mounted on a duplicate of the original wall in Grevillea Park in Inglewood, and the dedication was held in August. We would love everyone to go to Inglewood to see it completed and in its new location. It now has lights so you can view it day or night. This past summer, SCS spent 4 weeks conserving a bronze fountain in the Ario courtyard of the Mission Inn in Riverside, along with 1 week at the Palm Springs Art Museum helping the museum with the conservation and supervision of their Weiner collection for an exhibit which opened in early November 2007. They welcome **Andy Smith** and **Carrine Tzadik** to their staff.

On March 28, 2008, a mountmaking forum will take place at the Getty Villa in Malibu, California. Intended for mountmaking professionals, this one-day program will address principles, applications, and research in the field of mountmaking for art objects. Papers will be presented ranging in topics from material choices to structural and aesthetic design. As there are no current registries or organizations of professionals who do this type of work, the forum will provide an opportunity to begin an informal network with the goal of growing this affiliation. There is no registration fee, but reservations will be required. For further information please email **McKenzie Lowry**, mdlwry@getty.edu, **BJ Farrar**, bjfarar@getty.edu, **David Armendariz,** darmendiariz@getty.edu.

The staff of Antiquities Conservation at the Getty is busy preparing for a conference in Athens on the protection of museum collections from earthquake damage. This is the third in a series of conferences, the first of which was at the Getty Villa two years ago and was followed by a co-sponsored conference in Istanbul. The Athens Conference will be held in May and will feature the mitigation work at the Getty Villa as well as efforts underway in Greece and a number of other countries.

Rainer Theil, conservator for the Albertina Museum in Dresden couriered the 183 fragments of an ancient Roman marble sculpture to the Getty Villa from Dresden to begin a collaborative conservation and research project between the staff of Antiquities Conservation and the Albertina. The sculpture has a complex restoration history starting in the 18th century and continuing into the 19th century. During its shipment from Dresden to Moscow and back again during the world war it was badly broken and has remained off exhibition in the Albertina since. The conservation treatment is expected to take a full year after which an exhibition at the Villa will feature the work of the conservators and mount makers and the collaboration between the two museums.

In Decorative Arts and Sculpture Conservation at the J. Paul Getty Museum, **Stephen Bell** has been hired as a mountmaker for one year to assist in the preparation and installation of temporary exhibitions, including *Color of Life* on the history of polychromed sculpture to open at the Villa in early March.

The new publication *French Furniture and Gilt Bronzes: Baroque and Régence* is at the printer and will be available in February of 2008. The catalogue includes detailed technical summaries for 44 works in the Getty collection. **Arlen Heginbotham** is currently working on the next catalogue volume on the Rococo collection, which includes a collaborative lacquer analysis project with the scientific program of the Getty Conservation Institute.

Jane Bassett was recently promoted to Conservator. Her book *The Craftsman Revealed: Adriaen de Vries, Sculptor in Bronze* will be available in the spring of 2008. Based on her technical studies of twenty-five bronzes attributed to the early 17th-century Dutch artist, the publication describes the techniques of this brilliant sculptor while illustrating European casting methods and the process of carrying out technical studies of bronzes.

Julie Wolfe participated on a panel with the director of the Roy Lichtenstein Foundation, **Jack Cowart**, for the conference entitled "The Object in Transition" held at the Getty in January. The topic of their presentation involves the restoration of Lichtenstein's outdoor sculptures.

Mountmakers **Mark Mitton** and **Adrienne Pamp** will present a paper on the use of custom cast bronze mounts for temporary exhibitions at a mountmaking forum at the Getty Villa in March.

Tania Collas was recently promoted to Head of Conservation at the Natural History Museum of Los Angeles County. She is overseeing conservation preparations for the museum's upcoming new permanent exhibitions, including *Under the Sun*, an environmental and cultural interpretation of the history of Southern California. Senior consulting conservator **Claire Dean** is advising on this and other exhibit-related projects, while overseeing much of the outside conservation contract work required for the exhibit's preparation.

Final year intern **Jennifer Kim** (NYU Program) and conservation technician

Kathleen Olson are currently assessing the museum's extensive early Hispanic costume and textile collection, items from which are being considered for the *Under the Sun* exhibition. Jennifer is also treating a beautiful late 19th-c. hat made from silk and woven bird quills that belonged to the Del Valle family. In addition to preparing condition reports for objects slated for exhibit, Kathleen is doing a great job of wrangling the conservation section's new KEEMu database.

Griswold Conservation Associates, LLC has moved to a new location in Culver City. **Ina St. George** joined the staff as associate conservator and **Abigail Deras** is the new pre-program intern. **Denyl Cloughley**, former associate conservator, has returned home to Australia and will be missed greatly. **John Griswold** participated in a panel discussion about stone consolidants and new VOC regulations, organized by the Western Chapter of the Association for Preservation Technology, at SGH, Inc. in San Francisco.

John is also serving as staff conservator at the Norton Simon Museum one day a week, while directing GCA. **Dave Harvey** led the treatment of two 19th-century, naval cannon carriages for the Mission Inn in Riverside and the initial maintenance treatment of *Peace on Earth*, the monumental bronze by Jacques Lipchitz at the Music Center of Los Angeles County. The new office administrator, **Debbie Mezera-Bocarde**, has been assisting **Stefanie Griswold** in development of the new studio and lab facility and systems.
Beverly Perkins, CCI Senior Conservation Scientist **Jean Tetreault**, and Smithsonian Institute's Center for Materials Research and Education Senior Furniture Conservator **Don Williams** co-presented a session on innovative conservation at the Western Museum Association meeting in Oakland. Beverly will be representing AIC and her fellow conservators as a panelist on "Volunteerism" at this year's AAM meeting.

Regional Reporter:
Virginia Rasmussen

NEW MEXICO

Bettina Raphael has been spending several weeks over the past year at the Menil Collection in Houston, Texas, collaborating with **Brad Epley**, head of the Conservation Department there and with the curator of ethnographic art, **Kristine Van Dyke**, on projects focused on the African object collection, including an examination and analysis project involving terra cotta figures from Mali.

Susan Barger has been acting as the courier for the *Diebenkorn in New Mexico* exhibition that originated at the Harwood Museum in Taos. In addition to her usual work with small museums in New Mexico, she was the CAP assessor for the Museum of the American Railroad in Dallas and made a site visit to the Carnival Museum in Kinsley, Kansas.

Regional Reporter:
M. Susan Barger

PACIFIC NORTHWEST

Formely with Art Conservation Services, **Corine Landrieu** has opened her own practice in Seattle. Landrieu Conservation specializes in objects and sculpture conservation.
J. Claire Dean has been out and about doing field work in Oregon, Washington, California, Texas, and northern Nevada, where she ended up living on a working ranch for a while. She participated in the FAIC-CERT training program in Seattle in November and will close out the year in Los Angeles at the Natural History Museum of Los Angeles County, where she is serving as senior consulting conservator, museum projects, assisting Tania Collas with conservation issues associated with the museum's long-term renovation project.

City of Vancouver, BC archives staff were on strike for three months this summer with the rest of the city workers. picketing in the seaside park in front of the Archives. **Sue Bigelow** has finished a year as acting archives manager and is back in the lab. **Rosaleen Hill** and **Sabina Sutherland** continue to work backfilling Sue while she works on the Digital Archives project. Projects that Rosaleen and Sabina are working on include: digitizing audio tapes; conserving a huge poster for the silent movie *Western Luck*; repairing and digitizing motion picture film; treatment of oversized by-law schedules; and the condition assessment of incoming video materials.

Artech Fine Art Services celebrates their 30th year anniversary! What once started as a group of ten artists has expanded to a staff of over 60 employees. Their services include art installation, packing and shipping, climate controlled storage, custom framing, and art maintenance. They look forward to continued relationships with conservators throughout the region.

In December, **Dana K. Senge** completed a thoroughly enjoyable project with the staff of the Baranov Museum in beautiful Kodiak, Alaska. Together they cleaned and repaired the skin shell of a hundred year old baidarka, (or kayak). This vessel was treated in 1978 by graduate students from conservation program at George Washington University and after 30 years of exhibition, was ready for a new round of maintenance and treatment.
Marie Laibinis-Craft of MLC Objects Conservation, completed a condition survey and photo documentation of 26 Pilchuk Baskets by Dale Chihuly for the Government Services Administration [GSA]. The free-blown glass vessels were purchased by the GSA for the Peace Arch Port of Entry in Blaine, Washington in 1978 and were Chihuly's first commission. The survey was completed as part of the temporary relocation of the Pilchuk Baskets to Tacoma Union Station where they will be on exhibit until 2010, when the construction of the new port of entry building should be completed.

Marie and intern **Erin Stephenson**, recently cleaned a Chihuly floor chandelier as part of its bi-annual maintenance. Erin is also interning with paintings conservator, **Nina Olsson**, and spent the past two months assisting with the conservation of murals in Hood River and Portland.

Astrid van Giffen has been working with Marie Laibinis-Craft the past few months. Astrid moved to Portland this summer after graduating from the Netherlands Institute for Cultural Heritage, (ICN), with a degree in glass and ceramics conservation. She has completed the treatments of a large, heavily damaged ironstone vase and replicate of a Greek vase and is currently working on the treatment of several smaller porcelain and earthenware objects.

Regional Reporter:
Dana K. Senge

ROCKY MOUNTAIN REGION

Laura Downey Staneff and **Camille Moore** plan a survey of the photographs collection of the Arizona Historical Society (Tucson) in January.

Denver Art Museum conservators have all been involved in three traveling exhibitions: *Artisans & Kings: Selected Treasures from the Louvre*; *Color as Field: American Painting 1950-1975*; and *Inspiring Impressionism*. These have involved a lot of travel, condition reports, and some minor treatments. Thanks especially to **Gina Lauren** and **David Turnbull** for all of their work.

Third-year intern **Liz Homberger** from Buffalo is treating several Indian folk art pieces with flaking paint. These have not been exhibited before because of condition and will make a major contribution to the museum's useable collection.

Jessica Fletcher and **Carl Patterson** have recently been collaborating with the education department on a small exhibit that discusses touching art in the museum. The project relies heavily on our docents who are being trained to interpret the project for the public. A giant touchable turtle has been named "Carlos" in honor of our conservator-let's hope the message of being careful comes over more strongly than just plain slow.

Change is possible! Conservation just hosted **Samuel Anderson** who is proposing plans for a major expansion in laboratory spaces. Staff and projects have increased substantially over the past two years and now expansion is inevitable.

Regional Reporter:
Paulette Reading

SAN FRANCISCO BAY AREA

Elisabeth Cornu, objects conservator, has been the key instructor in 'PIEDRA 2007,' a monument conservation course in Rosario, Argentina in November 2007. This course was co-taught with **Marcela Cedrola**, museum scientist, and stone conservators **Patricia Riadigos** and **Dario Klehr**, all from Argentina. It was carried out under the auspices of the Direccion de Restauracion de Monumentos, Rosario, Argentina.
The paper conservation lab at the Fine Arts Museums of San Francisco is pleased to host **Adam Novak**, a 3rd year student in the Winterthur conservation training program.

The lab is the recipient of a Kress Fellowship, which has been awarded to **Nina Quabeck**. Nina, a paper conservator on leave from the K20 K21 Kunst Sammlung NRW in Dusseldorf, will be at the FAMSF for a year working on a project entitled "Uncovered and Unconventional," a study of the preservation and exhibition issues related to three-dimensional and oversized paper based artworks exhibited without glazing. She would appreciate hearing about your experiences with such artworks and knowing about installations of such occurring before July 2008. (Contact 415-750-7691 or nquabeck@famsf.org.)

Debra Evans and colleague **James Bernstein** taught their 25th "Mastering Inpainting" workshop at the Campbell Center for Historic Preservation Studies in October. Jim went on to teach number 26 at the Solomon R. Guggenheim Museum just after that. In the spring the two were honored by the AIC for their contribution to the education of conservators with the Sheldon and Caroline Keck Award.

In October Jim also taught a two-day interdisciplinary workshop, "Mastering Fills," for the Midwest Regional Conservation Guild. The course was co-taught by **Meg Loew Craft** and **Margo McFarland** at the Campbell Center. As mentioned in the last newsletter, Jim's article "A Remarkable Way to Stretch Canvases (and Other Essentials of Canvas Preparation)" is now available for download from www.GoldenPaints.com.

Sarah Gates has been working to prepare Turkmen carpets, along with **Donna LaVallee** and **Beth Szuhay**, for the exhibit *For Tent and Trade: Masterpieces of Turkmen Weaving*. The exhibit will be on view from December 2007 – September 2008 at the DeYoung Museum in San Francisco.
Mark Fenn, Associate Head of Conservation at the Asian Art Museum of San Francisco, just returned from his fourth, and probably final, trip to Bhutan working on the sculptures to be included in *The Dragon's Gift (Arts of Bhutan)*, an exhibit organized by the the Honolulu Academy of Art.

At Architectural Resources Group (ARG) and ARG Conservation Services (ARG/CS), Architectural Conservator **Kelly Wong** is overseeing the exterior renovation of terra cotta cladding and new windows at 450 Sutter Street, an art deco medical-dental building in downtown San Francisco designed by Timothy Pfleuger. Kelly is also supervising the exterior restoration of One Montgomery, a limestone and granite exterior office building in San Francisco's financial district.

Objects conservator **Katharine Untch** and Kelly Wong have completed a conditions assessment and master preservation plan for the Luther Burbank Home & Gardens in Santa Rosa, California. Kelly completed an Historic Structures Report (HSR) for an historic barn in Monterey.

Architectural Conservator **Mary Slater** and architectural designer **Lisa Kucik** are completing an HSR for the Carmel Mission.

Devlin McDonald, preservation masonry specialist, Mary Slater, architectural conservator **Mersedeh Jorjani**, Kelly Wong, and conservation technicians **Eric Hand** and **Collin Eaton** have completed the first phase of masonry and plaster conservation at Mission San Juan Capistrano. **Glenn David Mathews**, ARG/CS principal and historic architect, is managing the current conservation campaign at the mission.

Mersedeh Jorjani and Katharine Untch are treating architectural details at the First Church Christ Scientist Berkeley. Katharine and Mersedeh have also been working on municipal monuments after completion of conservation assessments for the City Arts Commission.

ARG Conservation Services has also been working collaboratively with mural conservator **Anne Rosenthal** at the Maritime Museum as the museum undergoes roofing and window upgrades.

Margaret (Meg) Geiss-Mooney, textile/costume conservator in private practice, gave lectures on caring for family textile treasures at the Wild Wonderful King Vintage Museum (Oakhurst, CA) in September and at the Skagit County Historical Museum (La Conner, WA) in October. She also attended the North American Textile Conservation Conference in Washington, DC in November, with funding provided by both a NATCC grant and a FAIC individual professional development scholarship.

Michelle Barger has been named Deputy Head of Conservation of the Elise S. Haas Conservation Studio at the San Francisco Museum of Modern Art. In this new capacity, she works with **Jill Sterrett** and other fellow conservators to guide the activities of the department. She assumes leadership of the advanced-level fellowship in conservation of contemporary art, and the studio is so pleased that she will also continue to keep her hand in objects conservation. Congratulations Michelle!

Marie-Chantale Poisson completed her two year fellowship in the conservation of contemporary art at San Francisco Museum of Modern Art in October. Marie-Chantale will be missed greatly, especially for her enthusiasm for learning and accepting new challenges that contemporary art offers. One of her most significant contributions was her dedicated role in the completion of the first time-based media survey at SFMOMA with Jill Sterrett.

Barbara Schertel is the new fellow in the conservation of contemporary art and comes to San Francisco Museum of Modern Art from Munich. She is the first conservator to join the staff with a background in furniture conservation. Barbara will participate in a survey of the furniture and design objects in the museum's collection.

Regional Reporter:
Beth Szuhay

TEXAS

Mark van Gelder has completed the conservation treatment of the acid-vandalized Rafael Navarro murals in the lobby of the Seton Medical Park Tower building in Austin. He is grateful to the many conservators who responded with valuable tips and information to his posted queries on the AIC Paintings Group website list. He also wants to thank and acknowledge pre-program intern **Nathalie Steinfeld** and paintings conservator **Nancy Lew**, for their assistance with various parts of the treatment process.

Mark also recently completed a condition survey of the approximately 150 paintings at the new National Trust Historic Site, Villa Finale, in San Antonio, TX.

Gregory Thomas is finishing the conservation treatments of the last five paintings (one is double sided) by A. R. Gurrey in the collection of the Kaua'i Museum in Lihue, Hawaii. Upon completion of these landscapes/seascapes, a total of thirty paintings by this artist will have been treated in the Art Care conservation studio. Greg is also continuing the conservation treatments of paintings from local private collections.

Regional Reporter:
Ken Grant

Health and Safety

Up In Flames?

Chris Stavroudis, column editor

About the only magazine I read religiously is *Scientific American* (other than, of course, our professional journals, newsletters, and this publication which, like you, I devour the moment it arrives). The column "50, 100 & 150 Years Ago" is a one page précis of what appeared in *Scientific American* 50, 100 & 150 years ago.

The September 2007 issue contained the following item from 1857, which I quote in full:

> "Many ladies have been burnt to death by their light gauze and cambric dresses taking fire and blazing up before there was time to extinguish the flame. Actresses and danseuses are most liable to this, and the talented Clara Webster and others lost their lives this way. It ought, therefore, to be generally known that by steeping the dress, or material composing it, in a diluted solution of chloride of zinc, it will be rendered fire-proof."

