

#### LAND ACKNOWLEDGEMENT

This conference is being held on the unceded ancestral homeland of the Ute, Paiute, Goshute and Shoshone peoples. We take this time to recognize them, to honor their past, present and future members as the traditional stewards of this land where we meet today. We acknowledge the past injustices they were subject to, including genocide and forced relocation, and the present inequities against which they struggle today. As individuals and as an organization we must continue to work to be more accountable to their needs and the needs of all indigenous peoples worldwide.

#### **NEED TO KNOW**

**Meeting Location:** Events will take place at the Salt Palace Convention Center (numbered rooms) or the Marriott Downtown at City Creek (lettered or named rooms) unless otherwise noted.

**Code of Conduct:** See page 6 or read online at https://www.culturalheritage.org/events/code-of-conduct.

**Registration Desk:** Registration will be on the first floor of the Salt Palace Convention Center. We only accept credit/debit cards (Visa, MasterCard, AmEx, Discover) in US dollars, no cash or check.

Monday, May 20 10:00am - 6:00pm Tuesday, May 21 7:45am - 6:00pm Wednesday, May 22 7:45am - 5:00pm Thursday, May 23 7:45am - 4:30pm Friday, May 24 7:45am - 3:30pm

Tickets can be purchased at <a href="www.culturalheritage.org/addtickets">www.culturalheritage.org/addtickets</a>
24/7 during the meeting. Please pick up any tickets purchased online at the registration desk. Your tickets are listed on the back of your namebadge.

**Bulletin Boards:** Check the bulletin boards near the registration area for program changes, messages, job listings, and other community announcements. Look for the literature showcase and community table!

**Online Meeting Community:** Check your inbox each morning or visit our 2024 Annual Meeting Community for updates to the program and notes from attendees.

Speaker Ready Room:Room 155 D (Salt Palace)Lactation Room:Room 260 A (Salt Palace)Quiet Room:Room 260 B (Salt Palace)

**Transportation:** Tours, receptions, and workshops will depart from the Marriott Downtown at City Creek. Any buses for offsite events will depart from and return to the Marriott's side entrance.

**Refreshment Breaks:** Refreshments will be served in the **Exhibit Hall** at the following breaks during the general and specialty sessions:

Tuesday, May 21, 6:00pm to 8:00pm Wednesday, May 22, 10:00-10:30am & 3:30-4:00pm Thursday, May 23, 10:00-10:30am & 3:30-4:00pm

Member Business Meeting will be held online June 4, 1:00pm EDT.

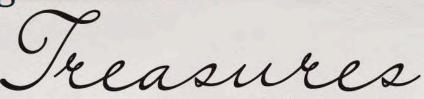
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Suzanne Davis
AIC President

This year's conference is organized around the theme, "Expect the Unexpected: Embracing and Managing Change, Uncertainty, and Surprise." For detail-oriented professionals who live and love to plan, this program offers a new area of growth with much to teach us. In the talks, panels, and workshops, you'll see themes of embracing surprise discoveries, navigating new opportunities, and responding to unexpected risks. Meanwhile, you *can* still expect plenty of talks presenting treatment projects, research findings, and new work in the care of objects, sites, and collections.

This is the first time AIC has met in Salt Lake City, Utah. If you are attending in person, I hope you enjoy discovering Salt Lake City's arts, culture, and history, as well as its beautiful natural surroundings. I invite you to use our wonderful local guide as you explore, especially if you'd like to support LGBTQ+ and BIPOC owned businesses.

If you're attending for the first time, I invite you to check out our tips for first time attendees to help you enjoy and make the most of the meeting.

These guides as well as our entire conference program were assembled by hundreds of dedicated volunteers—from session chairs, to speakers, to local advisors—along with the support and guidance of key AIC staff. Please join me in thanking these people as you see them!

