

President's Letter

Teresa Moreno

Dear WAAC Members,

While I'm sure you are all busy with summer, it is not too early to start thinking about the fall and all that it will bring this year.

The conference schedule for September and October in the western U.S. is jam-packed, but the one that I know you all are most looking forward to is the WAAC annual meeting, which this year will be held November 1-4 in Tucson, Arizona.

This later date for this year's meeting was selected to avoid conflicts with other meetings and conferences in the region, but also to let us take advantage of the cooling fall weather. It also coincides nicely with one of Tucson's signature events.

However, before the WAAC annual meeting, we also have to attend to the business of our annual WAAC election. The WAAC nominating committee is currently looking for outgoing and enthusiastic conservators to serve on the WAAC board. Professional service on the WAAC board is a fabulous way to network across sub-disciplines with other conservation professionals from across the western U.S. and even beyond. There are three positions that will come open this year and will need to be filled, maybe even by you! For those of you who may not be familiar with the make-up of the WAAC board, in addition to the president, the board includes the vice-president (VP), four members-at-large (MALs), the treasurer, the secretary, the fulfillments officer, the web editor, and the newsletter editor. Each year a new VP and two MALs are elected.

The VP serves two years total; one year as VP and then the second year as WAAC president. The VP is responsible for collecting and compiling the regional news and thus has opportunities throughout the year to interact with all of our fantastic WAAC regional reporters. They also, with the help of the nominating committee, coordinate the all-important annual election. In the second year of service, along with the privilege of becoming WAAC president, there comes the responsibility and treat of planning the annual meeting!

If you would like to see the annual WAAC meeting come to your region or town, and you have a penchant for planning parties or other highly civilized large gatherings with like-minded professionals, now is the time to put your name in the hat! Self-nominations are not only accepted, they are encouraged and most greatly appreciated!

The MALs hold two-year terms as well. Every year two MALs rotate off the board after serving their second years, and two new MALs are elected. This rotation ensures that there is always overlap of service among the four MALs on the board. The MALs serve on special committees as needed and often assist the VP with the election and the president with details pertaining to planning and implementing the annual meeting. If you are even remotely interested in professional service, but aren't yet ready to jump in the race for WAAC VP and are intimidated by the idea of serving on a larger national committee, serving as MAL on the WAAC board is a great way to get your toes wet!

Serving on the WAAC board is not only a rewarding way to fulfill a professional requirement for service, and give an injection of life to your curriculum vitae, it is also quite simply a lot of fun! The board meets twice a year, once at the WAAC annual meeting and once mid-year (usually January or February) in the Los Angeles area. Who wouldn't like a reason to travel to sunny LA in the late winter/early spring? While the agenda is usually quite full, covering all aspects of WAAC business, the mid-year board meeting always affords good times with friends, old and new, and often includes a delightful culinary experience. If one is so fortunate to be elected, the WAAC board meetings are not to be missed!

So, now that you are all clamoring to run in this year's election for one of the coveted seats on the WAAC board (and please don't hesitate to send or email your nominations to Randy Silverman, our current VP, at Randy.Silverman@utah.edu), let's move on to the details of the annual meeting.

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President's letter, continued

As I mentioned, the 2016 WAAC annual meeting will be held in Tucson, Arizona, November 1-4. The conference will commence on the evening of Tuesday, November 1, with an opening reception at the Arizona State Museum.

This year's meeting venue is the Silver & Sage Ballroom in the iconic territorial-style "Old Main" building, located in the heart of the University of Arizona campus. Old Main is the original University of Arizona building, designed by architect James Miller Creighton and constructed in 1891 when Arizona was still only a U.S. Territory. A walk up the wooden stairs and across the deep covered porch conjures up the spirit of the Old West. The building recently underwent extensive renovation and restoration that was completed in 2014, and it has been certified LEED silver by the U.S. Green Building Council, making it the oldest building in Arizona to receive LEED certification.

The conference sessions will get under way on Wednesday, November 2. The day will begin with a presentation on the preservation of Old Main by Corky Poster, architect and principal with Poster Frost Mirto, Inc., the local architectural firm that was part of the restoration team. There will be general session talks for the rest of the morning and afternoon on Wednesday, and all day on Thursday, November 3.

On Friday, November 4, there will be a special session that will highlight the on-going work by local teams to conserve and preserve the historic Mission San Xavier del Bac, which is located just south of Tucson on the Tohono O'odham Indian Reservation. Built on the edge of the Spanish Empire in the late 18th century, this Catholic Mission is a National Historic Landmark and is the oldest functioning building of European origin in Arizona. We will end the formal conference on Friday afternoon with an excursion to San Xavier and guided tours by the morning speakers. You aren't going to want to miss this!

Though the formal conference will have come to a close, there will still be plenty of activity to engage you over the weekend and even into the following week! We are planning an Angels Project on Saturday, November 5, in collaboration with the Old Pascua Museum and Yaqui Culture Center. The focus will be on the documentation and assessment of two-dimensional art by Yaqui artists, including works of art on paper in a variety of media, and a large mural by Daniel Leon. I hope a good number of paper and paintings conservators will consider signing up, but of course, all experienced conservation professionals will be welcome.

The Week at a Glance

Tuesday Nov. 1	Wednesday Nov.2	Thursday Nov. 3	Friday Nov. 4	Saturday Nov. 5
	Registration	General Session	Special Session: Preservation of Mission San Xavier del Bac	Angel's Project: Old Pascua Museum and Yaqui Cultural Center
WAAC Board Meeting	Conference Commences: Key Note Presentation	General Session	Tour: Mission San Xavier del Bac	
Registration & Reception at ASM	General Session	General Session		
	WAAC Board Dinner			

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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 May Newsletter should be received by the Editor before **April 5, 2016**.

Western Association for Art Conservation

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

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Teresa Moreno

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Randy Silverman

SECRETARY

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New Memberships

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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: Denise Migdail secretary@waac-us.org

Tucson, a UNESCO World City of Gastronomy!

You may have noticed that, aside from the opening reception that will be held at ASM on Tuesday, November 1, there is no formal WAAC banquet or dinner function planned.

The reason is that you will be coming to Tucson, a UNESCO World City of Gastronomy! (It is the first U.S. city to be so named, by the way.) There are so many amazing local farm-to-table dining options, from food-trucks to fine dining, that you will have a hard time choosing during the course of your stay. I am putting together a list of my favorites that I will include with the registration information.

However, in the meantime, if you are intrigued by this you can do your own research by exploring links that are available at this site. If you are a foodie, you are going to love this! tucsonaz.gov/integrated-planning/tucson-unesco-city-gastronomy

President's letter, continued

Plans are also in the works to offer a 3-day **Materials Characterization Workshop** (yes, spot-testing!) that will be taught by Nancy Odegaard and Scott Carrlee. The workshop will be held in the conservation lab at the Arizona State Museum, November 7-9. Details and registration information for this workshop will be forthcoming. If you have always wanted to take this workshop, but haven't had the opportunity, you should definitely pencil this into your agenda. Space will be limited so early registration is a must.

For those of you interested in sticking around over the weekend whether for the Angels Project or the Materials Characterization Workshop, or just to enjoy some warm desert sunshine and local culture, you will be able to experience what has become one of southern Arizona's most unique and meaningful cultural events, the All Souls Procession. The All Souls Procession incorporates art and performance with Hispanic, indigenous, and other cultural traditions of making offerings to and remembering and celebrating our ancestors and loved ones who have passed. The energy of the procession of celebrants and mourners is profound as it winds its way through the streets of downtown Tucson and culminates in a communal expression of grief and loss and a celebration of life and hope. Whether you choose to watch from the sidewalks as the procession passes by or join in yourselves, the experience is moving and memorable. More details about the procession, related events, and how to get involved can be found at allsoulsprocession.org/.

Art, culture, and good food! What more can you ask of a professional conservation meeting? Creative, informative, and thought provoking papers and presentations, of course! The schedule of talks is starting to fill in nicely. Already, I have received a number of really interesting abstracts, but there is still plenty of room for you to share your most recent conservation conundrums, treatment tips, and research advances! While it turns out that the meeting is both starting and ending with an architectural preservation theme, this by no means will dictate what papers will be selected for the general sessions. **Papers on topics from all areas of art conservation and related fields are welcome!** Please send your abstracts of 300 words or less to me at president@waac-us.org. The deadline for submission is September 1!

I look forward to your receiving your abstract submissions and to hosting you all here in my home town and alma mater for our annual meeting!

Sincerely,

Teresa

Alaska

Helen Alten provided the Haines Sheldon Museum staff with training in mannequin making in April. They constructed four mannequins for the *Haines 50* exhibit – the museum’s summer show that opened May 13, 2016. Part of the exhibit incorporates UV filtering photographic window clings that cut light and UV, but still maintain the luminescent quality of the gallery’s large windows.

Helen constructed two mannequins for the new Jilkaat Kwan Cultural Center in Klukwan, Alaska, which opened to the public May 14, 2016. The Center displays, for the first time, the 18th-century Whale House carvings, considered the best Northwest Coast carving ever produced. **Scott Carrlee** and Helen Alten were among the many people who attended the Center’s long-awaited opening.

Ellen Carrlee and Scott Carrlee worked in 2016 with the installation team at the Alaska State Museum to prepare new exhibits for the museum’s grand re-opening that occurred on June 6. More than 2,000 artifacts are on display, and over 300 conservation treatments were needed. Paintings conservator **Gwen Manthey** came up for the final week of installation to help troubleshoot and to pitch in hanging fine art.

Ellen is commissioning the new objects conservation labs, and **Seth Irwin** was brought in to help commission the paper lab. These are the first purpose-built conservation labs in Alaska. Scott is developing funding to bring in a paper conservator on contract to get paper conservation up and running. The new building combines Alaska’s state libraries, archives, and museums together in a state-of-the-art facility.

The Anchorage Museum has begun a 25,000 sq. ft. addition to expand its art galleries while simultaneously planning for the renovation and reinstallation of its largest exhibition, a 15,000 sq. ft. space devoted to the history and culture of Alaska. **Monica Shah** has been on the planning teams for both projects. The spaces are anticipated to open to the public in September 2017. They will host numerous conservators during the

summer in preparation to move 1,500 objects that have been on display for 30 years.

Sarah Owens and Monica Shah will participate in the next Materials Tradition program on weaving cedar bark organized by the Smithsonian Arctic Studies Center and the Anchorage Museum. This will be an expanded version of the program that includes two new components: community harvesting and processing of materials, and community-based language documentation. As part of this program Sarah and Monica will visit Metlakatla in June to learn more about harvesting and preparing cedar bark.

In recent weeks Sarah has been preparing objects for exhibitions including *Near the Bear*, a family-friendly exhibit that explores the Arctic environment through art and science. The exhibit features artwork from the Anchorage Museum’s collection and includes hands-on art activities and experiences. Sarah is continuing to increase the public face of conservation at the Anchorage Museum with Conservator’s Corner, where visitors can get a behind-the-scenes look at conservation in action.

Regional Reporter:
Ellen Carrlee

Arizona

Nancy Odegaard, Gina Watkinson, Marilen Pool, Betsy Burr, Nicole Peters, Skyler Jenkins, Jae Anderson, Elyse Canosa, and Christina Bisulca from the Arizona State Museum (ASM) all presented at AIC/CAC in Montreal through two posters and three papers. Nicole went on to present two posters at an archaeology conference in Greece.

Nancy presented another paper with **Caitlin O’Grady** at the ICOM-CC Glass and Ceramics Working Group Interim Meeting in Wroclaw, Poland; and Gina then attended AAM in Washington DC and completed a Smithsonian Affiliate Fellowship. **Victoria Kablys** from Queens University will be joining the lab for a summer internship.

Nancy and Jae will be participating in the collaborative conservation project at the School of Advanced Research in Santa Fe. In late June, Nancy and interns participated in the last season of the ASM archaeology program on the Colorado plateau.

Marilen and Christina’s research continues on plant and insect exudates in archaeological and ethnographic collections. They gave a joint poster for the Cross-disciplinary Symposium on Arid Environments Research through the University of Arizona Arid Lands Department, a presentation at the Society for Ethnobiology, and another presentation at the American Institute for Conservation AIC/Canadian Association for Conservation annual meeting in Montreal. Additionally, they submitted a paper on the topic to the *Journal of the Society of Ethnobiology*. Marilen continues working with ASM staff and students on the conservation of the ASM basketry collection.

The National Park Service conservators based in Tucson have been busy preparing pots, beads, sandals, and baskets for exhibits at the Phoenix Airport and for Chaco Culture National Historical Park. In addition, **Sam Merrifield** has been treating prehistoric textiles from Tonto National Monument, and **Maggie Hill-Kipling** and **Audrey Harrison** have been working with prehistoric sandals from multiple National Parks to document and address preservation issues.

Regional Reporter:
Dana Senge

Hawaii

As the paintings conservator at the Art Basel Hong Kong this past March **Dawne Steele Pullman** dealt with 3,700 paintings exhibited at the art fair – luckily only 11 required immediate treatment in preparation for transport! She then spent April in Paris visiting the Louis Vitton Foundation’s exhibition of eleven

Regional News, continued

Chinese artists from their collection. She is now back in Hong Kong working on a Joan Miró. Dawn also just completed a painting from the Maritime Museum of the Battle of Foochow (Fuzhou), 1884, by a French artist.

Rie and Larry Pace along with a group of great volunteers from the Pacific Aviation Museum on Ford Island in Pearl Harbor lightly cleaned and varnished six murals. Each of the paintings measures 8 x 12 ft. and was painted in oil on masonite in the early 1940s. The subject of these six large paintings is the Battle of Midway.

Treatments for portraits of Charles Reed Bishop and Bernice Pauahi Bishop painted by local artist Herb Kane were completed for Kamehameha Schools Bishop Estate. These paintings hang in the campus chapel. They are also in the process of treating six (so far) paintings by Harry Tsuchidana in preparation for a retrospective show opening at the Honolulu Museum of Art. Treatment proposals for seven paintings belonging to the Hawaii State Museum of Art have recently been approved, and work will begin in the next few months.

Bronwen Solyom is retiring at the end of June as the curator of the Jean Charlot Collection at the Hamilton Library at the University of Hawaii at Manoa. Bronwen has been with the library for over 30 years and has been curator of the Charlot Collection since 2003. During her tenure she developed and grew the Charlot Collection—a major archive of documents and art works relating to the artist and writer Jean Charlot and to those whom he came in contact over his long career in France, Mexico, the United States, and the Pacific—into a one of the jewels of the Hamilton Library. Her extensive knowledge of the collection, and her warm and welcoming nature will be sorely missed in the Hamilton Library.

Thor Minnick recently completed

treatment of a pair of decorated nineteenth-century Persian doors for Doris Duke Foundation's Shangri La Center for Islamic Arts and Cultures. He also recently completed treatment of a broken sixth-century Southern Dynasty (420–589) pottery tomb figure—a warrior with shield—for the Honolulu Museum of Art. He is presently working on a late-

Silent Auction - Tucson

Now is the time to start collecting items for the always popular Silent Auction: tools, books, leftover materials, things you craft yourself, mystery objects, it all adds to the fun.

Again this year, Carolyn Tallent and Susi Friend will be handling things; get in touch with them if you have any questions.

Last year was our best year yet, with lots of great items and happy winners. This year we are anticipating donated items from some of the Tucson area food purveyors. Mesquite pod flour, anyone?

nineteenth-century Chinese rosewood table from the Queen Liliuokalani collection at Washington Place.

Regional Reporter:
D. Thor Minnick

Los Angeles

The Los Angeles County Museum of Art (LACMA) textile conservation staff, including **Catherine McLean** and **Elizabeth Shaeffer**, just completed a massive five-year project culminating in the installation of *Reigning Men: Fashion in Menswear, 1715–2015*, an exhibition containing over 120 dressed mannequins—a total of 200 looks and 707 individual pieces. Assisting with conservation were **Lalena Vellanoweth** and **Anne Getts**. The exhibition will be on view from 10 April to 21 August 2016 in the museum's BCAM building, adjacent to *Robert Mapplethorpe: The Perfect Medium*.

Karen Bishop joined LACMA's Watts Towers conservation team and is currently working on the restoration of the ship sculpture.

Last April, LACMA's head of paintings conservation **Joe Fronek** completed the restoration of *The Raising of the Cross*, a recently acquired eighteenth-century colonial painting by Antonio de Torres. The large canvas is in remarkable condition, having survived unlined and still attached to its original strainer. Joe was assisted by his staff in the restoration, which included varnish removal, paint consolidation, inpainting, and structural improvement.

In June, **Elma O'Donoghue** traveled to the National Gallery of Art in Washington, DC to check and oversee the installation of LACMA's oversized Hubert Robert, *Stair and Fountain in the Park of a Roman Villa*, for the NGA's exhibition *Hubert Robert, 1733–1808*. In preparation for the loan, **Susanne Friend**, **Jane Berman**, **Don Menveg**, and **Duane Chartier** carried out structural repairs and treatment of the painting and frame, and devised a method to strengthen the old stretcher and frame for the painting's safe transport.