[Cambric, for those of you, like me, who don't know, means "a thin white linen or cotton fabric."]

150 years later, we are rightly concerned about the fire retardant chemicals to which we, and the environment, are exposed. (See this column last year, 29/1, for a discussion of the ubiquity of modern pollutants including the flame retardant PBDEs, polybrominated diphenyl ethers.)

The alternative to having these chemicals around us, danseuses bursting into flame, is we hope worse than the possible health hazards of exposure to these chemicals. If you don't give a whit about danseuses, and shame on you if you don't, how do you feel about infants immolated in their cribs due to flammable sleepwear?

This dichotomy between acute and chronic consequences of our existence is something that society and individuals must ponder. Conservators must also make these types of decisions. We balance long term preservation with questions of aesthetic enjoyment, historicity, and use. The recent controversy about flame proofing of theater curtains treated by conservators resonated with my mental images of smartly dressed ladies in their cambric finery bursting into flame.

The theater curtain controversy was fortunately mostly about miscommunication and not violation of any fire codes. But hypothetically, what if a conservator were to treat a painted theater curtain by lining onto new fabric with a wax resin adhesive? (Let me emphasize that this was not a treatment used in the Vermont theater curtain project.) But what would this giant candle do in a fire?

To be honest, I've never thought about the flammability of treatments I've used. And I've certainly never weighed the potential flammability of one treatment verses another in the process of determining the best treatment for a particular work of art.

In some circumstances might using flame-proofing chemicals on historic materials be the better choice, even if these chemicals negatively impacted the ageing properties of the artwork? [I would be interested in hearing from conservators who have dealt with these issues.]

And speaking of bursting into flames, this being universally agreed a bad thing, whether a danseuse or traveler, there is a new safety rule for airline travel. Batteries containing lithium are now considered a potential hazard and as of January 1, 2008, must be carried on flights according to new rules. (Remember those recalled batteries in a number of computers which had a propensity to burst into flames? Not something one would want occurring while traveling on an airplane.) Another problem with lithium batteries is that the fire suppression systems on airplanes will not extinguish a lithium fed fire.

There are two types of lithium-based battery, and each can be restricted in some cases. Lithium ion batteries are the rechargeable types used in computers, cell phones, and newer technology rechargeable power tools. Lithium metal batteries are the "longer lasting" more expensive batteries often used in cameras and now sold as long life replacements for conventional batteries (e.g., Energizer e^2 lithium batteries).

Most common lithium metal and lithium ion batteries may be carried installed in their devices in checked baggage. However the devices must be secured or locked in an off position. Spare lithium batteries (those not installed in their intended device) may no longer be carried in checked baggage. Spare batteries may be carried in carry-on baggage but they must be insulated against accidental shorting. They can be carried in their original packing, with protective covers, in plastic bags or with insulating tape over the terminals.

There is no limit to the number of small batteries that may be transported in your carry-on luggage. This appears to include the batteries used in most laptops and cell phones. Travelers are restricted to two spare larger rechargeable lithium ion batteries. The larger devices are things like external battery packs for laptops that offer a much longer running time than internal batteries. Very large lithium metal and lithium ion batteries are banned from flights, but these are not common commercially.

The specific rules are confusing and are based on whether the battery is lithium ion or lithium metal and the equivalent lithium content of the battery expressed in grams. With time, manufacturers will undoubtedly disclose this equivalent lithium content of their batteries which will make the rules much easier to interpret. For more information see dot.gov/affairs/phmsa1107.html, and safetravel.dot.gov/whats_new_batteries.html.

Conservators traveling to work onsite should pack accordingly. The bottom line, don't pack your spare lithium batteries with your cambric dresses.

Chris Stavroudis is a conservator in private practice.

Technical Exchange

Albrecht Gumlicht
column editor

Gamblin Conservation Colors in ½ Pans

Like everyone else, the ICA had difficulty getting the Gamblin Conservation Colors to stay in solution. Paintings conservator Per Knutas came up with the following very useful solution. He ordered empty ½ pans and watercolor travel boxes from Daniel Smith. He mixed the Gamblin colors thoroughly, adding xylene to the colors that had dried out somewhat. He then poured the paint into pans, right to the top of the pan. As the solvent evaporated and the paint no longer reached the top of the pans, he poured more paint into the pans, let the solvent evaporate, and repeated the process until he had cakes of Gamblin colors similar to watercolor half pans. We put these into the watercolor travel boxes and use our sets both in the lab and on-site.

Wendy Partridge

Recycled Razors

The Florentine bisturi or scalpel, consists of a special re-worked shaving blade once used in barber shops. Many of these traditional razor blades were originally made in Solingen, Germany, a European cutlery production area, well-known for high quality steel.

Nowadays, the old blades are revived in Florence, Italy making them a useful conservation tool. So, if you just happen to be traveling to Europe, consider having your own set made: Start by getting a couple of old razor blades at any swap meet. Don't forget to travel with them in your suitcase, not your hand luggage! Once in Florence, present a drawing of your prefered shape to Gianfranco & Filippo Galli, professional sharpeners of all sorts of tools. You may want to ask the workmen to save the wooden (or horn) handles that will be removed. The blades then undergo careful re-shaping/re-grinding/re-sharpening processes resulting in different shapes, of which a couple are shown in the image. They can be sharpened to various thicknesses. The convenient heavy-duty blades are highly valued tools (not just by wall paintings conservators, who kindly sent in this tip). They can be used for various tasks, like the removal of excess gesso or modeling of recent sculptural elements, fills, etc.

At the conservation worksite in Bamiyan, Afghanistan, Japanese conservators have successfully used these scalpels to remove later earthen plasters on the Buddhist mural paintings made in the 7-9th-centuries CE. The German made, Italian worked, Japanese used "bisturi" made the work go easy(er) in Afghanistan.

Information:
Find razor blades at any swap meet.
Sharpening Shop:
Gianfranco & Filippo Galli
Via della Spada, 26/r, Firenze, Italy
Tel: 011 39 055 282410.
Price for sharpening: approximately 20€

Yoko Taniguchi
Japan Center for International Cooperation in Conservation, Tokyo

(The preceding tip may not be the most widely applicable, but it was so Sweeney Todd I couldn't resist it. Ed.)

WAAC Publications

Handling Guide for Anthropology Collections

Straightforward text is paired with humorous illustrations in 41 pages of "do's and don'ts" of collection handling. A Guide to Handling Anthropological Museum Collections was written by Arizona State Museum conservator Nancy Odegaard and illustrated by conservation technician Grace Katterman. This manual was designed to be used by researchers, docents, volunteers, visitors, students, staff or others who have not received formal training in the handling of museum artifacts. Paperbound and printed on acid-free stock.

Price, postpaid:
$8.85 ($6.60 per copy for orders >10 copies)

Loss Compensation Symposium Postprints

A compilation of the talks comprising the Loss Compensation panel from the 1993 meeting at the Marconi Conference Center, enhanced by a detailed introduction into the history of loss compensation theory written by Patricia Leavengood.

Price, postpaid:
$12.50

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Donna Williams

Strip 'Teas' - Solubility Data for the Removal (and Application) of Low Molecular Weight Synthetic Resins Used as Inpainting Media and Picture Varnishes

by Gregory Dale Smith & Ronald Johnson

ABSTRACT

Polymer solubility data in the form of Teas Charts are provided for low molecular weight (LMW) synthetic resins (Laropal A-81, Regalrez 1094, and MS2A) commonly used as in-painting media and picture varnishes. Laboratory case studies involving the brush application of LMW synthetic varnishes over LMW restoration colors are presented to highlight the value of comprehensive, concise, and easily understandable solubility data on these resins. Importantly, the chemical nature of the resin varnish is found to influence the solubilizing strength of the varnish solution in relation to underlying paint layers.

INTRODUCTION

The ability to predict and manipulate polymer solubility is perhaps the most valuable scientific skill of the conservator. This skill is utilized when applying or removing a varnish, eliminating overpaint, introducing adhesives, and cleaning grime. Therefore the physical, chemical, and practical aspects of polymer dissolution comprise an important component of the first year science training for art conservation graduate students at Buffalo State College (BSC). Students are taught the thermodynamic and kinetic principles of polymer solubility as well as the solubility systems of Hildebrand, Hansen, Teas, and even the more recent innovations of Snyder..[1-3]

Recently, the accompanying science lab exercises were largely revamped to augment the lectures by focusing on more practical experiments, especially those with the potential to generate new information that would be useful to the conservation field. One such experiment involves small groups of students who cooperatively generate Teas charts for artists' or restoration materials for which little or only dispersed data exists in the conservation literature.

C. V. Horie's book, *Materials in Conservation*,[4] which is an important resource of solubility data for conservation materials, was compiled over twenty years ago, and many new resins – or changes in resin formulations – have appeared since. Aside from the need for reliable and comprehensive solubility data on new and reformulated resins, much of the data in Horie's appendix of Teas charts comes from manufacturers' product literature or from industrial studies on freshly prepared resins. There is obviously a need to update and review these data.

The introduction of numerous low molecular weight (LMW, $M_n < 1000$) resins to the field of conservation since 1990 presented an ideal starting point for our student experiments on polymer solubility. Those results are presented here in the form of Teas charts for three such materials: the synthetic urea-aldehyde in-painting resin Laropal A-81,[5] the hydrocarbon resin varnish Regalrez 1094,[6] and the reduced cyclohexanone varnish MS2A (Figure 1a-c, respectively).[6]

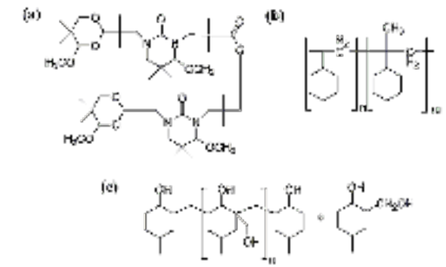

Figure 1. Proposed molecular structures of (a) Laropal A-81, (b) Regalrez 1094, and (c) MS2A.

TEAS CHARTS

Teas fractional solubility parameters and the corresponding Teas chart were developed from the earlier work on polymer solubility by first Hildebrand and later Hansen. Descriptions of this progression of polymer solubility theory and prediction have appeared in the conservation literature,[1-3] and so only a brief summary need be repeated here. In general, Hansen improved on Hildebrand's solubility parameter, δ, by further dividing Hildebrand's cohesive energy density (CED) value into component parts based on intermolecular forces. His innovation was in recognizing that it wasn't just the strength of overall interactions, that is the CED, that must be satisfied for solubility to occur, but that the forces involved must be alike in kind as well as magnitude. As a result, Hansen parameters consist of three values that indicate the tendency of a material to participate in dipolar interactions (polarity), hydrogen bonding interactions, and dispersion (London) forces. These values sum to give the Hildebrand parameter. Tea's innovation was to present this triumvirate of interactions as fractional parameters based on their respective contribution to the whole cohesive energy density. Therefore, Teas' parameters sum to give unity. Although Teas lost the overall magnitude of interactions by representing the data as fractions – i.e. his parameters assume a constant cohesive energy density that is merely divided up differently – Teas did achieve a more easily represented data set that could be visualized as the now widely recognizable triangular Teas chart.

Teas charts have come under fire for a number of simplifications, shortcomings, and "fudge factors." Two of the most cogent attacks have been printed in the *WAAC Newsletter* by Stavroudis and Blank[7] and by McGlinchey.[8] In short, Teas' system can rightly be criticized for overemphasizing dispersion forces (most of the data is in the lower right corner), neglecting ionic and acid-base interactions, rejecting the overall differences in the magnitude of cohesive energy densities, assuming solvent and solute randomness, and other transgressions. Arguments have been made elsewhere for more sophisticated solubility theories that can perhaps

predict polymer solubility more accurately.[3] However, those suggestions for more complete (and complicated) solvent theories have not caught on in conservation because they lack the simplicity of Teas charts and, importantly, the ability to calculate the effect of solvent mixtures on the fly. Furthermore, in the case of pure resins that are not prone to oxidative aging, like those studied here, Teas charts can prove an incredibly accurate and useful record – as well as predictor – of polymer solubility in pure solvents and in solvent mixtures. Therefore, with full knowledge of the insufficiencies of the Teas system, we have continued to teach and produce Teas charts for materials of use in conservation.

EXPERIMENTAL

Since the withdrawal of ASTM D3132, no standard method for polymer solubility exists. The solubility of each LMW resin in this study was tested in 50 different solvents using a modified version of the method utilized by Whitten in the *AIC Paintings Catalog*.[6] Three grams of the resin were weighed into a small jar with a tightly sealing fluoropolymer lined lid. Ten milliliters of solvent were then added to the jar, the lid sealed, and the sample agitated to ensure good mixing. The solvents were of technical or reagent grade and were used without further purification or drying. After several hours to one day later, the samples' solubility behavior was observed. Unlike Whitten's method,[6] but similar to that of Horie,[4] the action of each liquid on the polymer was described simply as being a solvent, a borderline solvent, or a non-solvent. A solvent produced a clear solution or a slightly turbid one that could not be separated by centrifugation. Borderline solvents dissolved the majority of the resin and left only a small amount of gelled residue. Non-solvents had either no effect on the resin, or else swelled or gelled the bulk of the resin with little indication of significant solubility.

Table 1 lists the standard reagent grade solvents used in the experiments, as well as their Teas fractional solubility parameters. These parameters were taken from Horie[4] when available or otherwise calculated directly from Hansen's solubility parameters.[9] In some instances, commodity solvent blends were used. Fractional parameters for mineral spirits (#6) and odorless mineral spirits (#3) have been published elsewhere,[4] however those for ShellSol 340HT (#4) were calculated proportionally from the parameters for hexane (#1) and cyclohexane (#5) based on the percent aliphatic (straight chain alkanes) to alicyclic (cyclic alkanes) composition as given in the manufacturer's literature Importantly, ShellSol 340HT is now no longer available with the closest alternative commodity solvent being ShellSol D38.[10] The values for all of these blends must therefore be taken as approximate (vide infra). The numerical assignments from Table 1 were used to identify the solvents' positions in the triangular Teas space (Appendices I-III).

In addition to recording the solubility of LMW resins in pure solvents, titration experiments were also performed to define better the solubility windows for some resins. A solution of the resin (3g in 10mL) was titrated with a miscible non-solvent until the resin just precipitated as a cloudy suspension. Because of the dearth of data on azeotrope formation among solvents commonly used in conservation, no attempt was made to avoid specifically azeotropic solvent combinations. The tendency of azeotropes to behave differently than either of the component solvents has been noted as a potential weakness of predicting solubility characteristics of solvent mixtures using Teas parameters, although to date no data has been provided to substantiate this concern.[11]

Table 1. Solvents used for resin solubility testing and their Teas fractional solubility parameters.

#	Solvent	fd	fp	fh
1	Hexanes	100	0	0
2	n-Heptane	100	0	0
3	Odorless mineral spirits	98	1	1
4	ShellSol 340HT	96	2	2
5	Cyclohexane	94	2	4
6	Mineral spirits	90	4	6
7	Ethylbenzene	87	3	10
8	Turpentine	77	18	5
9	Benzene	78	8	14
10	Toluene	80	7	13
11	Xylenes	83	5	12
12	Dichloromethane	59	21	20
13	Chloroform	67	12	21
14	Carbon tetrachloride	85	2	13
15	1,2-Dichloroethane	67	19	14
16	Trichloroethylene	68	12	20
17	Tetrachloroethylene	67	23	10
18	Tetrahydrofuran (THF)	55	19	26
19	1,4-Dioxane	67	7	26
20	2-Ethoxyethanol (Cellosolve)	42	20	38
21	2-Methoxyethanol (Methyl cellosolve)	39	22	39
22	2-Butoxyethanol (Butyl cellosolve)	46	18	36
23	1-Methoxy-2-propanol (methyl proxitol)	47	19	34
24	2-Ethoxyethyl acetate	51	15	34
25	Methyl acetate	45	36	19
26	Ethyl acetate	51	18	31
27	i-Propyl acetate	54	16	30
28	n-Butyl acetate	60	13	27
29	i-Amyl acetate (i-Pentyl acetate)	60	12	28
30	Propylene carbonate	48	38	14
31	Acetone	47	32	21
32	Methyl ethyl ketone (MEK)	53	30	17
33	Methyl isobutyl ketone (MIK)	58	22	20
34	Ethylene glycol	30	18	52
35	Propylene glycol	34	16	50
36	Methanol	30	22	48
37	Ethanol	36	18	46
38	i-Propanol	38	17	45
39	n-Butanol	43	15	42
40	Diacetone alcohol	45	24	31
41	Nitromethane	40	47	13
42	Acetonitrile	39	45	16
43	N-Methyl-2-pyrrolidone (M-Pyrol)	48	32	20
44	N,N-Dimethylformamide (DMF)	41	32	27
45	Pyridine	56	26	18
46	Carbon disulfide	88	8	4
47	Dimethyl sulfoxide (DMSO)	41	36	23
48	Ethanolamine (MEA)	32	29	39
49	Triethanolamine (TEA)	27	36	37
50	Water	18	28	54

The volume composition of the two liquids at the titration endpoint was used to calculate the Teas parameters for the solvent mixture at which the resin is just insoluble. To increase the accuracy of the Teas parameters for the mixture, the freeware program *Solvent Solver* was used to assist in this calculation.[12] This program uses specific gravity data and molecular weights to determine molar volumes, which are then used to calculate more accurately the fractional parameters of the mixture. When titrations were performed, the resulting Teas chart bears an 'X' on a dashed line connecting the solvent with the non-solvent to mark the solubility border position.