I'm delighted to welcome you to AIC's 52nd Annual Meeting. Whether you are attending this conference for the first time or the fifteenth, I hope you'll leave feeling inspired, educated, and connected to your fellow attendees.

academic programming of our annual meeting. This year, we're gathering together in Salt Lake City, Utah, which was to have been the site of the 2020 meeting, before the COVID-19 global pandemic intervened. As professionals, conservators, conservation scientists, and our closely affiliated colleagues tend to be highly risk-averse, and so we often find the unexpected to be unwelcome. Sometimes, however, no amount of careful planning can prevent the unexpected from occurring and we have to pivot and adapt as best we can. So as we now, in 2024, finally hold a meeting in Salt Lake City, to me the theme chosen by member vote, "Expect the Unexpected: Embracing and Managing Change, Uncertainty, and Surprise," seems especially salient.



Corina Rogge
AIC Vice President

However, even as we get ready to hear our colleagues talk about their encounters with the unexpected, the AIC staff, especially Ruth Seyler, the program chairs and assistant chairs, the specialty group and network review committees, the concurrent general session

committee, the poster committee, and our presenters have put in untold hours of work to prepare and plan for this meeting. Please thank them all when you see them at the meeting—this event would not be happening without their efforts. Their work has led to a phenomenal schedule. I know I am having a very hard time deciding which talks to attend and suspect others are as well! And for our in-person attendees, there's also the whole social whirlwind of tours; I hope that many of you are able to take advantage of them and immerse yourself in the natural beauty of the surrounding National Parks. Personally, though, I am looking forward to the RATS drag after party at Why Kiki—last year's was such a joyous celebration for attendees, AIC staff, and the locals we were able to party with, and I can't wait to do it again!



#### Advancing Conservation Practice Globally

#### VISIT US IN THE EXHIBIT HALL TO LEARN ABOUT

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Model field projects, scientific research, and education initiatives

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Books, AATA Online, bibliographies, videos, newsletters, teaching resources, and more

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Conservation Institute

#### **PEOPLE**

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Contemporary Art Network: Joy Bloser (Program Chair), Ellen Moody (Assistant Program Chair)

Electronic Media: Peter Oleksik (Program Chair), Caroline Gil (Assistant Program Chair)

Objects: Fran Baas (Program Chair), Caroline Roberts (Assistant Program Chair)
Paintings: Julianna Ly (Program Chair), Sydney B. Nikolaus (Assistant Program
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Stop by the registration desk or Booth #213 in the Exhibit Hall to say hi to staff!



american institute for conservation

#### Preserving Cultural Heritage

#### 2024 ANNUAL MEETING THEME

#### Expect The Unexpected: Embracing And Managing Change, Uncertainty, And Surprise

In his novel Slapstick or Lonesome no More! Kurt Vonnegut wrote "history is merely a list of surprises... it can only prepare us to be surprised yet again." For those of us working to study, treat, and preserve cultural heritage our jobs often involve encounters with the surprising and unexpected. We may encounter unanticipated materials on an object, have to change treatment methodology as new information comes to light, uncover new aspects of an artistic practice, discover unexpected advantages of a collaboration, or navigate shifting institutional or client priorities. While these types of uncertainty can be exciting, terrifying, and stressful, they present real opportunities for growth and learning. At AIC's 52nd Annual Meeting - May 20-24th at the Salt Palace Convention Center in Salt Lake City, Utah - we want to hear your stories of encountering the unexpected, of the surprising things you've learned and the pivots you've had to make. Through sharing our experiences, we can help our community be prepared to be surprised (yet) again and to embrace and take full advantage of the opportunities presented when the unexpected occurs.

#### **CODE OF CONDUCT**

AIC and FAIC are dedicated to providing a positive experience for everyone participating in a conference, workshop, or other event, regardless of race, religion, gender, sexual orientation, gender identity and expression, disability, and physical appearance.

We expect event participants to maintain a cordial tone and respectful attitude during any and all exchanges. Instances of mistreatment, including abusive, harassing, or threatening behavior toward other attendees, organizational staff, host and/or venue staff, or anyone connected to the event or venue will not be tolerated.

If you feel you have experienced such behavior, please report the incident as soon as possible. Reports can be made at the registration desk or event host or by emailing Meetings & Advocacy Director Ruth Seyler at rseyler@culturalheritage.org. At all times, we will protect your confidentiality.

