

President's Letter

Dana Senge

Dear Membership,

Happy Spring Everyone! As the months fly by during my presidency I am getting excited about our upcoming annual meeting, October 19-22, 2011 in Austin, TX. The meeting events will be held around University of Texas, Austin. The conference will begin with tours of several conservation labs on the UT Austin Campus and an opening reception at the Harry Ransom Center on the evening of October 19th. The

talks will be held on the 20th – 22nd at the Thompson Conference Center, also on campus. Our banquet will be held on Thursday evening, October 21, at the Byrne-Reed House, just off campus, and will be co-hosted by Humanities Texas. Austin will be a great host for our events!

You will find our official call for papers in this *Newsletter*. We are looking to hear from presenters in all specialties about successes and failures in conservation treatment, new solutions, project planning, management, conservation science, and research. WAAC is well known for our great *Newsletter* and our comfortable and educational annual meetings—you, our membership, are the ones who make this happen. I hope to hear paper proposals from many of you. We expect to send the registration packets for the annual meeting in early August.

And speaking of the great *Newsletter* you are about to read... with the last issue Carolyn Tallent, our fearless editor, passed quite a milestone. Volume 33, No 1 was the 50th newsletter Carolyn has edited! This accomplishment included the editing of 131 feature articles and 1424 pages. Thank you, Carolyn, for your tireless efforts to make this an important publication of professional information.

The nomination period for the 2011 board election is open, and we welcome nominations for Vice President and Member-at-Large positions on the board. Please see the wrapper of this *Newsletter* for a nomination form and contact information. And please, consider running to be on the board, this is a great group of people to work with and a great organization to support. The election will be held through the month of August. Those members who selected on their renewal forms to receive their ballot online will receive information on how to vote in early August via e-mail. Those who selected to receive a paper ballot should also receive voting information in early August via regular mail.

And finally, I want to extend my gratitude to this year's board. Everyone has been working towards making the annual meeting a great event and towards innovative ideas for WAAC to pursue... such as video content associated with *Newsletter* articles. When you run into or work with these folks, please extend your thanks to them for keeping our organization moving forward and the support they give to our profession. First and foremost – my thanks to the backbone of our board, Chris Stavroudis, the Membership Secretary, Carolyn Tallent, our *Newsletter* Editor, Walter Henry, our Web Editor, and Donna Williams, our Fulfillments Officer, without whom we would not necessarily know which direction to go. I would also like to extend my gratitude Brynn Bender, Secretary, Molly Gleeson, Member-at-Large, Sean Charette, Member-at-Large, Ria German-Carter, Member-at-Large, Daniel Cull, Vice President, and Bev Perkins, Member-at-Large (not her first time round!). Your work and support of the organization is greatly appreciated. Last, but not least, I'd like to extend my thanks to Natasha Cochran, our Treasurer, for four years of service. She has expressed her wishes to move on from the post. We are very grateful for her time on the board and have begun the search for a new Treasurer.

We are looking forward to seeing you in Austin...

Dana

Contents

President's Letter	1
Annual Meeting News	2
Membership	5
Regional News	6
Analysis of the Physical Characteristics of Transparent Cellulosic Nanofiber Paper <i>by Amber Harwood</i>	12
An Attractive Alternative: The Use of Magnets to Conserve Homer <i>by John Chamberlain</i> <i>by Kristen Watson Adsit</i>	16
A Collaborative Study of California Featherwork <i>by Ellen Pearlstein, Jim Druzik, Christel Pesme, Renée Riedler, and Molly Gleeson</i>	22
Book Review: Line, Shade and Shadow: The Fabrication and Preservation of Architectural Drawings <i>by Stephanie Watkins</i>	24
AYMHM	24

WAAC Annual Meeting

October 19-22, 2011 Austin, Texas

Join us for the Annual Meeting!

Wednesday October 19

- 3 - 3:45 Tour of the Book and Paper Conservation Labs at the School of Information
- 3 - 3:45 Tour of the Architectural Conservation Laboratory of UT Austin
- 4:15 - 5:15 Tour of the Conservation Labs of the Harry Ransom Center

Tours will be limited in size and will be filled in order of registration information received.

- 5:30 - 7 Opening Reception at the Harry Ransom Center, on campus

Thursday October 20

- 9 - 12 1:30 - 5 Talks held at Thompson Conference Center, on campus
- 6-8 pm Evening Banquet at Byrne Reed House, co-hosted by Humanities Texas

Friday October 21

- 9 - 12 1:30 - 5 Talks held at Thompson Conference Center

Saturday October 22

- 9 - 12 Talks, Thompson Conference Center

and as always, the very popular, **Silent Auction**

Bring items for the silent auction to be held at the Meeting. Consider bringing duplicate tools, books, or anything interesting to Keep our Austin meeting Weird!

If you have questions, ask Bev Perkins.

Editor's correction: My sincere apology to Yosi Pozeilov for the worst of all mistakes, misspelling his name in the last issue. Perhaps even worse to do to a frequent contributor of talks, workshops, and articles. He is in good company, however, I also once misspelled Stavroudis.

Volume 33 Number 2

WAAC Newsletter

WAAC Newsletter (ISSN 1052-0066) is a publication of the nonprofit Western Association for Art Conservation (WAAC). It is published three times per year, in January, May, and September. WAAC Newsletter is printed on alkaline paper. Copyright 2011 Western Association for Art Conservation.

EDITOR

Carolyn Tallent

REGIONAL NEWS

Daniel Cull

HEALTH & SAFETY

Chris Stavroudis

ARTICLES YOU MAY HAVE MISSED

Susanne Friend

COPY EDITOR Wendy Partridge

Photocopying

To make academic course packets that include articles from WAAC Newsletter, contact the authors of the articles directly.

Note to Authors

Authors of articles and other contributions accepted for publication in WAAC Newsletter assign to WAAC Newsletter the right to publish their work in both print and electronic form and to archive it and make it permanently retrievable electronically. Authors retain copyright, however, and may republish their work in any way they wish.

Disclaimer

The Western Association for Art Conservation does not recommend particular individuals, businesses, treatments, products, or services. WAAC Newsletter is simply a vehicle for the presentation of information from various sources. Publication of articles or reports in the Newsletter should not be construed as an endorsement of their content by WAAC. Opinions expressed in articles published in the Newsletter are those of the authors.

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) <http://cool.conservation-us.org/waac/>.

Deadline

Contributions for the September Newsletter should be received by the Editor before **August 30, 2011**.

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.

PRESIDENT
Dana Senge

VICE PRESIDENT
Daniel Cull

SECRETARY
General Information
New Memberships
Publication Orders
Brynn Bender

TREASURER
Payments
Natasha Cochran

MEMBERSHIP SECRETARY
Change of Address
Chris Stavroudis
membership@waac-us.org

MEMBERS AT LARGE
Ria German-Carter
Sean Charette
Molly Gleeson
Beverly Perkins

WEB EDITOR
Walter Henry

PUBLICATIONS FULFILLMENTS
Donna Williams

Individual Membership in WAAC costs \$40 per year (\$45 Canada, \$50 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 \$45 per year (\$50 Canada, \$55 overseas) and entitles the institution to receive the WAAC Newsletter and Membership Directory. For membership or subscription, contact

Call for Papers

We are accepting proposals for talks to be presented at the October annual meeting. We are looking for talks in all conservation specialties -- treatment successes, failures, project planning, management, conservation science, and research. Proposals can be submitted by specialty to the following board members:

Paintings: Ria German-Carter

Textiles: Bev Perkins

Paper and Book: Dana Senge

Objects: Molly Gleeson

Photographs: Sean Charette

Science: Dana Senge

Other: Dana Senge

Please submit an abstract to one of the contacts listed above by September 1, 2011. Keep in mind that talks at the meeting will be 20 minutes. AV equipment available will be PC and MAC operating systems with digital projector.

Notable Events



Congratulations to Rose Daly and Dan Cull, our vice-president, who were married March 12th, 2011, at St Vincent de Paul Catholic Church, Houston, Texas.



And on a personal note, as Dana mentioned in her president's letter, the last issue, 33/1, was the fiftieth that I have produced as WAAC Newsletter editor. Spread over 17 years, there have been 131 feature articles, and a total of 1424 pages.

The board surprised me with this beautiful, and quite tasty, cake at the March mid-year meeting. (And yes, the cake should have been proof-read. You can't have an odd number of pages.)

Somewhere out there is the next WAAC editor, perhaps reading this, but not for a few more years.

Carolyn

(As always, one must be a Board Member for these sorts of announcements.)

Visiting Austin

Dear WAAC members,

As you prepare for the meeting in Austin, you can look online for the latest activities at austinchronicle.com and austin350.com. In addition, some classic Austin sites around town that might be of interest to you, include the following.

CENTRAL:

Whole Foods began in Austin, Texas, and the flagship store is located between 5th and 6th Street on Lamar. It covers a full city block and must be experienced to be believed. Slightly north, you'll also find an REI, and the locally run Amy's Ice Cream, Book People, and Waterloo Records where you can obtain tickets for music events. (The town of Austin was first named Waterloo.)

Mellow Johnny's, Lance Armstrong's bike store in Austin, is nearby, at 400 Nueces Street. See: mellowjohnnys.com/theshop/. As is Opal Divine's Austin Grill at 700 West 6th, a diverse and affordable Austin staple. For Bluesy moves, try the famed Antone's at Lavaca and 5th. Slightly farther east you'll find the Austin Children's Museum, the Austin Museum of Art, the Mexic-Arte Museum, the Elephant Room (jazz), and the Paramount and State Theatres on Congress Avenue. In the neighborhood is Manuel's on 310 Congress, a high-end, award winning Mexican restaurant. If on a budget, try happy hour from 4-6. At 12th Street, Congress Avenue hosts the Texas State capitol. Tours are available. History, ghost, and Segway tours (Lavaca and 12th) are also available.

The Historic Driskell Hotel on the centrally located 6th street also has a fine ghost tour and a lovely lobby. Across the street, the associated 1886 café and bakery will accommodate any sweet tooth.

Sixth Street is nationally known for the movie scene (Alamo Draft House), the comedy clubs (Ester's Follies), and the music scene, found in the coffee houses, bars, the BBQ joints (Stubbs), and fine restaurants all around. Farther west you go, the higher the prices usually. The quaint O'Henry House Museum is on 5th between Trinity and Neches Streets.

The Lady Bird Johnson Memorial Trail for walking, biking, hiking, running encircles Town Lake. People crew, kayak, canoe, and paddleboat on the river. Rentals available.

SOUTH:

Arrive 30 minutes before dusk to watch the Mexican Free-tail bats on Congress Avenue Bridge when they exit the bridge to feed for the evening, although by October, they

may be migrating south for the winter. Bat boat tours are also available (austinbatsbridge.com).

Threadgill's is a local institution of country home cooking. At two locations: the south venue is larger; the original north venue on Lamar is where Janis Joplin once sang. Unfortunately, the recent expanded renovation of the north venue meant the elimination of the semi-nude wall-sized poster of Janis in her heyday. The southern venue is a great place to eat before or after bat viewing. Live music tradition continues at both sites. Check the schedule.

Heading west enroute to Zilker Park, you'll find Sandy's Burgers and Frozen Custard and Peter Pan Mini-Golf where you can retain childlike behavior without notice. In Zilker Park, you'll find boat rentals and the Botanical Gardens containing the Rose, Japanese, and Butterfly gardens and dinosaur tracks. And unless it is Thursday or the salamanders (*Eurycea sosorum*) need a break from humans, Barton Springs, also in Zilker Park, is naturally fed and a cool 68°F year round. Adult entrance fee to the pool is \$3. Be sure to bring your yoga mat along with your suit, goggles, and flippers.

South Congress Street (SO-CO) shopping district is quintessential Austin with Uncommon Objects with the signature cowboy riding jackrabbit over the door, Lucy in Disguise with Diamonds, Allen's Boots (of the cowboy kind and more), and the Turquoise Door among many other shopping experiences. Popular local restaurant mainstays include El Sol y La Luna, Guero's, Fran's Hamburger's with a red-headed pony-tailed Fran on top, Magnolia café, (breakfast is served all day including famous pancakes and has a vegetarian and vegan selection), Woodlands, and another Amy's Ice Cream. The Continental Club offers a local eclectic mix of music and has a small dance floor.

Trailer food is trendy in Austin. Near I-35 at 91 Red River try G'Raj Mahal Café. Torchy's Tacos at 1311 South 1st gets good reviews, as does the Flying Carpet at 1318 South Congress at Gibson and the Odd Duck Farm to Trailer at 1219 South Lamar Blvd.

For some local two-stepping and honky-tonking, visit an Austin classic, the Broken Spoke, far south on Lamar past Manchaca.

For some local two-stepping and honky-tonking, visit an Austin classic, the Broken Spoke, far south on Lamar past Manchaca.

NORTH - UNIVERSITY AREA:

On the Campus of the University of Texas at Austin, you'll find the Blanton Art Mu-

from the Threadgill's menu:

VEGETABLES

RED BEANS AND RICE
STEAMED RICE
SPANISH RICE
GREEN BEANS
SWEET POTATO FRIES
BLACK-EYED PEAS
SAN ANTONIO SQUASH
STEAMED BROCCOLI
MASHED POTATOES (with gravy)
MACARONI AND CHEESE
CORN-OFF-THE-COB
OLD SOUTH BUTTER BEANS
BLACK BEANS
BROCCOLI RICE CASSEROLE
STEWED OKRA & TOMATOES
GARLIC CHEESE GRITS
TURNIP GREENS
COLLARD GREENS
BUTTERED CARROTS
SPINACH CASSEROLE
YELLOW SQUASH
STEAMED ASPARAGUS
SCALLOPED POTATOES
FRIED OKRA
FRENCH FRIES
TEXAS BLACK-EYED PEA CAVIAR
COLE SLAW
DINNER SALAD

Local and Texas grown seasonal and fresh produce featured.

seum, and the natural specimen collections at the Texas Memorial Museum complete with a full skeleton of *Quetzalcoatlus northropi*, the Texas Pterosaur, a flying reptile, and the Glen Rose dinosaur tracks that will reopen 8 October 2011 in time for the meeting. Children will enjoy the gift store. During October, the Ransom Center will have two exhibits, *Banned, Burned, Seized, and Censored*, and *The Greenwich Village Bookshop Door: A Portal to Bohemia, 1920-1925* while the Blanton Art Museum will exhibit *Storied Past: Four Centuries of French Drawings* and *El Anatsui: When I Last Wrote to You about Africa (a retrospective)*. Across from campus, the Bob Bullock Museum has an I-Max theatre and a good place to get Tex-centric gifts for the family.

For political history buffs, don't miss the Lyndon Baines Johnson Presidential Library and Museum (<http://www.lbjlibrary.org/>) on the east side of campus. On the second floor, make sure you experience the automation figure of Lyndon and see the exhibit, *Left to Right: Radical Movements of the 1960s*.

The renowned, authentic Salt Lick BBQ has opened a trailer at MLK (19th St.) and Rio Grande near campus. (They also have a place at the airport.) If you are missing your college bar days, the Spider House at 29th and Furth 1 block east of Guadalupe, Crown and Anchor at Speedway and 30th, or the Dog and Duck at Guadalupe at 17th may bring back repressed memories.

Further north at 44th and Avenue G, the Elisbet Ney Museum is a quaint castle-shaped place in the midst of homes.

And don't forget, Austin hosts numerous tattoo establishments. Be sure to bring some bare skin in October and, maybe we'll even point you in the direction of Hippie Hollow where for \$12.00 you can swim nude as nature intended.

Stephanie Watkins

Regional News

ALASKA

During a trip to Fairbanks in February, **Scott Carrlee** did an assessment of the Pioneer Air Museum in Fairbanks and helped remove asbestos dust from 15 very large Rusty Heurlin paintings that comprise the Great Stampede Show at the Pioneer Memorial Museum. After 10 years of maintaining his "Certification of Fitness to Remove Asbestos" Scott was happy to be able to put it to good use. Scott was also happy that it was not 40 below when he was in Fairbanks. In April, Scott flew to Skagway to do an exhibit conservation assessment of 3 mechanical mannequins and about 100 other artifacts recently acquired by the Klondike Gold Rush National Park. The mannequins and other artifacts will be put on exhibit in a new Soapy Smith Museum. At the end of April, Scott gave three presentations at the Alaska Native Libraries, Archives, and Museums Summit in Anchorage.

Monica Shah is overseeing the IMLS-funded conservation assessment at the Anchorage Museum, which is in full force with conservators **Kim Cullen Cobb** and **Dana Senge** onsite to survey over 1,200 objects. Monica completed the treatment of a basket collection in preparation for its display.

Janelle Matz attended the AIC CERT training in San Diego in March, making lots of new friends and learning how to wear a hard hat properly, as well as finally meeting **Chris Stavoroudis** in person. Janelle is anticipating a busy summer caring for some of Anchorage's Public Art.

Seth Irwin is coming to the end of a mightily productive 14 months as "Alaska's Itinerant Paper Conservator." He and his trusty orange pickup truck full of supplies and equipment have provided expertise, treatment, and trainings in Valdez, Petersburg, Juneau, Eagle, Anchorage, Kenai, Wasilla, Homer, and Kodiak to 11 museums and numerous other clients. Funding came from the various institutions, the Rasmuson Foundation, the Alaska Humanities Forum, and the Alaska State Museum Grant-in-Aid.

Ellen Carrlee has been building relationships with the archaeological community in Alaska this spring. She presented a panel on shipwreck artifacts to the Alaska

Anthropological Association in Fairbanks as well as a poster on labeling adhesives (researched with **Samantha Springer** and **Anna Weiss**), did a conservation survey and workshops for staff at the Alutiiq Museum in Kodiak via their IMLS grant, and presented conservation info to CRM professionals through the Office of History and Archaeology in Anchorage.

Regional Reporter
Ellen Carrlee

ARIZONA

Dana Senge and **Maggie Kipling** completed treatments and transported ethnographic collections scheduled for exhibit at Tuzigoot National Monument and Navajo National Monument. **Audrey Harrison** has begun rehousing the basketry collection from Casa Grande Ruins National Monument. Pre-program intern **Amy Molnar** has been assisting in the lab with treatments and photography.

Brynn Bender was able to experience first hand the rowing of replica historic boats down the Colorado River through Grand Canyon National Park after working many years stabilizing original wooden boats in park collections. Brynn is also working on the development team for an emergency operations plan at the National Park Service facility in Tucson.

Linda Morris's studio is continuing conservation treatments for the Amerind Foundation's art collection and the Phippen Museum, as well as private collections, both paintings and paper artifacts. **Rachel Childers**, a student at the University of Arizona, has joined the studio as an intern. **Rachel Shand** and **Alinson Pinto** continue to assist in the studio, as well.