Miranda Dunn will update LACMA paintings conservators on talks she heard at the recent AIC conference in Montreal. **Kamila Korbela** is assisting Joe Fronek with his technical entries for the upcoming catalog edition of *The Ahmanson Gifts*.

This spring at the University of California, Los Angeles (UCLA) Library, audio/visual materials specialist **Yasmin Dessem** was awarded a \$40,000 grant by the John Randolph Haynes Foundation to complete preservation measures and digitize rare home movies from the Golden State Mutual Life Insurance company, the largest African American-owned insurance company in the Western United States.

Regional News, continued

UCLA Library is fortunate to have successfully hired **Kimi Taira**, a recent graduate from the Winterthur/University of Delaware program in art conservation, to work as an assistant project conservator on the historical maps from the UCLA Henry J. Bruman Map Collection. They are also pleased to welcome recent UCLA Master of Library & Information Science graduate **Hannah Moshier** as a contract assistant conservator for complex circulating collections care and other digital project work.

UCLA Library Preservation Officer **Dawn Aveline** traveled to Cuba this March to collaborate with colleagues as part of the UCLA Arcadia Digital Ephemera Project.

UCLA Library Conservation Center head, **Chela Metzger**, presented a paper on the "Conservation Principles and Ethics for Rebinding Rare Books," at a manuscripts conference at the Matenadaran Scientific Research Institute of Ancient Manuscripts in Yerevan, the capital of Armenia. Future collaboration is planned in advance of the possible rebinding of the Armenian manuscript masterpiece, the Gladzor Gospels (created before 1307) currently cared for at the UCLA Library. UCLA Library's Conservation Center is excited to host its first third-year intern in the coming academic year—Buffalo State Art Conservation Program student **Amanda Burr**.

The Margaret Herrick Library of the Academy of Motion Picture Arts and Sciences recently rehoused its entire oversized poster collection onto custom-made shelving designed to hold 96-inch long rolls. This project was a collaborative effort between graphic arts librarian **Anne Coco**, poster librarian **Ashely Johnston**, and conservator **Dawn Jaros**.

And they are thrilled that **Madison Brockman** will be joining the class of 2019 at the Winterthur/University of Delaware Program in Art Conservation. Madison joined the Margaret Herrick Library of the Academy of Motion Picture Arts and Sciences conservation staff two years ago as the conservation technician and has worked on several treatment projects for various collection departments under the supervision

of **Caitlin Jenkins** and Dawn Jaros. Madison will be finishing up projects at the Library until the beginning of July and while they are sad to see her go, they wish her the very best at Winterthur.

The J. Paul Getty Museum's Antiquities Conservation Department welcomes new Senior Conservator of Antiquities, **Susanne Gänsicke**, to the Getty Villa. Transplanted from Boston where she has worked for the past 25 years at the Museum of Fine Arts, Boston, Susanne will be joining the Getty's conservation team this summer. She brings a diverse background of experiences working with ancient artifacts, ranging from excavations in Egypt and the Sudan to conducting an in-depth technical study of the Greek-Egyptian Auloi, a complex cache of ancient wind instruments found at Moroë, Sudan in Pyramid N. VI.

Current graduate conservation intern **Ellie O'Hara** spent three weeks working with the Getty Conservation Institute team on a seventeenth-century fortified structure in Morocco, known as Kasbah of Taourirt.

Erik Risser, Jeff Maish, and mount makers **McKenzie Lowry, BJ Farrar, Elizabeth Soriano, Richard Hards** and **Mark Mitton** are working on the installation of a group of ancient marble sculptures on loan from the Santa Barbara Museum of Art at the Getty Center. As part of the loan, Erik is working on the challenging re-restoration of some elements of the large-scale marble Lansdowne Hermes. The mount makers also recently traveled to the Cleveland Museum of Art to attend the "Mountmaker's Forum," one of a periodic series of conferences addressing exhibitions and installation issues.

Jeff Maish also traveled to New York City to install a group of loaned objects for the exhibition *Pergamon and the Art of the Hellenistic Kingdom*.

The exhibition, *Roman Mosaics Across the Empire*, drawn primarily from the Getty's own collection, opened at the Getty Villa on March 31 and will be on display through the end of 2016. Conservation treatments for the mosaics from Tunisia, Gaul, Syria, and Italy lasted approximately 18 months and involved the Antiquities Conservation staff.

The mid-point meeting of the APPEAR project (Ancient Panel Painting: Examination, Analysis, and Research) was hosted by the British Museum on April 21-22, 2016. The meeting brought together a group of 23 participants (scholars, conservators, scientists, and artists) involved in the four-year collaboration to discuss progress in the technical study of ancient Romano-Egyptian mummy portraits, and to begin planning for a conference to be held at the Getty Villa in 2018.

Tania Collas and **Marina Gibbons** from the Natural History Museum of Los Angeles, together with textile conservator in private practice **Cara Varnell**, prepared Charlie Chaplin's iconic overalls worn in the 1936 film *Modern Times* for temporary display in the Natural History Museum's *Becoming Los Angeles* exhibit. The Chaplin costume will be on view until mid-August when it makes way for a special display of costumes from the 1925 and 1959 versions of the film *Ben-Hur*, coinciding with the release of the 2016 remake.

Tania and Marina were also involved in the installation of the new traveling exhibit, *Pterosaurs: Flight in the Age of Dinosaurs*, opening July 1, 2016. Pre-program conservation summer intern **Abigail Rodriguez**, a recent graduate of Scripps College with a BA in art conservation, will be assisting Tania and Marina with exhibit installation as well as a variety of treatments in the lab.

Regional Reporter:
Virginia Rasmussen

New Mexico

Conservation Solutions, Inc. (CSI) recently completed projects that include assessment of an Elk monument in Aspen, CO; treatment of bronze handrails at the US Capitol; assessment and treatment of entrance gates, lanterns, and sculptures at the Ringling Museum in Sarasota, FL; assessment and treatment plan for the restoration of historic metal finishes at Union Station in Cincinnati, OH; restoration of several items from the

Regional News, continued

Titanic; assessment and treatment of a Thomas Edison truck in Edison, NJ; and preparation of treatment plans for the National War Memorial in Ottawa, ON. It has been a very productive time.

Current projects for CSI include treatment of several Army Museum artifacts including cannons and tank barricades faced by soldiers during D-Day; laser cleaning of the northern exterior of the U.S. Capitol Building; conservation consultation on the landmark 1899 Old Post Office Building on Pennsylvania Avenue in Washington, DC; and assessment and treatment of terra cotta elements of the Ringling Museum's 36,000 square-foot waterfront Ca D'Zan ("House of John") building in Sarasota, Florida. CSI conservators also presented a paper in the general session of the AIC annual meeting in Montreal.

The conservation unit of the New Mexico Department of Cultural Affairs is happy to welcome to Santa Fe their 2016 - 2017 third-year intern, **Sophie du Bois Hunter**. Sophie joins them from Buffalo State's Art Conservation Department.

Conservation Unit staff attended a National Park Service workshop on paint and sampling techniques conducted by **Susan Buck** of Williamsburg, VA.

Senior conservator **Maureen Russell** and associate conservator **Larry Humetewa** recently completed work on a fun and fascinating project for the exhibit *The Morris Miniature Circus: Return of the Big Top*. Begun in the 1930s and built over a 40-year period by **Windy Morris** of Amarillo, TX, the Miniature Circus documents the last circuses to travel throughout the U.S. by train. The work was donated to the Museum of International Folk Art (MOIFA) in 1984. The 3/8 scale model is comprised of over 100,000 pieces including hand carved circus wagons and trains, hand sewn tents, sideshows, and of course hundreds of hand cast and painted people and animals. The challenge was there were few photographs or installation diagrams for the Lilliputian extravaganza, but as all conservators know, the show must go on . . .

Maureen recently returned from a courier trip to the Vitra Design Museum in

Weil am Rhine, Germany, located in the border triangle of Germany, France, and Switzerland. She brought approximately 500 artifacts from MOIFA's Alexander Girard collection to add to the Vitra Design Museum's extensive exhibit documenting Girard's work as an architect, textile designer for Ray and Charles Eames, toy maker, and graphic designer.

MOIFA also recently completed work on several other exhibitions, including *Sacred Realm: Blessings & Good Fortune Across Asia* and *Flamenco: From Spain to New Mexico* with treatments and installation by senior textile conservator **Angela Duckwall**.

Other exhibits of current interest are the Museum of Indian Art and Culture's *The Life and Art of Innovative Native American Artist and Designer Lloyd Kiva New*, and *Oblique Views: Archaeology, Photography, and Times*. The latter includes large, stunning images by contemporary photographer Ariel Heisey that are paired with similar photographs originally shot by Charles Lindbergh. Heisey captured the photographs by leaning out the door of his light plane and, holding his camera with both hands, re-photographed some of the Southwest's most significant archaeological sites as Charles Lindbergh had in 1929.

Silvia Marinas-Feliner, M.A.

Pacific Northwest

The work of Royal BC Museum conservators is almost exclusively exhibit-driven these days, with the installation of the *Gold Rush! – El Dorado in British Columbia* exhibit at the Canadian Museum of History in Ottawa (thank you **Lisa Bengston** and **George Field**, who travelled to Ottawa as part of the installation team), the upcoming opening of the Field Museum's traveller, *Mammoths: Giants of the Ice Age*, and with the refresh of the Royal BC Museum's ice age gallery.

George Field, Lisa Bengston, and contract conservator **Rachel Stark**

are also working on a small exhibit showcasing the emergency response and subsequent conservation treatments of the artifacts damaged in the U'Mista Cultural Centre's fire in 2013.

They were fortunate to have Fleming intern **Jessica MacLean** join the staff for the summer to assist with much of the exhibit preparation work as well. This summer the museum will be hosting **Lisa Imamura** of the Queen's Art Conservation Program.

The museum's third Collections Risk Analysis was completed under the direction of **Kasey Lee**, building on the work that was done in 2005 and 2010 and modeled after **Rob Waller**'s CPRAM methodology. It was not surprising that digital asset management and collections management software ranked high among the newer risks.

Colleen Wilson and **Kjerstin Mackie** have been busy delivering programs with the Learning Department. **Betty Walsh** has been processing loans and new acquisitions.

Kristin Kern presented a disaster preparedness workshop, "Are You Ready? Scenario Planning & Collaboration Among Heritage Institutions to Improve Disaster Preparedness for Collections," at the Oregon Historical Society on April 8, 2016. The workshop was delivered as part of the Western States and Territories Preservation Assistance Service project, with major funding from NEH.

At the Seattle Art Museum (SAM), **Nicholas Dorman** and **Liz Brown** taught a collections course for the University of Washington Museology MA program, with guest presentations by **Alan Phenix**, **Julie Wolfe**, **J. Claire Dean**, and **Alice Bear**. Liz is also collaborating with the UW Digital Arts and Experimental Media department, working with postgraduate digital arts students to study electronic media works from SAM's permanent collection.

For the *Mood Indigo* exhibition at SAM's Asian Art Museum, Nick brought three Brussels tapestries from c.1700 to the De Wit Manufacture Royale de Tapisseries in Mechelen, Belgium where they were

Regional News, continued

cleaned and repaired and received new linings. **Jane Hutchins** visited SAM to assist the staff team prepare other works for the show.

Nick also accompanied one of the museum's large Kiefer paintings to the Centre Pompidou and back, working with Fabrication Specialties to engineer new brackets to bring the sections of the painting together safely during installation.

Also on display in an exhibition of Buddhist art at the Asian Art Museum is *Buddha of Blazing Light*, one of two important paintings recently conserved in **Chi-sun Park's** studio in Seoul, thanks to a grant from South Korea's National Research Institute of Cultural Heritage.

SAM conservation intern **Jennifer Myers** completed rehousing of the museum's collection of Joseph Cornell boxes and treated paintings by Donald Sultan and Andre Masson.

SAM is currently pursuing two Mellon-funded conservation initiatives: an ongoing survey of the Japanese paintings collection and a planning grant to define a plan to establish a conservation studio for Asian paintings. **Tomokatsu Kawazu** has been leading the survey effort in collaboration with **Lisa Duncan**. During the most recent survey session, **Elizabeth Peña** visited to discuss the planning grant and **Tami Lasseter Clare** brought her mapping Artax XRF equipment to Seattle to examine several Japanese paintings in connection with the project.

At SAM's Olympic Sculpture Park, **Liz Brown** worked with **Abigail Mack** to specify the optimal color for repainting Tony Smith's *Wandering Rocks* and oversaw new footing attachments by Fabrication Specialties. Liz is also currently working with Mark di Suvero's studio on the replacement of rotted wooden logs on the artist's early sculpture, *Bunyon's Chess*.

The Washington State Arts Commission is undertaking its first hands-on inventory of the State Art Collection (4,500 artworks located in public spaces across the state of Washington). In April, WSAC added a

web writer-researcher and an inventory field worker to the team in Olympia, Washington. In addition to helping understand the conservation needs of this large, publicly-owned collection, the inventory will ensure that information presented online via My Public Art Portal at www.artswa.org is accurate, complete, and supported by current photographs. My Public Art Portal currently includes more than 600 State Art Collection artworks and is being grown so it includes at least half the collection by July 2017.

Valerie Peterman joined ArtsWA in April 2016 as the writer and researcher for the Art in Public Places program's My Public Art Portal. She will be composing interpretive descriptions of artworks and assisting in the growth of the web portal by editing photographs and vetting all artwork data before it goes online. She previously worked as the administrative lead for the publication of fine art editions at Gemini G.E.L. in Los Angeles and served as a curatorial intern at the Henry Art Gallery in Seattle.

Jennifer Myers joined the ArtsWA web portal team in mid-April as the web portal art inventory field worker. She will be travelling around the state and visiting every single State Art Collection artwork to create a thorough condition report and take detailed photographs. With a background in museum work and internships with conservation professionals, Jennifer has an M.A. from the University of Washington in Museology.

Corine Landrieu was busy this winter, treating and preparing artifacts for the EMP Museum's upcoming exhibit *Star Trek: Exploring New Worlds*, and Pivot Art+Culture's *Imagined Futures: Science Fiction, Art, and Artifacts* from the Paul G. Allen Family Collection. She also treated some Oceanic and Pacific Northwest artifacts and some mid and late twentieth-century American and European sculptures.

Samantha Springer began as a conservator at the Portland Art Museum last September, following the retirement of respected longtime paper conservator **Elizabeth Chambers**. She specializes in objects and has a particular interest

in working with living artists. Samantha comes to PAM from the Cleveland Museum of Art where she worked as associate conservator of objects. Since her arrival, Samantha has been focused on establishing an on-site conservation lab and integrating conservation into the broader museum practices. **Sydney Schaffer**, a pre-program intern, is helping her in the office with organizing conservation files and preparing to desalinate an Islamic tile this summer.

Regional Reporter:
Corine Landrieu

Rocky Mountain Region

During the month of April, the Denver Museum of Nature & Science upgraded its Egyptian Gallery. DMNS conservator, **Jude Southward** and consulting conservator **Jessica Fletcher** examined and treated the artifacts including two mummies and their associated coffins. UV and IR photography as well as samples taken for radiocarbon testing and isotope analysis will soon provide exciting new information about these popular pieces.

Jude and Jessica also finished an extensive treatment project for the Oceanic Collection rehousing grant, supported by IMLS. Consulting conservator **Julie Parker** completed condition reports and the treatments for the DMNS Konovalenko gem carvings of Russian folk life.

Beverly Perkins, division director and chief conservator at the Buffalo Bill Center of the West in Cody, Wyoming is the internship supervisor for **Vanessa Mayor** who has been working on housing collections at the Center for Traditional Textiles of Cusco in Peru. Vanessa is learning traditional spinning, dyeing, and weaving techniques. Beverly was fortunate to visit Peru to be able to witness Vanessa's work with the collections in the center and out in the communities.

In May, Denver area conservators had the opportunity to work with Curtains Without Borders, a non-profit

Regional News, continued

organization based in Vermont. For the past 18 years, the Vermont team of conservators has worked to document and preserve historic painted stage curtains. Director **Chris Hadsel** and conservator **Mary Jo (MJ) Davis'** visit to Colorado is part of a burgeoning outreach program called "Curtains Nationwide" that will identify and conserve curtains across the country. Denver area textile conservators **Paulette Reading** and **Julie Benner**, painting conservators **Cindy Lawrence** and **Lisa Capano**, and pre-program intern **Rachel Henderson** met with Chris and MJ in hopes of continuing their work locally.

The busy week included conserving a curtain at the Westminster Grange, Westminster, CO; examining a set of 1896 curtains at the Tabor Opera House in Leadville, CO; giving talks at the historic Elitch Theatre in Denver, the Feed & Grain Art Center in Loveland, and at an awards dinner in Westminster; examining additional curtains in Arvada, Aurora, Louisville, Longmont, Silver Plume, Greeley, Yuma, Holyoke, and Julesburg, CO, with more curtains to examine in the future!