LOW MOLECULAR WEIGHT RESINS

LMW resins have become important in conservation for their solubility in "weak" solvents – i.e. those of low polarity – and their tendency to resist yellowing and to remain soluble in these solvents even after extensive aging.[6] In addition, being LMW these polymers – more accurately described as oligomers – exhibit low viscosity at high concentration and have good optical properties. As such, these resins can be used safely and effectively over traditional paint media and can be left in service for much longer periods of time. Appendices I-III present the solubility data for Laropal A-81, Regalrez 1094, and MS2A, respectively, in a two dimensional Teas coordinate system.

It is immediately manifest that these resins show good solubility in nonpolar and/or aromatic solvents that are safely outside the maximum swelling range of oil paints. The extent of the solubility windows for these resins also makes sense in light of the "like dissolves like" rule. Laropal A-81, the urea-aldehyde inpainting medium, which has both acetal and carbonyl functional groups, is insoluble in purely aliphatic solvents like hexane (#1), but becomes soluble in slightly more penetrating, polar, or polarizable solvents like cyclohexane (#5) or ethylbenzene (#7). In addition, its solubility window extends further along the polarity (f_p) and H-bonding (f_h) axes, encompassing the halogenated solvents, acetates, and simple alcohols (Appendix I). MS2A, with only its hydroxyl functional groups to lend polar character, has a solubility window that is slightly less extensive along the polarity axis (Appendix III). At its furthest reaches, the solubility window from our data shows a slight deviation from the limited solubility data given elsewhere,[6] namely in that ethanol (#37) and i-propanol (#38) produced only a thick gel in our experiments. This may be due to the use of drier alcohol solvents in the other experiments or to the fact that MS2A production has undergone a slight change in its monomer feedstock, from mixed isomer methyl cyclohexanone to pure p-methyl cyclohexanone, since 2005.[13] The authors are aware of at least one conservator who has commented on differences in the two resin batches' odors and kinetics of dissolution.[14] The purely hydrocarbon resin Regalrez 1094 shows even more limited solubility, restricted almost exclusively to aromatic, halogenated, alicyclic, and aliphatic solvents (Appendix II).

One can also observe several of the shortcomings of the Teas solubility system in these data. For instance, the solubility of Laropal A-81 in hexane (#1) and heptane (#2) is markedly different, although this is difficult to observe in Appendix I because of the overlying solubility parameters for these aliphatic solvents (f_d=100, f_p=0, f_h=0). Although hexane showed no solubility and produced a thick gelled residue, heptane appeared after nearly a day of stirring to be a borderline solvent, eventually producing a clear solution with only a modicum of swollen gel residue. Although dispersion forces comprise the entirety of both solvents' interaction potential, the absolute magnitude of that interaction, which is larger for heptane but is neglected by Teas, must be important. Kinetics of dissolution are also important; both xylenes (#11) and cyclohexane (#5) produced crystal clear Laropal A-81 solutions, but on vastly different timescales. The xylenes solution formed in minutes whereas it took many hours for cyclohexane to have a similar effect. These kinetic data are not represented in a typical Teas chart.

Teas parameters are also problematic when using solvent blends, themselves mixtures of solvents. In the same diagram, one notices an anomaly for Laropal A-81 when combined with mineral spirits (#6). Although it would appear that mineral spirits should be just within the solubility window, it clearly behaved like a non-solvent. In this instance, the issue surrounds the ill-defined composition of "mineral spirits." In fact, when consulting with our local supplier of commodity solvents, the authors were astonished to hear that any tanker shipment between 14% and 22% aromatics is marketed as the same product without any further disclosure to the buyer. The ASTM guidelines for "mineral spirits" are even more liberal. A range of 0-22%, divided into three classes, can all be labeled "mineral spirits."[10]

The widely reported Teas fractional parameters for generic mineral spirits were intentionally used in Figure 2 to highlight this issue with commodity solvent blends. The actual mineral spirit product used in this experiment was ShellSol 7EC, formerly ShellSol 145EC, which reportedly contains 7.1% aromatics. If one uses *Solvent Solver* to simulate a 7.1% toluene (#10) solution in hexanes (#1), the Teas parameters for this particular "mineral spirit" would be closer to those widely reported for odorless mineral spirits (#3, i.e. f_d=98, f_p=1, f_h=1). With this in mind, the fact that Laropal A-81 is insoluble in ShellSol 7EC mineral spirits is understandable and is in fact predicted by the Teas chart for that resin. In a related situation, Fisher Scientific brand petroleum benzine, which before 1995 was ~12.5% aromatics, was changed without notice to a composition of approximately 0.1% aromatics, thereby reducing its efficacy in established

cleaning and varnishing formulas. The data reported by Horie[4] and Whitten[6] would have included the earlier formulation for petroleum benzine. Clearly it is "buyer beware" when using commodity solvent blends or relying on older solubility data related to these products, and if not for their ready availability and relative economy, conservators would be advised not to rely on proprietary solvent blends.

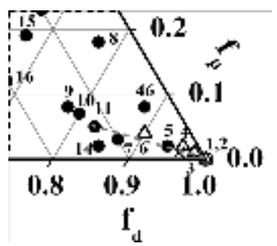

Figure 2. Detail of Teas chart for Laropal A-81 highlighting xylene (#11) – hexane (#1) titration experiment.

CASE STUDIES

Two case studies were devised to highlight the utility of the solubility data reported here. Both examples involve the brush application of LMW synthetic resin varnishes over Laropal A-81 restoration paints, viz. Gamblin Conservation Colors. Brush application of varnishes can be desirable for rendering specific surface aesthetics as well as to provide a more protective, cohesive varnish coating.[6] The simultaneous use of these resins for inpainting as well as varnishing can be complicated due to overlapping solubility windows, mechanical agitation from the brushing, the fluidity of the resulting solutions, and the easy re-solubilization of underlying layers due to the LMW of the resins involved.

The product literature provided in the initial release of the Gamblin restoration paints specifically notes that brush application of Regalrez 1094 or MS2A over the paints is possible, although no specifics are given. And yet, conservators often report difficulties in applying these two products over Laropal A-81 paints. These difficulties often lead to either the spray application of these varnishes or to the use of the urea-aldehyde paints over another varnish with adjustment of the inpainting medium formulation or physical manipulation of the paint surface to achieve the right gloss level. However, the case studies presented here suggest that successful brush application of the varnish might be possible if one studies carefully the solubility data for both the varnish and the inpainting resin.

Brush Application of Regalrez Varnishes over Laropal A-81 Paints

Regalrez 1094 has become a popular synthetic resin varnish for oil paintings because of its solubility in non-polar solvents, deeply saturating finish, and resistance to yellowing, oxidation, and insolubility with age.[6] However, when inpainting has been performed with other LMW resins, for instance those based on Laropal A-81, the overlapping solubility windows can be problematic for brush application of the varnish.

Fortunately, when the Teas charts for Regalrez 1094 and Laropal A-81 are inspected closely, one notes that the solubility windows do not perfectly overlap, leaving an opportunity for selective solvent application of the varnish. Regalrez 1094 is soluble in all aliphatic, alicyclic, and aromatic solvents (Appendix II), whereas Laropal A-81 (Appendix I) is soluble along the dispersion axis, f_d, only to a point just past that of cyclohexane (#5), keeping in mind the issues mentioned above regarding mineral spirits (#6). Figure 2 shows a detail from Appendix I of this part of the Teas chart for Laropal A-81.

Based on these data, one should be able to apply Regalrez 1094 over Laropal A-81 using ShellSol 340HT (#4), odorless thinners (#3), heptane (#2), or hexane (#1). However, a wider range of solvent mixtures may be possible and in fact desirable to increase drying time, leveling, etc. To chart more exactly the border of the solubility window for Laropal A-81, a solution of the resin in xylenes (#11) was titrated with hexanes (#1) and the point of precipitation of the resin noted.[†]

The Teas parameters for the titration endpoint are shown with an 'X' along the dotted line connecting the two solvents in Figure 2. This mixture amounted to 28% xylene. In an effort to test this calculation, a mock-up of the Gamblin Conservation Colors was brush varnished using Regalrez 1094 solutions (3g in 10mL) in hexanes with variable amounts of xylenes. The varnish was applied by brushing five times in the same direction. Figure 3 shows the test panel.

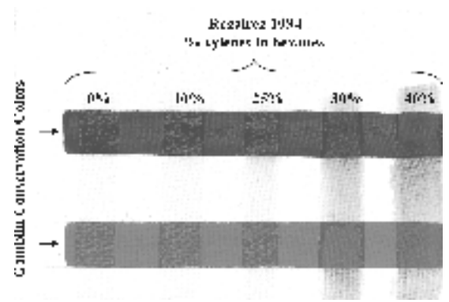

Figure 3. Mock-up showing Gamblin Conservation Colors brush varnished in 5 rapid passes using a Regalrez 1094 solution (3g in 10mL) in hexanes with increasing percentages of xylenes.

[†] Because of the controlled laboratory conditions available during the course of these experiments, hexanes could be used as the aliphatic solvent. However, the toxicity of hexanes is much worse than n-heptane, and so the use of the former by conservators should be practiced with extreme caution, if at all.

One can see that disruption of the Laropal A-81 medium is just apparent when the varnish solution contains 25% xylenes and is unacceptably smeared at 30%, just as suggested by the titration experiment. The slight bleeding at the lower value of 25% xylenes rather than the predicted 28% may be due to the effect of the resin on the polarity/polarizability of the varnish solution (vide infra). It is worth noting that the Gamblin product literature recommends rewetting of dried Laropal A-81 paints on the palette using a solvent of at least 25% aromatic character.

In summary, any primarily aliphatic solvent blend could be used to apply Regalrez 1094 by brush over Laropal A-81 paints so long as the aromatic content was kept below 25%, with 20% perhaps being a safer margin. One must keep in mind that if the aliphatic solvent evaporates faster than the aromatic solvent, or if the aromatic solvent is preferentially absorbed into the underlying Laropal A-81 layer, successive coats or vigorous brush application of an initially safe solution may eventually cause bleeding of the restoration colors. It is also important to note the makeup of the solvent blend being utilized. If a petroleum distillate containing higher amounts of cycloparaffinic hydrocarbons (e.g. ShellSol 340HT) is used in combination with aromatic solvents, the 'safety zone' is likely to be different due to the higher solubility of the resin in alicyclic hydrocarbons (e.g. cyclohexane, decalin, etc.) compared to aliphatic ones.

Brush Application of MS2A Varnishes over Laropal A-81 Paints

MS2A has achieved widespread use as a picture varnish, despite its brittle nature, due to the otherwise unachievable "silken gloss" and "lively, varied, sensitive appearance" that it produces.[6] Based on its solubility characteristics (Appendix III), the brush application of MS2A should be identical to the protocol described for Regalrez 1094. To test this supposition, a similar mock-up of Gamblin Colors was brush varnished with MS2A solutions identical to those used above for Regalrez 1094, except that the varnish concentration was lowered to 2g in 10mL to conserve what is a much more expensive resin. The results are shown in Figure 4.

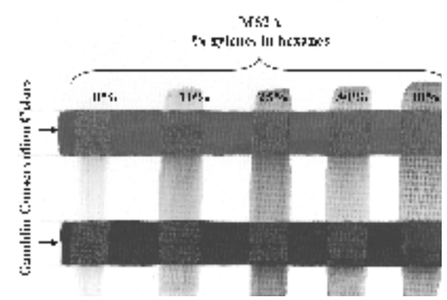

Figure 4. Mock-up showing Gamblin Conservation Colors brush varnished in 5 rapid passes using a MS2A solution (2g in 10mL) in hexane with increasing percentages of xylenes.

Clearly a more complex solvent, varnish, inpaint chemistry is at work. MS2A in pure hexanes immediately disrupted the underlying Laropal A-81 paints and became progressively worse with the addition of aromatic content. Why should a purely aliphatic solution act so aggressively on the underlying paint when the previous application of Regalrez 1094 in the same solvent on the same paint was benign?

Compared to Regalrez 1094, MS2A is a much more polar material, and the authors surmised that its incorporation into the aliphatic solvent at nearly 24% w/w was enough to raise the polarity of the resulting varnish solution to within the boundaries of the Laropal A-81 solubility window. In effect, the MS2A might be acting like a polar component in a solvent mixture. If this were so, then the bleeding effect should be reduced by lowering the amount of MS2A in the varnish solution.

A third mock-up was constructed to test this hypothesis. A series of less concentrated MS2A varnishes was prepared in hexanes. Figure 5 shows the result of the experiment after 5 unidirectional passes of the brush application.

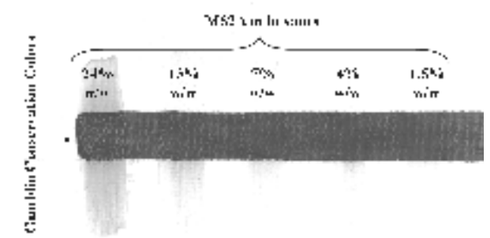

Figure 5. Mock-up showing Gamblin Conservation Colors brush varnished in 5 rapid passes using progressively less concentrated MS2A solutions in hexanes.

As hypothesized, the bleeding of the Laropal A-81 paint was reduced as the MS2A content of the varnish diminished. Although slight bleeding was still observed at concentrations of 4% and 1.5% w/w, these occurred only in the last pass of the brush. Another curious observation from this experiment relates to the appearance of the MS2A varnish solutions themselves. Those with solute concentrations equal to or higher than 13% w/w produced a yellow tinged, crystal clear solution, however lower concentrations appeared slightly milky with minor particulate residues, even after gentle heating.

Unbeknownst to the authors at the time, similar experiments performed by Sutherland on varnishes applied to oil paintings showed that a MS2A varnish solution increased the extraction of free fatty acids over that of the nonpolar solvent alone.[15] In fact, a didactic included in that paper specifically shows the ability of MS2A to increase the solubility of Laropal

A-81 in ShellSol 340HT. It was Sutherland's opinion too that the resin acts to shift the solubility parameters of the resin solution into a more polar region of the Teas chart, thus making brush application of MS2A over Laropal A-81 impossible.

Based on these observations, but without anything so restrictive as hard data, one could envision a possible working method for the brush application of MS2A varnish over Laropal A-81 inpainting that involved an initial few passes of a very low concentration varnish. After complete drying (only minutes with an aliphatic solvent), the thin dried varnish layer may provide additional protection in the event that additional passes with a more concentrated varnish solution were desirable. This suggestion is based on the relatively slow dissolution of MS2A in hexanes. Current experimentation at BSC seeks to explore these working methods more fully.

CONCLUSION

Teas charts prove a useful record and accurate predictor of solubility for LMW resins as well as a host of other conservation materials. Although the production of comprehensive Teas charts is likely to be beyond the time and material constraints of most conservators, it is an ideal exercise for conservation students. Experience has shown that students who construct a Teas chart develop an appreciation of the strengths and weaknesses of all polymer solubility theories, not just that of Teas. In addition, it presents a memorable introduction to a wide range of solvents, their properties, and their safety issues and instills in the student an intuitive sense of the "strength" of solvents to all manner of solutes, not just the oil paints that have dominated solubility thinking in conservation to date.

In releasing this report to the conservation community, it is hoped that these solubility data will prove useful in challenging varnishing or inpainting situations or perhaps in the exploration of solvent effects on a LMW coating's physical and optical properties. A few contrived laboratory examples have been presented here, but further careful exploration under realistic situations is warranted. In addition to the experiments detailed in this report, the BSC graduate students have produced comprehensive Teas charts for other recently introduced resins (Aquazol 200), for temporary consolidants (cyclododecane), surfactants (Triton X-405), and fresh and aged natural resin varnishes (dammar). Future classes of students will continue to explore and chart polymer solubility, and the authors welcome any suggestions for new or understudied target materials.

Acknowledgements

The BSC Research Foundation is recognized for an Undergraduate Summer Research Fellowship (RJ) to support the initial development of the laboratory exercise. Funding was also generously provided by the Andrew W. Mellon Foundation. The data shown here were collected by the authors and the BSC Art Conservation class of 2009. Helpful comments in the early stages of this project were graciously provided by Alan Phenix, Jill Whitten, Rob Proctor, James Hamm, Aniko Bezur, and Velson Horie. Bob Gamblin and Vincent Routledge are thanked for their donations of Laropal A-81 and MS2A, respectively.