Martha Winslow Grimm is busy organizing the Costume Society of America's sixth Angels Project which will be held June 7th at the William Hickling Prescott Historic House in Boston, MA. The 1808 Federal style house is owned by the National Society of the Colonial Dames of America and houses many 18th-century costumes and accessories. The thirty volunteers will be rehousing the collec-

tion and making supports for accessories, and five textile conservators will be completing treatments. The participating conservators are: **Margaret Ordóñez** (RI), **Mary Juliet-Paonessa** (CT), **Susan Jerome** (CT), **Harold Mailand** (IN), and **Martha Winslow Grimm** (AZ).

Marilen Pool will be working on the conservation of a Colonial polychrome Immaculata sculpture for the Tucson Museum of Art this spring. She continues to work on the treatment phase of the Southwest Pottery Project. Also working on this project are **Hamada Kotb**, Kress Fellow and PhD candidate in conservation from Cairo University; **Brunella Santarelli**, graduate research assistant and graduate student in Heritage Conservation Science at the UA doing thesis research on the mechanisms of salt deterioration of pottery; and **Erin Murphy**, pre-program intern.

Christina Bisulca, graduate student in Heritage Conservation Science at the UA, is completing an Ice Age bone project and beginning a residue study on ancient ceramics and stone materials that will include a study of the use of lead, tobacco, datura, and other substances in the Southwest. **Skyler Jenkins**, pre-program intern, has been accepted into the UCL program for the fall and has been working on coating and adhesive removal from the bones.

Molly McGath, doctoral candidate in Heritage Conservation Science at the UA, continues to research degraded cellulose fibers. **Laura Staneff** joined the lab briefly for a paper conservation project to stabilize items from a 1910 Tucson time capsule that included coins and papers. Everyone including interns **Jennifer Burley**, **Ben Gorhan**, and **Jacqueline D'Asta** helped with the project.

Ida Pohoriljakova, post-graduate conservation intern (Queens), is working on silver condition examination and documentation. **Werner Zimmt**, conservation chemist, is researching iron corrosion.

Nancy Odegaard is managing many projects in the lab and jumps in as needed. She recently directed a treatment project for the University of Utah for archaeological and ethnographic collections; is a copartner conservator with the Iraqi Heritage Conservation Institute; part of the Arizona Connecting 2 Collections team; presented

in two sessions at the recent Museum Association of Arizona meeting; and took students to help **Claire Dean** remove graffiti from rock art in Tempe. **Gina Watkinson**, conservation assistant and new graduate student in American Indian Studies at UA, is involved in keeping all the ASM projects in line while she researches plant materials used in SW objects.

Teresa Moreno has returned to work after being on maternity leave. She is resuming her research on American Indian silver jewelry and is coordinating the conservation work for an up-coming exhibit on Southwestern Pottery, which is another phase of the ASM's on-going Pottery Project.

At the Musical Instrument Museum (MIM), **Irene Peters** has been appointed chair of the Emergency Preparedness Committee and in this function is starting to gather information to compile the museum's emergency preparedness plan. She attended workshops on the topic hosted in Tempe by the Balboa Art Conservation Center. Irene is mainly busy writing policies for the Collections Management Policy manual, that recently helped the museum to gain Smithsonian Affiliate status.

Daniel Cull can be found behind the visible lab window at the MIM supervising lab assistant **Robert Gobin**, documentation assistant **Adriana Milinic**, and training volunteers **Steve Hinders**, **Karen Hayes**, and **Judah Page**, as well as working on a variety of musical instruments. Currently underway is the paint consolidation of a Spanish clavichord and a preventive low-temperature treatment project coupled with a brief object-by-object condition survey. Daniel recently authored a chapter entitled "Rhizomatic Restoration: Conservation Ethics in the Age of Wikipedia" in the book *The Ethics of Emerging Media* edited by **Bruce E. Drushel** and **Kathleen German**, published by Continuum. In other news Daniel and fellow conservator and WAAC member **Rose Cull**, née **Daly**, were married on March 12th in Houston, Texas.

Regional Reporter
Brynn Bender

GREATER LOS ANGELES

Curatorial and conservation departments at LACMA continue their technical examination of Dutch and Flemish 17th-century paintings for an upcoming catalogue. In recent months painting conservators looked at LACMA's three works by Rubens. **Elma O'Donoghue** and **Bianca May** are restoring three paintings from a series of six works by 18th-c. Mexican artist Juan Patricio Morlete Ruiz. In 2009 and 2010 the other three paintings in the series were restored Elma and Mellon Fellow **Paul Gardener**. Elma O'Donoghue is also working on a large panel painting by Juan Ramirez, *Marriage of the Virgin* from 1668 for the Latin American galleries. LACMA's new conservation website is up, featuring brief reports on projects in paintings, textiles, paper, and objects conservation as well as conservation science.

Sylvia Schweri-Dorsch has been appointed Associate Conservator for the Watts Towers, supporting LACMA's recent new involvement with their conservation. An objects conservator with architectural preservation experience, she is a graduate of the Institute of Fine Art Conservation Center of NYU and has worked at a variety of museums, archaeological sites, and private practices. She is responsible for day-to-day conservation activities onsite and will work with senior conservation scientist **Frank Preusser** to research and develop treatment protocols for the long term preservation of the Towers.

In April **Diana Rambaldi** started in the research laboratory of LACMA as Associate Research Scientist. Diana's research during her graduate work (PhD and MS at the University of Bologna, Italy) dealt with the development of new analytical strategies based on the use of innovative separation techniques and light scattering detection systems for the characterization of macromolecular and supramolecular species. She will be working with **Charlotte Eng** and Frank Preusser on the analysis of organic colorants and day to day examination of objects from LACMA's collections. She will also be working on specific problems related to the preservation of the Watts Towers.

LACMA's objects conservators, **John Hix**, **Don Menveg**, **Natasha Cochran**, **Silviu Boariu**, and **Siska Genbrugge**, as

well as **Jeff Ono** the mount maker, have all been extremely busy treating, installing, and deinstalling one large-object exhibition after the other: Olmec, Lucknow, David Smith as well as selections from the permanent collection of Modern Art.

Marieka Kaye, exhibitions conservator at the Huntington Library has recently completed the restoration of the Sleeping Beauty prop book. You can find a video about it on Disney's D23 site (March videos).

Gawain Weaver led an informal workshop at the AMPAS Margaret Herrick Library on the treatment of photographs specific to the library's collection. Participants were: **Jennifer Kim** the library conservator, as well as **Erin Jue** and **Jennifer Badger**, who perform contract work for the library periodically. Black and white silver gelatin as well as chromogenic prints were discussed and treated for a variety of condition issues.

Marie Svoboda from the Getty Villa and **Lorelei Corcoran**, director of the Institute of Egyptian Art & Archaeology at the University of Memphis, have just published a book entitled: *Herakleides: a Portrait Mummy from Roman Egypt*. The book presents the multidisciplinary study of the mummy of Herakleides in the J. Paul Getty Museum's collection and currently on view at the Villa. It highlights the funerary practices and religious beliefs during Herakleides' life through the collaborative contributions from museum professionals (Egyptologists and conservation scientists) as well as the medical and scholarly communities. An appendix by **Marc Walton**, GCI scientist, presents the detailed analysis of the red pigment that decorates the mummy. The book concludes by comparing the data from the mummy of Herakleides to similarly decorated red-shrouded portrait mummies in collections worldwide.

Conservators **Molly Gleeson**, **Vanessa Muros**, and **Liz Werden-Chayes** organized a session at this year's California Association of Museums March meeting in Pasadena, CA. The session, "Inks and Barcodes- Methods of Labeling and Tracking Objects," covered archival methods for labeling and tracking objects within a collection. Over forty attendees learned from talks and a practical session cover-

Regional News, continued

ing materials and application techniques addressing inorganic and organic materials. The program also covered methods used to track objects in a collection using bar codes and radio frequency identification.

At the same meeting **Angie McGrew**, associate objects conservator at the Autry National Center and **Ashley McGrew**, independent consultant and partner of Art and Object - Integrated Safety Systems along with the Autry conservator **Ozge Gencay-Ustun** organized another session entitled "Handling 101: Practical Tips and Solutions for Handling and Storing 3-D Objects and Textiles." Preventive conservation was highlighted through minimizing object movement, as well as the ways of avoiding common support materials or packing techniques that can cause damage. The session was attended by more than 40 participants and took an hour and a half. A variety of materials were shown and proper handling/storage demonstrations were carried out.

At this year's Society for California Archaeology, Molly Gleeson of UCLA, **Jacqueline Zak** of National Parks Service and California States Parks, **Alice Boccia Paterakis** of Kaman-Kalehoyuk Excavation, Vanessa Muros of UCLA/Getty Conservation Program, Ozge Gencay-Ustun of Autry National Center, **Allison Lewis** of the Phoebe A. Hearst Museum of Anthropology, and **Georgia Fox** of California State University, Chico organized a workshop entitled "Caring for Artifacts--from the Field to the Lab." The day-long workshop included topics from lifting artifacts, cleaning, labeling, storage, and assessing condition. 20 participants were provided with hands-on practicals for each section and a binder with useful resources and articles. The organizers are still working to develop this workshop for future SCA conferences, attendees of which include archaeologists as well as tribal museum professionals.

A day before the workshop, conservator Molly Gleeson chaired and co-organized a symposium with Georgia Fox, associate professor of CSU, Chico, titled "From the Trenches: Challenges of Preserving Archaeological Collections from Multiple Perspectives." The forum brought together presenters including state, federal, local, and private entities such as archaeologists, tribes, collections managers, CRM firms,

and conservators.

Vanessa Muros co-organized the 1st SAA International Portable X-Ray Fluorescence Symposium at the Society of American Archaeology Meeting with **Richard Lundin** of Wondjina Institute. She also acted as a discussant in the symposium where Ozge Gencay-Ustun presented the pXRF application at the Autry National Center to test for heavy metals on Native American collections. The session included Rae Baubien of MCI and et al's work on pXRF analysis on Panama gold.

Liz Werden-Chayes was selected as a participant in the San Diego session of AIC's Collections Emergency Response Training.

Rosa Lowinger led the Association for Preservation Technology's first professional study tour to Cuba. The group of architects, conservators, restorers, and preservationists met with numerous members of Cuba's preservation community in the cities of Havana, Trinidad de Cuba, and Cienfuegos. Rosa is presently planning AIC's first trip to Cuba, scheduled for early December 2011. Look for announcement on dates and sign up at this year's AIC Conference.

Tiarna Doherty, along with interns **Julia Burdajewicz** and **Emily MacDonald-Korth** completed the conservation of the Jack Youngerman painting *Red Vermilion* from the Norton Simon Museum in Pasadena for the exhibition *Surface Truths: Abstract Painting in the Sixties*.

Laura Rivers has joined the paintings conservation department at the Getty Museum as an Associate Conservator. Laura is also currently serving as the Chair of the AIC Paintings Specialty Group. She is working with **Yvonne Szafran** and Tiarna Doherty on the conservation and restoration of a large triptych by Martin van Heemskerck.

In addition to their ongoing work for the upcoming Los Angeles history exhibit, **Tania Collas** and **Liz Hoberger** recently prepared objects for loans to the Autry National Center and LA Plaza de Cultura y Artes. Tania is working on a humidified nitrogen atmosphere case for a geological sediment core specimen and Liz will soon be deinstalling the exhibit of Charles Knight paintings from his Life

through Time series to make way for a temporary art exhibit to coincide with the opening of the new Dinosaur Hall in mid-July, 2011.

Regional Reporter:
Virginia Rasmussen

HAWAII

Dawne Steele Pullman continues to work on paintings by Hitchcock and Enoch Perry for a private collection when in Hawaii. She is also in Asia this spring attending to the art works of her clients there.

The Bishop Museum has started conservation work in preparation for the renovation of the Polynesian Hall. Several conservators are being contracted to assist with the project. Over 500 artifacts will be reviewed and treated in the coming year, including artifacts from various Pacific nations.

Larry and **Rie Pace** recently finished work on the portraits of the founders of the Bishop Museum: the *Portrait of Charles Reed Bishop* by William Cogswell and the *Portrait of Bernice Pauahi Bishop* by Frederico De Madrazo. At the Honolulu Academy of Arts Larry and Rie have recently finished work on *Estuary* by Jan Van Goyen, *Flemish Interior Scene* by an unknown artist, and *Turning, 1958* by Morris Louis. The treatment of the Louis was carried out in the gallery in which it hangs due to the size of the painting. The treatment was funded by the Morris Louis Foundation.

Thor Minnick has successfully completed work on several Satsuma earthenware pieces and three kou-wood umeke from the Kalakaua collection - in private collections. He is presently working on a Ming dynasty huanghuali wood armchair for the Honolulu Academy of Arts.

Regional Reporter:
D. Thor Minnick.

Regional News, continued

NEW MEXICO

The conservation lab of the Dept. of Cultural Affairs, Museums and Monuments of New Mexico is happy to announce the recent opening of a second laboratory located on the second floor of the New Mexico History Museum adjacent to the Palace of the Governors. The new lab complements the primarily object focused Museum Hill laboratory with an emphasis on “flat” art such as textiles, paintings, and works of art on paper. Associate conservator **Mina Thompson**, associate textile conservator **Rebecca Tinkham**, and third year intern **Frances Baas** will be working in the new downtown location.

The department belatedly welcomes Fran Baas from the University of Buffalo program. They're thrilled she is there and have been delighted with the ongoing contributions she makes to the team.

Chief conservator **Mark Mackenzie** is busy with ongoing research and analysis (pXRF, FT-IR, UV-Vis spectrometry, UV-fluorescence) to determine the presence of cochineal in art, textiles, and artifacts from New Mexico, Mexico, and Peru. This is in support of a very large project called “Color Red.” The project will culminate in a multi-museum, multi-national exhibit in 2014. Mark is working with other institutions and scientists to supplement knowledge and analytical equipment abilities: **Marco Leona** of the Met; **Eric Hansen**, recently Chief Scientist of the LC, **David Wenger** of Jefferson Medical College, U of PA, and **Jon Schoonover** of Los Alamos National Laboratory. In addition, Mark is pursuing active research into persistent fumigants within partner museum collections and working with scientists from Mexico Tech.

Senior conservator **Maureen Russell** is teaming up with archeologists and scientists from DCA's Office of Archeological Studies to examine and analyze a collection of ancient greyware Dinetah/Navajo ceramics dating to ca. 1600 – 1650. The 57 vessels were stolen from BLM land and were “returned” after litigation. Previously, only 12 fragmentary vessels of this kind were ever known. Maureen is also lead conservator for the upcoming Native American Basket exhibit, *Woven Treasures*, from the extensive collection of the Museum of Indian Arts and Culture

(MIAC) that opens in November, 2011.

Rebecca Tinkham has had a paper accepted to the ICOM-CC Triennial conference to be held in Lisbon, Portugal, September 2011. She is preparing artifacts for the Museum of International Folk Art's (MOIFA) upcoming exhibit on Macedonian embroidery and three 47 star United States flags for exhibit at the NMHM as a part of the celebration of the state's centennial on January 6, 2012. Rebecca and Fran Baas are also preparing a custom mount for the inaugural ball gown recently donated to the New Mexico History Museum by Governor Susana Martinez, the country's first female Hispanic governor for the exhibit, *Homelands: Women of the West*.

Assistant conservator **Larry Humetewa** has completed treatments for *Woven Treasures* at MIAC, extensive treatments for the *Art of the Andes* exhibition at MOIFA, and is assisting with the IMLS survey of ceramics at MIAC. He is beginning his summer season working a day a week at Bandolier National Monument on graffiti mitigation.

Beth (Rydzewski) Holford, assistant objects conservator, completed treatment for an outgoing loan to the new Southern Ute Cultural Center which will soon open in Ignacio, Colorado. Loaned artifacts, courtesy of the Museum of Indian Arts and Culture, included buckskin dresses, beaded moccasins, wool leggings, basketry, beaded moccasins, a hide and bone saddle, and a beaded leather pouch.

Assistant objects conservator **Anya McDavis-Conway** continues to be involved in the NMHM's ongoing 3D object rehousing project, which is funded by the National Endowment for the Humanities. She is also lead conservator on the exhibit *Art of the Andes* where she and Beth surveyed the artifacts prior to establishing treatment parameters for the rest of the lab. The lab treated hundreds of fascinating artifacts for the show.

The Museum of Indian Arts and Culture Laboratory of Anthropology has been awarded an IMLS grant to perform a detailed survey of the archaeological ceramics collection, consisting of 5300 ceramics. The survey is primarily being executed by Beth Holford, Anya McDavis-Conway, and Mina Thompson. The

IMLS survey has been underway since January, and 25% of the vessels have been surveyed as of April.

In support of this survey the conservators are also sampling and testing for the presence of “mobile” arsenic. A “swipe” testing protocol was developed which ensured an averaging of the entire exterior surface using a swipe wiping material (Texwipe TX 1009) selected based on published NIOSH protocols. Nancy Odegaard was consulted early on in this process and provided very helpful information.

As they do not have a dedicated conservation science section, they began working with interested scientists to create a Research Associate Conservation Scientist program. Eric Hansen and Jon Schoonover will join **Marvin Rowe** in helping investigate, preserve, and conserve the collections of New Mexico.

Later this year **Cindy Lee** will join the lab. She is currently a student in the UCLA/Getty program in the conservation of archaeological and ethnographic Materials.

Joe Sembrat, Mark Rabinowitz, and Carla Bogdanoff report that Conservation Solutions, Inc. (CSI) is pleased to have concluded 2010 with an award winning project at the New York Public Library. CSI was on the team that completed the “New York Public Library – Exterior Renovation.” The project received awards from the Preservation League of New York and the New York Landmarks Conservancy. Other successful projects in 2010 included conservation treatment of Chief Manuelito for the McKinley County Courthouse in Gallup, NM; the conservation treatment of the Rose Garden Fountain *Boy With Goose* at the Rockefeller Estate in Kykuit, NY; the treatment, relocation, and installation of the LaGrange Terrace Marble Column to the American Wing Courtyard at the Metropolitan Museum; and the conservation of stone sculptures and cemetery grave stones and monuments at the University of Virginia in Charlottesville.

Regional Reporter:

WAAC is currently seeking a regional reporter for New Mexico.

Please contact:
Daniel Cull

Regional News, continued

PACIFIC NORTHWEST

New interns working at **Alice Bear Conservation** are **Alex Whedbee** and **Liz Penttila**.