If a participant engages in behavior that violates this code of conduct, we may take any action we deem appropriate, including warning the offender or their expulsion from a session, event, or entire meeting with no refund.

The AIC Annual Meeting is hosted by the American Institute for Conservation; 727 15th St NW, Suite 500, Washington, DC 20005; www.culturalheritage.org; info@culturalheritage.org



#### Bank of America Art Conservation Project

Art and objects of cultural heritage are vulnerable to the impact of time, and the conservation of these works calls attention to the rich diversity of the human experience. Our Art Conservation Project has been a key pillar of our programming since 2010. We're honored to have worked with some of the world's leading institutions to back the restoration and conservation of many of the world's greatest treasures.

 $\begin{array}{c} 260 +_{\text{PROJECTS}} \\ 430 +_{\text{ARTISTS}} & 40_{\text{COUNTRIES}} \\ & 121_{\text{CITIES}} \\ 200_{\text{CULTURAL INSTITUTIONS}} \end{array}$ 

These investments—and the many others our company is making to support the arts—are designed to help showcase and celebrate important cultural artifacts, and to promote cultural sustainability.

Learn more about Bank of America's commitment to the arts: bankofamerica.com/arts





**Doug Hyde** (Nez Perce/Assiniboine/ Chippewa, b. 1946) *Navajo Water Girl*, c. 1990s (detail) Heard Museum Art Conservation Project 2015 Selection



Claude Monet (French, 1840–1926) Waterlilies, 1914–15 Portland Art Museum Art Conservation Project 2024 Selection

Top:
Chiura Obata: Layer by Layer
at Utah Museum of Fine Arts
Image courtesy of Utah Museum of Fine Arts

Chiura Obata (American, b. Japan, 1885–1975) Two Running Horses, 1932 Art Conservation Project 2022 and 2023 Selection © The Estate of Chiura Obata

#### **Get to Know our Lead Sponsor,**

#### BANK OF AMERICA



Bank of America is one of the leading sponsors of conservation in the U.S. Why do you think that is? What is it about BoA that makes it so suited for the work we do?

At Bank of America, we believe that investing in the arts helps to build communities and has a positive impact on the lives of our clients and employees. We support a wide range of nonprofit organizations with funding and programming to drive engagement, make the arts more accessible and inclusive in the communities we serve, but also to promote cultural sustainability. Art and objects of cultural heritage are extremely vulnerable to the impacts of time. By funding the preservation of these works, we can help preserve our shared history for future generations.

Now is a unique moment for conservation as the whole world reckons with our shared past and new challenges for a sustainable future. What we preserve tells us what history is valued and how we teach the past. And we can't keep artifacts, artwork and the like around if the environment where they're stored is made inhospitable by climate impact. Why do you think it's important to fund conservation right now?

Conserving significant artwork helps to strengthen human connection and promote greater cultural understanding in our communities. To help support these efforts and foster advancements in conservation, we started our Art Conservation Project in 2010 to help artworks around the globe in most need of restoration. Since then, we have expanded our support to conservation education programs, including the University of Delaware's Six-Week Introduction to Practical Conservation (SIP-C) program, and to such organizations as the Smithsonian Cultural Rescue Initiative and the Monuments Men and Women Foundation. These programs and the individuals who carry them out are just one part of a larger ecosystem that is working to preserve and protect cultural treasures for future generations.

AIC is so proud to have you as lead sponsor of our annual meeting. Can you talk about why the AIC Annual Meeting is important for you?

AIC and FAIC bring together hundreds of conservation specialists to share information on art and objects of cultural heritage and

to help advancements in preserving this shared history for future generations. We are proud to be sponsoring one of the most preeminent annual gatherings on the subject of conservation.

In recent years, our annual meeting has a session on unexpected findings, which has been a favorite of many. What's a conservation project Bank of America worked on that where the outcome was surprising?