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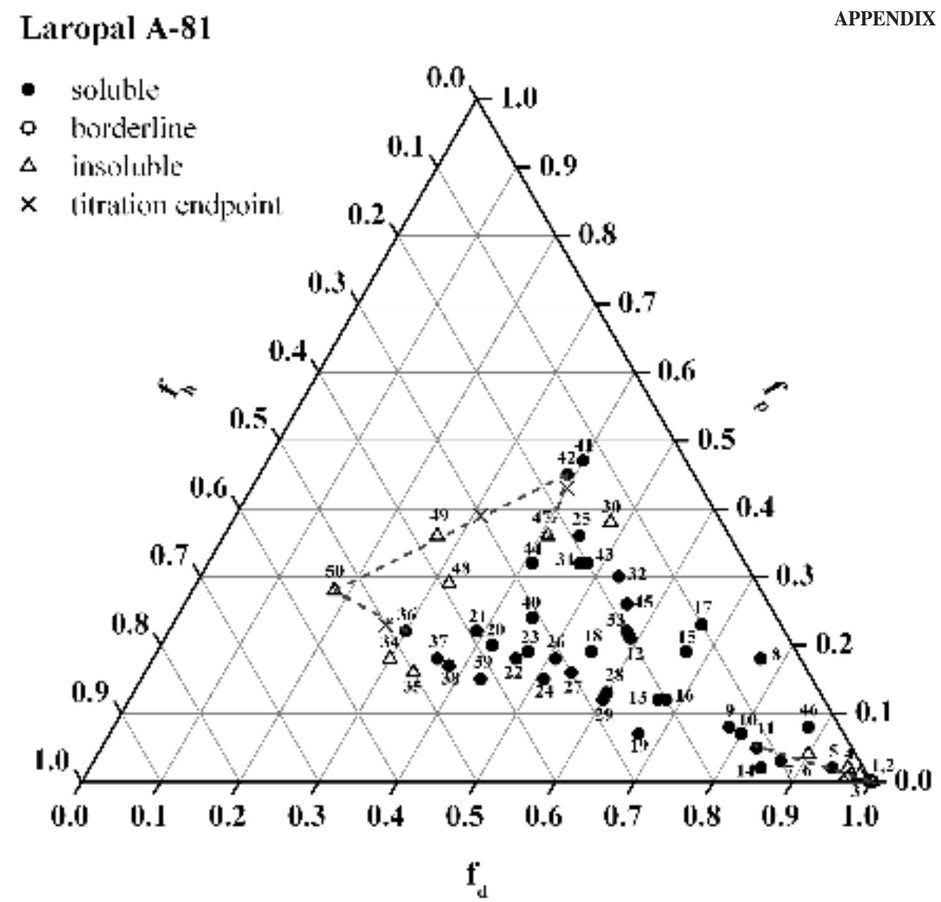
APPENDIX 1



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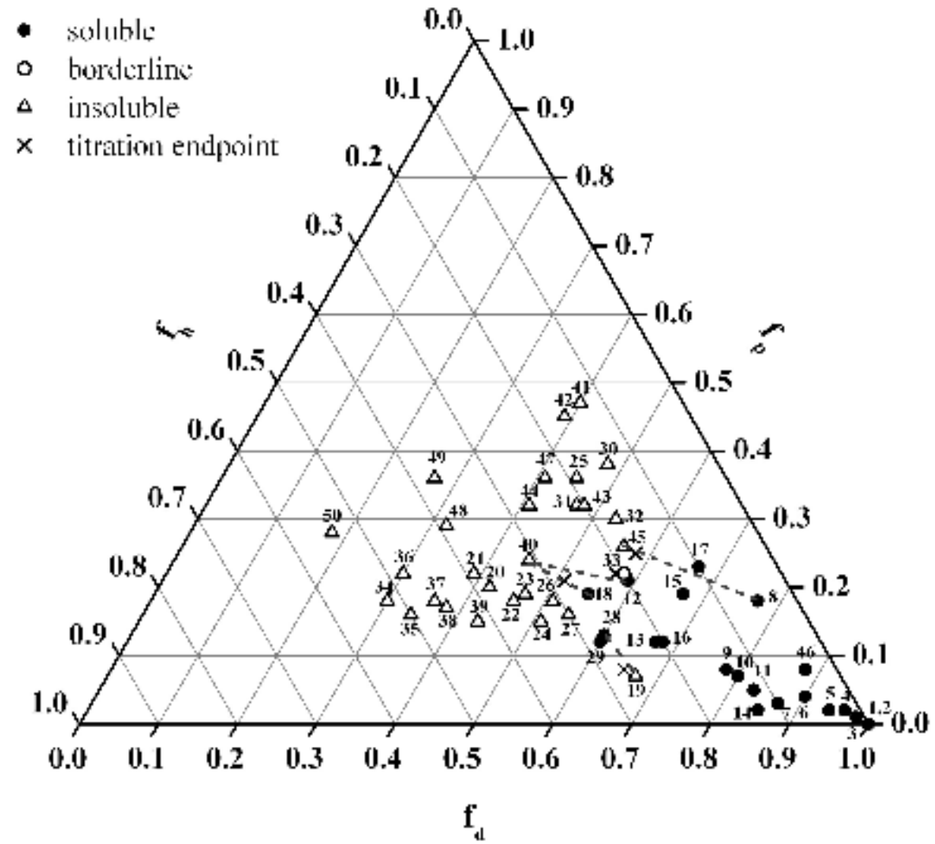
1	Hexanes	100	0	0
2	n-Heptane	100	0	0
3	Odorless mineral spirits	98	1	1
4	ShellSol 340HT	96	2	2
5	Cyclohexane	94	2	4
6	Mineral spirits	90	4	6
7	Ethylbenzene	87	3	10
8	Turpentine	77	18	5
9	Benzene	78	8	14
10	Toluene	80	7	13
11	Xylenes	83	5	12
12	Dichloromethane	59	21	20
13	Chloroform	67	12	21
14	Carbon tetrachloride	85	2	13
15	1,2-Dichloroethane	67	19	14
16	Trichloroethylene	68	12	20
17	Tetrachloroethylene	67	23	10
18	Tetrahydrofuran (THF)	55	19	26
19	1,4-Dioxane	67	7	26
20	2-Ethoxyethanol (Cellosolve)	42	20	38
21	2-Methoxyethanol (Methyl cellosolve)	39	22	39
22	2-Butoxyethanol (Butyl cellosolve)	46	18	36
23	1-Methoxy-2-propanol (methyl proxitol)	47	19	34
24	2-Ethoxyethyl acetate	51	15	34
25	Methyl acetate	45	36	19
26	Ethyl acetate	51	18	31
27	i-Propyl acetate	54	16	30
28	n-Butyl acetate	60	13	27
29	i-Amyl acetate (i-Pentyl acetate)	60	12	28
30	Propylene carbonate	48	38	14
31	Acetone	47	32	21
32	Methyl ethyl ketone (MEK)	53	30	17
33	Methyl isobutyl ketone (MIK)	58	22	20
34	Ethylene glycol	30	18	52
35	Propylene glycol	34	16	50
36	Methanol	30	22	48
37	Ethanol	36	18	46
38	i-Propanol	38	17	45
39	n-Butanol	43	15	42
40	Diacetone alcohol	45	24	31
41	Nitromethane	40	47	13
42	Acetonitrile	39	45	16
43	N-Methyl-2-pyrrolidone (M-Pyrol)	48	32	20
44	N,N-Dimethylformamide (DMF)	41	32	27
45	Pyridine	56	26	18
46	Carbon disulfide	88	8	4
47	Dimethyl sulfoxide (DMSO)	41	36	23
48	Ethanolamine (MEA)	32	29	39
49	Triethanolamine (TEA)	27	36	37
50	Water	18	28	54

Regalrez 1094

APPENDIX 2



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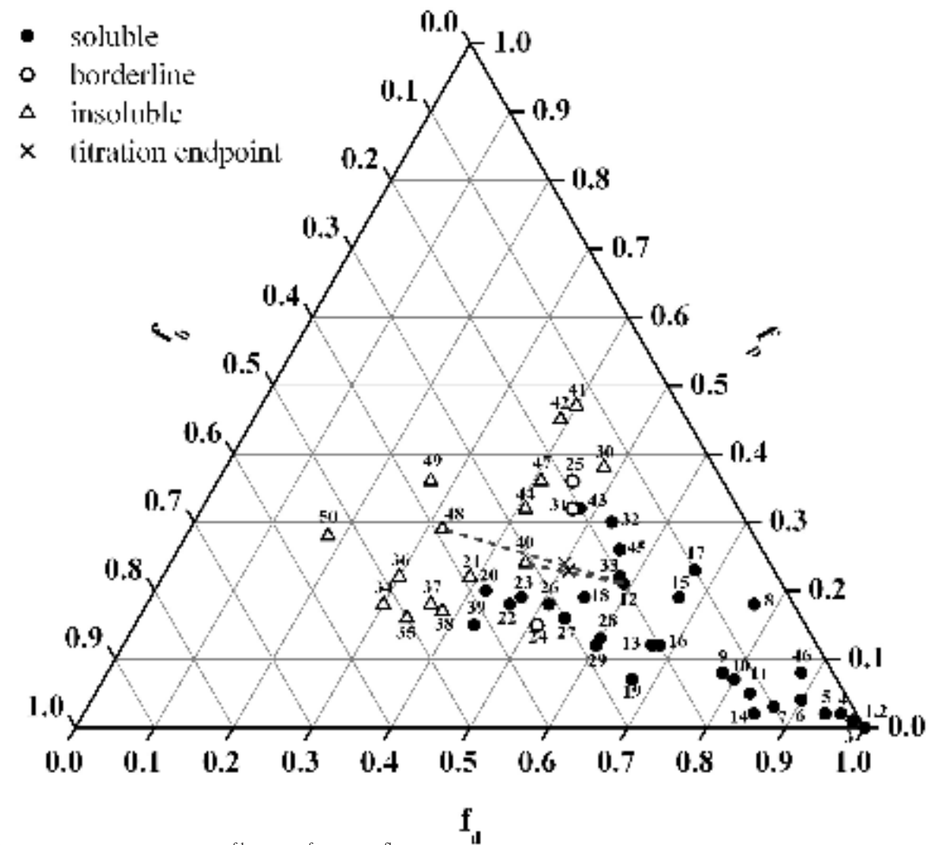
MS2A

APPENDIX 3



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47	Dimethyl sulfoxide (DMSO)	41	36	23
48	Ethanolamine (MEA)	32	29	39
49	Triethanolamine (TEA)	27	36	37
50	Water	18	28	54

Edge Finishing Silk Crepeline

by Yoonjo Lee

Silk crepeline can be edge finished in many way: hemming, pinking edges, or using a thin line of acrylic medium to seal an edge. These techniques are effective, but may produce a result that is less than desirable for a particular treatment. Such an incident prompted the development of this technique for edge finishing silk crepeline. This method fuses a polyester thread pulled from a piece of Stabiltex onto the edges of a silk crepeline patch to seal the edges and create a thin, nearly invisible finish. This technique works best with straight edges, but with some experimentation and patience, it can also be used to create shaped patches and to join two pieces of crepeline together.

Supplies:
- Sheet of glass
- Dark or light colored cardboard
- Pyrograph tool with rheostat
- Stabiltex
- Silk crepeline
- Painter's tape
- Mylar
- Sharpie® pen
- Small weights
- Small container of water
- Scissors

The pyrograph tool needs to be set at approximately 530° F ± 10 degrees. The goal is to melt the polyester thread and not burn the silk. The temperature should be adjusted accordingly.

Work Environment

1. You will do all your work on the glass sheet.

2. Depending on the color of the silk crepeline (light or dark), place the dark or light colored cardboard underneath the glass (dark cardboard for lighter colors and light cardboard for dark colors). The contrast will allow you to see what you are doing.

Finishing Straight Edges

1. Pull a thread from a piece of Stabiltex. Make sure it's longer than your silk crepeline patch.

2. Using the painter's tape, tape one end of the Stabilitex thread onto the glass work surface. Pull the thread taut and orient it vertically. Tape the other end to the glass. (See Figure 1.)

3. Place the silk crepeline fabric ON TOP of the polyester thread.

4. Align the grain line of the silk crepeline with the polyester thread and use small weights to hold the silk crepeline in place. (See Figure 2.)

5. Start from the top, using your middle and forefinger, hold the crepeline taut and gently run the tip of the pyrograph down the thread line. (See Figure 3.) Fuse only small sections at a time. You will want to pass the pyrograph tool over the area several times until the polyester thread melts (you will see the thread turn slightly opaque). This will also ensure that the silk doesn't burn.

6. Trim the edges and thread. The silk crepeline can be trimmed to less than a millimeter from the polyester thread line. (See Figure 4.)

Figure 1

Figure 2

Figure 3

Figure 4

Variations: Double or triple strands of thread can be used to finish edges. You will get a slightly heavier line, but a more durable edge. For best results, bundle multiple strands together and tape to the glass. Place the silk crepeline on top and fuse the threads.

Using a Template for Different Shapes

Things to note before you start:

1. For curves (circles, ovals, lobed shapes), it is best to use a little water on the glass to create surface tension when positioning the polyester thread and to help hold the thread in place while you work.

2. For complex designs, divide and conquer. Divide the template into quarters or halves. Fuse the polyester thread to one section at a time.

3. Simple shapes give the best results (circles, squares, triangles, etc.).

Making Silk Crepeline Patches

1. Use a Sharpie® pen in the appropriate color to draw your design onto Mylar (see Figure 5.)

2. Place your template between the glass and cardboard.

3. Using painter's tape, tape one end of the polyester thread just on the outside edge of your design. Placing the thread along the outside edge will accommodate any shrinkage that will occur when fusing the thread.

4. Dip your finger into water and spread a small amount of water along the outline of the design. Using your moistened finger and the water on the glass, arrange the thread along the outer edge of the design. Tape the other end to the glass work surface. (See Figure 6.)

5. Place the silk crepeline on top of your polyester thread. Any remaining water on the glass surface will help hold the silk crepeline in place, but do not rely on just the water, also use small weights. (See Figure 7.)

6. Hold the silk crepeline and polyester thread with your fingers to stabilize as you work. Do not pull taut. The goal is to retain the shape of the design. Work in small sections and fuse the thread to the silk crepeline with several passes. The remaining water will evaporate as you fuse the polyester thread onto the silk crepeline. Take your time!

7. Cut out the design with a pair of scissors (See Figure 8.)

Figure 5

Figure 6

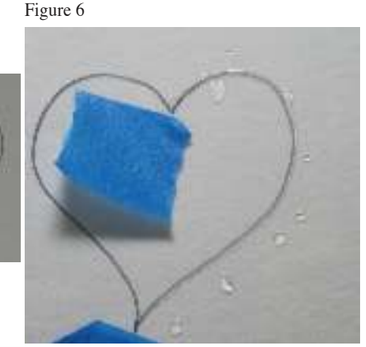
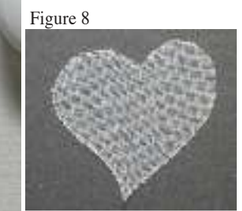


Figure 7

Figure 8



Joining Silk Crepeline Patches Together

A note before you start: For joining two silk crepeline patches, a Stabiltex thread will be applied to each patch, and then the two Stabiltex patches will be put together face to face and fused. Therefore, the Stabiltex thread will be on the back of one, and on the front of the other.

1. Begin by fusing a polyester thread along one edge of your silk crepeline patch as you would to finish a straight edge. Note which side the polyester thread has been fused onto the crepeline. This side will be the back side of your patch.

2. Fuse another polyester thread onto the edge of the second piece of silk crepeline. Also, note which side is the back of the fabric. Now you will have two crepeline patches, each with a finished edge. (See Figure 9.)

3. Flip the first crepeline patch over so that the polyester thread side (back) faces up.

4. Place the second silk crepeline patch on top of the first patch (back side to back side). Align the polyester threads next to each other so they butt up against each other. (See Figure 10.)

5. Weight down the silk crepeline patches with small weights.

6. Run the pyrograph tool over the doubled polyester threads until the two crepeline patches fuse together. (See Figure 11.)

7. Trim the overlapping edges as necessary. (See Figure 12.)

This method provides another option for finishing silk crepeline. The fused polyester thread produces a clean and tidy finished edge. With practice, it becomes a quick way to create patches and overlays. The instructions above are just the basics. Experimentation and development of new ways to use this technique are encouraged.

Figure 9

Figure 10

Figure 11

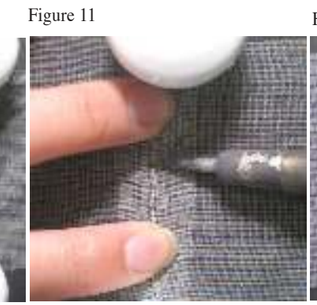


Figure 12

Working with Daylight in the Museum Environment

by Steven Hefferan

I have had the privilege of working with (and learning from) two of the premier conservation departments in the country. First, at the Metropolitan Museum during my tenure as resident lighting designer in the late 1980s, and also with the Winterthur Museum during the Period Room Relighting Project. Both experiences offered an incredible opportunity to shape the visual environment for an iconic institution. These assignments also introduced me to a culture where conservators were well integrated into the programming and design process and where discussions and negotiations concerning illuminance exposure and visibility concerns took place on a regular basis.

This is a sharp contrast with what I frequently encounter on projects around the country today. Unfortunately, conservators are often perceived as bearers of bad (and expensive) news. Their input, and that of other staff, is marginalized as mission-critical preservation and operational concerns take a back seat to the pressures of creating the next architectural destination. I have been the recipient of too many calls that start something like "We just moved into our new building and …" to believe this is an isolated issue. Of course, at that point you truly are the bearer of bad and expensive news, as an architectural issue is rebranded as a conservation problem.