The Washington State arts commission has recently contracted with public art collection consultant **Helen Lessick** to complete a preservation/collection management assessment for the State art collection. Lessick will be looking at how best to align need with resources for the management of 4,600 pieces, which are located in K-12 public schools, colleges, universities, and state agencies. The assessment will be complete by the end of May and comes at a time when the state's budget is undergoing major reductions for the arts commission ranging from -10% to -80%; other proposed bills would eliminate or curtail the public art program.

Mariam Clavir gave a keynote address on preserving cultural significance at a symposium, "Ethical Issues In Ethnographic Collections," presented by the Winterthur/University of Delaware Program in Art Conservation at the Winterthur Museum. The symposium was organized in conjunction with Winterthur's first exhibition of Native American material, *Made for the Trade: Native American Objects in the Winterthur Collection*.

Linda Roundhill has been very busy the last few months executing local conservation projects, including a painted 18thC. Swedish trunk, the de-installation and assessment of a Tom Ukas Totem Pole, the cleaning of outdoor marble sculpture from Taipei, and the treatment of two ancient Egyptian coffins that were needed for the exhibition *Wrapped* at the Washington State History Museum. She is currently enjoying the relative calm of working on a variety of interesting objects from around the world for private clients, including a rare akuilisaq made of seal gut.

Having spent part of the winter in the Arctic training dogs, mending harnesses and sled, and poop scooping a 37 pup dog yard every morning, **J. Claire Dean** is back in warmer territory and (assisted by **Deborah Uhl**) she is doing rock art conservation field work in Phoenix and Southern California. She is also working with the Tulalip Native American community getting artifacts ready for the open-

ing of the Hibulb Cultural Center, Tulalip, Washington.

Regional Reporter:
Corine Landrieu

ROCKY MOUNTAIN REGION

Teresa Knutson of Rocky Mountain Textile Conservation recently completed treatment on a three-piece dress funded by American Heritage Preservation grants. The dress is owned by the Kansas State Historical Society in Topeka and was worn to President Abraham Lincoln's second inaugural ball by Mrs. John Usher, wife of the Secretary of the Interior. Treatment consisted of consolidating and stabilizing the fragile main fabric of the dress and silk chenille trim, removing stains on the skirt from a water leak, replacing the deteriorated and lost net bertha of the evening bodice, and providing support for the dress during display.

Carl Patterson has just completed teaching "Introduction to Art Conservation" at the University of Denver. This class is a prerequisite for the Museums Studies Masters from the Art Department. He continues as MAST chair for the Colorado-Wyoming Association of Museums (CWAM) solving problems for member museums in a number of areas and raising funds for scholarships to the annual CWAM conference.

Anna Gil and **Katrina Fausset**, students from Northwest College in Powell, Wyoming were interns in the conservation lab of the Buffalo Bill Historical Center this winter. **Tara Hornung**, private conservator from Denver, successfully completed a residency in the BBHC lab, working on firearms from the Cody Firearms Museum.

Laura Downey Staneff consulted on-site regarding several paper conservation projects at the Arizona State Museum in February. Notably, some of the items were newspapers and documents belonging to the Jewish History Museum in Tucson and had been in a time capsule at the museum from 1910 to 2010. Conservators in the lab observed that some things, including ads for desirable real estate in Southern Arizona, had not changed much in that time.

Mark Minor is currently treating two carriages for the Frontier Army Museum in Fort Leavenworth, Kansas. One is an 1874 Gatling Gun "Cav Cart." The second is an 1878 model Escort Wagon.

Karen Jones, preservation representative for the Society of Rocky Mountain Archivists, organized a clinic for Preservation Week in collaboration with Denver Public Libraries. The clinic involved consultation with conservators about preserving family heirlooms and information about digitizing artifacts. The following area conservators participated: **Camille Moore**, **Beth Heller**, **Barbara Johnson**, **Paulette Reading**, and the conservators from the Western Center for the Conservation of Fine Arts (WCCFA).

The conservators at the WCCFA are treating a number of paintings by Russian American painter, Nicholi Fechin in preparation for the exhibit, *Nicholai Fechin, 1881-1955*. This exhibit will showcase approximately sixty works by Fechin, ideally with an equal representation of his time in Russia and the US – and from collections in both countries. The exhibition will open in Kazan in November 2011, with a following tour in Russia and the US. **Camilla Van Vooren** spent three weeks in February working at Kuniej Berry Associates, LLC Fine Art Conservation in Chicago.

The Denver Art Museum is delighted that **Kate Moomaw** will be joining the conservation staff as assistant conservator of modern and contemporary materials. Kate brings a wide range of expertise and discipline to this area. She will officially begin at the museum in early June.

James Squires recently coordinated conservation of panel paintings from the museum's Kress collection. Working with **Cynthia Lawrence** and staff from the Western Center for Conservation of Fine Art, the paintings were conserved for the current exhibit, *Cities of Splendor, a Journey through Renaissance Italy*.

As part of the upcoming *Marvelous Mud* exhibit, **Gina Laurin** and pre-program intern **Michal Mikesell** have treated a range of ceramics from the architecture, design and graphics, Asian, Spanish colonial, and from the modern and contemporary collections.

Regional News, continued

James, **Sarah Melching**, and conservation assistant **Aaron Burgess** were integral in conservation efforts for the electronic media exhibit, *Blink! Light Sound and the Moving Image*. Conservation staff worked with members from the curatorial, registration, IT, and installations departments to launch an amazing exhibit of 55 electronic works that span three decades.

Regional Reporter:
Paulette Reading
Textile Conservator
Denver, CO
paulette.reading@gmail.com

SAN DIEGO AREA

Regional Reporter:
Francis Prichett

SAN FRANCISCO BAY AREA

ARG architectural conservator **Mary Slater** is leading a team of ARG staff who are developing a historic structures report for the Swedenborgian Church complex, a National Historic Landmark in San Francisco. Mary Slater and ARG architect **Kitty Vieth** are working with MACTEC, Inc. to produce a historic structure report (HSR) and historic structure preservation guide (HSPG) for the 1941 custodian's residence at Wupatki National Monument in Arizona. Mary and Kitty recently teamed with MACTEC to complete an HSR and HSPG for the log ranger cabin at Walnut Canyon National Monument in Arizona.

Will Shank presented a paper on the murals of San Francisco at the first annual meeting of the ICOMOS International Scientific Committee on Mural Paintings which took place in Florence in April. He is also working with the faculty of the Universidad Politécnic de Valencia on a symposium about contemporary murals and their care.

The objects conservation lab at the Fine Arts Museums of San Francisco has been busy with exhibitions. **Lesley Bone** and **Alisa Eagleston** recently completed the installation of the exhibit *Olmec: Colossal Masterworks of Ancient Mexico* and are

now preparing for the upcoming installation of *Marvelous Menagerie: A Roman Mosaic from Lod, Israel*. **Arielle Hambrecht** has been developing the conservation department's web presence. Intern **Tegan Broderick**, who is completing her degree in conservation at the University of Melbourne, assisted with exhibit preparations and is now making custom covers for furniture in the collection.

Regional Reporter:
Alisa Eagleston

TEXAS

Mark Van Gelder was a recent co-guest lecturer for a class taught by **Karen Pavelka** entitled: "Conservation of Library and Archival Material," at the School of Information, the University of Texas at Austin. Mark's comments focussed on paintings conservation issues. The comments of **Catherine Williams**, the other guest lecturer, addressed considerations of objects conservation. Mark's work on the 2010 Texas state capitol building renovation project was the featured cover story in the February 14th, 2011 issue of Engineering News-Record Magazine. The magazine's cover photo shows Mark and **William Hayden** re-gilding the star atop the building's dome.

Sylvie Pénichon, conservator of photographs at Amon Carter Museum of American Art, Fort Worth, Texas was a guest lecturer at Winterthur/University of Delaware Program in Art Conservation where she taught a 2-day workshop on color photographs, history of the medium and identification.

In February, **Hoyu Chang**, conservator in private practice in Taipei, Taiwan, started a 3-month residence at the Carter. During her stay in Texas, Hoyu will work with Sylvie and study color photographs from the collection.

Regional Reporter:
Ken Grant

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: \$8.85

(\$6.60 copy for orders >10 copies)

Back Issues of WAAC Newsletter

Back numbers of the *Newsletter* are available. Issues Vol.1 - Vol.14, #3 (Sept. 1992) are \$5/copy. Issues Vol.15 - Vol.29, #3 (Sept. 1997) are \$10/copy. Issues Vol.30 (Jan. 2008) and after are \$15/copy. A 20% discount will be given to libraries seeking to obtain back issues to complete a "run" and for purchases of ten copies or more of an issue.

Prices include shipping and handling. Make checks payable to WAAC drawn in US dollars on a US bank.

For information please contact the WAAC Secretary:

Brynn Bender

Send prepaid orders to:

Donna Williams

Analysis of the Physical Characteristics of Transparent Cellulosic Nanofiber Paper

Introduction

Handling works of art on paper can present many challenges for conservators, due to the inherent fragile nature of paper. Conservators must not only take into consideration the limitations of the physical properties of the materials, but must also resolve specific exhibition, aesthetic, and storage concerns related to the work of art.

Often, contemporary works of art on paper push the boundaries of historical art aesthetics, when the physical properties of the substrate material become vital to the conceptual interpretation of the work. A visual dialogue between the spectator and the object is created by the tactile nature and inherent sense of fragility that paper possesses. These characteristics can be further manipulated by exaggerating the dimensions of the work of art beyond traditional formats and exhibiting the work unframed and fully exposed to the surrounding environment. Aesthetic and conceptual intent, in relation to the size, weight, transparency, and stability of a work of art on paper, must all be considered when preparing the object for exhibition. In particular, the degree of transparency of the substrate material will dramatically influence, and quite often limit, the mounting and exhibition options available to the conservator.

Hinging a work of art to a secondary support is traditionally achieved by selecting a hinging tissue and adhesive that is chemically stable, easily reversible, and an appropriate weight for the work of art. Hinges should not be of a heavier or stronger material than the art work itself, while at the same time, the hinge must be able to provide adequate support. The addition of any new material “must ensure the preservation of the physical and historical integrity of a given object and contribute to its chemical stability.” An inappropriate hinging material or method could cause damage to the object by inducing planar deformations, tearing, staining, and color change. The overall aesthetics of the work can also be interrupted by the degree of visibility the hinging tissue has through more translucent materials.

The following research project investigates the physical characteristics of optically transparent cellulosic nanofiber paper as an alternative conservation-grade material for the hinging and exhibition of translucent or oversized works of art on paper.

Transparent Cellulosic Nanofiber Paper

Transparent cellulosic nanofiber paper is structurally composed of cellulose microfibrils, which are the main constituents of plant cell walls. Nanofibers are characteristically different from traditional paper fibers in two fundamental ways: 1) the fiber width; and 2) the size of the interstitial cavities, or air pockets, between the fibers. Nanofibers are dimensionally smaller due to their individual microfibril composition, when compared to the microfibril bundles that form larger fiber structures. Secondly, nanofibers in optically transparent papers, are densely packed which greatly reduces the size of the interstices between the fibers. The scanning electron micrograph (SEM) image in Figure 1 is of a Kozo Japanese paper, while the SEM image in Figure 2 is of transparent nanofiber paper at the same magnification. What becomes immediately apparent is the difference between the fiber size in both images. The Kozo fibers are easily imaged at this magnification, where as the transparent

nanofiber paper produces a topographic image of the surface texture, with no indication of nanofibers.

The optical transparency of nanofiber paper is achieved through the reduction of scattered light, both internally and superficially. This phenomenon is made possible by three factors, the aforementioned small fiber width and reduction of interstitial cavities between the fibers, and the ability to obtain a highly polished surface. Nanofibers “are free from light scattering due to their diameters being less than one-tenth of the visible light wavelength.” Furthermore, “if the cellulose nanofibers are densely packed, and the interstices between the fibers are small enough to avoid light scattering, the cellulosic material becomes transparent.”

When one compares Figure 1 with the atomic force micrograph, or AFM, phase view image in Figure 3 of a transparent nanofiber paper, note the scale difference between the two

Figure 1

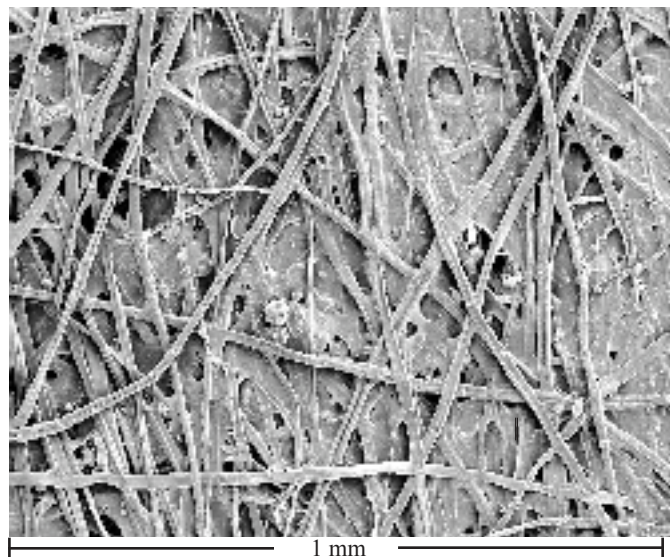
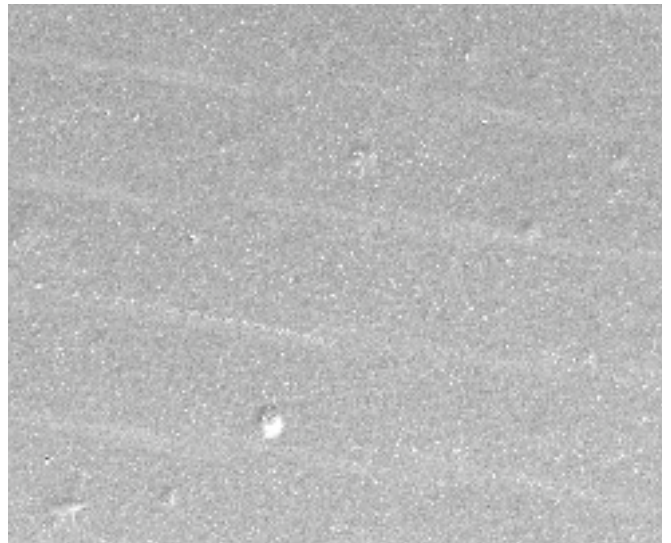
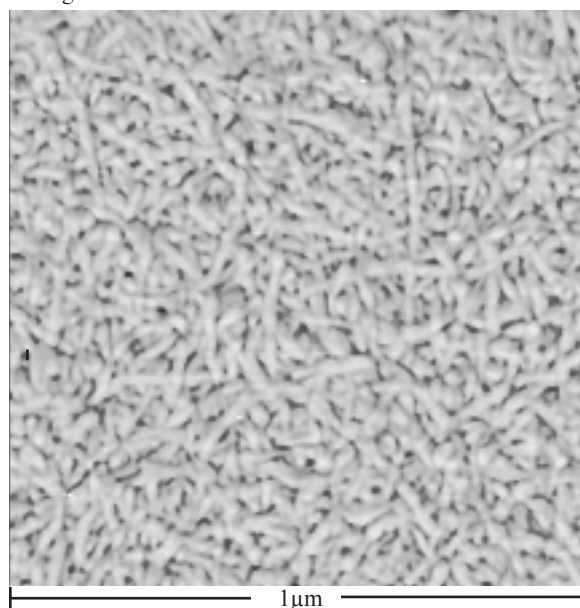


Figure 2



images from 1mm to 1 μ m. In order to image the nanofibers, AFM imaging was required because the technique has the ability to scan the surface of a sample using a silicon tip mounted to a cantilever to produce topographic images with nanometer resolution. When the two images are compared the difference between fiber size and the interstitial cavities between the fibers is evident.

Figure 3



Current Trends

Nano-technology is in the beginning stages of its development, and analytical testing of the physical, chemical, and mechanical properties of nano-materials continues to be evaluated. The manufacture of nanofibers resides within the domain of paper engineering laboratories of select international institutes, and at present the material is not commercially available.

One of several current trends for the development of nano-technology is the assessment of the material as a possible replacement for glass substrates and viewing screens in electronic devices. Traditionally, glass has been used in electronics because it has a low coefficient of thermal expansion (CTE) of 8.5 ppm K⁻¹; glass can sustain the heat produced on the assembly line during manufacturing processes and the heat produced by the component parts when the electronic device is in use. Furthermore, glass is readily available and can be manufactured transparent for use in display screens. Interestingly, what is of more significance in this particular discussion are the limitations of the glass components, which are that glass is heavy, rigid, and fragile. These limitations are what have helped foster the research and development of transparent nanofiber paper technology.

Other areas of research for nano-technology include, but are not limited to: 1) the medical field where nano-technology is being evaluated for tissue defect repair; 2) the addition of nanofibers for the reinforcement of adhesives; 3) the addition

of nanofibers as a strengthening agent in foams, aerogels, and starch; and 4) advances in material reinforcement, such as fiberglass, in the aerospace and automobile industries.

To date, nano-technology has not been much investigated in terms of possible art conservation applications. The current analytical data indicates that nanofiber materials exhibit similar physical characteristics as traditional fiber-based papers. They are hygroscopic and foldable, but they also exhibit some very unique characteristics such as a low coefficient of thermal expansion, similar to glass, and an ability to obtain various degrees of optical transparency while maintaining fiber density and tensile strength. This is in sharp opposition to the ways in which transparency in papers have previously been obtained, either by reducing the density of the packed fibers or by chemically processing the paper.

Preparation of Transparent Nanofiber Paper

The transparent nanofiber paper obtained for testing was manufactured into sheet form by Houssine Sehaqui, PhD candidate, Royal Institute of Technology (KTH), Fiber and Polymer Technology, Division of Biocomposites, Sweden. The nanofibrillated cellulose (NFC) water suspension was prepared from a softwood sulphite pulp, manufactured by Nordic Pulp and Paper, Sweden, with a composition of 0.7% lignin and 13.8% hemicelluloses.

In total, eleven samples were prepared for analysis. Ten were used for testing and one was kept as a reference sample. The samples were 7cm in diameter, with a random fiber distribution. They are approximately 53 μ m thick and weighed 257mg. The samples were pre-conditioned in the dark for three days before analysis (Figure 4).

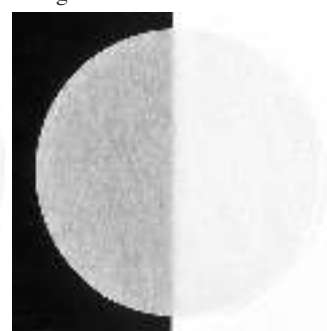
Preparation of Kozo Kurotani #16 Paper

A conservation-grade Kozo Japanese paper, Kurotani #16, was selected for comparative analysis and was purchased from the Japanese Paper Place, Toronto, Ontario. Kozo is a bast fiber obtained from the inner bark of the paper mulberry bush. The inner bark is what gives the plant stem its rigidity because these are the longest and strongest fibers of the stem, which measure approximately 10 - 15 mm in length. Papers made from Kozo fibers exhibit exceptional permanence and durability and are appropriate for almost any paper conservation technique because of their wet strength, their long, strong fibers, and their malleability.