After returning to the USA from her keynote speaker engagement at the New Zealand Conservators of Cultural Materials (NZCCM) National Conference in Christchurch, **Nancy Fonicello** conserved the eagle feather bonnet and coup stick of Crow Chief Plenty Coups for Arlington National Cemetery. The objects were laid at the Tomb of the Unknown Soldier at the dedication ceremony in 1921 and the bonnet is now on permanent display at Arlington. Nancy recently treated organic sculptures made by cowboy artist Charlie Russell for an upcoming display at Glacier National Park and is currently working on an 1860s Cree buffalo hide tipi for the Montana Historical Society.

Regional Reporter:
Julie Parker

San Diego

Carli Fine Art Conservation is working on conservation and mount design and fabrication for Russell Forester's *The Unfinished Man*, an intricate steel sculpture that has been the historical symbol of La Jolla Country Day School since 1962. CFAC is also collaborating with La Paloma Fine Arts and ArtWorks San Diego in the restoration of large works by Alexander Calder and Niki de St. Phalle. They are pleased to welcome **Kelsey Roman**, a graduate of UCSD with a B.S. in biochemistry as a pre-program intern. Kelsey will be participating in studio and fieldwork this summer in preparation for undertaking graduate studies in art conservation.

Regional Reporter:
Frances Prichett

San Francisco Bay Area

After almost three years at Fine Arts Museums of San Francisco (FAMSF), **Catherine Coueignoux** has bid adieu to her commute and her beloved colleagues to strike out on her own. She is now accepting furniture and objects conservation as conservator and sole proprietor of Oakstreet Art Conservation LLC.

She recently spent 10 days in Beijing as one of five instructors for an art conservation workshop offered through a collaboration by the World Monument Fund, the State Administration for Cultural Heritage (China), and the Palace Museum (Forbidden City). The goal of this three-week course was to introduce the philosophy and concepts of art conservation (being taught through the four year old CRAFT program in the Palace Museum) to 22 select museum professionals as well as 10 conservation students from all over China, where art conservation as we know it in the West is a fledgling profession. It was an intense and extremely fulfilling trip, and much delicious food was consumed.

The objects conservation team at FAMSF has been busy treating and mounting

objects for the *Mummies and Medicine* exhibition. **Geneva Griswold** completed the conservation of a 21st dynasty coffin just in time to present a poster on the treatment at the Ancient Egyptian Coffins conference and workshop in Cambridge. **Lesley Bone** has been working on a Bruce Conner assemblage for an upcoming traveling retrospective. The lab recently hosted a laser workshop taught by **Martin Cooper** that was attended by many Bay Area objects conservators.

Thanks to Mellon research and travel funds, **Anne Getts** of FAMSF's Textile Conservation Lab, was able to travel to Amsterdam to attend the Rijksmuseum's two-day symposium on "Fashion in Museums: Past, Present and Future," as well as consult with Dutch colleagues regarding a tapestry conservation treatment planned for the fall.

The Asian Art Museum (AAM) welcomes a new full-time paper conservator to the staff, **Kimi Taira**. Among other things, Kimi is outreach co-officer with the Emerging Conservation Professional Network. After graduating from the University of Delaware/Winterthur Museum Program in Art Conservation, Kimi is returning to AAM, where she previously held the position of conservation technician.

Following in this tradition, the current conservation technician, **Courtney Helion**, will be leaving to embark on her own graduate training in art conservation at the SUNY-Buffalo Program in August. The AAM staff is very proud of her accomplishments and wishes her the best in this next phase of her conservation career.

In March **Kathy Z. Gillis** interviewed contemporary Chinese artist, **Liu Jianhua**, in relation to the installation of *Collected Letters*, a commissioned artwork composed of 1600 porcelain letters and Chinese radicals, a gift of the Society for Asian Art in honor of the museum's 50th Anniversary. The work is currently on view in the Northwest corner of the museum's historic loggia.

In March, **Shiho Sasaki** was invited to participate in the Thai Banner Forum at the Walters Art Museum, "a discussion of difficult treatment and storage

Regional News, continued

issues for long Southeast Asian painted textiles.” In April, Shiho and contract conservator **Jennifer Parson** completed the treatment of two large-scale paintings from the collection, one from Thailand and the other from Cambodia. This work was funded by IMLS and a grant from a private donor. The Cambodian painting, *Five Buddha's of the Past, Present, and Future*, is slated to go up in the AAM permanent galleries in the near future, and the Thai painting, *Standing Buddha, Supported by the Monkey Hero Hanuman* will be featured in the upcoming fall exhibition, *Rama Epic: Hero, Heroine, Ally, Foe*, which opens October 21, 2016.

In April, **Mark Fenn** worked with former AAM head of conservation **Donna Strahan** for several days examining and taking samples of ancient Chinese bronzes for analysis and study. Mark will also be sampling Thai and Cambodian bronzes for analysis as a component of a Mellon education grant.

Denise Migdail continues her work as secretary for the WAAC board. She also continues her work as a member of the board of North American Textile Conservation Conference. She represented The Asian Art Museum at the AIC meeting in Montreal in May.

An exhibition focusing on luminous Korean mother-of-pearl lacquerware opened at AAM April 29, 2016 and will run through October 23. The exhibit includes a video highlighting the conservation of four Korean lacquer works in the exhibit. A symposium focusing on the study and preservation of Korean lacquerware was held on May 21 and featured conservator **Colleen O'Shea**, who carried out the treatments on the four works highlighted, and **Marianne Webb**, leading international expert on the conservation of lacquer.

Angie McGrew completed the treatment of several baskets from California, the Arctic, and the Northwest Coast for an exhibition at the Monterey Museum of the American Indian, Pacific House, California State Parks.

Regional Reporter:
Alisa Eagleston

Texas

In March, **Ken Grant** was pleased to accept the position of paper conservator and head of paper conservation at the Harry Ransom Center, University of Texas at Austin. Ken looks forward to continuing the Ransom Center's tradition of scholarship and innovative treatments in collaboration with associate paper Conservator **Jane Boyd**.

The preservation and conservation division at the Harry Ransom Center hosted a symposium organized by the Conservation Center for Art & Historic Artifacts on the preservation of ephemera collections entitled, “Out of the Ordinary: Preserving Paper-Based Ephemera,” on April 4, 2016. The symposium examined the myriad challenges of preserving a wide variety of non-standard paper items produced in the nineteenth and twentieth centuries.

The symposium included presentations by: **Stephen Enniss**, director, Harry Ransom Center; **Ellen Cunningham-Kruppa**, associate director, head of preservation and conservation, Harry Ransom Center; **Crystal Maitland**, paper conservator, Canadian Conservation Institute; **Joan Irving**, paper conservator and adjunct assistant professor, Winterthur Museum and University of Delaware; **Olivia Primanis**, senior book conservator, Harry Ransom Center; **Danielle Brune Sigler**, associate director for research and programs, Harry Ransom Center; and **Ken Grant**, paper conservator, Harry Ransom Center.

Regional Reporter:
Ken Grant

It was Rudolf Steiner who said
something along the lines,

*You give away in your 40's
what you learned in your 20's and 30's
so you are empty in your 50's
to prepare for your 60's.*

NEH Sponsored Training and Symposium Opportunities

Cultural Heritage Imaging (CHI) is rolling out a two-year training program entitled “Advanced Imaging Skills for Humanities Collections Professionals.” The two-year project, sponsored by a grant from NEH, will expand CHI's work in providing training in Reflectance Transformation Imaging (RTI) and photogrammetry.

Symposium in March 2017

Illumination of Material Culture: A Symposium on Computational Photography and Reflectance Transformation Imaging (RTI) at The Metropolitan Museum of Art, NY, on March 7-8, 2017.

The symposium is open to all who are applying RTI and related computational photography techniques or are exploring their use in collections. The symposium will bring together approximately 90 conservators and humanities collections professionals, photographers, curators, archivists, imaging experts, researchers, and technology experts to present the latest updates to RTI technology and related imaging techniques.

Symposium registration begins Monday, September 12, 2016.

2016 Sponsored 4-Day Training Classes

Apply now for these classes in 2016:

- RTI: de Young Museum, San Francisco, September 27–30, 2016

- RTI: LACMA, October 17–20, 2016

Note: The grant-sponsored training is for collections professionals working with public or nonprofit humanities collections in the United States. This includes art, history, archaeology, libraries, and archives. The application process gives priority to professionals at small institutions with staffs of 25 FTE or fewer.

2017 Sponsored 4-day Training Classes

Check the training application page on Sept. 12, 2016 for class dates and to apply.

- Photogrammetry: Classics Department, University of Texas at Austin, Spring 2017

- RTI: Yale University, Spring 2017

- Photogrammetry: Museum Conservation Institute, Smithsonian, Summer 2017

- Photogrammetry: Cultural Heritage Imaging studio, San Francisco, 2017

JOBS

The Minnesota Historical Society Associate Book & Paper Conservator

The Minnesota Historical Society (MNHS) seeks qualified and experienced applicants for an Associate Book & Paper Conservator position, to provide conservation treatment for MNHS book and paper collections and to manage the book and paper conservation laboratory, including a Conservation Assistant.

Desired qualifications include an advanced degree or Certificate in Art Conservation plus three years of experience. This is a full-time position (2,088 annual hours) and the salary is projected to be at least \$45,000 annually.

The Minnesota Historical Society is a 167-year old organization, headquartered in the Minneapolis/St. Paul area, and maintains a museum, library, and archives, in addition to close to 30 diverse historic sites throughout the state. The organization is a national leader in historic preservation, and by many metrics (including budget, staffing, and membership) is one of the largest state historical societies in the United States. Currently MNHS maintains four separate conservation laboratories for the preservation of books and paper, textiles, objects, and archaeology, and employs five trained conservators. The conservation facilities are large, flexible, well equipped, and modern.

To apply submit MNHS Application for Employment, (available at www.mnhs.org/jobs), cover letter, resume, and if applicable, any supplemental forms.

Application materials must be received by August 23, 2016.

University of California Los Angeles Library

Kress/FAIC Conservation Fellowship Program

The UCLA Library is currently recruiting for the following position and is actively seeking nominations and applications.

Payroll Title: Museum Scientist, Assistant Working Title: Kress Assistant Conservator
Department – Preservation

Requisition # 24382
Application deadline: 08/19/2016
Position Status: Limited Appointment (11 months)

The complete postings, which include the position descriptions, complete qualifications and application procedures, are available on the UCLA Library Employment Webpage, [Jobs @ UCLA Library, library.ucla.edu/about/jobs-ucla-library](http://Jobs@UCLA Library, library.ucla.edu/about/jobs-ucla-library)

Reporting to the Head, Conservation Center, the Kress Assistant Conservator (KAC) independently completes challenging entry level and intermediate technical conservation treatments on selected UCLA Library special collection materials, including: examination, photographic and written documentation, sample taking and analysis, conservation treatment proposal decision-making, the design of custom housings, and object handling/exhibit recommendations. The Kress Assistant Conservator interacts with curators and other conservators on treatment selection and prioritization. The KAC participates in departmental outreach activities, weekly meetings, and emergency preparedness/response activities. The KAC pursues continued conservation and material culture research. The KAC conducts research which contributes to the UCLA Library and the conservation profession.

Fine Arts Museums of San Francisco

Associate Objects Conservator

The Fine Arts Museums of San Francisco are seeking an Associate Objects Conservator. Under the supervision of the Head Objects Conservator, the Associate Objects Conservator takes part in the day-to-day operation of the Objects Conservation Department at the Fine Arts Museums of San Francisco. In this capacity they assist with departmental responsibilities for the preservation and conservation of outdoor and indoor sculpture, decorative arts objects, furniture, ethnographic and archaeological materials, and period rooms at two museums. This position includes the making and supervision of seismic mounts and assisting with approximately 10 exhibitions per year containing objects.

New: Expanded family of Gamvar Picture Varnish

Gamblin has introduced two new varnish formulations to the Gamvar line: Gamvar Satin™ and Gamvar Matte™.

Gamvar Satin gives paintings a unified and protective satin surface. It saturates, and dries to a lower gloss level compared to original Gamvar.

Gamvar Matte produces an even lower surface sheen, while still saturating.

The formula for original Gamvar is not changing. Original Gamvar will now be called Gamvar Gloss™. The label will clearly identify Gamvar Gloss as “Original Formula.”

Gamvar is made with Regalrez, a low molecular weight (LMW) synthetic resin based on Rene de la Rie's research at the National Gallery of Art. Gamvar has a refractive index similar to Dammar.

Like original Gamvar Gloss, Gamvar Satin and Gamvar Matte stay water-clear and can easily be removed with Gamblin's mild Gamsol™. The matting agents in the Satin and Matte varnishes are a mixture of natural beeswax and a fumed silica product. The wax is very effective in lowering the sheen and the fumed silica gives the resulting varnish layer more hardness than using wax alone.

All Gamvar varnishes are odorless and can be applied when the thickest areas of paintings are dry and firm to the touch.

Minimum Qualifications:

Education: Master's Degree in Art Conservation with specialization in objects conservation.

Work Experience: At least five years post graduate museum conservation experience. Additional work in modern materials, seismic mounts, and sculpture desirable.

FAMSF offers a competitive salary and generous benefits package.

Application Deadline: Open until filled

We accept online applications only. To apply online, please visit: <http://famsf.snaphire.com/home>. COFAM is proud to be an equal opportunity employer.

VLT - Very Low Tech Technical Exchange

Because simple ideas work,

because nobody ever thinks of passing on small solutions, even though they can sometimes be highly helpful,

because conservators are ingenious, and we all have a few of these.

Take a minute, take a picture, write a paragraph about your own clever solutions, and send them to the editor. This could become a regular feature.

Silicone dough

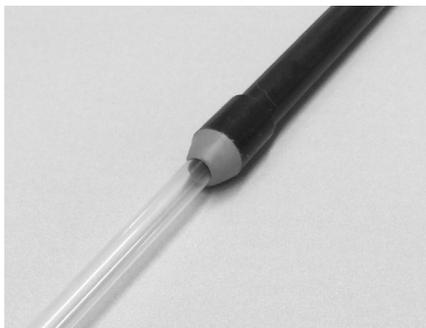
Sugru is a type of silicone dough that bonds to most materials, air cures overnight, and becomes a durable rubbery material suitable in heat or cold, indoors or outdoors, and is easily removed. Here I have used it to attach a glass pipette to a vacuum cleaner micro-tool attachment.

Other things I have used it for include: attaching a rare earth magnet to my sewing machine to keep small tools handy, embedding rare earth magnets inside to create a set of convex/concave clamps, making a hand tool ergonomic, and replacing a knob on a piece of equipment.

I found it recently at a Beverly's, and it appears to be available in stores like Orchard Hardware and Target. Previously you could only buy it online. The first time I ordered, I had to wait for the order to ship as the entire company was at Burning Man.

You won't want to waste it as once the package is opened, it won't keep. So have some ideas in mind for any that might be left over. Their website sugru.com has a large photo gallery for inspiration.

Angie McGrew



Easel ledge liner cut from open-cell black shelf liner from The Container Store. (This stuff can be used all sorts of ways in the studio, for instance for opening sticky jar lids. It's especially good to ensure things don't slip on a slick surface. Also marketed as rug gripper, good to keep in the on-site tool kit, CT.)



Sharps container and travel kit cotton and swab jars made from small salt cellars.



Hot air gun stand made from a paper towel holder and a screw-hook.



Swab jar made from a canning jar and a star-patterned lid insert that is sold to convert a Mason jar to a potpourri receptacle.



Brush holder and swab rest from mid-century modern ashtrays.



Serena Urry

Swab stick trick

To prevent the cotton from spinning on the stick, cut the tip of the skewer into a chisel shape. The cotton will stay on while rolling but slips off easily into the disposal can.



And yet another use for duct tape

A large roll of tape, like duct or masking tape, makes a good stabilizer for bottles or jars of liquid, especially good for plastic ones that tip easily. This can be really useful on-site.



Fill additive

I recently needed to build out missing corners for a painting on 70 year old, very dense gypsum board. I made my basic fill material with spackling paste with some white glue added to make it a bit harder, but was still concerned about strength.

I was thinking of the phrase “bricks without straw” when I realized that I had the perfect additive in the laundry room. Having washed and dried a bunch of white cotton and linen fabric for dyeing and white cotton kitchen towels, there was a pile of lovely white fibers from the dryer lint trap that I had kept.

The addition of the lint gave the fill material good handling qualities, strengthened it, and gave the fill a texture that matched the paper face of the original board very well.

MCP Storage Box

The Modular Cleaning Program organizes the process of thinking about cleaning, but keeping the component bottles organized can be a nuisance, and even a slight deterrent to use.

So, as a last step in simplifying the process, you might consider this: a plastic box from The Container Store with dividers to keep the bottles and jars in proper position for easy use.

The "boot box" is just the right size for the basic set. The plastic dividers make it simple to create whatever configuration you want. It costs about \$30, but is worth it when you can immediately pull the component you need. (Of course, the final convenience would be a guide sheet glued to the top, which I have never gotten around to making.) And it can all be ordered online, if you don't trust yourself to visit the store.