Why do we continue to build so many museums that are unsuitable, if not outright hostile to the comfortable viewing of artwork and artifacts at conservation light levels? From my perspective, there are many reasons, but a few stand out related to conservation concerns:

- The design team often underestimates the magnitude of the visual havoc daylight can cause in the gallery environment, while overestimating the ability of technical systems to mitigate the problems.

- Programming requirements related to conservation criteria are poorly defined, if provided to the design team at all.

- Even well defined maximum and/or illuminance-based criteria places the emphasis on what a meter reads and not what a patron perceives.

Illuminance, Luminance, and Brightness Perceptions

The basic metrics related to light exposure and visual comfort are often misunderstood by a design team. The concept of iIlluminance, the physical quantity of light that strikes an object is widely understood as something that needs to be controlled, even if there is confusion about the relationship between the measurement units of foot-candles and lux. Luminance, the physical quantity of light reflected back to the viewer, is often confused with brightness – how a viewer perceives and experiences luminance.

I believe it is in every conservator's interest to consider the light that is reflected back to the viewer, and this must include luminance from all sources. A favorable relationship between the luminance reflected back by the object and the luminances of other surfaces in the surrounding field of view creates pleasing brightness perceptions of displayed objects. This is true even at the lowest illuminance levels. In my experience, overemphasizing the target illuminance value as the end goal reinforces the tendency to treat mitigation solutions as technical concerns, to be engineered into submission. Including the visitor experience in the equation broadens the scope of the discussion and aligns conservators with the goal of creating a compelling visual experience.

Sculpting a favorable brightness perception is primarily a function of controlling the relative luminance between the displayed objects and their surround. It has little to do with the actual illuminance exposure the object receives. A luminance ratio of 3:1 between the displayed object and the surround creates a pleasing sense of emphasis and favorable brightness perceptions. As with all perceptions, subjective aspects such as prior experience and expectation will also play a powerful roll in developing brightness judgments. (I am reminded of my only late-night conservation crisis emergency phone call. During the opening party for a Degas exhibition at the Met, one donor threatened to pull his print from the show unless the light levels were reduced to the 5 foot-candle limit stated in the loan agreement. It was obvious to him, having viewed the piece at conservation light levels for years at his residence, that the piece was over-lit in the exhibit because it had never looked so bright. To the astonishment of the lender, dueling lighting meters confirmed that, in fact, the print was a little under-lit.)

So, in many ways, the art of exhibit lighting design can be defined as making objects appear brighter than expected at very low light levels. This becomes much more difficult to achieve in a world of white gallery walls, window reflections, luminous ceilings, direct sunlight patches, and the glare from unshielded accent lights. Few artifacts can compete for visual emphasis when displayed against a white wall. An illuminance meter can register the prescribed target value without revealing that the reflection from the opposite window makes viewing impossible. In these cases, the displayed material may appear to be the darkest object in the gallery, with the consequence that excessive illumination will be used to compensate.

The accompanying bar graph illustrates, on a logarithmic scale, the broad range of naturally occurring luminances that humans have evolved to perceive. Through the mechanism of visual adaptation, we are able to navigate the twelve orders of magnitude between moonless nights and a painful glimpse of the noon sun. However, an observer can only comfortably view luminances within an adapted range of two to three orders of magnitude at any moment. Note the disparity between the cluster of luminances for objects illuminated at conservation lighting levels and the luminances likely to be encountered when controlled daylight is allowed into the gallery setting. The eye can adapt to either range, but not at the same time. The visual system will automatically shift to the adapted range of the higher luminances in the field of view. The result is that the objects of interest are usually relegated to a featureless gloom when competing against daylight-induced luminances. To make matters worse, the constant shifting of one's visual adaptation range between light and dark, window to object, print gallery to adjacent sculpture court, creates a distracting and sometimes painful visual fatigue. Surveys and visitor logs confirm that poor visibility of displayed objects and supporting graphics is the primary complaint of patrons.

With an understanding of the disparity between the two adaptation ranges, it becomes obvious how difficult is it to affect meaningful change with post-occupancy solutions, short of blackout. It might be fair to ask whether daylight should be included in the museum luminous environment at all. However, curators speak of how the shifting spectral qualities of natural light enhance the viewing experience. Architects consider exterior views and connections to the outside world essential elements of a successful design. Visitors can tire of the monotony of black (or white) box gallery environments, and anyone with a windowless office can confirm the basic human biological need for time of day and weather cues that natural light can provide. So it would seem that the answer to the previous question is not if, but how will natural light be used.

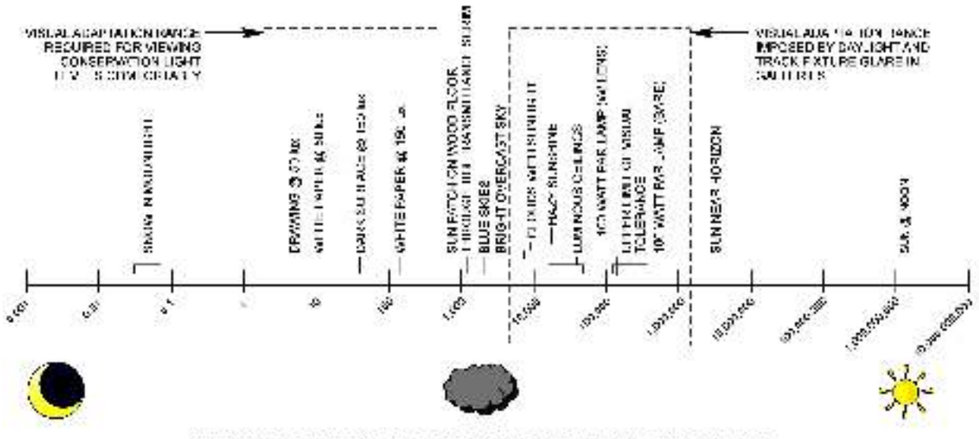
Building Form and Daylight

Like most building types, the development of architectural forms for museums and art galleries was influenced by specific illumination criteria. The initial illumination criteria of these spaces, which were primarily developed in the overcast climates of northern Europe during the 18th and 19th centuries, were based on maximizing the collection of available daylight while minimizing the need for windows which reduced valuable display space and produced reflected glare. The resulting daylight delivery systems that were adopted to respond to these needs can be characterized by three solutions: clerestory windows, light wells, and skylights or luminous ceilings. Though every building and site location is different, the impacts of these building forms on illuminance distribution, luminance ratios, and brightness perceptions are fairly consistent and can be summarized as follows:

Windows - In many ways, windows are the most problematic daylight introducing building form. Illuminance exposure can spike to over 5000 fc when direct sun is allowed to enter a typical window and strike an object. Even if illuminance is controlled, the outside view will force the eye to adapt to luminances much higher than the displayed material. Finally, the reflections of the windows in display cases, works under glass, glazed objects, and paintings with varnish, can greatly reduce object perception and understanding. From my perspective there is no practical way to maintain favorable viewing conditions at conservation light levels in a gallery with windows. As noted earlier, shades and scrims are a last-ditch solution to an existing problem, and should not be considered as an acceptable solution for new construction.

Skylights (clear glazing at the ceiling) - Skylights can also introduce direct sun patches of extremely high illuminance into the museum environment. Rarely used in official 'gallery' areas, skylights are most often found in atriums and courtyards – areas that sooner or later will be used for the display of light sensitive materials. All of the visual concerns introduced by windows are present with unprotected skylights.

Luminous Ceilings (interior translucent glazing typically located under a skylight) - The traditional translucent laylight ceiling model is characterized by overpowering luminances at the ceiling. This approach can also allow large amounts of unwanted solar gain into a building envelope during the day in most seasons, and radiate heat loss at night causing a severe energy penalty. Reflections of the luminous ceiling plane can create reflected glare and difficult viewing conditions for large paintings with varnish and any glazed surface that reflects an image of the ceiling back to the viewer.



LUMINANCES ENCOUNTERED IN NATURE AND THE MUSEUM SETTING

Lightwells, Lightscoops, and other Top Lighting Strategies - Typically, these various methods of introducing daylight from above have better visual characteristics than luminous ceilings. Top lighting strategies offer the possibility of controlling distracting luminances by blocking direct views of the sky and reflecting light into gallery. They can also be designed to distribute natural light to the display surfaces while maintaining the spectral and temporal qualities of daylight. Finally, compared to skylights and luminous ceilings, top lighting strategies can mitigate thermal concerns by minimizing glazing surface area to only let in the small percentage of the available daylight that is usable.

A well designed daylighting strategy can direct visual emphasis on the display surface without glare and reflection at modest illumination levels. In this environment, electric lighting loads can be offset and reduced by useful natural light, instead of increased to compete with excessive daylight.

Influence the Design Process

The design team is working with many competing and conflicting interests as they develop the form and systems required for this most challenging of building types. Buildings that carefully introduce only the useable daylight into the building envelope, are typically less expensive to construct and maintain. The sustainability movement and stricter energy codes are prompting a rethinking of the way we design and build our museums. Having seen these issues play out on numerous projects over many years, I can offer the following recommendations on how to interact with the design team to better manage the outcome.

1. **Get involved as early as possible.** A conservator with a seat at the table during the design process is more likely to find an end result that meets their needs. Time and again, I see curatorial, conservation, and exhibit staff kept at arms length from meaningful interaction with the design team until it is too late to impact significantly the direction of the project. Enlightened leadership will understand the importance of including key owner representatives on the project team. If staff cannot be actively involved in the project, recommend that a conservation consultant be included on the design team as an owner representative. The opinions of the owner-hired consultants tend to carry more weight than when the same recommendations come from within the design team.

2. **Provide precise guidance with conservation-based lighting criteria**. The design team is often contractually obligated to provide a design that meets program requirements, and most will make a good faith effort to meet these needs if they are clearly defined. Specifically identify which collections or galleries should exclude daylight or require full blackout options. Very light sensitive object types that require 5 fc / 50 lux illumination levels cannot practically be displayed in galleries with natural light. Reiterate that lobbies, atriums, and corridors are display spaces. A not-to-exceed illuminance criteria is a start, but for galleries with daylight, annual cumulative illumination criteria will be needed. 5 fc / 50 lux of electric illumination equates to 15,000 annual fc-hours / 150,000 annual lux-hours. The more typical 15 fc of electric accent lighting used in painting galleries approach 50,000 fc-hours / 500,000 lux-hours. A well-defined set of requirements can be your best chance to express your needs to the design team – especially if you are not actively involved during the design phase of the project.

3. **Review the architectural drawings.** Monitor the progress drawings that are typically available at milestones such as 100% schematic design, 100% design development, and 50% construction documents. Look for obvious architectural features such as windows or skylights in areas identified in the program as excluding daylight. Ask for information regarding proposed daylight control systems such as shades and blackout systems. What materials and transmittances are being considered? Do the proposed systems actually provide complete blackout without light leaks at edges? Are the proposed systems manual or motorized? How are they controlled? Finally, confirm that these devices remain in the project after the inevitable cost cutting takes place.

4. **Review studies and mock-ups.** Computer modeling of illuminance trends from daylighting systems is commonplace for most projects. The lack of a study should raise concerns. Confirm that proposed strategies will meet your illumination criteria and that a reasonable amount of electric accent lighting is included in the cumulative exposure assumptions. Also, if not clearly stated, request information about the primary assumptions used in the modeling to confirm they are realistic. (Ex. Default wall reflectance assumptions are typically 50% reflectance. Typical white gallery walls have a +/- 85% reflectance. The difference could significantly increase actual display surface exposure compared to the model predictions.)

5. **Go Green**. With the increased emphasis on the sustainability and energy conservation, the poor thermal properties of walls of glass combined with the cost of expensive windows and shading systems is becoming less defendable. Top lighting daylight architecture is notoriously expensive to construct, and every roof penetration increases the potential for leaks. Minimizing or eliminating daylighting systems will provide energy savings and lower building costs. Solid walls and roofs are less expensive than windows or glazing systems and the added shading systems that must be used to control the excessive light that these openings let into the building. When discussions about pleasing brightness perceptions and collection overexposure go nowhere, consider raising both 'green' arguments - environment and cost.

Consider these steps to help you get your needs expressed early on, when they are more likely to be integrated. Identify potential concerns before they become another "conservation problem." Perhaps it will not be long before responding to conservation criteria and visual concerns with appropriate building form is perceived as the low-cost, sustainable option.

Steven Hefferan is principal of the Boulder, CO based lighting design firm Hefferan Partnership Lighting Design (www.hpild.com). He has been sculpting pleasing brightness perceptions at conservation light levels for museums for over 25 years and can be contacted at steven@hpild.com.

Annual Meeting Abstracts

The 2007 WAAC Annual Meeting was held September 15-17 in Denver, Colorado. The papers from the meeting are listed below along with summaries prepared by the speakers.

Don't Scare the Horses: Small Museum Development in New Mexico

M. Susan Barger

Since the fall of 2001, there has been an effort to improve the infrastructure and skills in the small museums of New Mexico. First, this was an IMLS funded program under the auspices of the New Mexico Association of Museums and the Museum of New Mexico Traveling Exhibitions Bureau, TREX. When the federal money ran out, private funds kept the program going as the Small Museum Development Project until 2004. At that time, the state decided not to continue the program.

The needs of small museums did not go away, and Museum Development Associates was formed as a non-profit in 2005 to continue the work. This paper will discuss the history of the program, its successes and failures, and what has been learned about delivering services and training to small museums in New Mexico - the fifth largest state, the state with the fourth highest poverty level and the largest rich-poor gap in the nation, and a state that is known for its cultural resources.

The Removal and Restoration of Three Allen Tupper True Murals at the Graland Country Day School

Carmen Bria

In 1994, the Georgia Nelson Building on the campus of the Graland Country Day School in Denver was scheduled for demolition as its replacement was being built. Murals by renowned regional painter, Allen Tupper True, were known to be under numerous coats of wall paint in the "Little Theatre." The murals were painted directly on the plaster walls. This talk describes the collaboration with onsite construction specialists to remove the walls that contained the murals and their subsequent restoration. The restoration included the removal of the overpaint to reveal the extant murals done by the artist, the remounting of each mural, and the re-installation of the murals in the new facility.

Conservation and Restoration of the John Thompson Murals, Margery Reed Hall "Little Theater," University of Colorado

Lisa Capano

In 1929, John Thompson was commissioned to paint murals decorating the proscenium of the Margery Reed Hall "Little Theater" Stage at the University of Denver. He chose to paint themes of Shakespeare plays. The mural was completed circa 1930-31 and was then painted over. This decision was made by the then department head of the theater, against Thompson's wishes. Since then, the proscenium has been overpainted at least 4 times, in some areas even more. The ongoing conservation and restoration will probably go on for another 3 years. The author and a team of interns from the D.U. program are cleaning the mural, consolidating weak areas, filling losses, and inpainting.

The Neptune Fountain of Palos Verdes Estates at Malaga Cove

Steve Colton

Many great Italian piazzas have as their focal point a fountain of some kind. One was called for in the turn of the 18th-century Italianate city plan of the fledgling city of Palos Verdes Estates. A suitable fountain was available and adopted for the city's plaza at Malaga Cove.

For all of their public beauty, and the immense joy and pride they provide to the city, there really is no such thing as an easy to care for a fountain that is open to the public. Vandalism and pranks, natural aging of materials aided by human design, the ups and downs of care and neglect due to political agendas, and the world economy all work to take their toll on fountains. These can have very serious consequences on aesthetics and civics. Aspects of all of these factors came into play in the treatment of the Neptune Fountain. Considerations in treatment design and its four-year successful execution will be presented and discussed.

Emerging Issues of Accessible Collections

Ann Cunningham

Passage of the Americans with Disabilities Act has opened the doors to new audiences with diverse needs. Now museums are concerned with providing meaningful programming for these audiences. One of the most challenging needs is to accommodate people who benefit from tactually accessible exhibits. This fall the Metropolitan Museum of Art will host the second International Art Education for the Blind Conference and bring together many museums interested in developing these kinds of exhibits. Ann Cunningham will talk about museum programs already taking place and outline some of the new directions they are taking. This discussion is an opportunity for WAAC participants to share ideas about policies that could contribute to the success of these programs.

Raising the Stakes: Caring for SAM's Collections During Expansion and Beyond

Nicholas Dorman

The presentation will be an account of our experiences of simultaneously preparing for the construction of two new Seattle Art Museum venues: the Olympic Sculpture Park on the Seattle Waterfront and the new SAM downtown museum.

During the presentation and the following discussion a number of subjects will be considered, all of which potentially have a considerable impact on the preservation and conservation of collections:
- Preparation: whether to remove the art from the building during construction.
- Are pre-existing staff structures up to the job or do they need to be rethought.
- Budgeting and planning for previously unimagined tasks.
- Project management and risk management during construction.

- Juggling conservation needs and institutional PR and events requirements.
- What to do when the museum opens? The challenge of operating and maintaining standards in an unproven environment.

Creations of the Mind and Hand: the Conservation of an Ethnographic Treasure

Brynn Bender

Grand Teton National Park holds a breathtaking, world-class collection of Native American cultural artifacts. They are now getting well deserved conservation attention. This presentation will include an overview of the National Park Service's project to conserve the collection. It will touch on the history of the collection and the process of documentation, analysis, and storage upgrades for half of the collection. Treatment preparation and techniques will be discussed as we work towards the completion of up to 300 treatments by next year.