In 2022, the Bank of America Art Conservation Project funded the conservation of Chiura Obata's *Horses* screen at the Utah Museum of Fine Arts. During this project, conservators at the Nishio Conservation Studio discovered that the four-paneled screen contained hidden full-scale preparatory charcoal drawings of the horses. In addition, they found that the screen's internal layers were made of practice drawings by Obata and his students back in 1932. The recently conserved screen, the full-scale under-drawings, and a selection of the practice drawings is currently on display as part of the UMFA's **Chiura Obata: Layer** by **Layer** exhibition.

If you could propose your own session to the Annual Meeting about corporate philanthropy and conservation, what would you want to talk about and why?

Supporting art conservation has never been more important. It's critical that the private sector works together to help preserve historic work for future generations. A session about how organizations can source that funding, why we do it, and what to look for in projects might be helpful.

#### As a local resident, what do you love about Salt Lake City?

Kate: What I love about living in Salt Lake City is the quality of life. We have all four seasons, world-class outdoor recreation, and amazing geography. Our economy is also well diversified and thriving.

A fun fact about Salt Lake City is that we have the widest streets and the largest city blocks (it takes 8 blocks to make a mile here). Brigham Young, in his role as city planner, wanted the streets to be wide enough for ox-drawn wagons to make U-turns!

-Special thanks to Kerry Miles and Kate Moss of BoA for their time!







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#### **EVENING EVENTS**

We can't wait to see you in Salt Lake City in a few short weeks. The AIC Annual Meeting is many things to many different people – a chance to share your research, a chance to catch up on advances in the field, the opportunity to connect with colleagues, and to experience the host city in a new way. We all know that the takeaways and memories from the meeting are a mix of planned and spontaneous experiences. This year we have so many exciting new options!

#### Get Ready for Four Nights of Fun!

#### **Kick off Your Meeting on Tuesday**

Tuesday, May 21: Ease into it

- © Celebrate your colleagues at our **Awards Ceremony**, 4:00 to 6:00pm
- Din us for the Exhibit Hall Opening Reception: Welcome to the Hub, 6:00 to 8:00pm (Included in your registration!)
- © CIPP members can connect with private practice peers at their Happy Hour from 7:30 to 9:00pm. Salons G-I, Marriott at City Creek
- **●** ECPN members mingle with emerging conservators at their **Happy Hour** from 7:30 to 9:00pm, **Sponsored by Getty Conservation Institute**. Salon F, Marriott at City Creek, 75 S W Temple St.

After the award presentations, we're kicking off with our Exhibit Hall transformed into a lively hub. Expect the unexpected as we utilize this large convention center space to its fullest, with numerous exhibitors (including many new vendors), lots of food and drink, a demo stage, and ample opportunities for networking. This will also be an excellent chance to meet AIC Board and Nominating Committee members at 7:00pm and learn about the impact of volunteering with AIC, board service, or other topics. Our themed happy hours for private practice and emerging professionals follow the reception.



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#### **Connect with Colleagues on Wednesday**

Wednesday, May 22: Choose from three fun choices

Delve into deep discussions with peers in your specialty area. These focused gatherings are designed to foster meaningful connections and share insights in an intimate setting. The Specialty Group receptions are on the night of the opening sessions this year. These joint receptions are held from 6:30 to 9:15 pm and include great food and open bars:

- ASG/OSG/RATS at Clubhouse
- BPG/PMG at Red Butte Gardens
- PSG/TSG/CAN!/EMG at the Utah Museum of Fine Arts

Prices range from \$55 to \$65 for group members and \$29 to \$35 for students, depending on venue. Not a member of a specialty group or CAN? Add a group to your membership and save on the reception. These events are ticketed so <u>reserve your spot</u> today! Buses start to depart at 6:00pm and will shuttle through the reception hours.