Another handy feature is that you can keep the pipet for a solution in it's cubby to avoid confusion and contamination while you are working. This idea comes from Chris, whose kit you see at right. He used the wider dividers, mine has the narrow ones, which are cheaper.

The Container Store

Boot Box

22-1/2" x 14-3/4" x 5-3/8" h

10023020

\$9.99

Small Interlocking Drawer Organizers

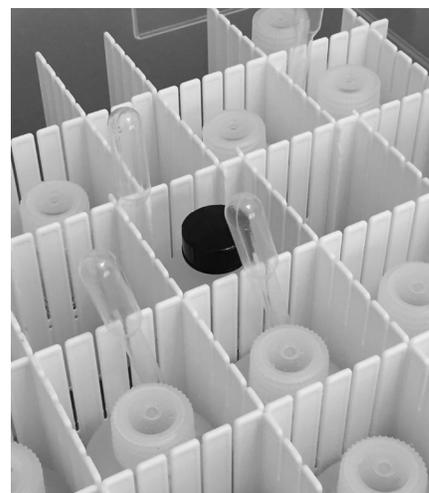
White Pkg/5

17" x 2-1/2" h

10051251

\$5.99 takes about 3 packages

Carolyn Tallent



Building a magnetic stir plate

I previously worked at a museum which had funding to buy adhesive crystals and solvent, but not a magnetic stir plate to speed up the process of making solutions. This was a problem since one of my projects had a rapidly approaching deadline and required a large quantity of adhesive.

Luckily, I realized that I could meet my deadline within budget by building a stir plate myself for only \$20 worth of parts. The principle of how a stir plate works is simple, and most conservators should be able to find the right parts easily. This enables anyone working with limited resources or in a remote field location to improve their efficiency without having to make sacrifices elsewhere. The device itself can be built in less than half an hour.

There are many useful tutorials posted online, including video tutorials, by homebrewers who built their own stir plates to solve similar problems. The details vary between tutorials, and it is certainly possible to build a more complex stir plate than described here, but the basics are consistent.

The fundamentals include a powerful magnet, a small fan, a power source, and housing. When the fan is in motion inside the housing, the attached magnet spins. A magnetic stir bar in any container on top of the housing should then spin along with it. Refer to the diagram for an overview of how the components fit together.

You will need these parts:

- A rare earth magnet. These can be found from online retailers for about \$1-\$5 apiece, but you can also scavenge one from inside an old hard drive. I used a neodymium magnet from a laptop's hard drive. It does not matter exactly what shape the magnet is, just as long as it is flat. Note: keep rare earth magnets far away from your other electronic devices.
- A small fan. The simplest option is a small 12-volt computer case cooling fan. I used the 80mm Antec three-speed 12-volt fan, which comes with a rheostat attached, but a single-speed fan would suffice. There is a wide variety of these fans available online for PC builders, but the very basic ones in the \$7-\$10 range

are adequate. You could also scavenge a fan from an old PC tower.

- An AC/DC adapter for the fan's power supply, with identical voltage. These cost around \$7 online. I used a 12-volt Motorola adapter, but these are virtually identical across major brands.
- Adhesive to hold the magnet to the fan.
- A small box to house the components. I used a cigar box because these are inexpensive and sturdy, yet easy to drill through. You can find empty cigar boxes either for free or at a low cost, typically \$1-\$5, at cigar stores. The only practical restrictions are that it must be big enough to house your computer fan and strong enough to support a container of whatever you are trying to mix on top.
- Four sets of screws, spacers, and wing nuts to hold the fan in place inside the box. You are going to be attaching the computer fan to the underside of the box lid.
- Either a soldering kit or a set of wire connectors, whichever is more convenient in your laboratory.
- Optional: A scrap piece of Plexiglas or similar sheeting the same size as the box lid.

Computer case fans come with four holes for screw mounting inside a PC tower. Center the fan on the cigar box lid, then drill four holes corresponding to where

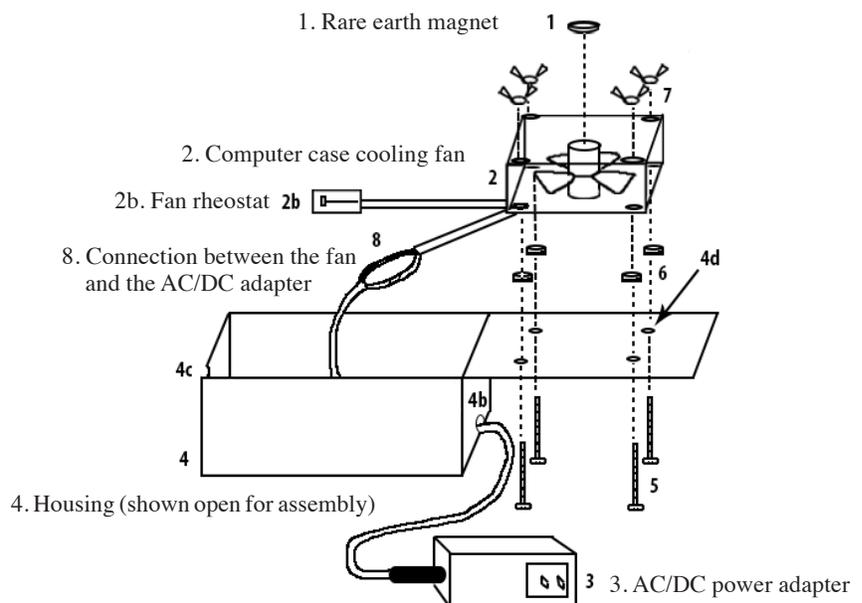
you will slot in the screws to mount the fan onto the underside of the lid.

Cut a hole in the back of the box wide enough to admit the cable from the power supply.

Your computer case fan will have a three- or four- pin power connector at the end of a short cable. Cut this pin connector off the end of its cable and shave off some of the cable's insulation to expose the wires. You only need to expose 1cm or less of these wires. If your fan has a rheostat, be careful not to remove this rather than the power connector. If your fan has both a three- and a four-pin power connector, it does not matter which one you remove. However, you should only remove one of the two connectors; ignore the spare.

Cut off the adapter plug from the power adapter cord, then expose about 1cm of the adapter cord's wires as well. The adapter plug is the part that plugs into a device for DC output, not the part that plugs into the wall to draw AC power.

Twist together the two devices' corresponding wires (live wire to live wire; neutral wire to neutral wire) and test the connection by plugging the power adapter into the wall. The fan blades should spin. If they do not, you may have either connected the wrong



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: \$10.00

(\$8.00 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:**

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Send prepaid orders to:

Donna Williams
WAAC Fulfillments
Williams Art Conservation, Inc.
6234 Afton Place
Los Angeles, CA 90028
fulfillments@waac-us.org

wires or selected a power adapter that does not match the fan’s voltage. Do not touch the live wires while the power adapter is plugged in.

The fan’s central post will spin along with the blades, but oftentimes only one side of this post will be accessible from outside the fan casing. Note which side this is, then unplug the fan and un-splice its wires from the power adapter’s.

Glue the rare earth magnet to the side of the center post that spun, so that the magnet will also spin when the fan is in motion.

When the magnet dries in place, you can feed the four screws into the holes in the box lid from the outside. Fit a spacer onto each screw from the other side before attaching the fan casing to the screws on the underside of the lid. The spacers will absorb some of the vibrations from the fan motor.

Once the fan is fitted, add and tighten the wing nuts to keep it in place when the box lid is closed.

Feed the exposed power adapter cable through the hole you drilled in the back of the box and reattach it to the corresponding set of wires on the fan. This is a good time to close the box and plug in the device in order to test whether you can get a magnetic stir bar to agitate a solution on top of the box.

If the distance between the spinning magnet and the top of the box is too great to affect the magnetic stir bar in your solution, try mounting the fan the other way up inside the box. Which direction the fan works best is a function of your magnet’s strength as well as the size of your fan and its internal motor.

Unplug the device after this test and decide how to insulate the exposed power wires. Depending on your preference and how well you can maneuver inside the box, you can either solder your wire connections together or simply clip them into wire connectors. Do not do this until you have tested that the device works, or you may have to cut the wires apart to remove the fan from the box.

If your fan came with a small rheostat

attached, you may also cut a small hole in the front of the box and pull it through the hole. The fan will automatically start when you plug the power adapter into the wall; the rheostat will allow you to adjust the fan speed.

Depending on how strong your magnet is compared to the strength of the fan’s motor, the magnet may also occasionally interfere with its starting. If the motor stalls when you plug in your device, open the box and gently tap one fan blade with a pencil to get it started. The potential for occasional interference is why it is not a good idea to glue the box shut. If tapping the blades does not solve the problem, use either a weaker magnet or a more powerful fan.

When the internal components of your stir plate are all in place and the box is shut, you may choose to cover the lid with a piece of Plexiglas or something similar. The heads of the screws are otherwise exposed on top of the box, which could be a problem if you want to mix your solution in a large container. While this step is optional, it also improves the appearance of the device. (Labeling the front of the device will also prevent it from being mistakenly thrown in the recycling bin.)

When this is complete, you are ready to use your new magnetic stir plate and enjoy your increased efficiency!

Marina Gibbons



Art and Fumigation: Should It Stay or Should It Go

While not a common problem, conservators are occasionally faced with insect infestations within a structure itself.

There are usually a number of options:

- Begin an aggressive IPM (Integrated Pest Management) program. This is probably the best and most sustainable option but often is difficult to implement.
- If the infestation is confined to one or two areas, a localized treatment with insecticide is possible.
- And there is always the nuclear option, fumigation. In California, sulfuryl fluoride, SF (trade names Vikane® and Master Fume®)) is the only approved structural fumigant.

This article will describe how these options did or didn't work, and how decisions were made in the fumigation of a client's residence.

Initially I was contacted when a client found swarmer drywood termites coming out of the wall near an indoor spa. Knowing that termites can only live in locations with some moisture, the wall around a warm, steamy spa seemed like a reasonable location for a colony. I was hoping that we could use aggressive local chemical control to deal with the infestation.

We then found more swarmers in the upstairs room above the spa. Again, there was hope that it was a localized colony (or two) living in the vicinity of the moisture source. And then we found swarmers in another upstairs room on the other side of the house. Things were not looking good for localized treatment.

At this point I contacted Tania Collas, head of conservation at the Natural History Museum of Los Angeles County, who has dealt with far too many insect issues. At the time she was working on the article "Battling the Beetles: Insect Growth Regulators as a Tool for Pest Management" which appeared in the previous issue of the *Newsletter*, 38/1. She had also presented a paper, "Car Trouble," at the WAAC Annual Meeting in 2008 at the Getty Villa on the fumigation of a number of historic automobiles in the history collection. In that case, they used SF in tarped containers on the roof of the museum to treat a webbing moth infestation.

She in turn recommended that I speak with Fred Rozo, the urban entomologist on staff at Western Exterminator Company with whom she had consulted in the past.

At the same time, the client contacted a number of extermination companies, Western Exterminator included. Each came to the residence, made their inspection, often found another colony, and made recommendations. Most concluded that tenting and fumigating with SF was the only way to solve the problem.

A couple of companies proposed alternative treatments, basically localized treatment of the entire structure. The offered alternate treatments were "green" and non-toxic to humans and animals. The alternatives are based on either silica gel ("Dri-Out") or orange oil.

Being skeptical of the claims that a structure could be "fumigated" with safe, green materials, we went through the house with the representative of the firm offering

treatment with the silica gel system. When confronted with very specific questions, the representative admitted that the treatment relied on finding colonies and then using a localized treatment on each. He also conceded that the powder couldn't possibly get into all the termite galleries.

So, it seemed there was no choice other than to fumigate the entire structure with SF, which left these options:

- Leave the art in the house during fumigation exposing it to the fumigant.
- Remove the art for the fumigation.
- Or, what I believe is a novel approach, leave the art in the house but isolate it from the fumigant.

The option of fumigating the art at the same time as the structure was one option to consider.

One reason to fumigate the collection as well as the structure would be if the artworks themselves were infested. We went through the house looking for signs of insect activity in the artwork. We found one painting that showed signs of silverfish or book lice activity (insect casings between the spacer and glazing). We found another with considerable insect damage to the frame. The nature of the damage made it seem likely that it had happened after the painting had been installed in the frame. We had to consider the possibility that the frame could be harboring active insects. (Which it was, read on.)

SF's effects on artwork remain a question. Tania found no visible alterations to the materials in the automobile collection after treatment. The literature on interactions of SF with paint is inconsistent. A study of various fumigants effects on oil paint undertaken at the Metropolitan Museum in the 1980s found that eleven of twelve sample paints were visibly altered by SF;¹ other studies have given different results. Tania's auto experiences, and my own observations of post-fumigated paintings certainly showed nothing so obviously damaging.

Years ago I had been asked to weigh in on the same question: keep paintings in the house during fumigation or move them out. After some research, my recommendation at that time was to leave the paintings in place (although the client ultimately chose to move the collection out during the fumigation). When clients contact me about insect infestation in a painting or frame in a family collection, I'll usually ask if they know anyone who is having their house fumigated and suggest that they put their painting in the house.

Because the monetary value of many of the paintings in this collection was extremely high, in an abundance of caution, we decided that the paintings should not be exposed to the fumigant. However, there were also problems with moving the paintings out of the structure. Anytime an artwork is transported there is a small yet real risk of damage. The process would require two trips, first out of the residence to art storage and then a return trip a few days later. Understandably, the client was very uncomfortable with moving the collection out of the house.

In addition, three paintings would have been extremely awkward to move. All three are quite large, and have been framed and glazed, adding considerably to their weight. One

is extremely fragile – artist’s intent – and any jolt would likely cause ongoing loss to the design layer. The two other paintings posed very significant risks from the manipulations that would be required to get them out of and back into the house. The original installation of each was nightmarish, and no one wanted to go through that process again. Twice.

If you have never been through a residential fumigation, you might not know about the preparations required before the treatment. Because SF is such a small molecule, it penetrates everywhere and everything. After all, that is how it is able to diffuse into structural timber and kill termites.

Food that isn’t removed from your home needs to be double bagged in special nylon film bags. The special bag minimizes the diffusion of the SF into the contents. The first bag reduces the concentration by (and I’m just making this number up), say, 99%. The second bag would then reduce the 1% transmitted through the first bag by an additional 99% dropping the concentration to 0.01% of the dose applied to the structure, which would be well below the safe residual concentration of SF of 5ppm.

Since oxygen is an even smaller molecule than SF, it seemed reasonable to assume that materials that prevent oxygen transmission would also block SF transmission. Therefore I made the case for bagging the artwork in MarvelSeal 360 film, the material used to bag materials for anoxic insect extermination.

This was accepted, and a plan was made to bag the collection into MarvelSeal bags prior to fumigation. A crew of six art handlers was booked for three days. We deinstalled the paintings, photo-documented the front and reverse of each, and sealed them into their silvery balloons. Smaller paintings were placed in bin-boxes and the entire box was sealed in MarvelSeal. Larger paintings were wrapped individually.

The three problematic pieces were de-installed, lowered into premade bags and sealed, thus minimizing handling. All individually wrapped paintings were secured to prevent their falling in the event of an earthquake.

Allow me to interrupt the narrative at this point with some information about sulfuryl fluoride. It is a colorless, odorless, highly toxic gas. The gas is transported and delivered as a compressed liquid with a boiling point of -55.4°C (-67.7°F). The gas is considerably heavier than air (three times as dense) so fans are used during the fumigation process to circulate the SF. Understandably, but to me unexpectedly, the fans are placed on the floor and blow upwards moving the SF from the floor, where it would otherwise accumulate, up into and throughout the structure.

As the liquid SF is released into the structure, it evaporates and becomes very cold. So cold that there is a risk of condensing water out of the air. The water in turn can cause permanent spotting and corrosion on surfaces upon which it lands. This problem is mitigated by the flow rate of the SF, the ambient humidity, and placement of the discharge hoses. In our case, two of the three discharge hoses were placed into ceiling crawl spaces to allow the gas to disperse and warm before settling into the house proper. As for all insecticides, SF’s use is regulated by federal law and is monitored by the EPA. The basic rule for any pesticide is that it is against the law to use the pesticide in violation of

its labeling. The pesticide product label is a legal document, and the statement "It is a violation of Federal law to use this product in a manner inconsistent with its labeling" is found on all pesticides sold in the US.

This caused a number of problems for our proposed treatment protocol. First, labeling required that a warning agent be added to the SF when it is injected into a structure. The warning agent used is the lachrymator and odorant chloropicrin, basically tear gas. The intent is to warn people of potential exposure to the toxic fumigant. If they smell the chloropicrin, they need to remove themselves immediately. This serves both as a warning to people entering the structure, legally or illegally, and as an alert should the gas escape the sealed structure at an unsafe exposure level.

The labeling also specified details about bagging of foodstuff (mentioned above) and that closed bags, e.g., plastic mattress covers must be opened before fumigation to allow any fumigant that gets into the bag a chance to get back out.