Assessing Collections Materials with a Mideofader

James R. Druzik, Katie Taylor, Teresa Mesquit, and Mary Reinsch Sackett

Although various individuals had built the capability to fade small areas on artifacts earlier, Paul Whitmore, Carnegie Mellon University, developed the first virtually non-destructive, micro-fading instrument that could be used directly on artifacts in real-time to assess their light sensitivity. Such instruments now exist at the Library of Congress, National Gallery of Art, the Museum of Modern Art, the Canadian Conservation Institute, and the Getty Conservation Institute, which has two such instruments. Activities are currently afoot to design a more portable and less expensive version for availability to wider collections.

The Getty Research Institute (GRI) uses micro-fading to assess a wide range of objects anticipated for display in its own galleries and requested for loan by other institutions. It also investigates a class of materials of interest to individual conservators. Since a major fraction of Getty materials are of unknown light sensitivity and come from the 19th-20th centuries, loan policy and display decisions involving both the conservation and curatorial departments often rides upon the delicate balance provided by GCI input. We'll briefly describe our overall policy and decision processes, followed by a tour of various assessments conducted over the last three years. These will include both works of art and archival documents from Allan Kaprow, Heinrich Schliemann, and a series of black and white Polaroid images from the 1950s. We'll see that in addition to providing preventive conservation lighting risk analysis the microfadeometer also represents a platform for gaining deep insights into materials behavior.

Preserving an American Treasure: the Ansel Adams Project at the Center for Creative Photography

Lisa Duncan and Laura Downey Staneff

In 2005, the Center for Creative Photography (CCP) in Tucson, Arizona was awarded a Save America's Treasures (SAT) grant funding an extensive project to preserve the Ansel Adams archive. A founder of the CCP, Adams is credited with the original idea of the Center's mission, to house not just a photographer's exhibition works but also negatives and archival materials, enabling study and use of a wide array of materials of interest to photographers, scholars, and students of photography.

The multi-component SAT project, scheduled for completion in spring 2008, includes: rehousing approximately 2,500 fine prints in sink mats, conservation assessment and treatment of the fine prints, improved preservation of the archival materials, cold storage for Adams' original film negatives, and renovation of a room used for public viewing of the fine prints.

This paper will focus on the conservation activities undertaken when Lisa Duncan, a graduate student in art conservation, spent her summer work project performing minor treatments on a large number of Adams prints as well as contributing to the preservation of the photographer's archival materials. This included consolidation of prints in the collection and working with nitrate negatives, autochromes, and even Adams' hat. The project has helped to stabilize this important collection while introducing avenues for new research into photographic materials.

Is There Life After Death? Surviving a Museum Expansion Project

Jessica Fletcher and Carl Patterson

October, 2007 marks the one year anniversary of the Denver Art Museum's exciting new expanded complex. Now that we are open, we have the time to look back at years of planning, teamwork, brilliant ideas, and grey hair that went into this enormous project. It has been a "once in a life-time experience" that we are about to do all over again. What did we learn? Departments like Conservation, directly involved with preparing and installing works of art, were especially heavily impacted. This paper will present the logistics of planning gallery spaces, preparing large numbers of artworks, installing exhibitions simultaneously, and surviving the first year of operation. It will also present solutions to problems never anticipated until the public came through the doors. Both successes and compromises will be discussed for practical application to upcoming expansion projects at other institutions.

Laying Good Foundations: Preparing to Design a New Collections Facility

Kelly Goulette and Jude Southward

The Denver Museum of Nature & Science is on the path toward building a new collections facility. This new facility and all its associated functions falls under our program called the DMNS Collections Initiative. Our aim through this initiative is to achieve current museum standards for natural history collections within the new facility.

How did we start? Our initiative began with a reaffirmation of the institution's mission, vision, and values. Next we all took a trip! DMNS curators, conservators, collections managers, registrars, and senior leadership visited colleagues who have bravely gone before us and built new collections facilities. Additionally, staff attended workshops such as the "Buildit and they will come: what you need to know BEFORE you begin museum construction or renovation" by the Society for the Preservation of Natural History Collections and the Building Museums Conference by the Mid-Atlantic Association of Museums.

With all this wonderful information our team completed strategic and master facility planning and then were ready to begin documenting specifications required for collections storage and processing functions. Additionally, we are beginning to discuss creative and innovative ways to provide visitor access to collections. Our next steps will be to update our collection plans, the DMNS Ethics and Collections Policies, and improve physical control of collections through inventory, data clean-up, condition reports, long-range planning, and upgrading storage mounts.

Mills Novelty Company Gypsy Fortune Telling Machine

John Kjelland

The Mills Verbal Fortune Teller Machine, constructed in 1907 by the Mills Novelty Company, is a part of the historical collection of properties and objects at Virginia City, Montana and managed by Montana Heritage Commission for the State of Montana.

From the benches of many, conservation ideas guided the treatment outcome which was the care of a special fortuneteller, affectionately referred to as the Gypsy. This paper takes the reader through the process, concerns, and technological products solicited from a variety of sources: labs, studios, shops, associations, and individuals; all dedicated to the faithful application of their specialties. Most technicians and consultants contacted were unfamiliar with conservation concerns but accepted the set guidelines and then proceeded in accordance with such. Some, working in cadence to their own experience and perceptions also yielded to conservation concerns, as they could not argue with episodes of the "Antiques Road Show" televised guidance.

The conservation treatment began in September 2004 and concluded in June 2006. Treatment included design and manufacture of electromechanical infills, gramophones, mechanical sound reproduction, textiles, paper, gesso/paint coatings, glass, metals, wood, and transparent/painted coatings applied to wood. The recruitment of advisors and practitioners in and outside the field of conservation proved to be a rather successful meld of ideas and activity.

The treatment, though complex and multi-disciplined, began as a challenge and concluded with a sense of accomplishment. The first issues addressed were of functionality: to put a nickel 'in' and yield an audible fortune 'out.' Once achieved, the decorative and whimsical elements required cleaning, stabilization, and element replacement. Loss compensation offered the most creative aspect of the project.

The treatment objective was to render the gypsy in working order with the overall intervention predicated on the most current philosophies guiding aged objects care found in both the museum and in the discriminating market place. This involves prizing stable original fabric and a standard of minimal intervention. In effect, returning the machine to a minimally compromised configuration – with compassion for the aesthetic of age. At the McFarland Curatorial Center, in Virginia City, the gypsy was disassembled and packed for shipment to the conservator's bench in Hall, MT.

Once on the bench and dismantled further, individual components received closer attention. To facilitate study and treatment, all of the electromechanical parts were removed from the case and installed onto a proportionately sized external jig platform for ease of access. After studying the animatronics movement and interrelated linkages, speculation began on stabilization to the electromechanical components, component elements, and options for any necessary loss compensation, as the search for identical mechanical movements found no positive results.

The missing component functions led to design and fabrication. The replacement in-fills functioned harmoniously with the existing functional movements once given ample time for adjustment and fine tuning. Treatment proceeded to the rhythm of "performance and function" then time was given to historic fabric stabilization.

To understand how these components truly work together, one need only to insert a nickel. The machine works and the conservation product supports the maker's intent. As for fortune predictability, one person's future is unique and seldom truly understood by its seeker.

Westward Bound

Karen Jones

Beginning with immigrant binders who fabricated the ledger bindings used to record the proceedings of new state governments, fine binding developed in fits and starts through out the Rocky Mountain West (Colorado, Arizona, Utah, Montana, Wyoming, and New Mexico). Highlights include the fine letterpress and bindery efforts in New Mexico and Arizona; the evolution of library preservation programs in Utah; and a successful effort to utilize bookbinding as occupational therapy for TB patients in Denver. The current burgeoning of interest and skill in the book arts and fine binding in the region is described by focusing on seminal individuals and programs, including the book arts program at the University of Utah and the American Academy of Bookbinding in Telluride, Colorado.

Protecting Ancient Works of Art in the Getty Museum From Earthquake Damage

McKenzie Lowry, Jerry Podany, B. J. Farrar, and David Armendariz

Since 1984 the Department of Antiquities Conservation at the J. Paul Getty Museum has developed and applied a broad range of seismic mitigation approaches to the protection of its collections from earthquake damage. A recently updated geotechnical study of both the site and the museum building at the Getty Villa, first completed 1983-84, has provided a guide for these efforts of damage mitigation. Approaches include simple static mounts that cradle and secure the objects, as well as the use of isolation mechanisms (decouplers) placed under monumental sculpture and display cases.

This presentation will provide an overview of mitigation efforts to date, detailing the unique challenges faced by conservators, mount makers and engineers when trying to protect ancient material on display, while also accommodating numerous aesthetic design concerns and limitations.

The Clyfford Still Museum: An American Treasure Comes to Denver

Dean Sobel
Director, Clyfford Still Museum

In August 2004, the city of Denver announced it would receive the artworks contained within the Clyfford Still estate – some 800 paintings and 1500 works on paper that comprise 94% of the artist's entire output, most of which has never been exhibited publicly. These artworks will form the collections of the new Clyfford Still Museum, planned to open adjacent to the Denver Art Museum in 2010. Given the significance of Still's role in American art, coupled with the comprehensiveness of his estate, the opening of the Still Museum will mark a major milestone.

The nature of Still's technique, the volume of material, the ways in which the works were stored, and the paucity of conservation treatment performed on these artworks poses unique conservation challenges, all of which will be the subject of this presentation.

Light Degradation, Light Sensitivity and Light Budgeting Program

Christel Pesme

After reviewing the different parameters of light degradation and the characteristics of light degradation, the presentation will focus on the light sensitivity of an artifact. The different parameters of light sensitivity will be proposed, and the different approaches to assess it will be discussed. The advantages as well as disadvantages of microfadometer use will be explained. Then the method for building a light budgeting program for an artifact and/or for a collection will be proposed.

How *Emigrants Crossing the Plains* Also Safely Crossed the High Seas

Joan Mast-Loughridge

We contracted with National Cowboy and Western Heritage Museum, in Oklahoma City, to stabilize the original carved walnut frame for Albert Bierstadt's painting *On Emigrants Crossing the Plains*. It was to be loaned to the Schirn Kunsthalle Museum in Frankfurt, Germany for an exhibition called "We Love America." Part of the request was that it be displayed in the original frame.

The frame has a large, carved walnut cove, which was splitting, and part of the forward moulding was warping away from the outside moulding and base. Further, there was a question as to the stability of the frame corners. The museum did not want to loan the framed painting without these conditions being addressed. We knew that the frame had been worked on previously, when the painting was conserved by WCCFA, but that it was primarily cosmetic.

Our concern with stabilizing the existing cracks in the cove was not to constrain them to the degree that, with natural expansion and contraction of the wood, especially with the climate changes during travel, the cove would split elsewhere. We also wanted to make sure that the warping forward cap did not detach, as it was the logical area to hold onto when maneuvering the very heavy framed painting. We used 1mm BEVA-film and B-72 in acetone to make repairs.

A Tale of Two Headdresses

Julie Parker

This paper will discuss the research and treatment of two Native American headdresses that were worn by the historical figures Chief Sitting Bull and Iron Tail, when they performed in Buffalo Bill's Wild West shows. The individual stories of these men will be used as an entry point to examine a tumultuous period in the history of the American West, illustrated with photographs from the archives of the Buffalo Bill Museum and Grave. The treatment involved the cleaning and stabilization of a variety of materials as well as a unique opportunity to restore an object to a configuration from a specific time period based on the evidence of archival photographs.

Keeping the Life Sculptures of John DeAndrea Alive

Carl Patterson, Jessica Fletcher, Kristine Jeffcoat, and Sharon Blank

The Denver artist, John DeAndrea is best known for producing life sculptures with a startling degree of realism. Unfortunately, many of his polyvinyl sculptures, found throughout American and European museums and private collections, have begun to deteriorate. This paper traces the evolution of the techniques, materials, and stability of John DeAndrea's sculptures and attempts to predict the reasons for deterioration. The artist's vision for the care and conservation of his work will be presented, using two of the Denver Art Museum's favorite pieces as case studies.

28 Sculptures in 29 Months: Aspects of the Installation of the Fran and Ray Stark Sculpture Garden at the J. Paul Getty Museum

Katrina Posner

This talk will discuss some of the planning, analysis, treatment, and mount-making steps taken to install the newly acquired collection of 28 modern outdoor sculptures. The sculptures arrived at the museum at the beginning of 2006, and the installation was completed in May 2007. In the interim, the sculptures were prepared for installation by cleaning their surfaces, removing old coatings, and reapplying new coatings. Structural engineering considerations for each piece were analyzed, and all of the sculptures were mounted for seismic stability. Our department was also involved with landscaping planning in order to minimize the impact of sprinkler overspray and chemical fertilizers on the surfaces of the pieces. The installation project was a group effort that included the work of many departments throughout the museum and trust. On-going maintenance efforts will be discussed, as well as potential future research.

How Jean Charlot Set My Heart Aflutter

Victoria Montana Ryan

The ultimate path to the complicated conservation treatment of a fresco by Jean Charlot involved a will, a house, and negotiations between five entities and led to a long-term relationship with the Charlot that set my heart aflutter. Charlot, who may be the artistic godfather of the great Mexican muralists, was at the forefront of the 20th-century revival of mural painting. Throughout his long career, Charlot left not only a large body of work, but many mural treasures scattered though numerous countries. The challenging conservation steps, including the use of cyclododecane, to ensure stabilization and preservation of one such treasure are the focus of this presentation.

Bacterial Removal of Mercury from Museum Materials: A New Remediation Technology?

Lisa Snelling
Laboratory coordinator for the Biology Program at Denver University.

Timberley Roane
Associate Professor of microbiology in the Department of Biology at the University of Colorado at Denver and Health Sciences Center.

Bacteria – capable of detoxifying and, in some cases, sequestering metals – are being investigated in the remediation of contaminated environments such as soil and water and, in this project, the removal of mercury from museum type materials. Mercury on such materials poses a unique remediation challenge because it forms non-degradable, persistent chemicals.

Because mercury-resistant bacteria have the ability to convert mercury into a gaseous form, they may facilitate mercury removal. In the work presented here, a diverse bacterial community was isolated from mercury-treated items; two of the non-pathogenic bacterial isolates were capable of reducing 10 ppm mercury concentrations. One, Arthrobacter sp. 2604, reduced the mercury associated with a gelatin medium by 30% and a paper matrix by 20% within 10 days at 28°C. Another, Cupriavidus metallidurans CH34, reduced up to 50% and 60%, respectively. Current work is optimizing the conditions for bacterial mercury removal such as the method of bacterial application and the appropriate food sources for the bacteria during the remediation process.

The Modular Cleaning Program: An Update and Demonstration

Chris Stavroudis

Another take on the Modular Cleaning Program. This time, we will discuss solvents, solubility theory, and how the MCP can help the conservator in thinking about solvent mixtures. The MCP uses Hansen solubility parameters as the basis for calculations and displays the properties of the solvent mixture on a two part graph. The graph hopefully helps the conservator visualize changes in the solvent mixture's properties as the proportions of solvents are changed.

The next version of the MCP should also be finished and ready for debut at the WAAC meeting. The upgrade is mostly to upgrade from FileMaker Pro 5.5 to FileMaker Pro 8.5. As always, there will be run time versions of the system for both Windows and Mac OS-X which will allow conservators to use the program without owning FileMaker Pro.

With any luck at all, the new version of the MCP will allow Mac users to view Hansen space using the 3D visualization program, Grapher, which is included with the Mac's operating system.

Rehousing With No House

Rebecca Tinkham

What do you do when your old museum collection storage facility has been demolished and the new one is a hole in the ground? Literally. Meanwhile work must continue, and you have a 2,300 plus collection to survey, treat, and rehouse. A tale of extreme coordination, creative problem solving, and fancy footwork from the Palace of the Governors / New Mexico History Museum as told by a textile conservator.

The New Mexico History Museum is scheduled to open Memorial Day weekend 2009 providing expanded space for permanent and temporary exhibitions and state-of-the-art storage with environmental controls. Since the new building will be located on the site of the old collection storage facility, the collections had to be moved to an intermediate space during construction. During this transition time, surveys and exams, conservation treatments, training workshops, rehousing projects, and exhibitions continue to happen and constant access to the collections is required.

Limited space in the conservation laboratory and the retrofitted storage facility has led to creative solutions when trying to juggle people, space, and projects. Supply storage is wherever it will fit. Volunteers' projects are often dictated by the day they work to best utilize available space. Rehousing projects may be only partly completed to prevent expansion in a packed storage space. The conservation lab, which has been treating predominately objects on a routine basis, has been occasionally thrown into disarray when a large textile is brought in for treatment or costumes for mounting. Limited lab space has necessitated a wet-clean to be performed in an outdoor, public area of the museum. What has worked, what hasn't, and what is being learned in the thick of it all.

Investigations into the Preservation of Light-Based Artworks at the Denver Art Museum

David Turnbull

The Denver Art Museum collection includes important light-based artworks by such artists as Dan Flavin, Robert Irwin, and James Turrell, but has had no approach for their long term preservation. The light-based installation *Trace Elements* by James Turrell was removed from display during the summer of 2007, and research into documenting the installation led to assessing exhibition and preservation issues of light-based artworks by other artists in the museum's permanent collection.