#### **Choose Your Own Adventure Thursday**

Thursday, May 23: Five opportunities to celebrate

The night is open to make it your own! Mix and match from our panoply of options:

- Ticketed dinner in a contemporary art museum (\$70)
- WAG reception (\$49 regular, \$35 students)
- Small-group dining experience in local restaurants (pay your own check)
  - (pay your own check) reunion (included for alums)
    - Drag After Party at Why KiKi (\$25)

Buffalo & Cooperstown grad school

#### Dinner at Utah Museum of Contemporary Art, 6:00 to 8:00pm (\$70)

Sponsored by ClickNetherfield

Secure your ticket for a limited-seat (100 max) vegetarian dinner reception at the Utah Museum of Contemporary Art. (\$70 includes dinner and open bar)

After a fun and informative day of talks, walk next door from the Salt Palace Convention Center to The Utah Museum of Contemporary Art for a delightful evening of viewing the museum's exhibitions on climate change and relaxing with friends old and new. Visit the museum's website for more information on the exhibitions. In recognition of the climate change exhibitions we will be serving an all-vegetarian menu. Purchase your ticket today to help support this innovative small museum that makes a big cultural impact.

#### WAG Reception from 5:00 to 8:00pm (\$49 and \$35/students)

Join fellow wooden artifacts conservators at Squatters Pub Brewery for a fun evening of companionship, craft beers, and creative appetizers (enough to make dinner out of). Squatters Pub Brewery is conveniently located within walking distance of all three host hotels. Note: The OSG/ASG/RATS reception is happening Wednesday so those with friends and colleagues in both objects and wooden artifacts groups can now go to both receptions. We even have a combination ticket that offers a \$10 savings. We know that OSG and WAG are the party groups in AIC, so we have arranged two nights of events just for you! Register today.

#### Buffalo & Cooperstown Graduate Program Reunion, 5:45 - 7:00pm

Reconnect with old friends and colleagues in a welcoming environment! Check the online schedule to confirm location.

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#### Dine-Arounds in Local Restaurants, 6:30pm (pay your own check)

Dine-arounds are making their meeting debut, thanks to the Member Engagement Subcommittee's suggestion! Experience Salt Lake City's vibrant culinary scene with fellow attendees. We have made reservations at the most talked about and recommended restaurants in Salt Lake City. Sign up for a spot at the restaurant of your choosing; you cover your own bill. We have made reservations for 4-6 people at each restaurant; make new friends as you break bread together. A fun brochure and a signup list has been emailed and posted to the Annual Meeting Community - snag your seat!

#### Drag After Party at Why KiKi, 7:30pm onward (\$25)

Join us for a night of drag shows, drinks, and dancing! Support the local LGBTQ+ community at Why KiKi, a space where all are welcome. We have set up a special 8:00pm drag show just for AIC Annual Meeting attendees, which will be followed by the semi-finals of Why KiKis annual lip-syncing battle! Stay for the early show or enjoy all Why KiKi has to offer, from dancing to food and drinks for the rest of the night. Ticket includes 2 well drinks or 1 specialty drink. Why KiKi is located directly across the street from the Marriott at City Creek, making it an easy and safe walk from all three host hotels. Please remember that tipping the Queens is HIGHLY encouraged, so come with ample dollar bills to show your love for all they do!

#### More About Our Reception Changes

As we shared with members in the quarterly member newsletter, continued rising costs, especially for food and transportation, and unique local restrictions such as stricter liquor laws and logistical hurdles with our venue choices means the all-attendee reception you've come to expect and enjoy on our opening evening was not possible this year. We appreciate your understanding as we strive to keep event costs low for both you and our organization.

With much resourcefulness and creativity, we've transformed new challenges into great opportunities to bring you receptions and other networking opportunities spread out over four nights. We could not have created such a diverse and dynamic offering without the great work and support from our groups and network volunteers!

#### Close the Meeting with Friends and Celebrate Sharing

#### Friday, May 24: Last event of the meeting

The 7th Annual Mistakes session will help us close our meeting from 4:00 to 6:00pm. It's your last chance to meet with friends new and old, commiserate with colleagues sharing their mistakes and trial-and-error experiences, and reflect on your amazing week at the meeting. We'll have snacks and a cash bar to help you relax and rest before your travels.

#### **Adventure Awaits!**

Be sure to secure your spots at these events! We look forward to seeing you in Salt Lake City for a meeting filled with unexpected surprises and unforgettable experiences!