Figure 4



Figure 5



Analysis of the Physical Characteristics of Transparent Cellulosic Nanofiber Paper, continued

In total, thirty samples were prepared for analysis from the same sheet of paper. The samples were 7cm in diameter, with a directional fiber distribution. They are approximately 61 μ m thick and weighed 69mg. The samples were also pre-conditioned in the dark for three days before analysis (Figure 5).

Instrumental Analysis

Instrumental analysis of the prepared samples was conducted at both the Canadian Conservation Institute in Ottawa, Ontario and at Queen's University, Kingston, Ontario. Analysis included: 1) UV aging, where light from a xenon-arc lamp was used to expose the test specimens to elevated light levels over 48 hours. The light source was chosen to simulate natural day light that had passed through a window. The temperature at the surface of the test papers was maintained at 41°C for the full duration of the exposure; 2) thermal aging, which occurred over 14 days at 90°C and 70% relative humidity; 3) optical properties, before and after aging, to assess changes in opacity, brightness, and yellowness; 4) chemical properties, before and after aging, to assess changes in pH and chemical composition; 5) zero-span tensile strength, which gave an indication of the strength of the individual paper fibers rather than the paper matrix as a whole; 6) sorption properties and moisture content; 7) caliper, or thickness, of each sample; and 8) fiber imaging included scanning electron and atomic force microscopy.

Results

The aim of this study was to determine the physical characteristics of transparent nanofiber paper and compare these results to a known conservation-grade Kozo, Kurotani #16, Japanese paper. UV and thermal accelerated aging was included in the analysis to help indicate the relative chemical stability and durability of the test materials before and after aging.

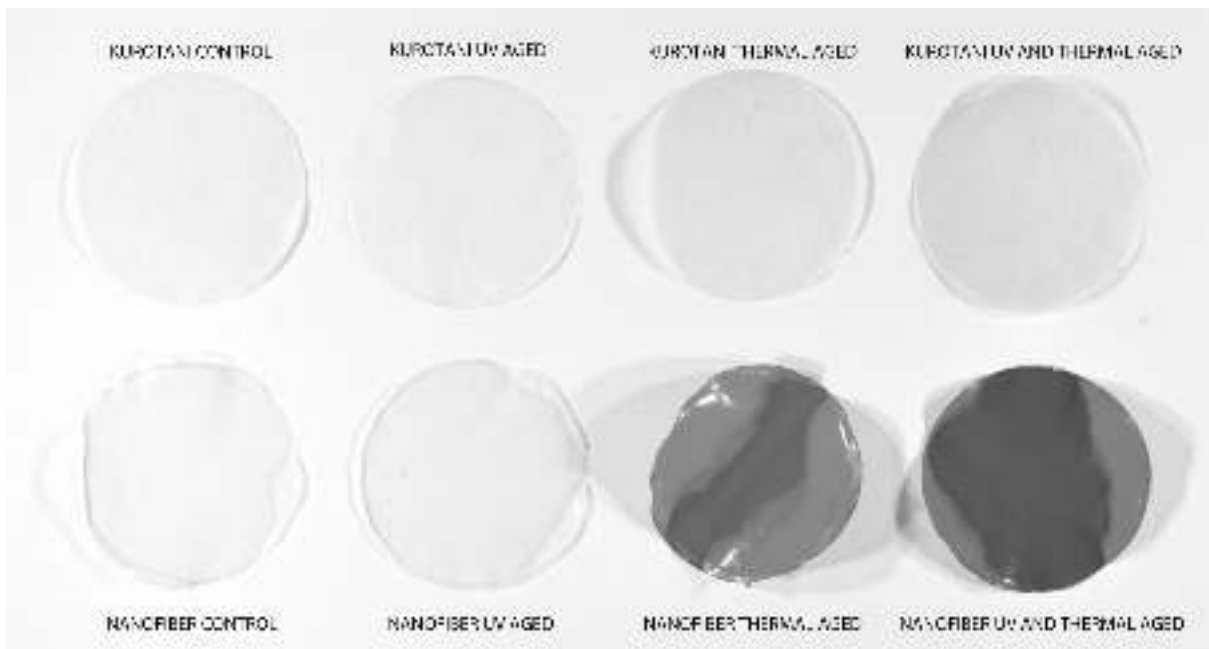
Accelerated aging, both UV and thermal, induced color change in the nanofiber and Kurotani samples. When viewed with the naked eye, the nanofiber samples appeared unchanged after UV aging, while the Kurotani samples were slightly bleached by the UV rays, and became less yellow. The most dramatic color change occurred after thermal aging when the nanofiber samples turned dark brown.

It is important to note that the thermal test conditions were quite extreme, whereby exposure at 90°C and 70% relative humidity over 14 days dramatically changed the nanofiber samples, but there was also a thermal component to the UV aging that induced little to no change in the test samples when exposed at 41°C over 48 hours.

The handling properties of the nanofiber paper was also changed following UV and thermal aging. The nanofiber samples became less ductile and increasingly brittle, which frequently caused hair line fracturing and splitting of the paper when cut with shears or folded during sample preparation for instrumental testing.

The pH testing was undertaken in this study as acidity contributes to the physical degradation of paper fibers. The pH of the un-aged nanofiber sample was 6.64, which was slightly more acidic than the Kurotani control sample, which had a near neutral pH of 6.99. Following UV and thermal aging, the pH of the nanofiber samples became increasingly more acidic. The UV plus thermal aged samples dropped in pH by almost 3/4 of a pH unit, which represents a fairly significant decrease. In comparison, the Kurotani samples maintained a near neutral pH before and after aging, indicating better overall chemical stability.

Figure 6 Exposure at 90°C and 70% relative humidity over 14 days



Analysis of the Physical Characteristics of Transparent Cellulosic Nanofiber Paper, continued

Following the preparation of the test specimens for pH measurements, it was noted that the nanofiber samples did swell considerably while in solution, and that the dark brown discoloration, induced by thermal aging, was partly soluble in distilled water.

The sorption properties and moisture content, at 50% relative humidity, for the nanofiber samples were significantly higher than the test results for the Kurotani samples. UV aging had little effect on the sorption properties of either material, and although thermal aging induced an overall decrease in these properties, the test results for the nanofiber paper remained significantly greater than the Kurotani samples.

The most unexpected result was obtained when the sorption properties and moisture content of the nanofiber paper was determined at the point of maximum adsorption. At 96% relative humidity, the control and UV aged nanofiber samples absorbed approximately 47.0g of water per 100g sample, where the water content in the paper amounts to almost half the weight of the entire sample. In comparison, the Kurotani samples exhibited little change in sorption properties following UV or thermal aging, with all results for moisture content measuring between 18.0g and 19.5g of water per 100g sample.

The isotherm graphs indicated that the nanofibers are very hygroscopic, and can absorb almost half their total weight in water, without turning into a gel. The ability of the nanofiber paper to absorb water to this degree is similar to the sorption properties of some adhesives, such as sturgeon glue.

The results of the zero-span tensile test gave an indication of the overall strength of the individual fibers for both the nanofiber and Kurotani samples before and after UV and thermal aging. As anticipated, the zero-span tensile strength of the nanofibers were three times greater than the Kurotani fibers, and comparable to a good quality bond paper. UV aging of the nanofiber samples seemed to have very little impact on the overall fiber tensile strength. However, after thermal aging, the fiber tensile strength dropped by one third. Although the decrease in tensile strength is significant, the measure of fiber strength still remains approximately two times greater than the Kurotani control sample.

Conclusions

Overall, the instrumental results indicated that the nanofiber paper maintained optical, mechanical, and chemical stability after UV aging. While in contrast, thermal aging of the samples induced more severe changes, causing the nanofiber paper to lose transparency, darken, and become brittle.

The dark brown discoloration of the samples, dramatically impacted the colourimetric results; including transparency, brightness, and yellowness. What components of the sample changed after thermal aging is unknown at this point and requires further research to determine. Fourier transform infrared (FT-IR) spectroscopy and atomic force microscopy did not indicate any significant changes in the compositional or morphological structure of the samples that could have contributed to the thermally induced color change. In general,

the optical stability of the test samples were affected by the introduction of extreme thermal conditions over an extended period of time, and the brown discoloration is partly soluble in water. When dealing with fibers in the nanometer range any subtle shift in fiber size, density, or chemical degradation could dramatically change the optical characteristics of the material.

The second factor which was significantly affected by thermal aging was the pH results for the nanofiber samples. Perhaps buffering the nanofiber paper and introducing an alkaline reserve may help stabilize the pH.

Continued investigation into source materials for nanofiber extraction is necessary. For example, nanofibers extracted from wood sources must undergo acidic chemical processing to remove the lignin and other non-cellulosic components, and yield only 40 - 50% cellulose after processing. Whereas, cotton seed fibers, in the raw state, are 95% cellulose, and contain no lignin. When the fibers are boiled in alkaline water the wax and pectin are removed, which then yields a 99% pure cellulose fiber. Furthermore, the alkaline treatment could also be used to impart an alkaline reserve which may contribute to producing more neutral or alkaline pH results. Finally, the extraction of nanofibers from cotton seed hairs may promote improved handling and aging properties.

It is evident that nanofiber technology is in its developmental infancy, with a vast potential yet to be explored. The efforts of cross discipline collaborations will continue to foster the development of nano-materials, by cultivating and refining, some of nature's most powerful component parts. When considering the cross discipline needs of conservators, continued investigation into the suitability of nano-materials is warranted as the technology continues to be refined for use within a broad range of industries.

BIBLIOGRAPHY

Abe, K., S. Iwamoto, and H. Yano. 2007. Obtaining Cellulose Nanofibers with a Uniform Width of 15 nm from Wood. *Biomacromolecules* 2007, 8: 3276-3278.

Bégin, Paul. Senior Conservation Scientist at the Canadian Conservation Institute. Personal Communication. February 2011.

Barrett, Timothy. 2005. *Japanese Papermaking: Traditions, Tools, and Techniques*. China: Floating World Editions.

Kosek, J.M. 2004. *Conservation Mounting for Prints and Drawings: a manual based on current practice at the British Museum*. London, England: Archetype Publications Ltd.

Nogi, M., S. Iwamoto, A.N. Nakagaito, and H. Yano. 2009. Optically Transparent Nanofiber Paper. *Advanced Materials* 2009, 21: 1595-1598.

Sehaqui, Houssine, PhD candidate. Swedish Institute for Biomimetic Fiber Engineering, Royal Institute of Technology, personal communication. March 2011.

An Attractive Alternative: The Use of Magnets to Conserve *Homer* by John Chamberlain

Introduction

The challenge in treating broken metal objects is to reconcile the need for an stable and secure join with the standards of contemporary conservation ethics. In practice, broken metals are often re-adhered with epoxy or acrylic resin adhesives, or by employing methods used in metals fabrication such as soldering, welding, or brazing. Unfortunately, these techniques can be either ineffective or damaging to the original materials.

Numerous publications in the past 10 years have discussed the use of magnets in conservation. Authors report of magnets being painted, or wrapped in paper or textile, and used to mount or secure textiles, works on paper, and objects for both exhibition and travel. Magnets have also been used as a treatment tool, most commonly as a clamp for repairing tears in both paintings and objects.

This paper describes the development of a technique for using magnets as part of a long-term treatment, in this case for rejoining the metal components of *Homer*, a small assemblage created by John Chamberlain in 1960.

Homer in Context

American artist John Chamberlain (b. April 16, 1927) is best known for creating large-scale, three dimensional assemblage sculptures from discarded parts of automobile bodies. In 1960, Chamberlain's first solo exhibition was mounted at the Martha Jackson Gallery in New York, and international success followed almost immediately. Constructed in 1960, *Homer* dates from this point in his career. To create the work, Chamberlain used eleven industrially fabricated, polychromed metal parts, which he cut, shaped, and attached in three places to a prefabricated wooden base. The work is unusual for Chamberlain, in that it is composed not of car parts but of household metals

such as canisters and food tins. *Homer* is also small in scale, measuring only 15 inches in height. The metal pieces are visually distinct, varying in their color, texture, and sheen, and featuring decorative designs and text. As part of the collection of the Robert Rauschenberg Revocable Trust (RRRT), the work is also a testament to the relationship between Chamberlain and Rauschenberg, to whom the piece was given.

Materials, Construction, and History

The food tins and canisters that serve as source material for *Homer* were most likely manufactured during the 1950s. Until the introduction of the aluminum can in 1957, metal food containers were made from tin-plated steel, hence the term "tin cans." All evidence points to this as the composition of the metals used to form *Homer*. The magnetic susceptibility of the pieces indicates that they are formed from an iron-rich alloy like steel. Further analysis of the metals and coatings was conducted using a Bruker Tracer III-V handheld XRF. Each spectrum collected from the work showed K-alpha 1 peaks for iron. Nine of the thirteen spectra also showed small but distinct peaks for tin.

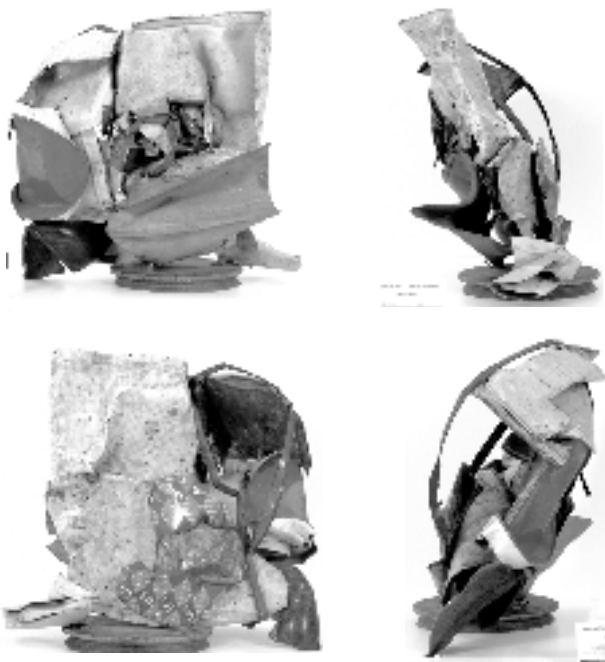
The coatings on *Homer* are most likely oleoresinous lacquers, which would have been applied by spraying or, for the decorative prints, by roller coating. In contrast, XRF spectra taken from the unjoined surfaces of the matte light green diagonal piece show the strongest peaks for zinc. This is consistent with zinc chromate metal primers, which are available in a wide range of green hues.

Chamberlain's artistic process is based in material exploration. He starts his works without a fixed idea, and describes the artistic intention as unfolding according to intuition and sexual impulse, incorporating randomness and chance. Chamberlain bends and folds the metals to wrap through and around each other in what he describes as a "sexual fit." Only after the work is composed does he concern himself with securing it together.

In *Homer*, undisguised soldered joins hold the different metal sheets to each other and to the wooden base. Corrosion near the joins points to the application and incomplete removal of an acidic flux during soldering. XRF spectra of joins show strong peaks for lead, a primary component of soft-solders, as well as peaks for zinc, which may indicate the use of zinc chloride flux.

Of the twenty-three joins of the work, solder is visible on nineteen and likely present in all. As a result of the artwork's design, a great deal of stress had been placed on these joins. The floral checkered piece, which is the central, weight-bearing element of the metal construction, was never directly secured to the base. As this element shifted with handling and movement, many of the original soldered joins failed.

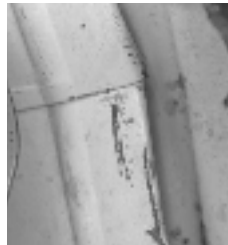
Two methods of repairing joins are apparent on the piece. Fifteen joins had been repaired with one or both of two materials:



All photographs of *Homer* © 2011 John Chamberlain / Artists Rights Society (ARS), NY

a white-colored substrate which has been made gray by means of a surface coating; and a loop of thin metal wire that pierces the metal sheets. The putty is found on 13 joins, applied over the solder and wire, if present. It is difficult to judge how many joins make use of wire loops, though they are visible in 7 locations, 5 of which are in conjunction with putty. This is supported both by the registration files of the RRRT, which notes a repair undertaken in May 1990, as well as by Lawrence Voytek, Rauschenberg's fabricator, who completed the repair.

Archival photographs demonstrate that the grimy surface patina and visible wear to the coatings and base are likely part of the original aesthetic. The presence of dirt and accretions is consistent with his body of work and points to the use of found materials. "I really wasn't interested in car crashes; I was interested in the material that came from cars, because it was free. Nobody really wanted it." Furthermore, after forcibly bending and crushing his materials, Chamberlain's objects often leave his studio with surfaces that are scratched, chipped, or otherwise worn. Some of this scratching also appears to have been added intentionally, as in the heavy vertical scratches that underline "Made in U.S.A."



Condition

In September 2009, when the piece was examined, the metal construction remained secured to the wooden base, and the base was structurally sound. The individual steel sheets were also intact, however four more soldered joints and one repaired joint had failed. As a result, *Homer* slumped dramatically. Due to the flexibility of the restored joints, the elements of the work moved readily.

The surfaces of *Homer* also showed signs of age-related deterioration, including areas of corrosion, as well as flaking and fading of the coatings. Red-brown accretions encircling the joints appeared to be iron corrosion products. This is likely generated by residual acidic flux. The silver paint which covers the white putty of the restored joints was cracking, due to movement of the pieces as a result of joint failure. Though there are scratches and losses to all the coatings, the light green zinc oxide primer is extensively worn away at the peaks of the folds, and is actively flaking. The checkered floral piece is unevenly faded, with more color preserved in valleys of the folds than on the peaks. Because this fading relates to its current topography, it is likely that it occurred after assembly. As these changes did not impact the stability of the work, they were not addressed by this treatment.

Treatment Goals

As might be expected for an artist who has sculpted polyurethane foam, Chamberlain accepts that some materials are transient, but may choose to use them for the sake of achieving a desired effect. At times Chamberlain even seems frustrated by cultural expectations of the permanence of art. Speaking of his polyurethane foam sculptures, he notes in an interview, "I have one or two of them left and they are ready to, well, not fall apart,

but parts of them are. But they have lasted forty years. What the hell do you want? How long is it going to take you to get it? It is not as necessary for the item to last forever as much as it is for you to get something that you are not used to getting" (Olbrist p. 34).