Jobs

The Cleveland Museum of Art
CHIEF CONSERVATOR

The Cleveland Museum of Art) seeks candidates for the position of Chief Conservator. The Chief Conservator has primary responsibility for the conservation of objects in the Museum's collection and for overseeing all aspects of a major conservation program that comprises a range of related activities: the treatment of objects, technical analysis, scientific research, collaborative work with other institutions, and the training of conservators.

As a senior manager within the institution, the Chief Conservator oversees the operations of the conservation department, which is staffed by six conservators, three conservation technicians, and several interns and fellows, and works in close cooperation with the Director of Museum Services, to whom s/he reports, and the Chief Curator. S/he is also responsible for participating in institutional planning, setting and maintaining effective policies with respect to the care and treatment of the collection and loans as well as the operation of the museum's facilities, the development of special initiatives, and representing the institution to a broad range of external constituencies including, most notably, the conservation profession, and upholding high ethical and professional standards in fulfillment of the mission of the Museum.

With a superb collection that is renowned for its scope and quality, the Cleveland Museum of Art is widely acknowledged as one of the finest museums in the United States. With an annual operating budget of $35 million, it is a leading cultural resource in Cleveland and northeast Ohio and a major center for art-historical research. It is presently in the midst of a seven-year, $258 million renovation and expansion project that will transform the institution and include state-of-the-art conservation spaces with laboratories for all specialties and areas dedicated for object preparation, photo-documentation and scientific analysis.

Qualified applicants should send resumes, curricula vitae, or other relevant credentials to: Human Resources, The Cleveland Museum of Art, 11150 East Boulevard, Cleveland, OH 44106-1797, E-Mail: resume@clevelandart.org. No phone calls please

The Asian Art Museum of San Francisco
PAINTINGS CONSERVATOR

The Asian Art Museum of San Francisco offers an opportunity for an experienced paintings conservator to conserve and restore Asian works of art in this world-renowned collection. The incumbent will perform conservation of works of art on cloth and paper including, but not limited to, screens, scrolls, banner paintings, Indian miniatures, Japanese woodblock prints, album leaves, photos, and contemporary artworks from various Asian countries. The incumbent must have an in-depth knowledge of the physical properties and aging characteristics of the materials and the effects of past and future restorations; manual dexterity; intense concentration; and aesthetic sensibility in addition to excellent organizational skills. The incumbent, serving as a lead professional in the Conservation Laboratory, must have the ability to prioritize work, coordinate with preparators and other museum staff, and sequence projects in order to meet agreed upon deadlines. Apply online at www.asianart.org or send a letter of interest and resume immediately to: Human Resources, Asian Art Museum, 200 Larkin Street, San Francisco, CA 94102.

Fine Art Conservation Group
PAINTINGS CONSERVATOR

Fine Art Conservation Group LLC is seeking qualified candidates to fill the position of full time paintings conservator. Minimum requirements: Master's degree from a recognized conservation program or equivalent professional training, at least 3 years of practical experience, the ability to devise and conduct treatment procedures independently, and excellent written and verbal communication skills.We are an established private studio located in Manhattan, specializing in the conservation of primarily 20th century and contemporary paintings. In addition to the treatment of paintings, the position also involves on-site surveys and the preparation of condition reports. Salary and benefits commensurate with experience. Please e-mail a letter of interest and resume to info@fineartconservation.

Amann + EstabrookConservation Associates
PAINTING CONSERVATOR

Amann + Estabrook Conservation Associates, a New York City-based conservation studio specializing in modern and contemporary art, is seeking a full-time painting conservator, available immediately. This position offers potential for professional growth through varied and challenging treatments. The candidate should have demonstrated ability in the treatment of modern and contemporary paintings and the ability to work under tight deadlines. Working with peers as part of a team is essential. The candidate should be a graduate of a recognized conservation training program or have equivalent apprenticeship training, with at least 2 years additional experience. Salary is commensurate with experience. Health benefits and 401K plan are offered. Interested applicants should send by fax or e-mail a resume with the names and contact information of three professional references, and three sample treatment reports: Sandra Amann and Elizabeth Estabrook, Amann + Estabrook Conservation Associates, 435 Hudson Street, New York, NY 10014.Fax: 212 262 4110. Studio@Amannconservation.com

Membership

Chris Stavroudis
membership secrertary

Articles You May Have Missed

Susanne Friend
column editor

"Gettysburg Undergoes Major Renovation," *Chicago Tribune*, 9/4/2007

Gettysburg is at the forefront of an effort to restore many Civil War battlefields to something more closely resembling their appearance when they were the scenes of bloody struggles between the forces of North and South. At the heart of these rehabilitation projects is a task that would seem an odd undertaking for the National Park Service: cutting down hundreds of acres of trees.

In the 142 years since the war's end, fields that were once farmed have fallen fallow, allowing trees to grow and obscure what were clear lines of fire in 1863. Under a 1999 restoration plan, the park service will cut down 576 acres of woodland at Gettysburg that did not exist at the time of the battle, and replant 115 acres of trees that were there but have since disappeared. A new $103 million museum and visitors center, designed to resemble a Pennsylvania farm to help it blend into the historic landscape, is under construction to replace the park service's cramped and outdated facility.

Among the highlights of the new museum will be the newly restored Gettysburg cyclorama, a 360-degree painting that depicts the key moment of the battle, Pickett's Charge, when Rebel soldiers came close to breaking through the center of the Union army's position on July 3, the last day of the battle. The massive 1884 painting, by Paul Philippoteaux, measures nearly 360 feet long and 27 feet high, and it weighs more than three tons. A team of conservators is repairing extensive damage and adding a missing 14-foot strip to the top of the cyclorama.

"Researchers Uncover Leonardo da Vinci's Method Stroke for Stroke," *CBC Arts*, 9/2/2007

Italian researchers say they have been able to reconstruct for the first time, stroke by stroke, how Renaissance master painter Leonardo da Vinci created his works of art. Investigators at the University of Florence have uncovered Leonardo's method of creating his works by using a scientific device to analyze the painting *Madonna of the Yarnwinder*. In the oil painting, completed in 1501, Leonardo depicts the Virgin Mary holding the child Jesus, who is looking at a yarnwinder being used to spin yarn. The researchers used what they call a nuclear accelerator device that launches particles at high speed to decipher the painting technique.

The examination showed that Leonardo applied thin layers of paint directly on the canvas. Different colours were layered on top of one another to create a rich texture. A high-resolution 3-D laser scan of the Mona Lisa by Canada's National Research Council in 2006 revealed the woman who sat for the Mona Lisa painting may have been pregnant or just given birth. Scientists discovered the Mona Lisa was wearing a translucent gauze garment over her dress — a garment known to be worn by women of the time during or after their pregnancy.

"Bellingham Woman Restores 200-year-old Pirate Flag," *The Bellingham Herald*, 9/10/2007

It was truly the luck of the draw that brought Bonnijo Chervenock to her pirate flag and allowed her to save a rare piece of maritime history. As a second-year student at the Textile Conservation Centre in England's Winchester School of Art, her assignment was a crumbling pirate flag that dated to the late 1700s.

It had fallen into over 50 pieces, had a lot of gunpowder on it, and some burns from shot going through it. Though she wanted to remove the dirt and grime that was degrading the fabric, she saw the gunpowder as a telling piece of the flag's sordid past. In order to restore the blood-red flag, Chervenock coated fine silk fabric in adhesive and put the skull and crossbones back together like a puzzle. She then stitched that back onto the cleaned flag. Based on her research, pirate flags like the one she worked on are a relatively rare find. Chervenock will graduate from Winchester when she's done with her dissertation on the effects of gunpowder on textiles — a topic inspired by the pirate flag.

"Out of the Public Eye," *The Moscow Times*, 7/31/2007

At the Tretyakov Gallery, a team of restorers uses homespun methods to revive the collection of Russian art. In the early 1990s, a few émigrés paid their way West not by smuggling cans of black caviar but by selling another highly prized fish product: sturgeon bladders. Dried flakes from the inner membrane of the fish's air bladder have long been used by Russian conservators as a glue to set loose paint. As sturgeon glue became accessible abroad, Western restorers found that it was more flexible and binding than synthetic alternatives.

Despite all the money and study going into developing new techniques and materials for art conservation, the traditional ones still excel. Restoration at the Tretyakov Gallery has been organized in the same way since 1936, when the gallery founded an in-house conservation department. Moscow's other museums outsource their restoration to a state studio called the Grabar Art Conservation

Center. Before every restoration, the gallery's leadership and all the restorers hold a meeting to decide on the task ahead.

Conservation remains a closed world -- many of the gallery staff followed their parents into the profession. When a restoration is difficult and "you've spent your own blood coming up with a solution, it is not so easy to give it away," Tretyakov conservator Orlovskaya said of the mystery surrounding her craft. "We work differently than abroad because we work more visually and intuitively, whereas [foreign restorers] rely more on microscopes and technology, and different lamps and magnifiers to see every ripple of the painting," she said. "You could say we work using feeling."

"Admiring the Triumph of Restoration," *The Montreal Gazette,* 9/10/2007

After a fire ripped through the Sacred Heart Chapel in Montreal's Notre Dame Basilica on Dec. 8, 1978, a 170-year-old work of religious art, *The Triumph of the Virgin,* was badly damaged, rolled up, and locked away. Last year, more than 2,000 hours of work went into restoring the early 19th-century canvas, a copy of a similar work in Paris by 17th-century French painter Charles Le Brun.

The 1810 rendition of Le Brun's work by William Berczy decorated the first Notre Dame church on Place d'Armes in Montreal. The refurbished painting hasn't been seen by the public since the fire almost 30 years ago. It is now the focal point of an exhibition, titled "The Artistic Legacy of the Montreal Sulpicians," opening in the newest pavilion of the Montreal Museum of Fine Arts, the old Erskine and American United Church.

"High and Mighty," *Detroit Free Press*, 09/19/2007

Tintoretto's enormous *The Dreams of Men* was reinstalled last month in a specially designed octagonal ceiling perch 24 feet above the ground. The painting -- an oil on canvas measuring more than 12 feet long and 7 feet wide and depicting gods and mythological figures -- was painted for the bedroom ceiling of a well-to-do Venetian merchant around 1550.

More than 450 years later, the DIA has returned the work to its original ceiling orientation, offering Detroiters an exhilarating perspective that no other museum in the United States can match. Conservation measures included cleaning and inpainting as well as removal of a disintegrating lining, and reinforcing the edges of the canvas with new fabric. In 2005 the DIA brought a conservator from Rome to reline the canvas and provide a spring-loaded aluminum stretcher to regulate tension. In recent years, conservators began studying the climate in the ceiling where the painting was to be hung to create a safer environment.

"Storms Blamed for Venice's Falling Masonry," *The Guardian*,10//2007

Long accustomed to sea surges which swell their canals, swamp their piazzas, and threaten the foundations of their buildings, Venetians are now looking up to the skies with trepidation as freak rainstorms are blamed for bringing chunks of masonry crashing down from landmark palaces.

Locals and tourists fled for cover on Saturday as a 66lb block of white marble dislodged from a window frame at the Ducal palace, close to St Mark's Square, and fell 65ft to the crowded pavement below. The chunk missed a passersby although flying shards of marble from the impact left a German tourist bleeding from a leg wound.

Days earlier, another tourist destination, the Correr museum in St Mark's Square, lost a large piece of marble from its facade which fell into an internal courtyard. As city officials planned an emergency meeting for today, the mayor, Massimo Cacciari, was quick to point out the Ducal palace had been restored just three years ago, but suggested water infiltration due to record rainfall had done the damage.

Mr. Cacciari suggested old iron rods holding the marble blocks in place at the Ducal palace had rusted to the point of disintegration in the heavy rain. City officials have already warned of tiny cracks appearing in Venice's palaces thanks to pigeons which peck at facades while searching for food scraps.

"Goa's Rich Heritage Monuments to get a Midas Touch," *Mangalorean.com,* 9/22/2007

Goa's rich heritage monuments will get a Midas touch with the state government signing a memorandum of understanding with New Delhi based Indian National Trust for Art and Cultural Heritage. The memorandum is for restoration, conservation, and maintenance of archaeological monuments/sites and heritage structures.

Though small in size, Goa has a large number of archaeological monuments and heritage sites. Restoration, conservation, preservation, beautification, maintenance etc. of these monuments/sites is the responsibility of the central and state governments. Hence regular repairs and periodical conservation, preservation, maintenance of archeological monuments/sites and heritage structures in the state is being pursued for their proper upkeep.

"Houston Museum Honored With Rare 17th-Century Edo Period Folding Screens," *HULIQ.com*, 9/19/2007

The National Research Institute for Cultural Properties, Tokyo, has selected a pair of historically important six-paneled screens titled Hie Sanno Sairei-Zu from the collection of Museum of Fine Arts, Houston, to be conserved by experts in Japan.

The screens, created in the 17th-century Edo period by an unknown Japanese artist, depict the Hie Sanno Festival, one of Japan's three most important festivals. Following a comprehensive restoration, Hie Sanno Sairei-Zu, along with ten other objects chosen worldwide for conservation, will be part of an exhibition at the Tokyo National Museum in May 2008 celebrating the Cooperative Program for the Conservation of Japanese Art Objects.

In Japan, the screens will be conserved by the Association for Conservation of National Treasures/Kyushu Branch Studio located at the Kyushu National Museum. The Kyushu Branch Studio specializes in the conservation of Japanese scroll mounting and Asian paper conservation.

"L.A.'s Street Murals Disappearing," *L.A. Daily News*, 10/22/2007

Los Angeles' iconic murals are disappearing. Once the mural capital of the world, Los Angeles has quietly surrendered that distinction to Philadelphia over the past five years. Artists say 60 percent of them - about 1,800 - now are either gone for good or have been nearly obliterated by tagging and vandalism.

Officials with the Los Angeles Department of Cultural Affairs say that in recent years they have been unfairly portrayed as being lax for allowing the murals to decay. They say funding for restoration has plunged in 10 years, from $400,000 in the late 1990s to $20,000 for 2007-08 - only enough to restore two murals.

When a mural is defaced, the artist who painted it is required, as part of a permit, to do touch-up work. But many muralists say they're not being notified in time or just can't find the funding. As a result, tagging can linger on murals longer than if it was sprayed on street signs or traffic signals. In fact, taggers have realized that their work will stay on murals longer than on blank walls, so their canvas of choice is the mural.

The Cultural Affairs Department opted to shield the murals in wax so if tagged again, a mural can be blasted with hot water. Still, despite advances in technology, the transportation agency has been unable to find a method to remove graffiti that does not damage the murals. Under city permits, Caltrans has the right to paint over the murals if artists don't maintain them.

"Old World Masterpieces May Benefit from a Nanotechnology Cleaning," *Nanowerk Spotlight,* 10/22/2007

Chemists from the Center for Colloid and Surface Science (CSGI) research group at the University of Florence have created a nanomagnetic sponge that can absorb cleaning solutions, release them onto the surface of paintings, sculptures, and other works of art, and then reabsorb the solutions, after the piece is cleaned. All of this occurs without the human hand ever coming into contact with the art.

Although porous like a sponge, the material is actually a hard, solid hydro-gel. The sponge is made by cross linking magnetic nanoparticles (CoFe2O4) through a polyethylene glycol and acrylamide polymer network. When polymerization is complete, the sponge can be immersed in water to achieve full saturation.

The nanomagnetic gel is hard enough to be handled with tweezers or cut with a knife or scissors. This is important because the gel can be cut into a specific shape for cleaning a particular area of the artwork. When cleaning is accomplished, the gel can be removed with a magnet. The nanomagnetic sponge can also be freeze-dried into a magnetic powder, which will reform the gel when rehydrated. The nanomagnetic sponge appears to be particularly useful for removing Paraloid polymers from marble and frescos.

To evaluate the efficiency of the removal process, the team employed the use of Microreflectance Fourier transform infrared (FTIR) spectrometry. A comparison of spectra collected before and after the treatment showed that signals from the acrylate completely disappeared after the cleaning. Additional analysis through scanning electron microscope (SEM) and, in particular, the mapping of X-ray emission collected by energy dispersive X-ray spectrometry, provided clear evidence that no residue from the nanoparticles remained on the surface of the painting, and the polymer was completely removed. The scientists also tested the process on a damaged fresco, successfully demonstrating its use on plaster.

"ASI Finds Fault with Palace Restoration," *Chandigarh Newsline* 10/23/2007

The ongoing conservation work of the famous Jagatjit Palace of Kapurthala has come under a cloud as the Archaeological Survey of India (ASI) has raised serious objections to the manner in which the project is being carried out.

The ASI objections, raised in a confidential report submitted to the Government of India, is that a tinge of modernity is being added to the original work, and the material used in the palace is destroying its originality. Jagatjit Palace, built in 1906 by the then king of Kapurthala, Maharaja Jagatjit Singh, is inspired from the Palace of Versailles and is considered to be a classic example of French architecture.

According to highly-placed sources in the INTACH, the ASI has sent a report to the Union government, saying that the originality of the palace's architecture was being compromised. INTACH sources said on the ground floor, where the floor was damaged, modern tiles are being installed, and that instead of restoring the old, damaged walls of the original structure, new cemented walls are being constructed parallel to old walls.

When contacted, INTACH chairman S.K. Mishra claimed that everything was being done according to the original architecture and material of the palace. When asked whether the contractor given the restoration work was an expert in restoration of historical buildings, Mishra said he had no idea about the contractor. However, he quickly added that the contractor "must be an expert," which is why he had been engaged for the work.