These rules posed a new problem. The nylon film bags are approved for usage to protect food from the SF gas. MarvelSeal is not so approved, even though everyone contacted agreed that it would work (although there were



Art and Fumigation: Should It Stay or Should It Go, continued

some questions about the quality of the heat-sealed seams). Since the MarvelSeal was not approved, it was technically considered the equivalent of a mattress bag and, by strict interpretation of the labeling, would have to be opened before fumigation, obviously defeating the purpose of bagging the artwork.

A compromise was reached in which the MarvelSeal bags were designated “not well ventilated” areas. A not well ventilated area requires a certified technician to test SF levels in the area before allowing reentry into the structure.

This requirement led to another minor dispute. Only the certified technician can enter the structure before it has been cleared for reentry. But we didn’t want the technician opening the bags sealing the artwork without supervision for obvious reasons (sharp implement to open bags, art inside of bags).

This impasse was mitigated by another compromise: The structure would be cleared by the technician leaving the bags untouched. After the structure was demonstrated safe for reentry, the technician and I would inspect each bag. I would open a small hole in the bag, jump back, and the technician would insert the sniffer into the hole to test SF levels inside the bag. While I was willing to wear SCBA (self-contained breathing apparatus – the only form of personal protective equipment effective for SF), it wasn’t necessary as the type of ventilation used to clear the gas was approved by California to allow inspection for residual SF to be undertaken without PPE. (Years ago when our house was fumigated, the inspection for reentry was performed by the operator while wearing SCBA.)

The effects of fumigants on materials in a typical household have been investigated. One well known problem is if SF is heated above 400°C, say by a pilot light on a water heater, it decomposes into hydrofluoric acid and sulfur dioxide. For this reason the gas company is required to shut off service during the fumigation.

There is also a concern about trace amounts of hydrofluoric acid in the SF. A common recommendation in the conservation literature is to run the SF through marble chips to remove any acidic contaminants. This seems straight forward and simple. I discussed this with the representatives of the fumigation company, and they saw no real problems with the idea. After all, it’s just letting the gas pass over or through marble chips. After building a couple of prototypes, a diffuser and an inline chamber made of 4” ABS piping and thoroughly washed marble chips, word came down that that, too, would be a use in violation of the labeling of the product.

The discussions about what was and wasn’t consistent with SF’s labeling and how standard practice could be modified were frequent and involved the fumigator; a representative from Douglas Products, the company that manufactures both Vikane® and Master Fume®; and the subcontracted company that actually tarps the structure and administers the gas.

While the evidence for and against the safety of SF to various art materials is arguable, chloropicrin, the “warning agent” is considerably more pernicious. It is known to corrode

polished metal surfaces and is suspected of being the agent of some of the reported negative effects of SF fumigation on various materials.

Recognizing this, California regulations were modified in 2015 to allow a licensed operator to request an exemption from the Department of Pesticide Regulation to omit chloropicrin during the fumigation process. The exact phrasing is: “There may be circumstances in which the use of chloropicrin is not possible due to its unknown effects on sensitive items, including, but not limited to: artifacts in museums or in police evidence storage.”

I drafted a waiver request justification which was submitted to the County Agricultural Commissioner’s office along with the additional required documentation provided by the fumigation company (floor plan, additional measures to be taken to clear the site, to prevent leaks, security plans, etc.).

Ultimately, the request was denied. The fumigator suspects that the reason for denial of the waiver was the very close proximity of surrounding residences to the structure.

When we found that the chloropicrin would have to be used, we looked more carefully at the metal artifacts in the collection. Most of the collection was patinated and waxed sculpture. Sculpture conservator Donna Williams and I felt that together the patination and wax coating would prevent alteration of the metal surface from either the SF or chloropicrin. Prior to fumigation, Donna re-waxed the pieces. Any objects that were considered potentially vulnerable were placed in MarvelSeal bags. (Being Hollywood, this included an Oscar or two.)

One happy coincidence did occur. While our editor, Carolyn Tallent, was working on the article in the last *Newsletter*, “Fast and Furious: Operation, Maintenance, and Repair of Metropolis II” by Mark Gilberg, Alison Walker, and Richard Sandomeno, she mentioned the termite infestation to Mark Gilberg, head of conservation at LACMA. He had recently purchased an acoustic emission probe for detecting wood-boring insects in wooden artifacts, but hadn’t had occasion to test it with a known infested object.

Mark graciously offered to accompany me to the client’s residence and listen for activity in the walls and in the framed work described above. After probing sites of known infestation and getting familiar with the amplified crunching of termites, we tested the frame of the painting that appeared to either be, or have been, infested.

Much to our delight -- perhaps the wrong sentiment -- we found that the frame was definitely infested as we could very clearly hear the distinctive clicking sound of an active (presumed) termite infestation.

[Mark’s plan for the device is to use it to screen incoming loans and acquisitions. When frass is found in wrapping or pouring out of exit holes, it is difficult to know if it is from an active infestation or left over from long departed guests. Being able to listen for activity should greatly improve the decision making process for dealing with these problems as

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pieces move into and out of the conservation center. The AE sensor was custom made by Acoustic Emission Consulting, Inc (5000 San Juan Avenue, Ste D, Fair Oaks, CA 95628). Model # AED-2010L.]

So fumigating the one painting that we knew had bugs in the frame solved one of our preexisting bug problems. This left the large painting that was suspected of harboring book lice or silverfish.

We scheduled a crew to deinstall the painting for treatment. When the backing board was removed, guess what we found? A silverfish scurrying off between the reverse of the painting and the stretcher bar. The reverse of the painting was thoroughly vacuumed and the space between the stretcher and canvas was cleared. The frame was thoroughly vacuumed and the painting was re-framed, re-backed, and re-installed.

Considering this a stopgap measure, we really wanted to make sure there was no ongoing book lice or silverfish infestation. While the rest of the collection was placed in MarvelSeal bags to protect them from the SF, this painting was treated by anoxia to dispatch the intruders. The bag was made more than 20% larger than the painting to compensate for the loss of the 20% oxygen in air. Additional cellulosic material was placed in the

bag to help buffer humidity changes, and lots of Ageless was introduced before sealing the bag.

As we were using MarvelSeal which is opaque, we could not use an Ageless Eye to monitor the oxygen level inside the bag. After the bag was opened at the end of the anoxia treatment, we sealed the Ageless in a MarvelSeal bag and were pleased to see that it continued to absorb oxygen, so we are reasonably sure that the oxygen level was sufficiently low during the treatment to be effective.



There was a lot of seaming of MarvelSeal for this project. We used three tools for the process. A hand-held rotary sealer from PackRite; a 6" crimp sealer from Uline; and a small iron. (The small iron was a bad idea as its sharp edges were found to create small tears in the film. We should have just used a Sealector tacking iron for this option.)

We used an entire 200' roll of 48" wide MarvelSeal 360 on the project.

As there was still some unease about the ability of the MarvelSeal to prevent the SF from entering the bags, we decided to slightly pressurize each bag (except for the anoxia treatment). We used the exhaust port of a small vacuum to inflate the bags and then tied string around the bags to maintain a slight amount of pressure. In some cases we used light "bungee cords" to provide constant tension on the string and pressure in the bag.

Some of the bags were found to be slightly leaky – by the time we reentered the residence after fumigation some pressure had been lost from some of the bags. Others were still puffy.

I was extremely interested in Tania Collas's helpful article on insect growth regulator pest control trials in the January 2016 *WAAC Newsletter*. It is a shame that the moveable and immovable sides of cultural heritage conservation do not have more linkages in literature searches and dialogue, for there is so much to learn from one another. I'm on the buildings side of the aisle and empathize entirely with the collection care problems of insect infestations, due to my dealings with termites, and in my native England, with the dreaded deathwatch beetle (*Xestovium refovillosum* sp).

For subterranean termites, the baited systems deploying growth and digestion inhibitors do show good results. But for dry wood termite eradication, the method of choice at least in California for building complexes remains fumigation. I know artwork and collections conservators have grave concerns about some of the insecticides so deployed for their impacts on the museum objects, but as we found out in the UK with attempted fumigant systems for the deathwatch beetles in medieval cathedral roof spaces, impacts are low and infestations soon reappear.

Sterilization of museum object by irradiation (Eastern Europe); anoxic environments; etc tends to leave the artefacts unharmed by the process = impacts are low. But if the infestation is in the cabinet or building within which

Art and Fumigation: Should It Stay or Should It Go, cont'd.

When tested during the secondary clearance, most of the bags had an undetectable level of SF inside. A few had levels of 1ppm and one was at 3ppm, 5ppm being the safe level. In these cases, the bags were opened and left to air out for some additional time before unwrapping.

The paintings, sculptures, and other materials were re-installed, again over 3 days with a crew of 5 art handlers. At this time hanging hardware was inspected and upgraded, earthquake mitigation was added as appropriate, and batteries on the wireless transmitters for the alarm system were changed.

SF provides no ongoing protection against reinfestation. Once it diffuses out of the structure, it is done. That's good as there is no residue or after effect. It's bad in that after all that effort, a new colony of termites can move in the day after the treatment is completed.

Recognizing this and realizing that the fumigation treatment was a process no one wanted to ever repeat, we contracted with the extermination company to treat any wooden structural members that were accessible with Tim-bor, (disodium octaborate tetrahydrate). The borate system was dissolved in water and sprayed generously onto all surfaces that could be accessed from crawl spaces and access panels. As the water evaporates, a thin layer of the non-volatile product is left behind. According to Wikipedia it is "non-carcinogenic and has a low toxicity to humans and pets," however it kills "termites, powder post beetles, carpenter ants, fungi, and algae."

*"Visual Effects of Selected Biocides on Easel Painting Materials," Koestler et al, *Studies in Conservation*, Vol 38, no 4, 1993.

the artefact is kept, and the 'container' or display case is not also treated, and external conditions remain the same, then the chances of re-infestation are high. And this could also be true for museum objects and other larvae-based wood-eating insects, regardless of how "object sterilization" takes place (e.g., cold temperatures, irradiation, NOx gassing etc). But why?

In the European Commission DG-XII research grant aided project Woodcare (for which I was project manager at English Heritage), a consortium of scientists from the UK, Ireland, and the Netherlands led by consultant mycologist / entomologist Dr. Brian Ridout, closely studied the ecology of the deathwatch beetle in its habitat. We found that larvae remained completely untouched by gas / powder fumigants, well insulated in their tunnels. Furthermore, when mature insects surfaced through 'flight holes,' they could sense the poison and avoid those areas remaining treated (usually horizontal upper surfaces where gas / dust settles). We also discovered that natural predators (certain flies and spiders) were being killed by the non-target specific insecticides. So what to do?

Through complementary research at the Universities of Oxford, Birkbeck College, London and Abertay, Scotland, we learned that egg-laying mother beetles are attracted to fungi-infested wood as an indicator of moisture and nitrogen nutrition release; that there were no pheromone or anti-feedant odors that could be utilized in targeted traps (though pheromone traps remain promising for the furniture beetle); and that light attraction looked like the most promising killing vector.

Therefore, fine-tuning wavelengths of the old butcher's shop blue light 'insectocutors' proved the best approach: we avoided harm to spider predators, protected bat species, and killed up to 60% of egg laying mothers emerging in the spring and taking flight to colonize fresh wood. [See www.insect-o-cutor.com and similar. Certain flying insects are attracted by specific light wavelengths. Upon approaching the lamp, they are burnt to a crisp and collected in a tray. As the website says – a 1938 technology that still works today.] As the deathwatch beetle can live for up to 10 years in its larval stage, eradication of the pest in huge cathedral roof spaces is an on-going project. But studying how beetles and their larvae behave and then targeting (combinations of) treatments, seems the way ahead.

By the way, in the process of the research, TNO-Bouw (the Dutch building research establishment) was able to trial a beetle-sniffer (larvae fart, so lots of off-gassing methane to track) but settled on a patentable transducer-based detector able to pick up vibrations from noisy larvae jaws chewing on all that wood when concealed deep in roof beams and the like.

The work was published in Ridout B and Teutonico J (Eds), "Timber: the EC Woodcare Project – deathwatch beetles in historic buildings," *English Heritage Research Transactions*, Vol. 4, James & James (now Maney), London, 2001. It appears to be selling still on Amazon for approximately \$12.50 plus shipping and tax.

Author's note: The conference provided a good mix of talks by conservators and conservation scientists containing relevant information for both. I hope to provide an overview of the conference and to summarize the information presented from a practicing conservator's perspective. Conservation scientists have added immensely to our understanding of the phenomenon of metal soaps, and there was much discussion regarding the need for continued sources of funding for this important and critical research.

It is with upmost respect for their efforts that I will only lightly touch on presentations dealing with the details of scientific analysis, those dealing with advanced and/or innovative analytical techniques, and those that discussed specific and detailed models for the processes involved. Not being a conservation scientist I do not feel qualified to discuss these with the expertise they are due.

Over March 14th and 15th 2016 the Rijksmuseum hosted a conference and workshop on metal soaps in art. The conference brought together a veritable who's who of conservation scientists, conservators, and art historians to discuss the present state of knowledge with regard to all aspects of metal soap degradation phenomena. The conference was extremely well-organized and information dense.

Each day was divided into 3 sessions consisting of a longer talk by an invited speaker followed by five "poster pitch sessions" during which presenters had 5 minutes to highlight their posters. The invited speakers were Dr. Gillian Osmond, Dr. Joen Hermans, Dr. Costanza Miliani, Dr. Aviva Burnstock, Dr. Silvia Centeno, and Dr. Jaap Boon. The posters presented a wide variety of subjects including case studies, specific scientific advances in technique and approach, and various models of the processes at play. Attendees could view/read the posters and talk with the presenters during breaks.

Each day ended with participants attending one of several options for workshop sessions followed by a regrouping of all attendees to discuss the "findings" of the individual workshops. The proceedings of the conference will be published in a forthcoming book, "Metal Soaps in Art: Conservation and Research," by Springer due out Summer of 2017.

History of Metal Soaps

Day 1 started with Petria Noble presenting a historical overview of metal soaps. Most conservators will have heard of metal soaps, or perhaps lead soaps, by now. The phenomenon was extensively studied by MOLART, AMOLF, and others following the 'discovery' of a large number of protruding masses and small "holes" in the paint film of Rembrandt's *The Anatomy Lesson of Dr. Nicolaes Tulp* when it was examined at the Mauritshuis in 1996.

These masses were subsequently found to consist of lead carboxylate soaps, and thus began the metal soaps journey. A 2002 survey revealed these metal soap aggregates to

be present in thousands of paintings ranging in date from the fifteenth to the twentieth century – some estimates say that this phenomenon affects 70% of paintings in museum collections.

In some paintings the appearance of the metal soaps had been mistakenly attributed to the artist's use of sand in the paint media and/or abrasion of the paint film. Ms. Noble discussed the different stages of lead soap aggregate formation beginning with (1) intact paint and progressing to (2) an early stage with small aggregates and increased transparency, (3) expansion of mature aggregates leading to their eruption through the paint surface, (4) a more advanced stage with protruding aggregates and remineralization, and finally (5) late stage mature aggregates that are partially dissolved or lost.

One consistent feature of many paintings exhibiting metal soaps was exposure to high levels of relative humidity. Ms. Noble showed many beautiful images of metal soaps both in cross section and as surface phenomena. She noted that we now know that metal soap degradation products can take many forms and manifest in differing ways.

What is a Metal Soap?

Metal soaps are salts, also called carboxylates, of a metal and long chain fatty acids or diacids. In the multi-layered structure of an oil painting metals are most commonly found in the pigments used in paint and ground layers (e.g. lead and zinc white) or in paint additives (e.g. lead acetate or zinc sulphate), while fatty acids are typically present in paint binders (e.g. linseed oil) or, in some cases, in varnish layers (e.g. oil/resin varnishes).

Soaps form when positively charged metal ions (cations) react with negatively charged free fatty acids or diacids (anions) to form an electrically neutral compound - a salt. Some think that the formation of these soaps is part of normal reactions that take place during the cross-linking of oil binding mediums. It is when these soaps begin to aggregate or migrate within the paint matrix that undesirable changes arise resulting in the observed metal soap degradation phenomena.

The chemistry of metal soap formation is not yet fully understood but as a field we are making great strides in our understanding. The mechanisms involved, e.g. which factors trigger the processes and how they might be prevented or decelerated, are not yet fully known. There is reasonable evidence to suggest that the phenomenon may result from specific qualities inherent in the artist's materials and techniques, from conservation procedures, and/or from the object's exposure to certain environmental conditions such as high temperature and relative humidity. However, this has yet to be empirically proven.

Metal Soaps in Art, 2016, continued

Metal soaps can form aggregates that result in numerous small lumps/bumps/“pimples” on the surface of a painting. When these aggregates are decapitated or lost they appear as tiny white spots (often mistaken as abrasion) or leave small craters (voids). These craters can subsequently become filled with dirt and/or varnish taking on a dark appearance resulting in tiny dark spots, which can look similar to mold.

Metal soaps can migrate to the surface of an artwork producing efflorescence resulting in a hazy or patchy appearance.