Furthermore, Chamberlain's practices in caring for his own work can prove problematic for collectors who give weight to historical value. In one interview, he describes repainting a paper collage he had made 45 years prior. Chamberlain also restored his galvanized steel sculpture *Norma Jean Rising* by painting and re-titling the work *Norma Jean Risen*. The piece now has two dates—1967 and 1981—associated with its manufacture.

It was the choice of the conservators and the RRRT to confine the current treatment to structural stabilization. It was considered that this minimal intervention respected its unique history in Rauschenberg's collection and the existing art historical importance of the work as an early assemblage by Chamberlain. While perhaps not in accord with Chamberlain's more comprehensive approach, this treatment does not preclude further treatment in the future.

Thus, the primary focus of the treatment of *Homer* was to realign the component pieces and stabilize them in their original position. This would not only prevent further damage caused by movement, but it would also return the piece to its intended rigidity and formation. For practical reasons, as well as out of respect for the unique history of the work, the conservation treatment also preserved the materials from the 1990 repair. As the condition of the surface beneath the putty is not known, removing the restoration materials posed the risk of creating an aesthetic disturbance. Furthermore, removing the wire loops and putty would likely cause the piece to lose any remaining stability.

Traditional Conservation Methods for Joining Metals

As the simplest method of joining metals in terms of application and reversibility, adhesive options were investigated first. Based on preliminary sampling, three adhesives—Araldite 2013, FastSteel, and J-B Weld—were chosen due to their medium gray color, matte finish, and high viscosity. They were tested on a mock-up of the artwork, which had been soldered and puttied together from pieces of ferrous metal cans. Paraloid B-72 was also tested based on its familiarity to the researcher and popularity in conservation. The test adhesives were allowed to dry either horizontally or vertically in order to evaluate flow, strength, and gap-filling properties. Paraloid B-72 was only tested in the vertical position.

The conditions of the mockup likely vary significantly from those of the artwork; nonetheless, testing revealed significant information. Each of the adhesives demonstrated problems adhering to the metal, and only half of the bonds remained intact after the application of gentle pressure. Though Araldite 2013 appeared to have the best working properties, the join in which it was applied over solder, without a barrier layer and dried in the horizontal position did not fully harden, demonstrating a sensitivity to contamination during curing. This could be a problem given the complex mixture of compounds likely present on the joins of *Homer*. In the B-72, small bubbles consis-

An Attractive Alternative, continued

Considerations	Adhesives	Soldering, Welding or Brazing	Mechanical Fasteners	Magnets
Application	Easy to apply	Requires specialized equipment and knowledge	Must create holes in metal, if none exist	Easy to apply
Reversibility	Reversible mechanically or with solvents	Not reversible; re-treatable	Fully and easily reversible	Fully and easily reversible
Changes to Artwork	Requires clean join surfaces, i.e. removal of patina in areas	Application is damaging to surface coatings, metal sheets and repair putty	Must create holes in metal, if none exist	No immediate change; slight magnetization of metal over time
Relative Join Strength	Variable strength, depends on adhesive used and surfaces to be joined	Strong	Strong	Variable strength, can be customized to specific join
Character of Join	Rigid to somewhat flexible	Rigid	Rigid to somewhat flexible	Somewhat flexible; accommodates small shifts in alignment
Other Considerations	Further complicates mixture of materials and chemistry of joins	Only joins metal to metal; cannot be applied over other materials	Usually create a strong visual impact	Unknown effects of magnetization of metal

tently hardened in the dried film, creating a visual disturbance. Though good in theory, adhesives would likely present significant problems in practice.

Other common options for joining metals proved no more promising. Soldering, brazing, or welding could be very effective if skillfully done, however these methods would damage the well-preserved coatings and repair materials on the work. Mechanical joins would stabilize the piece, however the metal sheets would have to be punctured with new holes in order to apply bolts or another type of fastener. This could negate Chamberlain's "sexual fit" of the metals, as well as impact *Homer's* appearance.

Magnetism and Magnets

At this point, magnets that had been placed on the work for temporary stabilization had been holding it together for approximately three months. They were still effective, and easy to reverse as well as apply. Though the magnets had shifted slightly, transportation and gentle handling had not further damaged *Homer*. As the most promising option, further testing and research was undertaken into the use of magnets as a long-term joining method.

Permanent magnets are classified as materials that continuously generate their own magnetic field. Substances which can form permanent magnets are described as ferromagnetic and include iron, cobalt, nickel, and some rare earth elements. The atoms of ferromagnetic materials have several unpaired electrons in their outermost orbital. In these atoms, an orbital magnetic moment is generated when the unpaired electrons have the same spin and orbit. This orbital magnetic moment is characterized

by both a magnitude and a direction. When the orbital magnetic moments of groups of atoms align in parallel within a crystalline structure, a magnetic domain is formed. An object is magnetically-charged when its magnetic domains are aligned in the same direction, creating one large magnetic field.

There are four types of commonly available permanent magnets (Table from Verberne-Khurshid, F., I. Smit, N. Van der Sterren). For this experiment, different shapes and sizes of neodymium-iron-boron rare earth magnets were tested. The strongest and most permanent magnets in existence, they are over 10 times stronger than ceramic magnets. Susceptible to corrosion, rare earth magnets are always coated, usually with zinc or nickel. Their maximum operating temperature, above which demagnetization occurs, is 176° F, well above the temperatures at which *Homer* would be stored or displayed.

In order to protect the surface of *Homer* from abrasion, and the nickel coating on the magnet from chipping, polymer coatings for the magnets were investigated. The magnet supplier for this project recommends a rubberized coating to protect the surface of neodymium magnets from damage due to impact.

Through the addition of a magnetic powder, the coating could itself be made into another type of magnet, known as a bonded magnet. These are comprised of a magnetic powder consolidated in a polymer matrix. Though magnetically weak, bonded magnets are moldable and flexible, as the polymer matrix can be thermoplastic, thermosetting, or elastic. The magnetic strength of the coating would be strengthened as a result of curing under the influence of the magnet inside. Importantly, the coating could be molded or shaped to fill the negative space

An Attractive Alternative, continued

around the broken joins, strengthening the bond with the artwork and promoting invisibility of the repair.

Polymer Coatings for Rare Earth Magnets

Experiments were conducted on two classes of coating polymers and three formulations of silicone rubber. Initial testing was performed with Paraloid B-48N (40% mixture in 1:1 acetone-ethanol) an acrylic resin designed to bond to bare and primed metals, and Elite Double 8 silicone rubber, chosen due to its softness, elastic nature, purported unreactivity, and characteristic “frog-grip.” Paraloid B-48N adhered well to the magnet’s surface, however, the film formed was brittle and hard—not unlike the nickel plating already on the magnet. Because silicone rubber will not bond with a metal surface, a coating was formed by submerging the magnet in a mold. This coating broke easily when the magnet inside was attracted to a nearby object, however the softness and flexibility of the rubber made it an appealing prospect.

Additives for Coatings

In an attempt to improve the aesthetic properties of these coatings, pigments were added to both the B-48N and the Elite Double 8 silicone rubber. This effectively changed the color of the coatings, including the pink silicone rubber, but showed no other beneficial effects.

To create the bonded magnets, strontium ferrite powder was added to both coatings. When added to uncured silicone rubber, these particles secured the coating to the magnet’s surface, effectively strengthening the coating. The powder also served as a bulking agent, increasing the thickness of the coating layer and enabling one-step dip-coating. With the B-48N, however, the powder also made it difficult to achieve a smooth surface, creating a hard pointed coating. Because of its rigidity, B-48N was eliminated from further study and consideration.

Varying the amount of strontium ferrite in the mixture changed the appearance of the final coating. Mixtures that were not saturated showed marked separation, with the black particles clustering closest to the magnet, leaving an outer surface of pure silicone rubber.

Iron filings were also tested. Though they effectively adhered the rubber to the magnet, the large size of the filings proved problematic to achieving a smooth, regular coating.

Chalk white and the black strontium ferrite powder were mixed together and added to silicone rubber in the hope that they resulting polymer would be grey, like *Homer’s* existing joins. Instead, the strontium ferrite powder formed an interior layer close to the magnet, while the white pigment remained suspended in an uneven outer layer. Future experiments could also explore using dyes specially formulated for use with silicone rubber in order to achieve a desired color.

Silicone Rubber Formulations

Research was also conducted to select an appropriate silicone rubber formulation for the final treatment. In general, cured silicone rubbers consist of a silicone polymer, traces of catalyst, cross-linking agents, filler materials, softeners, and stabilizers. Clear products were selected, both for aesthetic reasons and because of the implied lack of pigmented additives.

In order to form a coating of sufficient softness and strength, formulations with a Shore Hardness A value of approximately 40 were considered. For ease of application, the rubber should vulcanize at room temperature. Two-part silicones that cross-link via an addition mechanism generally have the fewest additives of the room-temperature vulcanizing rubbers. To reduce the likelihood of the treatment aging poorly, the search was restricted to these products.

Name	Alnico	Ferrite or Ceramic	Neodymium (Nd-Fe-B)	Samarium-Cobalt (Sm-Co)
Material	Aluminum, Nickel and Cobalt	Iron Oxide and Barium- or Strontium oxide	Neodymium, Iron and Boron	Samarium and Cobalt
Stability	Inert to most environmental substances	Inert to most environmental substances	Susceptible to corrosion; always coated	Inert to most environmental substances
Hardness	Hard and strong	Hard but medium brittle	Medium brittle; always coated	Very brittle
Operating Temperature (degrees C)	-270 to 450	-40 to 200	Up to 80 or 180	Up to 250 C
Magnetic strength	Low	Low	High	Medium
Resistance to demagnetization	Low	Medium	High	Low
Price Range	Easily extractable material; economic	Easily extractable raw material; economic	Rare earth metal; expensive	Rare earth metal; very expensive

From Verberne-Khurshid, F., I. Smit, N. Van der Sterren, “The attraction of magnets as a conservaion tool.” *ICOM Committee of Conservation, ICOM-CC: 13th Triennial Meeting, Rio de Janeiro, 22-27 September 2002; preprints*. London: ICOM-CC; James & James, 2002, pp. 363-369.

An Attractive Alternative, continued

Based on these requirements, two products were tested: Smooth-On SORTA-Clear® 40 and Silicones Inc. P-4. SORTA-Clear® 40 is much thicker than P-4 when in the liquid phase, which could present a problem for casting the rubber into a mold. In addition, air bubbles which formed during mixing remained in the SORTA-Clear® 40 after curing. Oddy testing was conducted to indicate whether the chosen formulations would release harmful volatiles upon aging. Samples of the cured products with and without added strontium ferrite powder were aged, as well as a control setup and a B-48N reference. Overall, the products tested performed well, and no coupon displayed a significant percentage weight change. Because it exhibited superior working properties, Silicones Inc. P-4 was chosen as the coating material for the magnets used in this treatment.

Shaping the Coating

Two methods of forming a coating were employed in the treatment. In order to create the custom-shaped coating for the magnets, impressions were taken from the negative space surrounding broken joints using a two-part silicone rubber mold-making compound. Two-part plaster molds were fabricated from these impressions. A magnet of appropriate size was placed inside the mold before the uncured silicone-rubber mixture was poured in. As an alternative, some magnets were dip-coated with silicone rubber, with or without strontium ferrite added.

The coating and magnet used to repair a specific joint varied depending on the aesthetic and strength needs of the location. Cast bonded magnetic coatings were employed behind the broken joints on the TV's can and the light green zinc-chromate primed piece. As strontium ferrite powder makes the cured rubber black, it was not added to the most visible repair joints. For the diagonal white metal piece attached to the base, the magnet used was painted with pigments in B-48N prior to dip-coating.

Additional Stabilization

In addition to repairing existing joints, further options for stabilization were pursued. A coated magnet was added to serve as a spacer, holding the white tin in alignment above the light green piece. This cast coating contains a small amount of strontium ferrite in order to keep the silicone attached to the magnet but allow the spacer to remain translucent.



It was determined that a spacer was necessary to keep the central metal piece at an appropriate distance from the metals joined to the base. During treatment, stacks of magnets had been used for this purpose but, though effective, the shiny silver color disturbed both the appearance and concept of the piece. For the final repair, a spacer was fabricated out of cast plexiglass rod. Magnets were attached to both ends with adhesive and an aluminum rod sheath. These magnets were then coated with silicone rubber at one end, and a bonded magnetic coating at the other. This spacer is necessary to the integrity of the work, and is acceptably unobtrusive from the few angles at which it can be seen

Finally, a “stopper” was made to fit around the checked floral metal where it rests on the wooden base. While the spacers prevent the central metal mass from leaning to the left or right, the stopper should prevent it from sliding out of alignment on the wooden base. This stopper was cast around two small disc-shaped magnets using silicone rubber mixed with strontium ferrite.

Conclusion and Recommendation for Future Research

Though established conservation methods of repairing metals were not considered acceptable for *Homer*, treatment was absolutely necessary in order to extend the life of the work. Through experimentation with coating and additives, magnets have proven to be an effective alternative and a promising non-invasive option for joining certain types of metal.

As there are no published precedents for the use of magnets as an adhesive on metal artwork, it is difficult to predict the long-term effects of this treatment. Over time, magnets are known to slightly magnetize the metal surface to which they are attached. It is unclear, however, how strong such effects would be, their duration, and whether this would alter the ability to conduct instrumental analysis of the work. Accelerated aging experiments are difficult to design for magnets, as they are uniquely altered by substantial elevations in heat. Therefore, it would be ideal to monitor and report the effects of this treatment over time and verify that magnets remain strong and do not migrate.

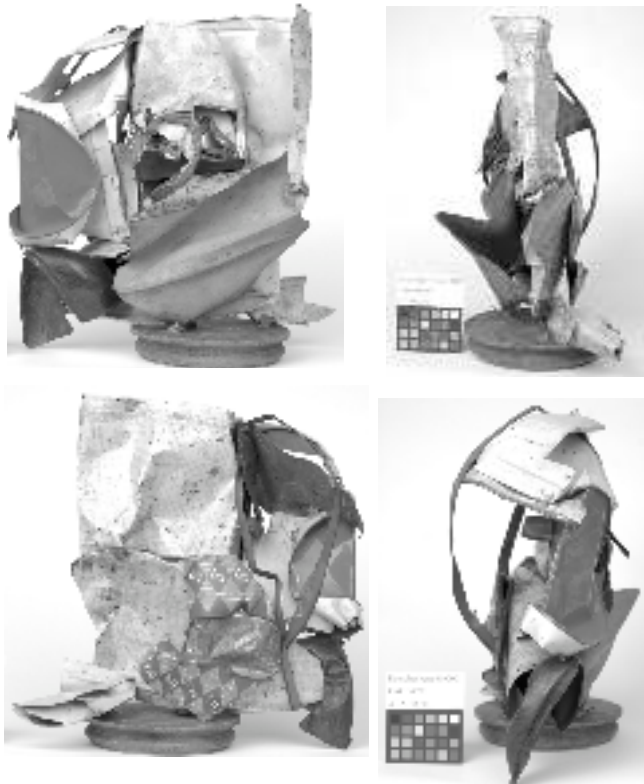
The lifespan of silicone rubbers is supposed to be greater than 30 years in an outdoor environment. Nonetheless, the coatings should also be periodically monitored for migration of silicone oil to the surface and deterioration or cross-linking of the polymer matrix. The frog-grip quality of the surface that makes silicone rubber a desirable coating is also likely to cause the repairs

An Attractive Alternative, continued

to collect dust and dirt preferentially. As silicones are sensitive to solvents, cleaning would need to be approached carefully.

Though further investigation is warranted into the long-term effects of the treatment, through the application of custom-coated magnets, *Homer* has regained structural strength and stability. The piece now stands upright and can be moved and handled without falling out of alignment. Furthermore, all signs indicate that the treatment should age well and last for decades to come. According to the manufacturer, "If they are not overheated or physically damaged, neodymium magnets will lose less than 1% of their strength over 10 years – not enough for you to notice unless you have very sensitive measuring equipment. They won't even lose their strength if they are held in repelling or attracting positions with other magnets over long periods of time."

If we look to the artwork itself for precedents, *Homer* was created in 1960 and repaired once in 1990, meaning that the original joins were broken by the time 30 years had passed. When examining the piece in 2009, the materials of all of the 1990 repairs, except one, were still functional. In light of the time



spanning the previous interventions on *Homer*, this treatment should aim to last for at least 20-30 years. However given their durability and strength, magnets may prove reliable for many decades more.

Acknowledgements

I am indebted to David White and Thomas Buehler of the Robert Rauschenberg Revocable Trust for their support of this project. I am most grateful to Christine Frohnert, Professor at the Conserva-

tion Center, Institute of Fine Arts, NYU; Conservator for Contemporary Art, Cranmer Conservation; and Chair, Electronic Media Group of the AIC for her vision and guidance. In addition, Simone Miller, Paintings Conservator and Research Assistant, Technische Universität, Munich, Germany, Department of Conservation, Art Technology and Conservation Science, and Astrid Schubert, Paintings Conservator, Museum Ludwig, Cologne, Germany, have generously shared their work on silicone rubber and magnets respectively, which served as direct predecessors to this study.

Bibliography

Braun, Tom. "Using Magnets as a Temporary Adhesive." *AIC Paintings Specialty Group, Postprints, Dallas, Texas, May 30-June 5, 2001*. Washington, DC: AIC. Paintings Specialty Group, 2001 pp.83-84.

Campbell, P. *Permanent Magnet Materials and Their Application*. Cambridge: Cambridge University Press, 1994.

Chamberlain, John and Hans Ulrich Obrist. *John Chamberlain*. Köln: Verlag der Buchhandlung Walther König, 2006.

Derbyshire, Alan and Timea Tallian. "New Miniatures Gallery." *V & A Conservation Journal*, 51 (2005 Autumn), pp. 2-4.

Dignard, C. "Tear Repair of Skins with Minimal Access to Their Back: The Treatment of a Kayak." *Leather Conservation News*, Volume 7, No. 2, pp. 1-8.

Jiles, David. *Introduction to Magnetism and Magnetic Materials*. New York: Chapman and Hall, 1991.

Keynan, Daria, Julie Barten, and Elizabeth Estabrook. "Installation Methods for Robert Ryman's Wall-mounted Work." *The Paper Conservator*, Vol.31 (2008) pp.7-16.

Miller, Simone. "Silicone in Modern Arts. Part I, Basic Knowledge on Silicone Chemistry." *Zeitschrift für Kunsttechnologie und Konservierung*, Vol. 20, no. 2 (2006), pp. 291-308.

"Silicone in Modern Arts. Part II, Artists and Conservation Methods." *ZKK*, Vol. 21, no. 1 (2007), pp. 63-86.