"Eighth Wonder of the World? The Stunning Temples Secretly Carved out Below Ground by Paranormal Eccentric," *Daily Mail*, 11/22/2007

Nestling in the foothills of the Alps in northern Italy, 30 miles from the ancient city of Turin, lies the valley of Valchiusella. The hillside scenery is certainly picturesque, but it is deep underground, buried into the ancient rock, that the region's greatest wonders are concealed.

Underneath the hillside, 100ft down and hidden from public view, are nine ornate temples, on five levels, whose scale and opulence take the breath away. Narrating the history of humanity, they are linked by hundreds of metres of richly decorated tunnels and occupy almost 300,000 cubic feet. The Italian government was not even aware of their existence until a few years ago.

But the 'Temples of Damanhur' are not the great legacy of some long-lost civilisation, they are the work of a 57-year-old former insurance broker from northern Italy, Oberto Airaudi, who, inspired by a childhood vision, began digging into the rock. "My goal was to recreate the temples from my visions," he says.

The temples of Damanhur - named after the ancient subterranean Egyptian temple meaning City of Light – were begun in August 1978. Volunteers, who flocked from around the world, worked in four-hour shifts for the next 16 years with no formal plans other than Oberto's sketches and visions. By 1991, several of the nine chambers were almost complete with stunning murals, mosaics, statues, secret doors, and stained glass windows.

But time was running out on the secret. The police swooped on the

community demanding: "Show us these temples or we will dynamite the entire hillside." Stunned by what they had found, the authorities decided to seize the temples on behalf of the government. Retrospective permission was eventually granted and today the 'Damanhurians' even have their own university, schools, organic supermarkets, vineyards, farms, bakeries, and award-winning eco homes.

"This Trash Really was a Treasure," *Associated Press,* 10/24/2007

A painting stolen 20 years ago was found lying in trash along a street, and now it could fetch up to $1 million at auction. Elizabeth Gibson didn't know anything about the brightly colored abstract work she spotted on her morning walk four years ago on Manhattan's Upper West Side. Sotheby's auction house will be selling the work next month for the now-widowed original owner.

It turned out that it was a 1970 painting titled *Tres Personajes* (Three People) by Mexican artist Rufino Tamayo, whose work has soared in value in recent years. A Houston couple whose names were not disclosed purchased the work -- an oil on canvas with marble dust and sand worked into the paint -- in 1977 at Sotheby's. It was stolen in 1987 from a warehouse where they had placed it while moving.

Sotheby's said it could bring up to $1 million when it is sold at its Latin American art auction Nov. 20. Gibson will receive the $15,000 reward the couple put up when it was stolen, plus an undisclosed percentage of the sale of the painting. Sotheby's says *Tres Personajes* is an important work that represents the artist's mature period.

"Scientific Tools Hunt for Lost Da Vinci Art," *The Los Angeles Times,* 10/24/2007

Analyzing 500-year-old bricks, engineers in California are searching for a lost Leonardo da Vinci fresco that some researchers believe is behind a wall in Florence's Palazzo Vecchio. The hunt for the *Battle of Anghiari*, an unfinished mural by da Vinci, has captivated art historians for centuries. Laser scanners, thermal imaging, radar, and neutrons will be employed in the project that Culture Minister Francesco Rutelli said is expected to take about a year.

Maurizio Seracini, an Italian engineer, said he and colleagues at the University of San Diego are studying bricks and stonework that were found in a storeroom in the Palazzo Vecchio and were once part of the huge hall. Some researchers believe a cavity in one of the hall's walls might have preserved the mural, which da Vinci began in 1505 to commemorate the 15th-century Florentine victory over Milan at Anghiari, a medieval Tuscan town. The work was unfinished when da Vinci left Florence in 1506. Since Vasari respected the Renaissance masters, some hypothesize that he wouldn't have destroyed da Vinci's work on what is presumed to have been a wall behind one Vasari painted when he decorated the room in the 1560s.

A few years ago, using radar and X-ray scans, Seracini and his team found a cavity behind Vasari's fresco that could indicate a space between walls. And if there's no da Vinci masterpiece behind Vasari's wall? Seracini predicted that art restoration would benefit in any case since the project would pioneer ways for restorers to understand countless paintings that have been covered by whitewash and plaster.

"Preserving the World of Art -- New Conservation Center Should be Finished by Spring," *Berkshire Eagle,* 11/01/2007

The art of protecting art is about to get a bigger canvas. A new, $25 million, cutting-edge restoration facility is nearing completion 1,000 feet to the south of the Sterling and Francine Clark Art Institute. It will become the new home of the Williamstown Art Conservation Center, currently housed in a building on the Clark's campus.

"This may be the most state-of-the-art conservation center in the country," said John Skavlem, senior director of development for the Clark. It will be moving into a 32,000-square-foot building designed by Japanese architect Tadao Ando, of which 16,000 square feet will be dedicated to preservation of paintings, sculptures, photography, drawings, vases, furniture, and most other media used in creating works of art.

The facility includes a $150,000, 100-square-foot lead-lined room that will be used to X-ray art works to help determine their preservation needs and age. Tom Branchick, director of WACC, anticipates completing the move by the end of March 2008.

The building also includes 2,500 feet of new gallery space, which the Clark will use for exhibits that depart from what the museum has done in the past. Terrace visitors can also watch, through the large windows, the art preservation work in progress. Primary construction will be complete in November, when testing of environmental control systems will begin.

"Aga Khan Trust Revives the Middle Ages," *Cairo AL-AHRAM Weekly*, 11/1-7/2007

The Khayrbek and Umm Al-Sultan Shaaban monumental complexes, two of the finest examples of Islamic mediaeval architecture in the Darb Al-Ahmar district of Cairo, have been restored. Prince Karim Aga Khan and Culture Minister Farouk Hosni announced the inauguration of the complexes after five years of restoration.

The Khayrbek complex was named after the first of Egypt's Ottoman governors, Emir Khayrbek, and was built in stages during the Mameluke and Ottoman periods. The neighbouring Umm Al-Sultan Shaaban monument, which was built by the Mameluke Sultan Shaaban for his mother Khwand Baaraka in 1368, comprises a mosque, two madrassas (religious schools), a kuttab for children (Quranic school), two mausoleums, a sabil, and a water trough for animals.

Both monuments, like all other Islamic monuments located in heavily populated areas, were suffering seriously from environmental danger including air pollution, a high subsoil water level, a high level of humidity, leakage from the Al-Madiaa (a fountain used for ritual ablution), and an overloaded and decayed sewage system more than 100 years old, not to mention the earthquake of 1992 which significantly increased the number of cracks. Both monuments had been closed to worshippers and visitors.

"Undercover Restorers Fix Paris Landmark's Clock, 'Cultural Guerrillas' Cleared of Lawbreaking over Secret Workshop in Pantheon," *The Guardian,* 11/26/2007

It is one of Paris's most celebrated monuments, a neoclassical masterpiece that has cast its shadow across

the city for more than two centuries. But it is unlikely that the Panthéon, or any other building in France's capital, will have played host to a more bizarre sequence of events than those revealed in a court last week.

Four members of an underground "cultural guerrilla" movement known as the Untergunther, whose purpose is to restore France's cultural heritage, were cleared on Friday of breaking into the 18th-century monument.

For a year from September 2005, under the nose of the Panthéon's unsuspecting security officials, a group of intrepid "illegal restorers" set up a secret workshop and lounge in a cavity under the building's famous dome. Under the supervision of group member Jean-Baptiste Viot, a professional clockmaker, they pieced apart and repaired the antique clock that had been left to rust in the building since the 1960s.

Only when their clandestine revamp of the elaborate timepiece had been completed did they reveal themselves. "We decided to tell them in the end so that they would know to wind the clock up so it would still work," said Lazar Klausmann, a spokesperson for the Untergunther.

The hardest part of the scheme was carrying up the planks used to make chairs and tables to furnish the Untergunther's cosy squat cum workshop, which has sweeping views over Paris. The group managed to connect the hideaway to the electricity grid and install a computer connected to the net.

Klausmann and his crew are connoisseurs of the Parisian underworld. Since the 1990s they have restored crypts, staged readings and plays in monuments at night, and organised rock concerts in quarries.The Untergunther are already busy working on another restoration mission Paris. The location is top secret, of course.

"Scientist Presents Case Against Possible Pollocks," *The New York Times*, 11/29/2007

A forensic scientist said yesterday that a large group of paintings discovered several years ago and thought by some to be by Jackson Pollock included many containing paints and materials that were not available until after the artist's death in 1956. At least one was painted on a board that was not produced earlier than the late 1970s or early '80s, said the scientist, James Martin, in a lecture last night sponsored by the International Foundation for Art Research in Manhattan.

Mr. Martin was commissioned to examine the paintings in 2005 by their owner, Alex Matter, the son of Herbert and Mercedes Matter, artists who were friends of Pollock's. Mr. Matter has said he found the paintings, made in Pollock's signature drip style, in 2002 or 2003 in a Long Island storage container that had belonged to his father. The findings add to a growing body of evidence that the paintings — 32 in all, including some ephemera and works on paper — were made by someone other than Pollock or at least that many were substantially altered after the artist's death.

"Hirst to Fix Another Formaldehyde Installation," *The Art Newspaper*, 9/26/2007

Last year we revealed that Damien Hirst was to replace the rotting shark in his *The Physical Impossibility of Death in the Mind of Someone Living*, 1991 bought by collector Steve Cohen from Charles Saatchi, reportedly for £6.5m.

The work is now on loan to the Metropolitan Museum in New York for three years. Now the British artist is to repair his *Mother and Child, Divided* (1993),an installation of a bisected cow and calf in four formaldehyde tanks, in the collection of the Astrup Fearnley Museum of Modern Art in Oslo. The work is leaking and has been sent to the artist's studio in London for emergency repairs.

"A leak emerged due to a flaw in the glass, and some formaldehyde was lost," says Gunnar Kvaran, the museum's director. This edition of the work was displayed at London's Tate Britain in 1995 as part of the Turner prize exhibition. Hirst won the award that year.

"Textile School is Stitched Up," *The Times,* 12/3/2007

Conservators around the world have been shocked by the University of Southampton's decision to "condemn to oblivion," in the words of the UK Institute of Conservation (Icon), the world's leading school for textile conservation.

The Textile Conservation Centre (TCC), which has trained half the world's select group of 800 textile conservators, including the winner of this year's £15,000 national Conservation Award, is to close because it no longer fits the university's research and funding criteria.

The president of the International Institute of Conservation, Jerry Podany, of the Getty Museum in California, wrote to the Vice-Chancellor of Southampton, Professor Bill Wakeham, saying the decision is "widely perceived as no less than a betrayal of trust." "We see the university's decision as damaging to the world's textile heritage, the international conservation community, and most sadly a poor repayment for the loyalty, high standards, and dedication of its highly motivated staff," he wrote. However, it is understood that an endowment of £5 million could still save the centre, founded in 1975 in Hampton Court Palace but since 1998 based in Winchester School of Art, with a staff of 16 and 60 students. The TCC is forbidden to discuss the situation publicly but it is said to be devastated by the decision after 32 years of steady development and achievement.

"Anonymous Painting Attributed to Caravaggio," *MSNBC.com,* 12/11/2007

A casual glance at an auction catalog set a British art historian on the path to discovering the brushstrokes of Caravaggio on a painting previously attributed to an anonymous follower of the Baroque master. Experts in Italy believe a copy of Caravaggio's *The Cardsharps* which surfaced at a London auction last year is an earlier version of the 1594 painting now displayed at the Kimbell Art Museum in Fort Worth, Texas.

The previously anonymous work was bought at a Sotheby's auction in December 2006 by art historian and collector Denis Mahon and will be first displayed to the public in the Sicilian city of Trapani at a Caravaggio exhibit starting Saturday, organizers said.

Mahon was at a restaurant when he spotted a painting attributed to a Caravaggio follower in a catalog and quickly linked it to the already known "Cardsharps," said Mina Gregori, an Italian art historian who worked with the British expert to verify his initial hunch. "It was intuition or a stroke of genius," Gregori told the Associated Press in a telephone interview.

Mahon was struck by the fact that the work belonged to a private collection that had previously sold an original Caravaggio, she said. Maurizio Marini, another Caravaggio expert who has studied the newly found painting, said the work is true to Caravaggio's style, and X-rays have confirmed it is an original by revealing the lead-laced sketch that was drawn to outline the painting.

An analysis of the paint has also come up with traces of very fine sand, another trademark of the artist, he said. Gregori said she was convinced that the London painting was a Caravaggio when she noticed that the face of one of the cheats, though partly covered by the page's hat, had still been sketched out in detail by the artist before being painted over. "That's the ultimate proof," she said. "A copycat doesn't do that."

"Officials Report Mold in a Leonardo Collection," *New York Times*, 12/23/2007

Leonardo da Vinci's Codex Atlanticus, the largest bound collection of his drawings and writings, has been infiltrated by mold. The extent of damage to the Codex — an assemblage of 1,119 pages of drawings and writings dating from 1478 to 1519 on topics ranging from flying machines to weapons, mathematics to botany — is not yet known, but the mold is not spreading, scholars said.

The Codex, which consists of 12 leather-bound volumes, is kept in a vault at the Biblioteca Ambrosiana where temperature and humidity are constantly monitored. The mold was first identified in April 2006 by Carmen Bambach, a curator of drawings at the Metropolitan Museum of Art in New York, and confirmed by conservation experts from the Florence-based state conservation institute, Opificio delle Pietre Dure.

Scientific analysis is required to determine the cause of the mold, which could be the result of several factors, including exposure during exhibition or study, or the unintended consequence of a restoration that began in 1968 and ended in 1972.

The Codex Atlanticus, so named because it was originally compiled as a single volume of miscellany comparable to an atlas, is the largest collection of Leonardo's sheets. Formed at the end of the sixteenth century by the sculptor Pompeo Leoni, it is viewed by some scholars as a treasured but lamentable compilation, given that Leoni dismembered some of Leonardo's notebooks to create it.

"Away from Limelight, they Shine," Lucknow *Newsline*, 12/30/2007

The best way to do something, is to do it yourself. That's the motto that Saiyed Anwer Abbas has lived by, whether it be the publication of his architectural directory — Wailing Beauty — which lists crumbling, lesser-known Lucknow monuments complete with historical and architectural details and archaeological status, or, more recently, his effort to save rare Tughra inscriptions in Imambara Zainul Abidin.

Abbas spent his entire gratuity post-retirement to bring out Wailing Beauty, in a bid to highlight the exquisite stuccowork extant on Lakhnavi monuments. His most recent effort is perhaps the first privately-funded conservation bid to protect and preserve ancient Tughra inscriptions on an 18th-century Imambara Zainul Abidin Khan in Old Lucknow.

"Tughra style of calligraphy is not commonly seen - these are calligraphic panels with logos or designs highlighting the names of the Almighty, the Holy Prophet, Imams revered by the Muslims, "Abbas says. "As a scholar who has studied Islamic calligraphy in detail, I can assure you such brilliant calligraphy is rare in the Indian sub-continent. Of the 15 archways on which these inscriptions were extant originally, only five remain today."

"France Racing to Save Lascaux Cave Paintings from Fungus," *CBC News* 1/2/2008

The French government is taking emergency action to rescue the celebrated cave paintings of the Lascaux caverns from a fungus. Archeological experts have begun applying a fungicide to halt the spread of grey and black mould in the caverns, dubbed the Sistine Chapel of prehistory.

The French government has closed the caves located about 450 kilometres south of Paris to everyone, including scientists and historians, for three months and will replace an air circulation system that may be partly responsible for the fungus. The system, installed seven years ago, may have been poorly designed, as a similar fungal attack took place after its installation.

Laurence Leaute-Beasley, president of the International Committee for the Preservation of Lascaux, called for the management of the caves to be taken out of the hands of the French government, saying someone who understands the science involved should take over. The French government, not wanting such an an important site to be seen as neglected, has decided to accept the committee's advice and act now against the fungus. One of the projects to be halted by the emergency treatment is a survey that was to make a three-dimensional digital record of every painting in the caverns.

And one everyone is sure to have missed:

"Joshua Reynolds Helped to Pirate Old Masters," *The New York Times,* 2/1/1914

Letters which have just been unearthed in the British Museum show that Sir Joshua Reynolds and other artists had a sort of loosely organized "gang" which made a practice of substituting copies for originals of famous paintings owned in Italy and other Continental countries, the originals then being brought to England and sold there.

In one typical instance paintings by Nicholas Poussin were sent to Reynolds in London in 1785 and stored in his house until sold, a confederate working in Italy having contrived their substitution. The British Museum disclosed correspondence where Reynolds himself arranged for a young artist to make two copies of pictures by Rubens, the copies substituted for the originals and the latter brought to England.

Sir Joshua went on record regarding his conscience and shows that he had no moral qualms. "I have not the least scruple about the sending copies for originals."

How far substitution was practiced by the artists of older England no man can say, but the fact that it is now proved that substitution was in vogue successfully by Reynolds and his friends causes two questions to be called to mind. How many scores of canvases now in continental galleries are really copies from English brushes? How many scores of reputed Old Masters, bought at vast figures by Americans from reputable and innocent sources in Europe, are really substitutions made by the coteries of English forgers in the days of long ago?