Metal soaps can result in increased transparency of the paint films as the metal ions migrate out of their original layer(s) to form soaps. We now know that the phenomenon of “ground staining” (often seen in 19th-century paintings, esp. in the Hudson River School) is a result of increased transparency of paint and ground films due to the formation of metal soaps.

Metal soaps can also react with environmental pollutants or other ions that may be present in the paint films, such as sulphur or calcium, and form crusts on the paint surface (e.g. oxylate crusts). These crusts are often very intimately bound to the paint layers and are very difficult to remove.

While lead and zinc soaps are currently the most well known metal soaps, soaps can also form from other metal ions - such as calcium, copper, and iron; these metal soaps remain less well studied than those formed by lead and zinc.

Zinc Soaps

Invited speaker Dr. Gillian Osmond discussed her ongoing research into zinc and zinc soaps. Dr. Osmond first gave a brief history of zinc white’s (zinc oxide) use as an artist’s material. It was initially introduced as a less toxic alternative to lead white and is more resistant to yellowing and darkening. These properties caused it to be incorporated in many white and colored commercial paints, sometimes as an undeclared additive, beginning in the mid 19th century and for much of the 20th century until titanium white began to dominate the industry. As an example, Ripolin paints are zinc-based.

Unfortunately zinc is very reactive in oil-based media and created challenges within the commercial paint industry for managing shelf-life and durability. Many of these commercial studies have proven useful in our understanding of zinc soaps.

The majority of zinc oxide is produced in one of two pyrolytic processes – a direct (“American”) process and the indirect (“French”) process. As Dr. Osmond illustrated these processes are important as pigment size, shape, and the manufacturing process all affect zinc’s reactivity, with indirect or French process zinc oxide generally being less stable.

Dr. Osmond showed numerous examples of zinc carboxylates that have been identified in various paintings/paint films. FTIR (Fourier transform infrared microspectroscopy) being a key tool used to identify metal carboxylates. Of note - the presence of aluminium stearate (a component present in some paint formulations) in combination with zinc is highly detrimental. Although there is not (yet) a proven causality, it is highly likely that environmental factors do play a role in zinc soap formation.

Zinc soaps have been implicated in the deterioration of increasing numbers of paintings, in particular widespread structural instabilities seen in a group of mid 20th-century abstract expressionist paintings with zinc oxide-based preparatory layers. Zinc soaps can manifest as disfiguring lumps -as seen in works by Vincent van Gogh, widespread paint cleavage – as seen in the works of mid-century abstract expressionists, or as a disfiguring surface bloom that proves resistant to cleaning or saturation. It is thought that zinc soaps lead to embrittlement of the paint layer.

Dynamics of Metal Soap Formation

Invited speaker Dr. Joen Herman’s talk looked at metal soap formation from a molecular viewpoint to gain a better understanding of how and why metal soaps form. I will only give a brief synopsis of his talk as it involved many images and phase diagrams, and my notes do not allow me to discuss the finer points of the analysis undertaken.

Dr. Herman presented the progress to date in the development of a model for metal soap formation and crystallization. A simplistic model of how oil paint films “dry” holds that they dry through oxidation resulting in a polymer network. It turns out that this process is less straightforward and more complex, and that oil paintings are not stable objects from a chemical point of view. Improved analytical techniques such as attenuated total reflection Fourier transform infrared spectroscopy (ATR-FTIR) and differential scanning calorimetry (DSC) were used to study the transition from amorphous material to crystalline fatty acid or metal soap.

Some important concepts raised were: the finding that metal ions “hop” or diffuse through the polymer network and can migrate quite far away from their original location. Hydrolyzation of the ester bonds is critical to the creation of the free fatty acids needed to form metal soaps, and it is thought that the availability of free fatty acids drives the process of metal soap formation. If a high concentration of free fatty acids and metal ions is present, the kinetics of the system will be thermodynamically pushed towards the creation of metal soaps.

Interestingly, the rate of metal soap and fatty acid crystallization decreased rapidly with the degree of linseed oil polymerization, possibly leading to systems where metal soaps are kinetically trapped in a semi-crystalline state. Various morphologies of metal soap aggregates were observed in oil paint layers, and it is suggested that factors

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like exposure to heat, moisture, and/or cleaning solvents as well as the presence of microcracks play a crucial role in the rate of crystal growth and the probability of crystal nucleation although Dr. Herman reminded the audience that correlation does not equal causation.

Structure and Distribution of Zinc Carboxylates at a Macro and Micro Scale

Invited speaker Constanza Miliani discussed the use of non-invasive reflection FTIR spectroscopy and ATR-FTIR to investigate different forms of zinc carboxylates found in simple model paintings and actual modern and contemporary oil paintings. This talk dealt primarily with methods of analysis that can be used to identify the various forms of zinc carboxylates present in test and actual paintings.

Of note: it was found that carboxylates formed quickly in test paintings, in as little as 60-120 days. The effects of various additives in commercial paints can accelerate the formation of zinc soaps, e.g. aluminum and chromium. Zinc oxide was found to be more stable than zinc sulphate or zinc carbonate.

Metal Soaps in Paintings – Phenomenologies and Challenges for Conservation

The fourth invited speaker, Dr. Aviva Burnstock, discussed the phenomenon of metal soap degradation and the challenges that it presents for the conservation of works of art. She began by presenting numerous examples of the various expressions of metal soap formation and degradation on paintings from a variety of periods and on a variety of supports. Her examples included enlarged and magnified images taken of painting surfaces as well as images of cross-sections and analytical results.

Metal soaps have been identified on paintings on all types of supports. They can take the form of dark “oil spots” as seen on a painting by Goya. In this example the painting had an applied oil/resin varnish which reacted with metal ions from the paint/ground layers resulting in dark spots on the surface. Looking at a cross-sections revealed metal soap aggregates surrounded by a pool of free fatty acids causing the dark “oil spots” seen. In this case it was thought that the oil containing varnish served as a reservoir of free fatty acids. Recrystallized lead was also seen at the center of the lead soap aggregates; this is a later stage in metal soap formation.

In examples of paintings with paint instability, particularly ground/paint and interlayer paint cleavage, Dr. Burnstock showed cross-sections analyzed using backscatter electron microscopy, which revealed horizontal microfissures at the boundary between paint layers. These microfissures result from metal soap degradation and are thought to be responsible for the paint instability.

Another example discussed was a dark lead soap crust that had formed on the surface of a painting but only in

areas without paint along the edges of the work. A second example of a zinc-based crust was shown. In this case it was thought that the presence of chlorine and sulphur – most likely from the environment or possibly from paint additives - played a role in the formation of the crust. The mechanisms for the role these compounds (Zn, Cl, S) play are not fully understood although it is suspected that they accelerate the degradation processes.

Dr. Burnstock pointed out that the types of research that give us information about what phenomenon we are looking at and help us gain understanding of the processes and mechanisms involved are different from the types of experiments that would best inform conservation practice.

In the case of metal soap crusts, which are often insoluble in the range of solvents safely employed by a conservator, there seem to be three primary approaches to treatment – saturating the affected areas through local application of varnish, locally retouching the affected areas, and attempts to reduce or remove the crust.

The most promising results in reduction or removal of the crust employed chelators (in particular EDTA, which has a preference for lead) at varying pHs, in some cases thickened or gelled to control application. By manipulating pH, concentration, and delivery method it was possible in some cases to reduce or even remove these intractable crusts. In some cases the gels softened the crusts enough that mechanical removal was possible. What remains unknown is whether these crusts will return as the aging and degradation processes inherent in the paint film continue.

Understanding the Dynamics of Lead Soaps in Oil Paintings

The fifth invited speaker, Dr. Silvia Centeno, discussed the dynamics of lead soaps. This was another more science-oriented talk looking at phenomena on a molecular level. I will give a brief overview of the talk.

Various analytical techniques were employed to gain an understanding of the mechanisms and factors that trigger metal soap formation and the dynamics of the reactive compounds present in paint films. The goals of the ongoing research are to identify which species are mobile within the paint film, how changes in temperature and relative humidity affect the dynamics, and how mobile various species are.

To do this the experiments looked at metal soap formation in paint films in differing relative humidity conditions, and the dynamics and mobility of palmitic acid and lead palmitate in a linseed oil matrix at differing temperatures. The research found that with increasing temperature the static fractions decrease. It also found that as RH increases, the reaction rate of metal soap formation increases. It is unclear whether this is due to swelling of the paint film which opens channels for reaction or whether increased RH accelerates hydration of the free fatty acids. The behavior

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of short-chain soaps differs from that of long-chain soaps. Again it is important to note that correlation does not equal causation. This research is ongoing.

Polar Medium Exudates in Oil Paintings and Their Disastrous Consequences

The last invited speaker, Dr. Jaap Boon, discussed one of his most recent research directions - exudates in oil paintings.

Dr Boon began by reminding us that the aging of oil films is a dynamic process and involves "slow chemistry." He showed numerous examples of oil paintings with various exudates – some liquid, some more solid. Some examples of forms these exudates can take include drips, sticky surfaces, and small metal soap "balls" visible on the surface. Degradation phenomena seen include dried paints that re-liquefy over time, as seen in paintings by Karel Appel; delaminating paint layers as seen in works by Hans Hoffman; and fluid drips as seen in the works of Frank van Hemert. In the case of drips, the paint films were initially "dry," and over time components within the film reliquefied, in the case of van Hemert about 7 years later.

These exudates are fluorescent and can be easily seen in UV. The liquefaction results from polar medium fractions within the paint film that cannot be accommodated by the paint mass, e.g. they are unable to anchor within the paint matrix and then migrate to the surface. The reasons for this lack of "anchoring" are thought to be related to paint formulation, metal soap additives, a lack of coordinating metals in the paint film, and surface treatments of the fillers and pigments used in the paints. In Dr. Boon's words, "the paint doesn't know it's on canvas any longer."

Of note is Dr Boon's observation that there are almost no [tubed/commercially produced] paints any longer that are 100% linseed oil; most contain other oils – sunflower and safflower (both of which are semi-drying oils) were mentioned – as well as numerous additives. There does seem to be some difference between student-grade and professional-grade paints, with professional grade paints having fewer fillers added. Also of note was the observation that high relative humidity increases this degradation process driving out the polar material faster.

Workshop Discussions

Both days of the conference concluded with a moderated discussion of the various break-out workshops participants could elect to attend. On both days the discussions had similar themes so I will summarize some of the salient points raised during both discussions together.

While research into the phenomenon of metal soaps has progressed in leaps and bounds creating an increasingly solid foundation, there remain many unanswered questions for practicing conservators: Are there trigger events that lead to the formation of metal soap aggregates and degradation processes? What are the triggers? Once

triggered do these processes run to an inevitable conclusion (thermodynamics) or can they be slowed or halted? Are there warning signs? Do certain treatments exacerbate the formation of metal soaps? How do solvents affect these processes? What causes the various expressions of metal soap degradation (e.g. aggregates vs. increased transparency vs. carbonate layers)? Removal of degradation products seems to be a temporary fix, at least in some cases – example of a Rembrandt with the repeated need to remove a hazy surface layer. What influence do these degradation processes have on the mechanical properties of paintings?

The good news is that there is quite a bit we do know. At least some of these phenomena, although perhaps new to conservation, are not new to other fields and pertinent literature does exist. If we look at historic writings, we see that artists in the 18th century were already aware of and discussing some of these phenomena, e.g. the increased transparency observed in paintings. Literature regarding commercial paint manufacture from the 1930s/40s discusses the problem of zinc soap formation.

Different layers within a painting seem to play a role with some layers serving as reservoirs of reactive material (e.g. medium-rich layers adjacent to layers containing metal-based paints). Paint/ground particle size and shape seem to play a role. Heat seems to play a role (e.g. from lining procedures or local treatments) in triggering the formation of metal soaps - lead soaps melt at 120 degrees Celsius. Some metal soaps appear to go through phase changes and these phase changes are "game changers." But, are we accelerating processes that would happen anyway or are we activating new pathways?

As a field we need to create a database of physical histories for artworks. Using various analytical techniques it may be possible to monitor the occurrence of metal soaps. There are also simpler means of monitoring that may be effective (e.g. x-radiography as lead soap aggregates may be visible in x-rays) or UV photo documentation (many of the degradation products are fluorescent).

While no causal relationship has been confirmed through analysis, we do have a pretty good body of evidence suggesting that temperature and relative humidity do have an effect on the kinetics of metal soap degradation processes. There is also evidence for a relationship between metal soap formation and materials and techniques. Layers containing lead or zinc (e.g. ground or paint layers) adjacent to layers with a high density of media seems to be conducive to the formation of lead soaps with the media-rich layer providing a source of fatty acids that the metal ions then react with.

Some adjacencies appear to be particularly problematic: zinc-containing layers over lead-containing layers; zinc and/or lead-containing layers which lie under black pigment-containing layers; binding media-rich layers (e.g.

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red lakes, earth pigments, etc.) adjacent to zinc and/or lead-containing layers. The presence or absence of a varnish may affect these processes. Modern paints contain many additives that likely affect these processes negatively.

There was some discussion of wax linings and whether the presence of wax may retard some of these effects based on the example of paintings by Mondrian where those that were wax lined showed less, possibly no, obvious metal soap degradation. Possible explanations for this observation are that perhaps the soaps do form but remain more anchored so are less likely to form aggregates; or that the crystalline structure of the wax may prevent the formation of metal soaps by disallowing migration of free fatty acids and/or metal ions.

It was suggested repeatedly that the formation of a visual database and networks for sharing information and observations is an important (crucial?) step in furthering our understanding of metal soaps. [I have to note that one of the most enlightening aspects of the conference was seeing so many visual examples of metal soap degradation phenomena.]

A few final observations were made. Based on our understanding of the aging of oil paintings metal soaps themselves are not necessarily a bad thing. And as Ken Sutherland aptly pointed out, it is important as we are made more aware of metal soaps and our understanding of metal soap phenomena increases to not overdiagnose its presence.

Poster Highlights

- Works by Franz Kline that exhibit fragile paint layers, flaking, interlayer cleavage, and active paint loss in conjunction with the presence of zinc and lead soaps. It is not currently understood why not all Kline paintings exhibit these conditions. Exacerbating external factors including poor RH control and liberal travel are thought to have contributed.

- Observation of 17th and 19th century paintings on panel where the metal soap formation follows the wood grain resulting in increased transparency visible as dark lines. Also noted were areas where the paint and upper ground are pushed up in long ridges eventually resulting in paint loss due the increased volume of the metal soap aggregates.

- A work by Mondrian where zinc soaps have resulted in localized areas of wrinkling, blistering, and delamination in passages of cadmium yellow paint found to contain zinc white, likely as an additive.

- A work by Mondrian exhibiting severe cracking and flaking resulting in numerous losses. The presence of zinc oxide was identified in lower paint layers and the presence of two types of zinc carboxylates was confirmed: amorphous zinc carboxylates, considered to be from an initial stage of degradation, and crystalline

zinc carboxylates, a further step in the degradation. The crystalline zinc carboxylates were seen at the delamination interface.

- Investigation into works by Appel and Hoffman showed an unexpected pattern of zinc soap formation – lamellar soap formations and fatty acid chain packing.

- Mock ups created to model the lead soap degradation process in oil paintings were created by creating an intermediate layer (a so-called “reactive layer”) between a ground and a black paint layer. The study found that variations of various metal soap components found in the “reactive layer” affects how and where metal soap aggregates are formed. This suggests that paint layer composition does influence the kinetics of lead soap formation.

- Aging of natural resins in the presence of common historical pigments. In these studies it was the terpene acids that react with the cations in the pigments. It was found that generally the presence of a pigment reduced the stability of the resins and that some pigments, notably Zn and Cu, have a “catalytic” effect. These processes can affect the removability of varnishes. The study proposed the idea that small discoloration may constitute a carboxylation process.

- A study looking at two different zinc particle sizes in reaction with a variety of oils led to the observation that not all zinc soaps form aggregates. Factors that affect reactivity include particle size - with smaller particles increasing reactivity. Exposure to increased relative humidity (e.g. that experienced during a lining process) and elevated temperature also increase reactivity.

- An intriguing alternate theory for formation of metal soap aggregates based on colloid chemistry based on examination of a Max Beckmann triptych.

- A look at a series of painted wall hangings that have been in the same location for over 200 years seems to indicate that environmental factors do play a role. The highest degree of lead white degradation/soap formation was found in samples taken from the painting closest to the windows.

- An investigation into the migration of metal ions from the paint/ground layers into oil-resin varnish layers resulting in varnish layers which are more difficult to remove with conventional methods.

- The alteration of copper pigments due to the formation of copper metal soaps. This resulted in chromatic changes, e.g. browning or darkening.

- A comparison of two Salvador Dali paintings that exhibit unique zinc-oxide degradation. Both had been glazed and were unvarnished. Extreme degradation of the zinc white containing paint in one of the works is

hypothesized to have been triggered by exposure to high temperature and humidity during a one-day photo shoot in 1936. Only one of the panels was photographed. The one not photographed showed much less extreme degradation.