Paris, Mariabianca, Anna Valeria Jervis, and Lidia Rissotto. "The Restoration of a Gilt Leather Portiere of the 16th Century: Study of A Magnet-Based Support Structure." *ICOM Committee for Conservation, 15th Triennial Conference New Delhi, 22-26 September 2008: Preprints*. Edited by Janet Bridgland. New Delhi: Allied Publishers Pvt., 2008. pp. 332-339.

Schlefer, Elaine R. "Wrappers with Magnetic Closures." *Abbey Newsletter*, Volume 10, No. 5.

Schubert, Astrid. "In der Gemälderestaurierung - Druckeinwirkung auf pastose Oberflächen." Diploma thesis, University of Arts Berne, Conservation Program, Berne, Switzerland, 2002.

Smithsonian Institution Research Information System. Norma Jean Risen (Sculpture), © 2001-2004 Smithsonian Institution.

Spicer, Gwen. "Defying Gravity with Magnetism." *AICNews* (Nov. 2010), Vol. 35, 6:1, 3-5.

Stoner, Joyce Hill. "Mending Tears Vertically on Large Paintings Using Magnets." *Postprints (AIC Paintings Specialty Group)* 2008, pp. 114-115.,

Verberne-Khurshid, F; I. Smit; and N. Van der Sterren. "The Attraction of Magnets as a Conservation Tool." *ICOM Committee for Conservation, ICOM-CC: 13th Triennial Meeting, Rio de Janeiro, 22-27 September 2002: preprints*. London: ICOM-CC; James & James, 2002 pp.363-369.

A Collaborative Study of California Featherwork

This is the year of the feather, with incredible discoveries of fossilized cells from ancient South American penguin feathers that allow archaeologists to reconstruct their colors, stories in *Smithsonian Magazine* about dinosaurs' feathered descendants, and a full color cover story about the extravagant evolution of feathers in *National Geographic Magazine*.

Along with these headlining stories, Native California featherwork is receiving some attention as well, as the focus of a collaborative research project being carried out at UCLA and the Getty Conservation Institute (GCI) with participation from central and northern California regalia makers and weavers. This project began with the goal of understanding feathers used in California regalia and baskets, their susceptibility to fading, and the impact that color loss may have on cultural value.

After an initial investigation into the physical composition, use, and fading behavior of Northern (red-shafted) Flicker feather regalia from Central California, published in *Studies in Conservation* in 2010, the project team chose five additional culturally-important feathers in California to expand this research: American Goldfinch, Mallard Duck, Red-tailed Hawk, Western Scrub Jay, and Great Horned Owl. In addition to their cultural importance, these feathers were selected for their unique color system and the fact that they are from non-endangered species.

Based on all six feather types, the project was designed to investigate: why these feathers are selected and modified for cultural use; what these feathers mean to Native Californians; and to evaluate whether these feathers fade equally and what fading can be attributed to--whether color fades during ceremonial, household, or museum use. To address these questions, the project team held discussions with regalia makers and basketweavers about feather value and manufacture and use of featherwork, completed a survey of California featherwork in museum collections, and carried out color measurement and accelerated light aging studies.

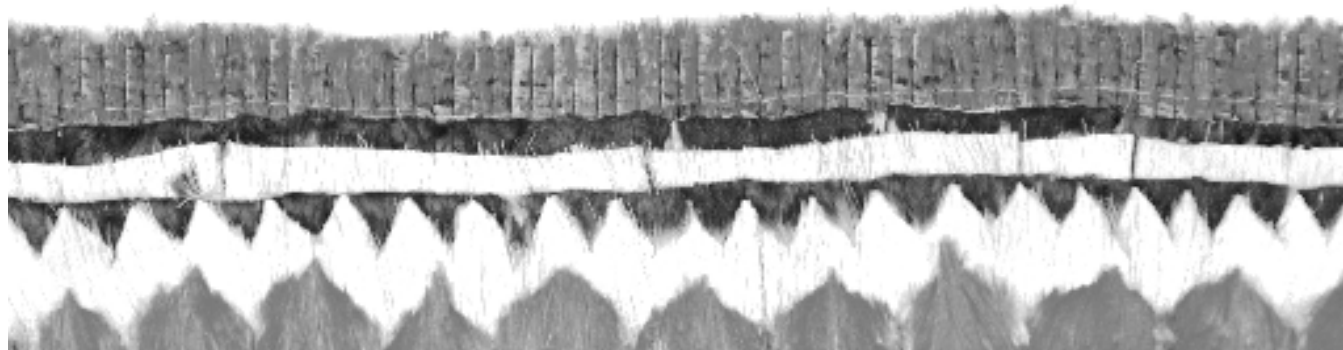
Native Californians used feathers in a myriad of ways, including for making baskets and regalia. Feathered baskets and regalia not only played central roles in ceremonial life, but also functioned as important trade items and were passed down as inheritance within families. Speaking with regalia makers and basketweavers, it was evident that featherwork continues to be valued, especially for the time and skill needed to find and collect the raw materials and to make the items.

Through these discussions, it also became clear just how special feathered baskets and regalia are to California tribes—the feathers are chosen from birds that are featured in creation stories, and the items of featherwork themselves appear in these stories as well. When selecting birds for use, featherworkers will also consider color, time of year, and sex of the bird. Cultural manipulation of feathers requires close observation of birds and their plumage. Some feathers are dull at the base and showy at the tips (Mallard Duck, American Goldfinch), and are attached to baskets overlapping as they would be seen on the bird to maximize this display. Understanding significance, value, and use of feathers in Native California cultures is complex and cannot possibly be addressed by conservators alone. This project has been greatly informed through the generosity of many regalia makers and basketweavers.

Discussions with featherworkers also considerably enhanced examination and estimation of condition of objects in collections. During the spring and summer of 2010, the authors documented over 120 Native California feathered items in California museums, including the Southwest Museum at the Autry National Center in Los Angeles, the Phoebe A. Hearst Museum in Berkeley, the Oakland Museum of California, the California State Indian Museum in Sacramento, the Yosemite Museum, and the San Diego Museum of Man. They also looked at one important collection located outside of California at the Field Museum in Chicago.

The survey had two aims – one was to gather cultural, technical, and condition information, with a main focus of identifying the feathers and documenting fading. For example, on a headdress with Northern Flicker, Red-tailed Hawk, Eagle, and Wild Turkey feathers, the feathers were examined and any fading present was recorded, and each type of feather was compared to see if one particular feather was more faded than another. While information about condition upon collection and previous exhibition and loan lighting would assist in understanding whether older featherwork had already faded when it was collected, or whether long term museum display had resulted in color loss in feathers, it was particularly difficult to reconstruct the necessary information.

The second goal of the survey was to pilot a survey instrument created specifically for this purpose. A form was developed using Filemaker Pro 10, along with controlled vocabularies and visual glossaries to assist in recording informa-



by the UCLA / Getty feather project team:

Ellen Pearlstein, Jim Druzik, Christel Pesme, Renée Riedler, and Molly Gleeson



tion. Based on the results from this survey, the authors have begun to make preliminary observations about feather usage, regional modifications, universal attachment methods, and condition trends, such as tendencies toward fading based on colorant system.

Color measurement and accelerated light aging studies were carried out on all six feather types at the GCI. Feather colors result from the combination of two mechanisms. It can result from the selective absorption of the incident light by natural pigments deposited in feathers. Black, brown, charcoal, and buff colored feathers are usually pigmented with melanin. Red, yellow, and orange feather colors are often produced by birds through the digestion of carotenoid pigments in berries and insects that are part of their diet, and the same bird will produce different color plumage if its diet changes. Color can also result from the interactions between incident wavelengths of light and the three-dimensional organization of the structure of the feather at a nano scale. Blues, greens, and iridescent feathers (like Mallard Duck scalp feathers) usually derive their colors from both mechanisms.

Given the variety of sources contributing to color in feathers, including localized differences in pigmentation and gloss, the complex arrangement of barbs and barbules, the anisotropic organization of the cellular structures which affect color reflection even in pigmented feathers, and the fact that even feathers from a single bird may show color variation, there is no reason to believe that all feathers will respond the same to light. In order to understand how feathers are affected by light, accurate and repeatable color measurements are critical, and not surprisingly, turned out to be difficult to achieve. At the GCI, a substantial color difference of up to 63 CIEDE76 units was measured from an identical site on a peacock tail feather “eye” by changing the angles of illumination and detection.

To address the difficulties of color measurement, a method used in ornithology and adapted from the Bidirectional Reflectance Distribution Function was tested to identify the best illumination, detection angle, and feather orientation to accurately record color change. Essentially, the method involves the use of an angled probe holder with micro optical fibers to allow for the variation of illumination and detection angles. It was found that the method is particularly important for measuring structural colors (structural iridescent colors are angle and orientation dependent). This work has resulted in the development of new ways to measure feather colors and a deeper understanding about which feathers are most susceptible to fading.



Through this work, several priorities have been identified to enable better documentation and preservation of California featherwork in collections. In order to assist conservators and other museum specialists in feather identification, culturally important feathers in California have been scanned at high resolution at the GCI and will be placed on a website.

The survey form and supporting documents, including visual glossaries illustrating featherworking techniques and deterioration, are being refined in order to improve documentation of feathered objects. The goal is to create a resource to share both the scanned feather images and the survey form and supporting documents, and to establish a repository for survey information. Such a resource would encourage not only a knowledge exchange about Native featherwork, but would permit collections staff, featherworkers, and ornithologists to share information over great distances. Display recommendations for lighting featherwork which take into account color value, colorant systems, and previous conditions are forthcoming.

Many cultural specialists shared information about birds, color preferences, ways of modifying feathers, and methods used in the past and today to preserve feathers. Thanks are owed to several people, particularly Bradley Marshall, Susan Billy, Frank LaPen, Meyo Marrufo, and Clint McKay.

First presented as a talk at the 37th Annual Student Conference of the Association of North American Graduate Programs in the Conservation of Cultural Property, 2011.

Book Review

Line, Shade and Shadow: The Fabrication and Preservation of Architectural Drawings

"The book began quite innocently with a search for information that was not there," begins Lois Olcott Price in the introduction to her recently published book, *Line, Shade and Shadow: The Fabrication and Preservation of Architectural Drawings*. A labor of love for Price for over two decades, this work amply rewards those who have long awaited its publication. A small preliminary quibble: it might have been good to have included in the title "...Before 1940" which would clue the buyer that the book does not include discussion of computer assisted design (CAD) and computer printer output material, focusing instead on pre-World War II and pre-Modernism materials and methods. The information that Price does include is thoroughly researched, as is expected of Price's work.

The book is divided into four distinct chapters neatly arranged. One: Architectural drawing fabrication before 1860. Two: Architectural drawing fabrication between 1860-1940. Three: Photoreproductive processes used by architects. Four: Preservation and conservation issues with architectural drawings. Each section has endnotes with bibliographic references. A nice glossary exists at the back of the book. The size, heavy coated glossy paper, large font, and design layout scream "coffee table book," yet the information is encyclopedic. As noted by James F. O'Gorman, in the forward, "This is a reference book, not one to be read cover to cover." The book is a gem to skip through, easily read in specific sections as needed. The abundant, large photographs by Jim Schenck compliment Price's descriptive text.

Price begins by outlining how the development of technology within the culture impacted the tools necessary for creating new modes of building, thereby putting the drawings in period context. Chapters one and two are a short master's class in circa nineteenth and early twentieth-century architectural drawing and design. Where else will one find a definition of "mouth glue" (p. 24), a discussion on the importance of French curves (p. 63), suspended pantographs (p. 65), or poché (p. 100), and read about lawn manufacture, as in lawn fabric (pp. 90-91)? Of further delight for architects, artists, historians, and conservators are sections discussing paper characteristics (pp. 16-17) including papers used for tracings (pp. 76, 81-88), watercolor manufacture and use (pp. 36-43), inks (pp. 103-118), dry media (pp. 119-126), and erasers (pp. 126-128).

The organization of chapter three on photographic reproductive processes is straightforward beginning with an overview of basic nineteenth-century printing-out photographic development in the context of the era. It is followed by the name, history, process description, identification methods, bibliography, and example images for each iron, silver, carbon, and dye process listed. A few of the illustrations (e.g. Pellet and Vandyke) are unfortunately placed within the description of the previous process. Careful reading of the figure descriptions will avoid confusion. Throughout this chapter, Price presents a balanced amount of pertinent technical, historical, and practical information. Similarities between historic photographic processes are directly addressed in the "confused with" sections.

Articles You May Have

"Climate Change Threatens Archaeological Treasures,"
Discovery News, 12/07/2010

Mummies decaying in Siberia, pyramids vanishing under the sand in Sudan, Maya temples collapsing: Climate change risks destroying countless treasures from our shared past, archaeologists warn.

Melting ice can unlock ancient secrets from the ground, as with the discovery in 1991 of "Oetzi", a 5,300-year-old warrior whose body had been preserved through the millennia inside an Alpine glacier. But as ice caps melt, deserts spread, ocean levels rise and hurricanes intensify, archaeologists fear a heavy toll on world heritage.

Experts warn that rising ocean levels -- which some forecast could jump a meter (three feet) by 2100 -- stand to wipe out dozens of coastal archaeological sites.

The details of period working methods and materials covered in the first three chapters will help caretakers establish appropriate care schemes and conservators to choose appropriate treatment protocols. If unclear, chapter four clarifies the impact of historical construction and use directly on the condition of the materials today. High praise goes to Price for clearly presenting a myriad of helpful solutions for a large array of materials and collections. In this final chapter, each historic format and process are covered, as are issues of management, arrangement, surveys, environment, storage, access, exhibit, duplication, and emergency/disaster recovery. Readers may wish to tab page 240 for the quick reference chart of "Photoreproduction Sensitivities" and page 300 for the "Recovery Summary" chart.

The information of most direct interest to conservators begins on page 308 and extends through page 346. A comprehensive guide to relevant information without becoming an instructional manual, this section repeats plenty of "cautions" throughout to satisfy the most nervous conservator, while conveying enough helpful information to those learning from the text. For example, on page 338, within a discussion of pressure-sensitive tape removal, Price notes that organic solvents can soften the adhesion and how various papers might be altered by this procedure. Details regarding specific solvents and application procedures are avoided.

Price predominantly comments on New England and mid-Atlantic US architectural histories because of the geographic spread of technology during this time period, and her access to collections, yet anyone working with similar architectural drawings will benefit from the knowledge presented. Available from Oak Knoll Books in the USA, and Hes and DeGraaf in Europe, this book is a good addition to a reference library and well worth the US\$95 price tag. It is nice to have information that was once missing, now all in one place.

Stephanie Watkins

Having read the review several times, I finally had to find out what this was. Ed.

mouth glue - "...animal glue mixed with sugar or molasses and sold in lozenges designed to melt in the mouth or warm water so the adhesive could be applied from the softened stick or with the tongue."

Lois Olcott Price

A forecast spike in unpredictable weather events -- hurricanes chief among them -- is another major source of concern, says Dominique Michelet, a specialist of American archaeology at the CNRS. He cites the case of Chan Chan in Peru, former capital of the Chimu civilisation and the largest pre-Colombian city in Latin America, which is already severely exposed to flooding linked to the El Nino weather pattern.

Sand is one of the worst enemies of archaeological sites, as in Sudan where dunes are encroaching on the burial pyramids of Meroe, the capital of a flourishing kingdom from the 3rd century B.C. to the 4th A.D.

“Roman Statue Discovered in Ashkelon after Storm Damage,” *Haaretz.com*, 12/14/2010

The massive storm that swept through Israel over the weekend caused a great deal of damage to archaeological sites all along the Mediterranean coast, but also uncovered an impressive statue of a woman between 1650 and 1800 years old in Ashkelon.

The statue, a 1.2-meter high figure of a woman with her head missing, has been dated to Roman times and is thought to have stood erect in a bath house. The statue was discovered when a cliff crumbled into the water at a sea-side archaeological dig in Ashkelon.

Among the chunks of earth that broke off from the cliff were parts of a large building that apparently were once a part of a Roman bath house. Sections of a colorful mosaic floor were also ruined.

Archaeologist Dr. Yigal Israel of the Israel Antiquities Authority in the Ashkelon region explained, “It is a lovely white statue that is missing its head and part of a hand. It was apparently imported from Italy, Greece or Asia Minor, and may have represented the goddess Aphrodite.” The statue had fallen from a relatively high precipice, but was surprisingly unharmed. Dr. Israel estimated that the statue’s head and hand were missing even during Roman times.

“Reconsidered, a Met Velázquez is Vindicated,” *The New York Times*, 12/20/2010

For nearly 60 years the portrait of a baby-faced Philip IV by Velázquez

hung in the Metropolitan Museum of Art’s European paintings galleries, a stunning example of the only 110 or so known canvases by that 17th-century Spanish master. It was the earliest known portrait of Philip by Velázquez, who, as the king’s court painter, went on to record his image for decades.

So it was quite a shock when, in 1973, the Met, reconsidering 300 of its most treasured works, declared that the painting was not a Velázquez and was probably executed in his studio by an assistant or follower. But in the museum world, 37 years is several lifetimes.

Now, after a year of examination and restoration, curators, conservators and scholars have changed their minds. They are convinced that this full-length portrait of the 18-year-old king is indeed by Velázquez.

The painting had last been cleaned and restored around 1911, when it was in the possession of Joseph Duveen, the legendary dealer who encouraged restorers to tone down paintings to make them look more serious (hence more salable) and to repaint any areas that were worn or damaged. As a result, this painting had decades of yellowed varnish and considerable repainting. In fact, so much painting had been done over the original that it was impossible to tell what the initial image had been.

When the varnish and over-painting were removed for the first time, details in the composition emerged — the delicate hands, the strongly characterized head, the simple white collar, the elaborate gold chain, the draping of the clothes — that had the unmistakable characteristics of the artist.

“Coit Tower Murals Fading Away,” *San Francisco Examiner*, 12/26/2010

Thousands of visitors trudge by the murals that ring the inside of Coit Tower each year as they head to the elevator to go to the top of the historical structure. If they stopped to look closely at the frescos, however, they might see scratches in the paint or the grime that has built up over the years.

“There are no barriers in front of them and people can touch them. If they were hanging in a museum somewhere, they wouldn’t need to be preserved,” said Senior Registrar Allison Cummings of the San Francisco Arts Commission.

It has been 15 years since the 27 murals from 1934 were touched up, and city agencies are looking for the money to do the needed work on the historical paintings. The work by the 26 artists under the theme “Aspects of California Life” is widely considered to be a precursor to the Works Progress Administration era that created about 8 million jobs for public projects through federal money.

An icon of the New Deal, the murals were inspired by famed Mexican painter Diego Rivera, husband of renowned painter Frida Kahlo.