#### **AIC 2024**

#### Wander and Dream of Color!

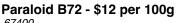
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#### 2024 Award Recipients

Since 1974, we have awarded members and allied professionals for outstanding and distinguished contributions to the field of conservation. Please join us in congratulating these recipients for 2024! We will present the awards at the Award Ceremony on **Tuesday May 21, 2024, from 4:00pm - 6:00pm MDT.** We will live stream and record the presentation for all members. Learn more about your colleagues and their contributions to the field. We know you will find it inspiring!

David Magoon-University Products Conservation Advocacy Award for conservation professionals who have advanced the field of conservation and furthered the cause of conservation through substantial efforts in outreach and advocacy.

Martha Singer, Chief Conservator, Material Whisperer

Allied Professionals Special Recognition award for the work and contributions from professionals in other fields to the advancement of the conservation profession

**Robin Hodgson**, Owner, RH Conservation Engineering

**Emerging Leader Award** for outstanding service to the organization by a member in the early stage of their career

**Abed Haddad**, Assistant Conservation Scientist, Museum of Modern Art

Robert L. Feller Lifetime Achievement Award for exceptional contributions to the conservation profession throughout one's career

**Abigail B. Quandt**, Head of Book and Paper Conservation, The Walters Art Museum

**Donna K. Strahan**, Head, Department of Conservation and Scientific Research, National Museum of Asian Art

CAA/AIC Award for Distinction in Scholarship and Conservation

**Han Neevel** and **Birgit Reissland** Awarded by CAA this spring Forbes Medal for distinguished contributions to the field of conservation and celebrates those whose work on a national or international platform has significantly advanced the preservation of cultural heritage.

**Debra Hess Norris**, FAIC Board Member, Chair of the Art Conservation Department at the University of Delaware, and Professor of Photograph Conservation

**Rutherford John Gettens Award** for outstanding service to the organization.

**Kerith Koss Schrager**, Head of Conservation, National September 11 Memorial & Museum

**Molly C. Gleeson**, Head Conservator, Penn Museum

**Honorary Membership** for outstanding contributions to the conservation profession.

**Tony Sige**l, conservator of objects and sculpture in private practice

Sheldon and Caroline Keck Award for excellence in the education and training of conservation professionals

Michael C. Henry, Principal, Michael C. Henry, LLC / Watson & Henry Associates

**Ann Shaftel**, Director, Treasure Caretaker Training

**Publication Award** for excellence in an article or book on conservation.

Properties of Plastics: A Guide for Conservators by **Thea van Oosten** 

Scientific Studies of Pigments in Chinese Paintings by Dr. Blythe McCarthy and Dr. Jennifer Giaccai

**President's Award** for exceptional work in helping collections caretakers in Maui, Hawaii, respond to damage from the devastating August 2023 wildfires.

**Liane Na'auao**, Paper Conservator, University of Hawaii at Manoa Library

Malia Van Heukelem, Archivist, Librarian and Collections Manager, University of Hawaii at Manoa Library

Foundation Service Award for outstanding service to the Foundation for Advancement in Conservation.

**Max Marmor,** recently retired President, Samuel H. Kress Foundation

**Antoine "Ton" Wilmering,** recently retired Senior Program Officer, Getty Foundation

Ross Merrill Award for Outstanding Commitment to the Preservation and Care of Collections honors institutions in North America that have shown an exemplary and sustained commitment to conservation and collections care through interpretation, research, scholarship, education, and/or public outreach.

**Walters Art Museum** 

To be awarded at the museum in June

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#### MAY 22 ▶ WEDNESDAY

2:00pm - 2:00pm

Easel Exchange (+ \$39 / \$29 students) Room 355 D (Salt Palace)

The Paintings Specialty Group (PSG) is hosting a lunchtime session titled Easel Exchange. This session will allow conservators to informally present ongoing, complex treatment decision making strategies, gain feedback on current practices, and generate ideas on paths forward.

At the lunchtime session, conservators can self-select which treatment topic most interests them and/or pertains to their ongoing work, and sit with others that may be navigating similar treatments.