- A look at the varnish residues present in craters caused by loss of lead soap aggregates. Because the varnish was found in the crater it is suspected that the varnish was applied after formation and loss of the lead soap aggregate and thus likely not artist applied.
- Use of aqueous gels for the removal of inorganic salt crusts (a form of metal soap degradation). A visually disturbing grey haze was found following devarnishing. This layer was found to be insoluble in organic solvents. Testing of Pemulen TR2 and methyl cellulose gels with chelators was found to be effective at solubilizing the salt crust.
- An oxylate crust that was best removed mechanically.
- Small white spots on a 17th-century painting initially thought to be due to abrasion from past cleaning were analyzed and found to be caused by lead soap aggregates that had been decapitated. This finding influenced a more conservative approach for the treatment.
- A look at calcium and lead soaps present on two paintings in architectural settings. It is thought that some of the components which lead to the formation of the calcium soaps originated in the lead-based adhesive and the plaster wall. The formation of the metal soaps resulted in areas of cleavage and paint delamination.
- A look at the how metal soap formation may affect the ratio of relative amounts of palmitic and stearic acids present in a medium and how this may affect identification of drying oils. The P/S ratio is often used to identify the oil source in paint binders.
- Georgia O’Keeffe paintings show micro-protrusions. O’Keeffe noted the presence of small pinpoint losses in paintings during her lifetime suggesting that the soap formation process began very early in the paintings’ history. Multiple angles of UV light with a fixed camera were used to create a 3-d morphology of the surface that will allow monitoring of changes to the surface.
- metal soaps identified in paintings by James Ensor resulting in protrusions and dry and brittle paint layers.
- use of non-invasive reflection mid-FTIR spectroscopy to identify metal oxylates in-situ.
- metal soaps identified in paintings by Pierre Soulages resulting in delamination of paint layers, lifting paint layers, softened under layers, and liquid drips and exudations.
- metal soaps added to modern oil paint on purpose as dispersion agents, stabilizers, and extenders.

“Louvre to Restore da Vinci’s ‘St. John the Baptist’,” *The Wall Street Journal*, 01/13/2016

The Louvre will begin restoring Leonardo da Vinci’s “St. John the Baptist” (1508-19) in the coming weeks, leaving just two of the museum’s five masterpieces by the Renaissance giant untouched by restorers, including its most famous occupant: the “Mona Lisa.”

The museum says layers of varnish applied on the portrait of an intriguingly young and androgynous St. John the Baptist over the past five centuries to protect it have grown opaque, masking important parts of the painting, including the cross he bears and the pelt he wears. “The details are in the shadow now, while 10 or 20 years ago they were more visible,” says Vincent Delieuvin, chief conservationist for Italian renaissance art at the Louvre.

The attempt to enliven one of the most representative examples of da Vinci’s techniques is making some art experts nervous, however, after the firestorm that followed the French museum’s restoration of another of the artist’s works in 2012.

In addition to showing off the artist’s technique, the painting holds historical significance. It was one of the few the master kept with him as he moved to different cities in Italy and, in his later years, to the court of French King Francis I. Mr. Delieuvin says many documents, from drawings and sketches to other paintings, show that da Vinci worked on “St. John” for years. The Louvre hired well-known master restorer Regina Moreira to handle the restoration process.

“Big Meaning in the Minuscule: Art Museum Explores Conservation,” *Cincinnati.com*, 01/28/2016

After the before and before the after. That’s where Serena Urry lives. As chief conservator for the Cincinnati Art Museum, Urry is the line between phases in a painting’s life. A map to take filthy to fine. Crumbling to composed.

Urry’s work is key to the preservation, the presentation of the museum’s nearly 66,000 artworks, some dating to the time when we rocked the Cradle of Civilization. Her workshop, however, is hidden, kept behind the curtain. Yes, an actual curtain. The steely gray one you don’t really notice as you stroll into the Great Hall from the lobby.

But not anymore. Starting Tuesday, you can’t miss her: She’s the star of the exhibit, “Conservation on View: Zaragoza’s Retablo of St. Peter.” For the first time in her 25-year career, Urry cleans paintings in front of the curtain, restoring the golden glimmer to the 18 painted panels of a 600-year-old Spanish altarpiece. Standing 10 feet tall and nine feet wide, the work also represents one of the largest conservation projects in the museum’s history.

“Frost Art Museum Will Display Giant Roman Jigsaw Puzzle,” *The Examiner*, 01/29/2016

The Lod Mosaic, a 1,700-year-old Roman mosaic from the Eastern Roman Empire in what is now Israel, will go on display in the Patricia & Phillip Frost Art Museum at Florida International University on February 10, 2016.

Discovered in 1996 by construction workers who were digging to widen a road, the third-century CE mosaic was rescued by the Israel Antiquities Authority (IAA). Entitled “Predators and Prey,” it is notable for its subject matter, its size, and its outstanding degree of preservation.

The mosaic covers an area of about 6,996.5 square feet and was divided into 30 “fragments” for relative ease of handling and study. Seven of these fragments, totaling 344.4 square feet, have traveled the world during the past three years.

Featured are indigenous animals coexisting with ferocious wild creatures such as lions and tigers, an elephant, a giraffe, an Asian water buffalo, plus marine life, a sea monster, and merchant ships. Remarkably, the mosaic contains no images of human beings or deities.

Archaeologists have calculated that it contains more than two million tesserae. Archaeologists believe the Lod Mosaic was created as the floor of a large audience room, in a grand villa owned by a wealthy Roman merchant whose trade route crossed between Jerusalem and the Mediterranean.

“Nainital-Based Conservator Knighted by Italy,” *Times of India*, 03/08/2016

Anupam Sah, a Nainital-based art conservationist who has restored numerous heritage properties, including monuments, cities, sculptures and manuscripts, has been knighted by Italy for “outstanding work in the field of restoration techniques”. The letter from the government of Italy, dated February 24, 2016, announces that Sergio Mattarella, the country’s president, will confer ‘Knight of the Order of the Star of Italy’ on Sah, who at present is head of Art Conservation, Research and Training, Chhatrapati Shivaji Maharaj Vastu Sangrahalaya -- formerly known as the Prince of Wales Museum.

Sah, 46, is also a founder of Himalayan Society for Heritage and Art Conservation (HIMSHACO), a not-for-profit organization based in Nainital. Apart from conservation of various heritage properties in nations across the globe like Germany, France, Italy, England, Sri Lanka, Indonesia, Nepal, Scotland, Sah’s projects in India, where he has worked in almost every state, include the one in Raghurajpur village in Puri district, Odisha.

After convincing the centre and state governments to link art conservation with development, it was declared a heritage village in 2003.

“Austrian Museum Raises Funds to Restore Damaged Artworks,” *Ahram Online*, 02/05/2016

Would you pay to see art that’s broken, mouldy or eaten by worms? Vienna’s famous Leopold Museum sure hopes so. The prestigious home of Gustav Klimt and Egon Schiele is displaying damaged artworks to raise funds for their restoration.

Around 185 pieces by Austrian artists, ranging from turn-of-the-century paintings to Art Deco chairs and lamps, are part of the unconventional Hidden

Treasures exhibition. Some, like Robert Russ’s 1885 “Mill with Evening Sky”, reveal damaging tears in the canvas or heavily flaking paint. Other forlorn pieces of artwork include a delicate porcelain figurine with its head missing, and the panel of an oil painting by Cecil van Haanen fallen victim to hungry woodworms.

“Usually you go to the museum to admire works in perfect condition. Here, we are showing the dark side of our collection,” the Leopold’s new director, Hans-Peter Wipplinger, told AFP in a recent interview. Boasting around 6,000 pieces, the museum has gained global fame for its outstanding array of 19th and 20th-century Austrian art.

The museum needs a total of 370,000 euros (\$400,000) to restore the artworks -- a sum that largely exceeds the institution’s available funds. “That’s how I got the idea of finding patrons willing to finance the repairs,” Wipplinger explained. The exhibition, which runs until February 22, illustrates the spoils and damages an artwork can suffer over the years. “It’s also about showing the public all the work and technical know-how required to present a piece in mint condition,” Wipplinger said.

“How Cat Hair Brought Down a Pair of Art Forgers,” *Science*, 02/14/2016

Investigations into the artist responsible for modern works often have a specific goal: To figure out if the work in question is a forgery.

Bonnie Magness-Gardine manages the Art Theft Program at the Federal Bureau of Investigation in Washington, D.C. For many years, she and other investigators had seen innumerable forgeries of the work of Clementine Hunter, a self-taught and incredibly prolific African-American painter from Louisiana.

Many people tried to copy her distinctive folk-art style, but only two regularly succeeded: William Toye and his wife Beryl Ann Toye, a couple from New Orleans. They were so good at imitating Hunter’s style that “they got away with this for years,” Magness-Gardine says.

In 2009, the Federal Bureau of Investigation finally gathered enough evidence to confiscate the Toyes’ supposed Hunter collection, and during the raid they noticed that “they lived in a very modest house with approximately 30 cats,” Magness-Gardine says.

When forensic investigators analyzed the seized works, they found cat hair embedded in the paint—a characteristic not shared by Hunter’s authentic work. “That’s essentially what brought them

down,” Magness-Gardine says. William Toye pled guilty to art fraud in 2011.

“Colorful Cowboy gets some High-tech TLC,” *Smithsonian Insider*, 02/24/2016

What do a cowboy and a Corvette have in common? It’s not the opening of a joke, but rather a key to the current restoration of the Smithsonian American Art Museum’s vibrant outdoor sculpture “Vaquero,” by Chicano artist Luis Jiménez.

“Vaquero” is made of a plastic, acrylic urethane, which is typically used to make signs and some car bodies, like the Chevy Corvette Stingray. It is one of the more stable plastics and holds up really well outdoors,” explains Helen Ingalls, objects conservator at SAAM.

“Vaquero” is hollow inside. A woven fiberglass fabric inside the sculpture serves as a matrix to hold the resin. “Vaquero,” has stood outside the museum for more than 20 years enduring bird droppings, acid rain and city dust.

Treating “Vaquero’s” surface over the years “was a challenge because there weren’t a lot of precedents; there weren’t a lot of maintenance programs that dealt with outdoor sculpture made from plastic resin,” she says. “The main problem was the deterioration of the top clear layers that act as a first line of defense.

The solution: The sculpture was transported to Oberlin, Ohio where McKay Lodge Fine Art Conservation Laboratory will undertake “Vaquero’s” re-surfacing. McKay Lodge will work collaboratively with PPG Automotive Refinish, a company specializing in transportation and industrial coatings, to research and identify an appropriate coating to use on “Vaquero.”

The newer coating formulations that McKay Lodge is applying to the sculpture will last longer, withstand the elements much better and won’t require any maintenance—other than regular washing, something that makes Ingalls very excited.

“To Detect Fakes, Art Meets Science,” *The Wall Street Journal*, 02/24/2016

As the recently settled Knoedler & Co. art-forgery lawsuit made clear, even the trained eyes of art connoisseurs can have their blind spots. So some in the art market are turning to science for added reassurance, subjecting objects to tests more commonly associated with crime procedurals.

Still largely the province of laboratories at large museums and universities, and of a handful of consultants trained in that world, such reviews aren’t a magic bullet for authentication, experts

say. But they can flag inconsistencies that signal a forgery.

Last fall a fledgling art-forensics laboratory at State University of New York's Purchase College began testing works for the art trade. The work requires expertise in both chemistry and art history, along with an understanding of how art and artifacts are made.

With the counterfeits sold by the Knoedler gallery, tests of two supposed Robert Motherwell paintings dated 1953 and 1955 showed indications that an electric sander had been used on both surfaces—a technique the artist wasn't known to have employed. The analysis, conducted in 2008 by Massachusetts-based Orion Analytical LLC, one of the most prominent firms involved in such work, also detected pigments that weren't developed until the 1960s.

The paintings turned out to be among more than 30 counterfeit works Knoedler sold that were created by a man living in Queens, supplied by a Long Island art dealer who has since pleaded guilty to criminal charges.

"When science began to show that the experts were often wrong, that was really terrifying," said Jeff Taylor, an assistant professor of arts management at Purchase College who co-founded the lab there. The facility, launched in 2014, grew out of a popular Chemistry in the Arts course taught jointly by Stephen Cooke, an associate professor of chemistry, and Dr. Taylor, an art appraiser and historian who studies the art market and has an art-advisory business.

The lab now has about \$400,000 worth of testing equipment at its disposal. It offers pro bono services to public art collections such as the Hispanic Society of America, helping conservators document the materials of objects in their collection.

"Twelfth-Century Virgin Shows Her True Colours," *The Art Newspaper*, 02/25/2016

One of Russia's most important icons, thought to be beyond repair, is the focus of an exhibition at the Grabar Art Conservation Centre in Moscow following its restoration (until 26 February). Recent work on the medieval Bogolyubskaya Icon of the Mother of God, now in the Vladimir-Suzdal Museum in the city of Vladimir, revealed the piece's original full-length image of the Virgin with her arms outstretched towards Jesus.

The icon, dated to the late 12th century, is one of only around 30 surviving from the period; the Mongol invasions of

Russia, which began in the 13th century, destroyed much of the country's early Christian heritage. The icon had been described as an "archaeological ruin" by conservators who examined it in 1918.

It has had more than 20 interventions in its nearly 900-year history (the average for an ancient Russian icon is three). The latest saw Aleksandr Gormatyuk, a Grabar conservator, make the 200km journey from Moscow to Vladimir to work on the piece as it was deemed too fragile to travel. Layers of wax and resin were removed to reveal the original paint, which helped confirm that Virgin's face, clothing and hands were 12th-century. I

t was also x-rayed and 3-D scanned. "It's probably the first time 3-D scanning was used in the restoration of icons in Russia," Gormatyuk says.

"Major Restoration Projects Mark 50th Anniversary of Venice and Florence Floods," *The Art Newspaper*, 03/02/2016

To mark the 50th anniversary of the great Venice and Florence floods 1966, two US conservation organisations are collaborating on major art restoration projects in the two Italian cities.

The non-profit groups, Save Venice and Friends of Florence, will work together this year to restore a Tuscan egg-tempera painting on panel by the Master of Badia a Isola from 1315; a Madonna and Child Enthroned with Angels in the Galleria Palazzo Cini in Venice; and 48 drawings by Giovanni Battista Tiepolo from the Horne Museum in Florence.

On 4 November 1966, the River Arno burst its banks, sending dark muddy water thundering into the centre of Florence at 60 km per hour. More than 100 people died in the floodwaters and around 14,000 works of art were badly damaged or destroyed, including Giorgio Vasari's *The Last Supper*. The same day, high tides and rain-swollen rivers filled the Venice Lagoon to bursting. Floodwater raised the canals' level to a height of 6ft 4in, ruining works of art worth an estimated £3.2 billion.

Angeli del fango, the "mud angels", descended on Florence from all over the world to help clear up the city, rescuing almost 1,000 paintings, frescoes and sculptures. However, the display of international cultural solidarity also highlighted how unprepared and under-resourced the Italian government was.

Friends of Florence, which is based in Washington, DC, has raised and donated around \$10m for the preservation of art and architecture in Florence and Tuscany, contributing more than \$900,000

to renovate the Uffizi's Botticelli Rooms last year. Save Venice, which has its headquarters in New York, was born in response to the floods of 1966 so "it is fitting that we commemorate the anniversary with what we do best—restore cultural treasures", says Frederick Ilchman, the chairman of the organisation.

"Botswana: Tsodilo Hills Preservation Impresses U.S Envoy," *AllAfrica.com*, 03/08/2016

US ambassador to Botswana Earl Miller has applauded the Tsodilo community for their continued efforts of conserving the Tsodilo heritage site. Speaking in an interview after touring the Tsodilo hills, Miller said it was satisfying to see a community taking responsibility in preserving the rock paintings.

He said the United States Ambassadors Fund for Cultural Preservation has provided support for projects, which included training in the preservation of ancient art sites in Gaborone and at Tsodilo Hills. He also noted that the training in 2001 was the first AFCP project in Botswana and it included a two week rock art conservation workshop in Gaborone and onsite training in anticipation of Tsodilo becoming a World Heritage Site.

Programme director of the United States Ambassadors Fund for Cultural Conservation Martin Perschler said the conservation of the site was a clear sign that Botswana valued the heritage sites and that rock painting was an art form of communication.

"Spanish Castle is Spared from Collapse, but not Criticism," *The New York Times*, 03/10/2016

When the residents of Villamartin heard that the landmark castle near their small town in southern Spain was to be restored, they probably envisaged a thoughtful restoration of the medieval stronghold to something approximating its former glory.

Instead, they have been left with something that many feel more closely resembles a multilevel parking garage. The repair of Matrera Castle, perched on a ridge in the Andalusia region, has infuriated locals and provoked the ire of some conservators. Images of the castle before and after the restoration have recently fueled outrage and ridicule on social media.

The architect behind the restoration, Carlos Rojas, acknowledged that his results were not to everyone's taste. "I understand the criticism of local people

used to seeing the tower look a certain way, but the principal objective was to prevent the collapse of the structure.”