The Recreation and Park Department owns Coit Tower, which is perched on Telegraph Hill and overlooks the Bay and nearby North Beach. The agency is working with the Arts Commission to find funds for the restoration work.

“Slavery Murals Ordered out of Georgia State Office,” *Los Angeles Times*, 12/31/2010

Murals of slaves harvesting sugar cane on a Georgia plantation and picking and ginning cotton are coming off the walls of a state building on the order of a new agriculture commissioner.

The murals are part of a collection of eight works painted by George Beattie in 1956 depicting an idealized version of Georgia farming, from the corn grown by prehistoric American Indians to a 20th century veterinary lab. In the Deep South, the history in between includes the use of slave labor.

“I don’t like those pictures,” said Gary Black, the newly elected agriculture commissioner. Slavery was indisputably part of 19th century farming in Georgia. By 1840, more than 280,000 slaves were living in the state, many as field hands. Just before the Civil War, slaves made up about 40% of the state’s population.

Beattie’s murals tell part of the story. There are no signs of the whippings, beatings, shackles or the other brutality used to subjugate the slaves, who appear healthy, muscular, even robust.

Few have openly protested the murals, maybe because the Agriculture Department is not heavily visited. Black’s plans after the inauguration next month include painting rooms, cleaning offices, patching walls — and taking down those murals.

“Attempt to Slash Los Angeles Graffiti Removal Budget Sparks Criticism,”
Los Angeles Times, 01/08/2011

Los Angeles city officials have long used the “broken windows” theory to justify the \$7 million spent each year on graffiti removal. The logic goes like this: Safe and prosperous communities start with clean streets.

But this week the fate of the effort was called into question when the top financial advisor to Mayor Antonio Villaraigosa recommended that the city slash the graffiti-removal budget in half as part of a round of short-term cuts. The graffiti-removal cut would last through the rest of the fiscal year and would save the city \$1.5 million - a critical step in balancing the city budget.

Some City Council members have reacted with alarm, saying eradicating graffiti is both an economic and a safety imperative. So far, Santana’s suggestion to cut back on the program has gotten little public support.

The city has long paid to clean up graffiti. These days the Department of Public Works contracts with 14 groups - all but one of them nonprofits - to cover more than 32 million square feet of graffiti scrawled on buildings, walls and overpasses.

The Central City Action Committee, an Angelino Heights-based organization that works with youth, sends six teams out to scour the streets each day. Special scanners allow crews to record the exact color of the surface defaced by tags. The crews bring along a tinter that helps them mix the paint to match. A new program involving the LAPD and the city attorney’s office would give clean-up crews cameras to document graffiti to help prosecutors convict taggers. It’s supposed to launch this month.

“Bhutan’s Endangered Temple Art,”
The Guardian, 01/02/2011

British art experts have been given unique access to the hidden heritage of the Himalayan kingdom of Bhutan, including spectacular 16th- to 19th- century wall paintings from its 2,000 temples and monasteries.

Specialists from the Courtauld Institute have been amazed by the exquisite quality and technical sophistication of paintings that were largely unknown and unrecorded in the west. Stephen

Rickerby of the Courtauld, described their technique as unrivaled in the west and spoke of being overawed by the miniaturist detail, achieved through a unique layering of colours and coatings.

Despite their intricacy, some of the paintings are huge, extending across hundreds of square metres.

Bhutan, a kingdom of 700,000 people with a Tibetan Buddhist heritage, is one of the world’s most insular countries. Access to the sites was granted as part of a three-year research collaboration between the Courtauld and the Bhutan department of culture, through funding from an anonymous US benefactor. The last stage of fieldwork and scientific analysis has just ended.

Although the paintings are largely sacred in subject and are restricted to religious worship, the Bhutanese have looked to the Courtauld’s expertise to ensure the paintings’ preservation for posterity. Some of the buildings in which they have survived have been damaged over the centuries by fires and floods. The Courtauld study will lead to an understanding of how the art deteriorates and how it can be preserved.

“A Triage to Save the Ruins of Babylon,”
The New York Times, 01/02/2011

The damage done to the ruins of ancient Babylon is visible from a small hilltop near the Tower of Babel. Across the horizon are guard towers, concertina wire, and dirt-filled barriers among the palm trees; encroaching farms, and concrete houses; and the enormous palace that Saddam Hussein built in the 1980s atop the city where Nebuchadnezzar II ruled.

For the first time since the American invasion in 2003, archaeologists and preservationists have once again begun working to protect and even restore parts of Babylon and other ancient ruins of Mesopotamia. New sites are being excavated, mostly in secret to avoid attracting the attention of looters.

The World Monuments Fund, working with Iraq’s State Board of Antiquities and Heritage, has drafted a conservation plan to combat any further deterioration of Babylon’s mud-brick ruins and reverse some of the effects of time and Mr. Hussein’s archaeologically specious re-creations.

The Fund has created computer scans to provide precise records of the damage to the ruins and identified the

most pernicious threats, starting with erosion caused by salty groundwater.

Another of the more dire threats to the site has been unchecked development inside the boundaries of the old city walls, enclosing nearly three square miles. The fund’s project has plotted the old walls on a map, causing trepidation among Iraqis who live along them now. They fear the preservation of Babylon’s ruins will force them from their homes and farmlands, as when Mr. Hussein expelled residents of a local village to build his palace.

“A Fresh Look at a Masterpiece,”
Boston Globe, 01/09/2011

When Isabella Stewart Gardner bought a large portrait of Spain’s King Philip IV in 1896, she believed it was by the hand of Diego Velázquez. She had bought the picture, painted in 1626-28, on the advice of the great Renaissance scholar Bernard Berenson. Berenson (not a Velázquez expert) noted that it was a replica of a painting in the Prado Museum in Madrid, but said the replica was “better in execution.”

The portrait as a whole combines a sense of sharp austerity with dizzying power. The Gardner’s head of conservation, Gianfranco Pocobene, explained that the last time the painting was restored was in 1948, when its surface was cleaned and a synthetic varnish that was new for the time was applied. The canvas was also re-lined.

The status of the Gardner’s portrait of Philip IV is not clear. Since the 1930s, experts have tended to agree that it is a combination of workshop and Velázquez himself. So little is known about Velázquez’s relationship with his studio that it has been impossible to say what degree of involvement he had.

Pocobene is one of Boston’s most experienced conservators, but he stresses that he is not a Velázquez expert. Having just spent several months with the painting, he is, however, understandably curious. What he would like to see is a deeper analysis of the picture by qualified scholars.

Distracted by costly building and restoration projects, the Gardner remains without a curator, and has so far made no attempt to bring in outside experts. In an e-mail to the *Globe*, Jonathan Brown, the leading Velázquez scholar in the United States, said, “it has been ages

since I last saw the picture. I didn't know it was being restored, but obviously the time has come to have another look."

"While Pompeii Crumbles," *Wall Street Journal*, 01/12/2011

The scandal over conditions at the ancient Roman city of Pompeii has yet to die down since a structure known as the "School of the Gladiators" collapsed there in early November. At least three other major collapses occurred in the past two months.

Italy's President Giorgio Napolitano has called the situation a "national disgrace"; opposition parliamentarians continue to press for Culture Minister Sandro Bondi's resignation. Yet experts and activists say that Pompeii's perilous current state is just one dramatic example of a widespread national emergency.

Later this month, the Italian government is expected to approve tens of millions of euros in emergency funds to address the Pompeii crisis.

Money is not the only problem, however. Administrative costs are the one area in which culture spending has risen, but the returns on that investment have been disappointing. In recent years, as the basic maintenance that might have prevented the collapses at Pompeii was left undone, administrators there focused on multimedia shows and live performances in a first-century B.C. Amphitheater.

Pompeii was granted a special autonomous status in 1997, allowing it to control its own revenue, but the administration there left €70 million (\$90.3 million) unspent that could have gone to maintaining the structures and grounds.

"Restoring a Masterwork," *Yale Daily News*, 01/14/2011

Those who have yet to see "The Education of the Virgin" at the Yale University Art Gallery have only a short time left. The painting was officially attributed to Spanish master painter Diego Velázquez last July after sitting for 80 years in University storage, and is currently on view in the Yale University Art Gallery, but it will not be there for long.

On Feb. 21, the work, which is believed to be among the earliest known works by the painter, will go into conservation, a restoration effort that could take up to four years, said Laurence Kanter, the gallery's curator of European art.

Because it was in stable condition and at no risk of further deterioration, the painting received minimal treatment before it was placed on view in early December. But, Kanter said, the painting is far too damaged to stay on public view. The painting shows areas of cracked, worn and altogether absent paint — two horizontal creases revealing the bare canvas run across the center of the piece — while the outline of a cat is dissolved into a faint gesture in the lower left corner.

Chief conservator for the University Art Gallery Ian McClure said the edges of the painting have likely been cut down on three sides, with marked shortening on the top and left sides.

Despite the excitement whipped up by the discovery of a Velázquez, the conservation of "The Education of the Virgin" is a secondary goal for the University's conservators at the moment, McClure said. Their top priority is preparing collections of ancient mosaics and roughly 30 mural paintings that are to be ready for the opening of the renovated art gallery in late 2012.

"Leaning Tower of Pisa's Kaleidoscope Effect to Be Restored," *Discovery News*, 01/14/2011

The Leaning Tower of Pisa is about to add a new effect to its oddball geometry, according to restorers working on Italy's most iconic monument. Restoration work on the seventh tier of the tower, just below the bell chamber at a height of about 164 feet, has returned a unique optical effect which was conceived at the tower's construction.

At this tier, a series of decorative arches allow sunlight to stream into the tower in intricate patterns, producing a kaleidoscope-like effect on the tower's white marble. "For decades they have remained closed because of several wooden doors. They were installed to prevent pigeons intruding inside," Gisella Capponi, director of the Institute for Conservation and Restoration at the Ministry of Cultural Heritage.

The complete view upwards of the interior was also obstructed by a floor on the first tier. It was built in 1935 to house bulky instruments to monitor the tower's tilt. Basically an empty cylinder covered by a great vault, the tower's interior will boast unique light effects. They will be particularly striking at dusk or

dawn, when the marble inside the tower turns pink because of the sun's rays filtering through the arcades. Much whiter -- the restorers have removed centuries of grime and dust from the tower's marbles -- the tower is also very stable.

"US Bank Funds Restoration," *Irish Times*, 01/15/2011

Banks have been getting such a bad press it would be churlish not to give credit when they do something good. Bank of America Merrill Lynch is sponsoring the restoration of *The Marriage of Strongbow and Aoife*, one of the most popular exhibits in the National Gallery of Ireland.

The famous painting by Cork-born artist Daniel Maclise dates from 1854 and is viewed by approximately 750,000 people every year. The exceptionally large canvas (10ft x 16ft) depicts the marriage of Norman invader Richard de Clare, known as Strongbow, to Aoife, daughter of Dermot McMurrugh, the King of Leinster.

The event was traditionally regarded as pivotal in Ireland's history as the marriage symbolised the start of 800 years of British rule in Ireland. Valerie Keogh, a spokeswoman for the National Gallery of Ireland, said the painting had been removed from display and the project would take two years to complete.

The painting has been unrolled and placed on a purpose-built platform to allow the conservation treatments to be carried out. The conservation work in progress will be visible on the gallery's new website in March.

"Heritage Lovers Fume over Temple Restoration," *Times of India*, 01/30/2011

The restoration of the centuries-old Saptakoteshwar temple at Opa has left heritage lovers aghast. They allege that the unique monument has been defaced and the introduction of new elements in it are against conservation ethics.

The state archives and archaeology department had entrusted architect K D Sadhale to carry out the conservation of the small but beautiful temple dating back to pre-Portuguese times.

"The introduction of pilasters, door frame and additional window above the door are against universally-accepted conservation ethics," archaeologist Varad

Sabnis told TOI. The three elements were not part of the original structure.

In addition to the three elements, a new retaining wall, though artistically done on its three sides, has been erected around the temple. "This mars the heritage ambience of the place and period look of the monument," Heritage activist Sakhardande said.

Sadhale denied that the ambience of the heritage site has been altered. The unique temple with a three-tier structure has a kalash in the shape of a bud and a dome sits atop the structure. Two laterite stone nandis (bulls) and elephants can be seen in each corner.

"Egypt's Treasures: Assessing the Damage," *Discovery News*, 01/31/2011

Concern about Egypt's priceless antiquities continues to grow, and Egyptologists around the world are issuing high-alert statements about the risk of Egyptian antiquities being smuggled abroad.

Salima Ikram, professor of Egyptology at the American University in Cairo, told Discovery News the Egyptian National Museum is safe at the moment, thanks to the Egyptian people who have bravely defended their national treasures. Meanwhile, holding together on social networks, the Egyptologist's community is trying to assess the damage at the Egyptian National Museum by scrutinizing the footage shot just after looters broke into the building on Friday.

Watching the footage, experts have been able to produce a map of the museum rooms where looting and vandalism took place, showing that the attack occurred on three sides. According to a faxed statement by Zahi Hawass, who on Monday has been appointed Minister of State Antiquities in the new government named by President Hosni Mubarak, 13 Late Period cases were smashed, and several antiquities were thrown on the floor.

"Damaged Ancient Egyptian Artifacts to Be Restored," *Discovery News*, 02/07/2011

The artifacts damaged at the Egyptian National Museum in Cairo last week will be restored in five days, Zahi Hawass, Egypt's Minister of Antiquities, said on Monday.

Among the 70 artifacts vandal-

ized during anti-government protests, the most significant are a statue of King Ahkenaten wearing the blue crown and holding an offering table, King Tutankhamun's gilded walking stick and a wooden statue of King Tut standing on the back of a panther.

The damage was caused by about six people who broke into the museum through its windowed ceiling using ropes. According to Hawass, the thieves were "ignorant" people who took out the objects from their showcase and dropped them on the floor when they realized that they were not made of gold.

The thieves also ransacked and vandalized the newly opened museum gift shop, which they believed was the real museum.

"The funny part of the story is that only the books of the gift shop remained untouched. Looters are never interested in books, I guess," Hawass said. The newly appointed Minister of Antiquities also clarified what happened to the two mummies whose heads were photographed lying on the floor among scattered bones. "They were two already disembodied heads being temporarily stored next to the CT scanning lab in the museum's grounds," Hawass told Discovery News. A team of 11 members has already begun the restoration work, starting from the statue of Akhenaten carrying an offering tray.

"Restoring a Piece of Surfing History," *Daily Pilot*, 02/07/2011

Cannery Village art conservator, Ardenia Capannelli, has restored a painting on a board owned by Duke Kahanamoku, considered the father of modern surfing.

Capannelli honed her skills in Italy, where she studied and practiced conservation of Renaissance-era paintings. When the Surfing Heritage Foundation of San Clemente asked her to restore an oil painting of a Hawaiian chief atop a long wooden surfboard, she had no idea who Kahanamoku was.

Kahanamoku traveled the world as an Olympic swimmer and became an "ambassador" of surfing. Hollywood agents were taken by his striking profile and physique, and Kahanamoku soon became a supporting actor in Hollywood productions.

The chief on Kahanamoku's board has a ubiquitous presence in Ha-

wai — his image can even be found on street signs, said Dick Metz, founder of the Surfing Heritage Foundation, who acquired the board from the Honolulu-based Outrigger Duke Kahanamoku Foundation in the late 1960s.

This board is special because of its painting, Metz said. Depicted is a chief wearing a mahiole, a traditional Hawaiian feather helmet. Painted on the board when it was built in the early 1930s, the image is sealed by a heavy coat of varnish. But the finish began to chip over the years. After some of the paint began to chip off with the varnish, Metz decided to get it restored.

"Breathing Life into Fading Paintings," *Deccan Herald*, 02/2011

A series of about 50 mural paintings in the ancient ninth century Lord Shiva Temple in Tamil Nadu's composite Thanjavur district have been saved from the tentacles of total destruction after long years of bio-degradation and neglect.

'Sri Thyagarajaswami Temple' is an early Chola period architectural marvel. The 'monkey-faced' valorous King Mucukunda Chola, as the legend goes, took a great leap of faith to bring back the image of 'Somaskanda' from Lord Indra's abode, making Tiruvarur a unique hallowed ground. It is this Mucukunda Chola's story which was beautifully captured in detail in a set of paintings on the ceiling of the 'Devasriya Mandapam' inside the temple.

These paintings, which throw light on the temple's pre-history and philosophy, were in a 'shockingly dilapidated condition'. What worsened the paintings' condition was "irresponsible digging up" of the Hall's terrace on the pretext of water-proofing. But that work was abandoned, causing water seepage and fungus leading to irreparable damage.

Ranvir R. Shah, founder-trustee of the 'Prakriti Foundation' managed the painstaking work of cleaning, reviving and restoring the paintings. A 10-member team led by Ms. K. P. Madhu Rani of Bangalore-based 'Intach Chitra Kala Parishad Art Conservation Centre (ICKPAC)' restored the paintings over three years. Though there has been "lot of loss" in the murals, in the renewal process, some new paintings were also discovered on one of the walls.

“Art Needs a Preservation Law,” *Daily News & Analysis (Mumbai)*, 02/20/2011

Recently, union minister of culture Kumari Selja, declared that conservation and public art initiatives would be given priority on a long list of imperatives vis-à-vis an appropriate preservation of culture.

News reports state that the ministry may even contemplate the enforcement of a registration law that will list public art and heritage relics - this, being different from monument protection - in the capital. It is likely that additional stringent laws would be framed to prevent desecration of public art.

The minister was quoted by a news service as saying, “People must learn to respect public art. I want to see more installations across the country. Art should be brought out from the confines of the museums to public spaces so that they become more interactive and mass-oriented.”

She rued the fact that despite an existing policy that declares 2% of the cost of all building projects to be allocated for executing works of art, very little note-worthy art work has actually been created in public places.

A recent visit to Hampi, listed as a world heritage site, reveals the extent of the problem that the ministry and individuals are up against. Despite funds from several international agencies, and a few well-known Indian corporations, work appears to be proceeding at snail’s pace. The restoration and conservation efforts can be described as patchy.

“Murals Conserved for Art Gallery Reopening,” *Yale Daily News*, 02/21/2011

When the newly hired curator of American paintings and sculpture took her first tour of Yale’s art storage facility 31 years ago, she found a set of damaged canvases wrapped up around two-by-four blocks of wood. She realized that the paintings were some of the only surviving works from the first years of the late 19th-century American muralist movement.

The murals, taken from the Huntington Mansion in New York, spent 85 years at Yale in storage and on the walls of a secret society. They are comprised of 28 semi-circular lunettes and three ceiling paintings. Though they are works done in oil on canvas, the artists gave their paintings of muses and other

classical figures a matte surface in order to make them look like frescoes.