Mr. Quevedo Rojas said modern standards for restoring historic buildings discouraged efforts to make them look as they might have when first erected. “You have to distinguish and maintain the historical value and architectural integrity,” he said. “You can’t make the structure have the same appearance as the original. You can’t falsify the appearance. It has to be clear which parts are new and which are old.”

José María Gutiérrez López, the director of Villamartin’s small history museum, said critics were simply ill informed. Mr. Gutiérrez López, who has written a book about the castle and the history of its surroundings but was not involved in the repairs, expressed surprise at the negative attention it has received. “When there was the collapse in 2013, we couldn’t even get 100 signatures together to restore the building,” he said. “Now there’s been this restoration, there’s been an outcry. It makes me very frustrated.”

“Artificial ‘Nose’ Sniffs out Pollution to Protect Disney Art on International Tour,” *Phys.org*, 03/14/2016

Original drawings and sketches from Walt Disney Animation Studio’s more than 90-year history traveled internationally for the first time this summer. This gave conservators the rare opportunity to monitor the artwork with a new state-of-the-art sensor.

A team of researchers report today that they developed and used a super-sensitive artificial “nose,” customized specifically to detect pollutants before they could irreversibly damage the artwork. The researchers reported on their preservation efforts at the 251st National Meeting & Exposition of the American Chemical Society (ACS).

“Many pollutants that are problematic for human beings are also problematic for works of art,” says Kenneth Suslick, Ph.D. “The high sensitivity of artists’ materials makes a lot of sense for two reasons,” explains Suslick, who is at the University of Illinois at Urbana-Champaign. “Human beings are capable of healing, which, of course, works of art cannot do. Moreover, human beings have finite lifetimes, whereas ideally works of art should last for future generations.”

To protect valuable works of art from these effects, conservators enclose vulnerable pieces in sealed display cases. But even then, some artists’ materials may “exhale” reactive compounds that

accumulate in the cases and damage the art.

To counter the accumulation of pollutants, conservators often hide sorbent materials inside display cases that scrub potentially damaging compounds from the enclosed environment. But it is difficult to know precisely when to replace the sorbents.

Suslick figured he might have an answer. He had already invented an optoelectronic nose used largely for biomedical purposes, but it can’t sniff out the low concentrations of pollutants that damage works of art.

To redesign the nose with the aim of protecting artwork, he approached scientists at the Getty Conservation Institute (GCI). He proposed that his team devise a sensor several hundred times more sensitive than existing devices used for cultural heritage research. The collaboration took off, and the scientists built a keener nose.

“Legendary ‘Beast Jesus’ Restoration Gets Its Own Dedicated Arts Center,” *Art Net News*, 03/25/2016

A small Spanish town is doing its best to extend the Ecce Homo craze that saw thousands of tourists flock to Borja to see the perplexing amateur restoration of a church fresco.

The disastrous efforts of local resident Cecilia Giménez are now immortalized at the newly-opened Centro de Interpretación. Mayor Eduardo Arilla hopes the new art center will help sustain tourism related to the painting, which has waned since Beast Jesus first became a sensation in 2012, bringing thousands to the sleepy town.

Giménez, now 85, had attempted to restore Elías García Martínez’s damaged 1930 fresco, only to be ridiculed for the cartoonish, primate-like appearance of the altered work, which came to be known as Beast Jesus.

The new arts center contains 15 posters explaining the story of Ecce Homo and its unusual claim to fame, written in English, French, and Japanese. Giménez appeared at this week’s opening in a wheelchair, having recently broken her hip. Also on hand were several of Garcia’s grandchildren. “This is too much, my God, I don’t deserve all this,” said an emotional Gimenez at the opening ceremony.

In addition to providing a new revenue stream for the town, the Beast Jesus meme has led from everything from a music video and an opera to a documentary film.

As for Giménez, she’s come to terms with the much-maligned appearance

of her inadvertent creation, telling El Pais “sometimes, after seeing it for so long, I think to myself, son of mine, you are not as ugly as I thought you were in the beginning.”

“Egypt’s Museum of Islamic Art Regains its Allure after Two-Year Restoration,” *Ahram Online*, 03/27/2016

After two years of closing, Cairo’s Museum of Islamic Art will officially be inaugurated in April, Minister of Antiquities Khaled El-Enany announced Sunday during a tour of the museum to inspect restoration and rehabilitation works.

El-Enany pointed out that the “restoration and the opening of the museum embodies the collaboration efforts exerted on the local and international level to stand against any kind of terrorism that aims to erase Egypt’s distinguished identity and civilisation.” Elham Salah, head of the ministry’s Museums Department who escorted the minister during his visit, told Ahram Online that 95 per cent of the restoration works have been completed.

The façade, building and halls have been restored and new state-of-the-art security and lighting systems were installed. All the pedestals carrying large artefacts and display cases were also replaced.

The museum was damaged by a car bomb explosion in January 2014 targeting the adjacent Cairo Security Directorate on Port Said Street in Bab El-Khalq neighbourhood. The explosion blew a six-metre crater into Port Said Street and ripped into the façade of the two-storey museum building, whose second floor is shared with the National Library and Archives.

“When Art Falls Apart,” *Scientific American*, 04/01/2016

Conservators at museums and art galleries have a big worry. They believe there is a good chance the art they showcase now will not be fit to be seen in one hundred years, according to researchers in a project called Nanorestart.

Why? After 1940, artists began using plastic-based material that was a far cry from the oil-based paints used by classical painters. Plastic is also far more fragile, it turns out. Its chemical bonds readily break. And they cannot be restored using techniques historically relied upon by conservators.

So art conservation scientists have turned to nanotechnology for help. In the Nanorestart project (the idea is to use nanomaterials to restore art) a consortium

of 27 museums, universities, and chemical companies—financially supported by the European Union—began to tackle four tasks in 2015.

The first goal is cleaning contemporary art surfaces. Second is stabilizing canvases and painted layers. Third is removing unwanted modern materials. And fourth is figuring ways to enhance protection of the artworks.

With novel materials that function at the nanoscale, workers hope to penetrate the polymer networks that underlie artworks, remove the blemishes of degradation, and stabilize the remaining structures. A related project called Popart (Preservation of Plastic Artefacts in museum collections) developed spectroscopic and chromatographic analytic techniques for identifying the plastic components in the art, the first steps towards preserving them.

The researchers also tracked the ways in which those plastics degrade, an important step because degradation byproducts--gases, for example-- can also damage nearby objects in display cases. Cleaning these objects without harming them was also a major focus.

“Met Museum’s Broken Angel Reveals its Creator’s Methods,” *The New York Times*, 04/06/2016

Sometime late on July 1, 2008, for reasons still not completely known, a terra cotta relief of the archangel St. Michael by the Renaissance master Andrea della Robbia came loose from its place above a doorway at the Metropolitan Museum of Art and plunged to the stone floor.

The accident was unthinkable, but perhaps the warrior angel was presiding over his likeness: Instead of hitting front first or at an angle, which could have caused catastrophic damage, the blue-and-white lunette — 62 inches wide and 32 inches at its tallest point — landed flat on its back, in the wooden frame that encased it.

The glazed white head of St. Michael, one of the largest single parts of the work, broke loose and rolled to one side. But most of the pieces shattered by the fall remained together inside the frame. Now, after more than five years of study and work by the museum’s conservators and curators, all of those pieces have been put back together.

Along the path of reassembly, the museum learned many things it had never known about the relief. More significantly for art-historical scholarship, the museum also gained new insights into the working methods of the della Robbia studio in Florence.

But another lesson the accident taught, in the end, was how durable della Robbias were made to be, despite their humble, seemingly fragile clay origins. St. Michael’s head was completely unharmed after the fall.

“How Greed and Incompetence put Russia’s Heritage at Risk,” *The Moscow Times*, 04/14/2016

On March 15, 2016, Russia’s Federal Security Service (FSB) raided the Culture Ministry in Kitai-Gorod. Deputy Culture Minister Grigory Pirumov was arrested, along with other officials and the chief of the Baltstroj construction company.

The charge: embezzlement, in a scheme involving a number of priceless heritage sites. Konstantin Mikhailov, head of the Archnadzor activist movement — an organization which helps preserve and safeguard historical monuments -- is one of many activists and restoration experts who say that they have been sounding the alarm for years, and that the current case is just the tip of the iceberg.

Architect Grigory Mudrov says that he has witnessed cases where monuments were in better condition before restoration than after it. “Ninety percent of the conservation-restoration happening at historical buildings is actually just renovation-style reconstruction,” he says. He’s often seen some contractors adding modern elements such as suspended ceilings or linoleum flooring. “In general,” he says, “restoration has become part of the construction field.”

Art conservation experts, architects and activists are currently campaigning for more transparency and public participation in decisions made about historical restorations and preserving cultural heritage throughout Russia.

“In order solve the challenges the field is facing, we should be talking about dismantling the entire system,” says architect and conservation expert Natalya Dushkina. She and other experts in her field gathered to discuss the uncertain future of Russia’s cultural heritage last week. The atmosphere was grim — all participants have long been aware of the systemic problems and hope that that the Culture Ministry’s embezzlement scandal will serve as a wake-up call for both the government and the media.

An expert is a man who has made all the mistakes which can be made in a very narrow field.

Niels Bohr

“Stolen Dutch paintings recovered in Ukraine,” *BBC News*, 04/15/2016

Ukraine says it has recovered four paintings from a haul of 24 that was stolen from a gallery in the Netherlands more than a decade ago. The haul of 16th and 17th century paintings was worth €50,000 (£40,000; \$56,000) when stolen from the Westfries Museum in the city of Hoorn in 2005.

The four recovered works had been “in the possession of criminal groups”, Ukraine’s foreign minister said. Reports say they were recovered from Ukrainian ultra-nationalists. The museum said in December that two men, reportedly from a Ukrainian nationalist militia, had presented a picture of one of the paintings to the Dutch embassy in Kiev.

At the time, Dutch media reported that the men had said they had found the entire stolen collection and demanded millions of euros for the haul’s return. Ukrainian authorities gave no more details on how the four paintings were recovered.

Vasyl Grytsak, the head of Ukraine’s state security service, said the first painting was recovered in early March, followed by a second in early April and two more on Thursday. “A preliminary examination has determined they are authentic,” Mr Grytsak told a press conference. Ultra-nationalist Ukrainian militia groups are fighting a pro-Russian insurgency in parts of eastern Ukraine. The conflict is estimated to have killed more than 9,200 people since April 2014.

“Why is India’s Taj Mahal Turning Green?,” *BBC News*, 25 May 2016

An invasion of the insect called Chironomus Calligraphus (Geoldichironomus) is turning the Taj Mahal green, says environmental activist DK Joshi.

Mr Joshi has filed a petition in the National Green Tribunal - a special tribunal set up by the government to deal with environmental disputes - saying that the “explosive breeding” of the pests in the polluted Yamuna river is marring the beauty of the monument.

“Fifty-two drains are pouring waste directly into the river and just behind the monument, Yamuna has become so stagnant that fish that earlier kept insect populations in check are dying. This allows pests to proliferate in the river,” said Mr Joshi.

The stains the bugs leave on the marble are washable and workers from the Archaeological Survey of India (ASI) have been trying to scrub the walls clean, but Mr Joshi says frequent scrubbing can take the

sheen off the marble. He says the problem has a simple solution - just clean up the Yamuna.

On Monday, Uttar Pradesh Chief Minister Akhilesh Yadav ordered officials to “trace the factors behind the problem and find a solution”. To restore the monument’s beauty, the ASI has been applying “mud packs” on its walls to draw out the pollutants.

The mud-pack is based on a traditional recipe used by Indian women from ancient times to restore a natural glow to their faces. A layer of fullers earth - a type of lime-rich clay - mixed with water is applied over the walls and left on for 24 hours or more to dry. Once it dries, the mud is removed and the surface is washed with distilled water to remove impurities.

The marble mausoleum had been given this treatment several times in the past: in 1994, 2001, 2008 and 2014.

“King Tut’s Blade Made of Meteorite,”
Live Science, 05/31/2016

King Tut was buried with a dagger made of an iron that literally came from space, says a new study into the composition of the iron blade from the sarcophagus of the boy king.

Using non-invasive, portable X-ray fluorescence spectrometry, a team of Italian and Egyptian researchers confirmed that the iron of the dagger placed on the right thigh of King Tut’s mummified body has a meteoric origin. The team, which include researchers from Milan Polytechnic, Pisa University and the Egyptian Museum in Cairo, detailed their results in the journal *Meteoritics and Planetary Science*.

The study shows the ancient Egyptians attributed great value to meteoritic iron for the production of precious objects, possibly perceiving those chunks of iron falling from the sky as a divine message. The most ancient Egyptian iron artifacts, nine small beads excavated from a cemetery along the west bank of the Nile tomb in Gerzeh and dated about 3200 BC, are also made from meteoritic iron hammered into thin sheets.

The dagger blade is not the only celestial object found in the boy king’s tomb. His pectoral, or necklace, features an scarab which is Libyan desert silica glass. The glass was produced by the impact on the sand of a meteorite or comet.

Such natural glass exists only in the remote and inhospitable Great Sand Sea of Egypt — the Western Desert. In order to produce the scarab, the ancient Egyptians would have had to trek across 500 desert miles.

“X-Rays Reveal 1,300-Year-Old Writings Inside Later Bookbindings,”
The Guardian, 06/04/2016

Medieval manuscripts that have been hidden from view for centuries could reveal their secrets for the first time, thanks to new technology.

Dutch scientists and other academics are using an x-ray technique to read fragments of manuscripts that have been reused as bookbindings and which cannot be deciphered with the naked eye. After the middle ages manuscripts were recycled, with pages pasted inside bindings to strengthen them. Those fragments may be the unique remains of certain works.

Dr Erik Kwakkel, a medieval book historian at Leiden University, said, “Every library has thousands of these bindings, especially the larger collections. If you go to the British Library or the Bodleian, they will have thousands of these bindings. So you can see how that adds up to a huge potential. It’s really like a treasure trove. It’s extremely exciting.”

Access to such “hidden libraries” has been made possible by macro x-ray fluorescence spectrometry (MA-XRF), which allows pages to be read without removing the bookbinding.

Professor Joris Dik, of the Delft University of Technology, described the potential for finding new material with clues to the past as “massive”. The technology does not just make hidden texts visible, but legible.

Now the technology has proved to be “equally efficient in the visualisation of hidden medieval inks,” he said. “A thin beam of x-rays is used to scan the object, charting the presence and abundance of various elements below the surface. That is how iron, copper and zinc, the main element constituents of medieval inks, could be viewed, even when covered by a layer of paper or parchment.”

“Is an Eakins Hiding an Eakins?: Painting, Mystery, Detective Story,”
The Philadelphia Inquirer, 06/14/2016

What if one Eakins is hiding another Eakins? The *Bibliophile* is a painting by Susan Macdowell Eakins, wife of the celebrated Philadelphia painter Thomas Eakins. An accomplished painter, Susan had studied with Thomas at the Philadelphia Academy of Fine Arts. The *Bibliophile* is in the collection at Bryn Mawr College.

Now a graduate student in the Winterthur/University of Delaware

program in art conservation has detected, beneath the surface, a separate painting. It’s natural to ask: Who started the painting underneath? Was it Thomas Eakins?

While no one is exactly saying yes, this painting has become the subject of a fascinating detective story. Gerrit Albertson is a graduate student at the Winterthur/University of Delaware program in art conservation. As part of the graduate program, students must study paintings that may have challenges for conservation. Among three paintings he studied in his second year, Albertson got *The Bibliophile*.

Albertson went to work, first doing old-fashioned research followed by electron microscopic analysis which suggested that different white pigments had been used in the top and bottom layers of the canvas — which could suggest two different artists were at work.

Albertson contacted John Delaney, senior imaging scientist, and Kate Dooley, research scientist, at the National Gallery of Art in Washington, DC. Delaney suggested that they try hyperspectral reflectance spectroscopy in the reflective near-infrared range.

Beneath the seated reader, there is an unfinished, sketchy-looking painting of a half-length male figure. The head is clearly visible in the spectroscopic images. Exciting.

But Albertson went further. At the Hirshhorn Museum in Washington, D.C., at the Pennsylvania Academy of Fine Arts, and at Bryn Mawr, he examined some old palettes associated with or once used by Thomas Eakins. Albertson analyzed the paints, and they corresponded pretty well to the paints in the lower layers of the canvas. And he found that the specific white pigment Eakins used was different from the white his wife used. And guess what? Her white is found in *The Bibliophile*, while his is found underneath.

Albertson e-mailed a hyperspectral reflectance image to Kathleen A. Foster, an Eakins scholar and senior curator of American art and director of the Center for American Art at the Philadelphia Museum of Art — and “she did not feel comfortable making an attribution based on this image alone.”

Neither does Albertson: “I can only say that I wouldn’t rule Thomas Eakins out.” How can we ever know for sure? Maybe we never will, says Albertson — unless some more certain link surfaces somewhere. Albertson writes that there is “no substitute for closely looking at an actual painting.”