Patricia Garland, the gallery’s paintings conservator, said the team has dealt with a range of issues, from simply cleaning off surface dirt to contending with tears and the removal of white lead paint from the backs of the canvases. Garland said the conservators will attach the canvases to the walls of the Art Gallery using reversible methods -- the team has sandwiched removable adhesive and cushioning materials between the canvas and a sheet of aluminum honeycomb.

The team is still testing cleaning methods to determine the best course of action. One difficulty is that the matte paint has absorbed more dirt than a varnished painting would.

“Sparing our Treasures an Art Attack,” *The Age*, 02/22/2011

Art galleries and museums around the world spend billions of dollars every year conserving and protecting their often priceless objects by ensuring they are kept in high-tech, air conditioned environments.

At the University of Melbourne, PhD student Caroline Kyi is exploring how free radicals can be used to counter the actions of harmful micro-organisms that cause the art works to deteriorate. In particular, Ms Kyi is investigating the use of nitric oxide to prevent the growth of the micro-organisms that cluster together as “biofilms” on art works and monuments such as marble statues.

“In situations where sustenance for the micro-organisms is scarce, more nitric oxide is released to signal that the organisms in the biofilm should disperse rather than remain aggregated. I’m taking advantage of this natural process by developing methods to artificially encourage the production of nitric oxide, which will boost biofilm dispersal and so prevent its growth.”

Biofilms not only cause staining on paintings, or unwanted changes in pigmentation, they can also create habitats for higher organisms such as mould or fungi to develop. Ms. Kyi studies patterns of growth by cultivating cultures of micro-organisms taken from art works then uses them as an “inoculant” on samples of art works.

Ms Kyi says nitric oxide is used in communication between cells and when bacteria are communicating with

other species in a community they are more susceptible to biocides — substances that destroy them. She is exploring what she calls “a polyphasic approach” where the nitric oxide would help disperse the organisms and this would be followed with a biocide or some other treatment.

“Mosaics Inspire Innovative Technology,” *Yale Daily News*, 02/22/2011

Thomas Philips, the senior materials assistant at the Yale University Art Gallery, prepares to grind a layer of concrete off the backs of five pieces of a sixth-century Byzantine mosaic.

The tiled works were excavated in the 1930s from Gerasa, now present-day Jerash, Jordan. The modified concrete cutting and mounting techniques that will be used in the restoration of the mosaic demonstrate some of the ways in which the Yale University Art Gallery’s conservation department is employing innovative technologies to restore a number of artworks coming out of storage for the collection’s reinstallation in the renovated wing of the gallery.

Conservators are experimenting with materials from the airplane and marine industries to construct sturdy backings, and for the first time ever they are modifying computer-controlled industrial cutters for use in art restoration.

Philips breaks through the concrete using a Computer Numeric Control tool, a machine with a computer-controlled drill bit. The concrete was added to the mosaic by Yale conservators in 1933 as a standard conservation practice of the day, but when the heavy backing began to damage the work, the mosaic was put back in storage.

The backing that will replace the concrete will be made of more experimental materials, as it must be both lightweight and extremely strong. The newly backed mosaics will weigh about a fifth of what they did. This mosaic will bring experimental techniques to a renovated gallery full of traditionally conserved pieces.

“Restoring a Part of History,” *The Daily Home*, 02/23/2011

Talladega College held its Hale A. Woodruff Mural Restoration Signing and Exhibition Agreement Signing in Savery Library Wednesday. The of-

ficial signing of the contract with the High Museum of Art in Atlanta signified the finalization of a nationwide tour that will send the college's historical Amistad murals to several museums across the country after being restored at the Atlanta Art Conservation Center.

Talladega College is Alabama's oldest private historically black liberal arts college, founded in 1867. The murals are by Hale Aspacio Woodruff, who in 1937 taught at Atlanta University, currently known as Clark-Atlanta University, and then came to Talladega College to teach classes in the humanities department.

The "Amistad Murals" are depicted in three scenes "The Revolt," "The Court Scene," and "Back to Africa." The other three panels depict an Underground Railroad scene, a scene of the first day of registration at Swayne Hall, and the construction of Savery Library.

The murals will be detached from Savery Library in early March and then transported to the Art Conservation Center where they will be cleaned and re-stretched during a period of eight to 12 months. After the restoration process, they will be on display at the High Museum.

"Restoring the Unrestorable," *Yale Daily News*, 02/23/2011

Some art works are destined for decay. While the Yale University Art Gallery conservation department is hard at work restoring pieces of the collection for a 2012 reinstallation in the renovated wings of the gallery, conservators say there are some art works that have damage that simply cannot be reversed because of the ways in which they were constructed.

The most fragile works, such as a Syrian knitting sample dating from the third century, must be rotated off view every six to 12 months in order to slow its deterioration. Ancient artifacts are not the only concern: 20th century works such as a plastic sculpture created in 1926 by Antoine Pevsner are also at risk.

Believing in progress does not mean believing that any progress has yet been made.

Franz Kafka

For pieces like Pevsner's sculpture, conservators can only hope to slow the pace of the object's deterioration, as they cannot stop it entirely.

The best way to accomplish this, says Ian McClure, chief conservator at the Art Gallery, is still unclear. Storage at very low temperatures will slow the sculpture's degradation. But storage in an enclosed space poses its own issues, as the plastic emits harmful gases. To neutralize the effect, carbon filters were added to the sculpture's case to absorb pollutants in the air.

While certain art works are difficult to preserve — some pieces are just not meant to last. Modern-day conservators deal with the issue of contemporary artists constructing works from unconventional materials with intentional disregard for longevity.

While Yale's conservation department is employing innovative technologies to restore the gallery's collection to a condition in which the wear and tear of time does not impede the viewer's experience, sometimes the team has to settle for a less-than-perfect facelift. As McClure said: "Conservation should be about finding equivalent materials so that it can look how it looked, rather than worrying about making it exactly the same."

"Restoration Reveals the Madonna's Royal Blue," *The Examiner*, 02/24/2011

Around 1485 AD, Filippino Lippi created a masterpiece entitled Madonna and Child. Commissioned for Filippo Strozzi, a prominent and successful Italian banker, the painting was meant to hang on the walls at the Strozzi villa in Santuccio.

Almost five centuries after its completion, in 1949, the painting was gifted to the Metropolitan Museum of Art. Originally featuring vibrant blue, red and green colors, the painting had acquired a thick layer of grime and varnish in its half a millennia. According to Keith Christiansen, chairman of the Department of European Paintings, this varnish was intentionally applied in the nineteenth century in an attempt "to tone down its color".

The Met's new exhibition, entitled A Renaissance Masterpiece Revealed: Filippino Lippi's Madonna and Child, is only half a room, located

in the European paintings galleries on the second floor. Flanking the painting are items that were used by the Strozzi family — marriage chest, tapestry, corbel stone, and a wooden chair — taking the viewer back in time to the decorated palace of a wealthy fifteenth-century Italian family.

Madonna and Child was restored this past fall by Associate Conservator Karen Thomas, overseen by Conservator in Charge Michael Gallagher.

"Conservation Scientists Mull Reconstruction of Buddhas," *Science A Gogo*, 02/28/2011

Coordinated by UNESCO and the International Council on Monuments and Sites, a group of scientists is examining the debris left from the Taliban's destruction of the Bamiyan Buddhas and considering whether reconstruction of the giant statues might be feasible.

Located on the Silk Road, the 1,500 year-old works of art once formed the centerpiece of one of the world's largest Buddhist monastic complexes. Since the destruction of the statues by the Taliban regime, restoration experts have been endeavoring to secure the remains and restore access to the statues.

Examination of several hundred fragments from the 55m and 38m tall statues has yielded some surprising insights. Professor Erwin Emmerling, from the Technische Universitaet Muenchen, discovered that prior to the conversion of the region to Islam, the statues were over-painted several times, presumably because the colors had faded.

The statues themselves were hewn out of the cliff, but the flowing garments were formed using clay, which was applied in two or three layers up to eight centimeters thick. The conservators working on the project have stacked the ruins in temporary warehouses. Larger pieces have been covered over in situ. "However, that will only last for a few years, because the sandstone is very porous," Emmerling explains.

He hopes to refine a new process that injects an organic silicon compound into the stone. Conservation of the fragments would require the construction of a small factory in the Bamiyan Valley - alternatively some 1,400 rocks weighing up to two tons each would have to be transported to Germany. A conference

to be held in Paris this week will further consider the fate of the fragmented Budhas.

“The Chapel of Aragon in St John’s Shines again in all its Glory,” *The Malta Independent*, 03/2011

The restoration of the Chapel of the Langue of Aragon, Catalonia and Navarre in St John’s Co-Cathedral has now been completed. The project consisted of the restoration of the dome and wall carvings and the marble funerary monuments, as well as the restoration of the lunette painting The Martyrdom of St Lawrence and the painting of St Francis Xavier, both the work of Mattia Preti.

The chapel, like the rest of the church, had suffered from the ravages of time. The main cause of deterioration was due to the infiltration of rainwater from the dome, which caused an irreparable loss of gilding and the erosion of some carvings.

The first stage of restoration consisted of the careful cleaning. Any linseed oil applied during the 20th century was removed using poultices of alkaline solutions. This was followed by the consolidation of the loose stone carvings, after which the walls were prepared for re-gilding, which was carried out using 24-carat gold leaf adopting the same gilding process that had been used in the 17th century.

The restoration of the lunette revealed that the canvas had sustained severe damage and was torn in several places. The restoration procedure consisted of detaching the canvas from the wooden support followed by the removal of several layers of discoloured varnish and over-painting. The canvas was relined and fitted on a new stretcher frame.

“Down Come the Murals,” *The Daily Home*, 03/07/2011

Tuesday marked the beginning of the end for Talladega College’s prized Amistad Murals’ display in Savery Library. All six murals painted by artist Hale Aspacio Woodruff have been hanging in TC’s Savery Library since the 1930s, and are undergoing a detachment process from its walls before being restored at the Atlanta Art Conservation Center.

Larry Shutts, associate conservator of paintings at the Atlanta Art Conservation Center, had the task of carefully detaching the canvases from the walls of the library. Weak spots on the paintings were covered with strips of Japanese tissue that were adhered to the paintings with a wax resin to prevent any damage in the detachment and transportation of the murals.

Upon arrival at the conservation center, the murals will be adhered to another piece of fabric and then onto enormous wooden stretchers where they will be cleaned and restored.

“It’s an exciting day for me to be the president of this institution as the murals come down to be restored,” said TC President Billy C. Hawkins as he looked on during the detachment process. “This will be the last time these murals hang in this library. March 7, 2011 is certainly a day to be remembered.”

After the restoration process, the murals will be presented at the High Museum of Art in Atlanta in an exhibit titled “Rising Up: Hale Woodruff’s Murals at Talladega College” from June 2 to Sept. 2, 2012.

“British Museum Buys Assyrian Treasures Cleaned by Agatha Christie,” *The Guardian* 03/07/2011

Despite the best efforts of Agatha Christie and her pot of face cream, many of the ivory treasures just acquired by the British Museum from the Assyrian city of Nimrud are still scorched by the fire that brought one of the great palaces of the ancient world crashing down on top of them 2,600 years ago.

The ivories were discovered in the 1940s by the archaeologist Max Mallowan, Christie’s second husband, and have been in storage since 1963, never seen by the public.

Agatha Christie knew the carvings intimately. She spent long periods on site in the eight years Mallowan spent excavating the enormous site in northern Iraq. He built her a special writing hut but she also helped with site work, including cleaning the beautiful ivories using a pot of expensive face cream.

The museum conservators who have been working on them wouldn’t recommend the technique, but it appears to have done no harm to the tiny sphinxes, lions, serpents and flowers, once inlaid

with precious stones or covered with gold foil, which originally completely covered elaborate pieces of furniture.

Nimrud was first excavated by the archaeologist Henry Layard in the 19th century, and the giant winged stone bulls and lions he brought back to the British Museum caused an international sensation. He had dragged them across the desert by ox cart and shipped them down river on rafts supported by thousands of inflated goat skins.

Since then the museum has acquired pottery, inscriptions and metal work from the site and the greatest Nimrud collection in the world is now in Bloomsbury.

Some of the pieces have notes on the back in ancient Aramaic, which appear to be the Ikea flatpack instructions of almost 3,000 years ago on how to assemble the furniture.

“Jefferson Bible Restoration Shows Surprising Religious Views,” *The Examiner*, 03/16/2011

The Smithsonian’s National Museum of American History is currently performing a specialized conservation treatment to ensure the long-term preservation of Thomas Jefferson’s bible, a small handmade book that provides an intimate view of Jefferson’s private religious and moral philosophy.

At age 77 and living at Monticello in retirement following his two terms as President, Jefferson assembled what he titled *The Life and Morals of Jesus of Nazareth*. Using excerpts from the Four Gospels of the New Testament, Jefferson arranged the text to tell a chronological and edited story of Jesus’ life and moral philosophy, removing sections of the New Testament containing supernatural aspects, as well as perceived misinterpretations he believed had been added by the Four Evangelists.

Using a razor, Jefferson cut and arranged selected verses from the books of Matthew, Mark, Luke, and John in chronological order, mingling excerpts to create a single narrative. Jefferson had no intention of publishing his work, rather intending it to be private reading material. The book stayed in Jefferson’s family until the Smithsonian’s librarian purchased it from Carolina Randolph, Jefferson’s great-granddaughter, in 1895.

After nearly 200 years, the book

has become fragile and requires treatment to ensure its long-term preservation. Because of its age and the glue used to adhere the clippings to the blank paper, the pages are extremely stiff and inflexible and the tight binding has led to cracking and some tearing of the pages. One of the main goals of the conservation is to stabilize the book in such a way that will provide increased access to the American public.

“Conservation of Paintings at Eastern State Penitentiary Begins,” *Philadelphia Inquirer*, 03/17/2011

Lester Smith would probably not rank 1955 as his best year. He spent it in notorious Eastern State Penitentiary, so mortified by the bad decisions that had led to his armed-robbery conviction and incarceration that he rarely, if ever, spoke of the experience before his death in 2003.

But 1955 was, in a way, his *annus mirabilis*, his miracle year. Not only did he turn his life around, but he also embraced Catholicism, and, in an explosion of creativity, painted 23 murals in the prison’s two-room Catholic chaplain’s office.

Smith covered the plaster surfaces with scenes from the life of Jesus and images of Mary, St. Peter, and St. Martin of Porres. In one poignant image, he showed a kneeling inmate, hands over face, seeking absolution as Jesus hovers above.

But if Smith turned his life around in 1955, it’s been a downhill slide for his prison artwork since. So much so that on Wednesday, a conservation team led by Cassie Myers of Milner & Carr Conservation removed the seriously deteriorated painting *The Penitent Prisoner* from the wall, carefully rolling it onto a cylinder for conservation and later reattachment.

It was the first step in what is hoped will be the complete renovation and restoration of the chaplain’s office at the prison, a National Historic Landmark. During the next year or so, all the remaining paintings will be conserved in place.

“Getty: Expertly Saving Antiquities,” *Palisadian-Post*, 03/17/2011

Associate Conservator Jeff Maish is analyzing a Roman bronze figure of Eros -- patina, color and texture,

and even unusual corrosion -- all things that reveal its history.

The statue had been on display at the Getty Center until the Villa reopened in 2006 and all the antiquities were relocated. That transfer offered an opportunity for this in-depth technical study. The bronze Eros will remain in the laboratory for several months.

The best example of a complete, seamless conservation effort that clearly demonstrates the Getty’s approach to restoration is the Apollo Saettante, now on display at the Villa. This project is collaboration with Italian colleagues at the Museo Archeologico Nazionale in Naples as part of the cultural exchange agreement made in 2007 between the Italian Ministry of Culture and the Getty Museum.

Using archival research, X-ray, ultraviolet photography and endoscopic examination, investigators discovered not only how Apollo was made in antiquity, but also the methods used to restore it in the 19th century. Erik Risser, assistant conservator on the project, decided to honor the later restoration by preserving the Apollo’s matte black surface patina, which is not how the ancient surface would have looked. The conservation work at the Getty encompasses important academic scholarship as well as hands-on restoration.

“Libya’s Ancient Heritage Sites Suffer from Neglect,” *The Daily Star*, 03/28/2011

A toga-clad statue lies half buried among cow dung at the ancient Greek city of Cyrene in eastern Libya, where the country’s wealth in antiquities has suffered decades of neglect.

Goats and cows graze among the towering Greek and Roman columns of the ruined city, a UNESCO world heritage site perched on a mountain side with stunning views over verdant plains and the Mediterranean Sea beyond.

Founded in the 4th century B.C. by Greek colonists and later ruled by imperial Rome, Cyrene’s souvenir kiosks, restaurants and protective barriers usually found at such sites are absent. The dilapidated village of Shahaat, which does surround it, does not appear to be geared to the tourist trade. “It’s been the same here since the revolution in 1969,” said Shahaat tourism policeman Hamdy

Hamed. “There’s been investment in oil, but none at all in tourism.”

The people of east Libya complain that there has been little investment in their part of the country since Moamar Gadhafi came to power in a military coup 41 years ago. The region is now largely held by anti-Gadhafi rebels after mass protests and bloody fighting in the past month, much of it around the key oil exporting towns of Ras Lanouf and Brega.

“Most of the artifacts are still buried. Tourism has been neglected,” said Shahaat resident Hamdy Bzeiwi, who is unemployed and has seen little of the income that would usually come from living close to a site such as Cyrene.

At the ruins, bags of rubbish litter the second-century Arch of Marcus Aurelius. An amphitheater likely to have been used for performances of Greek tragedies is now apparently being used as a sheep pen judging by the hoof prints and droppings.

“Tam Alumni Rally for Return of Mosaics,” *Mill Valley Patch*, 05/02/2011

Much of Tam High’s storied history is on display throughout its campus, adorning its walls in the form of banners, trophies and historical photos. But two massive relics of that history have received decidedly less conspicuous treatment, stuffed into a dirty, moldy storage facility at the back of campus for more than three decades.

A pair of huge mosaics, each 13 feet tall, six and a half feet wide and weighing one and a half tons, served as cornerstones of Mead Theatre until the theatre was demolished 37 years ago because of safety concerns. The mosaics depict Greek comedy and tragedy.

The stone-tesserae mosaics were built by William Jurgen Hesthal, a noted painter, lithographer and etcher, as part of the WPA’s Federal Art Project in the 1930s, with the help of student volunteers. The mosaics were stored in fairly miserable conditions underneath Benefield Hall.

The Tam Alumni Association hired Tam parent Jantine Neuwirth, an expert in art restoration and a professional art conservator and appraiser, to restore the mosaics. Tam High parent and architect Deepak Dandekar has designed a stainless-steel box in which to frame the mosaics.