Tables will be divided into the following topics:

- Cleaning Considerations
- Aesthetic Integration & Inpainting
- Structural Treatments
- Varnishing Strategies
- Ethical Approaches

This session is sold out!

Objects Tips Lunch (+ \$39 / \$29 students)
 Salon F - Marriott City Creek

Sponsored by Wiss, Janney, Elstner Associates, Inc.

 Proactive and Reactive: Seismic Preparedness and Lessons Learned (+ \$39/\$29 students)
 Room 258 (Salt Palace)

Presenters at our lunchtime panel discussion will offer guidance on earthquake mitigation, prevention, and recovery. Topics range from methods to mitigate damage to structures and collections to lessons learned after seismic activity. Salt Lake City, Utah is on the Wasatch Fault making this an appropriate venue to address this topic as staff in cultural heritage institutions and regional planners are working on solutions to prevent damage.

Our experts will share their experience and expertise with counteracting seismic activity, through proactively retrofitting and stabilizing historic buildings, planning and designing new structures, focusing on ways to identify and reduce risk during planning. Discussions will include examples of successes, mistakes, and even failures. Participants and presenters will have an opportunity to ask each other questions after the presentations. The goal of the lunchtime panel discussion is to offer solutions for identifying and mitigating risks, foster planning to reduce damage, and encourage interdisciplinary conversations to develop innovative solutions.

#### Oscratic Dialogue: What to do with lacunae

(+ \$39 / \$29 students) Room 355 A (Salt Palace)

Led by William Wei, the 10th Annual AIC Annual Meeting Socratic Dialogue! One of the main issues behind the theme of the AIC 52nd Annual Meeting is dealing with the surprising and unexpected in conservation practice. It is noted in the summary that "We may encounter unanticipated materials on an object, have to change treatment methodology as new information comes to light, uncover new aspects of an artistic practice, discover unexpected advantages of a collaboration, or navigate shifting institutional or client priorities. While these types of uncertainty can be exciting, terrifying, and stressful, they present real opportunities for growth and learning." Lunch will be provided.

That something surprising and unexpected can be considered "terrifying and stressful" has long been a concept in modern conservation practice. This was noticeable following a presentation by Krol and Wei given at the 2022 AIC annual meeting on the treatment of lacunae in historic wall paintings. The talk evoked a long and interesting discussion or debate on how a conservator may or should treat lacunae in general, in works of art and other heritage objects. Until a century ago, it was common to reconstruct missing parts to bring back the original appearance of an object,

such as the artistic infilling of a painting, or replacing a missing part of or repairing damage to an object. However, modern conservation theory and codes of ethics have led to reconstruction becoming a less common choice for the reintegration of lacunae in favor of more subtle retouching/infilling techniques, or leaving lacunae untreated. The choice of techniques continues to be a subject of heated debate, especially when important objects are (rediscovered) and in need of treatment. In fact, one could argue that the element of surprise actually often comes after the treatment is completed. The question is, what is it that makes selecting and conducting treatments for lacunae "terrifying and stressful"?

In the continuing series of such dialogues at AIC annual meetings, a Socratic dialogue is thus proposed for members of the conservation profession to reflect on what makes the decision-making process in conservation treatments so stressful, with a focus on lacunae. A Socratic dialogue is a structured form of dialogue in which all participants actively contribute. The purpose of the dialogue is not to answer the questions of how one should treat lacunae. The Socratic method provides a safe, open environment for participants to reflect on what it is that makes the decision-making process so difficult, and to investigate what the essence is behind their own points of view as well as those of others. This session will not be recorded.

#### MAY 23 ▶ THURSDAY

2:00pm - 2:00pm

#### Health and Safety Network: A Focus on Mental Health (+ \$39 /

\$29 students)

Salon F - Marriott City Creek

Speakers: **Stephanie Arel, Stephanie Black, Holly Cusack-McVeigh, Mark Wilson** 

#### Sponsored by Creative Vision Life Coaching, LLC

The Health and Safety Network is hosting a 2-hour lunch session with a 90-minute panel discussion on the often-unexpected mental health challenges that conservators face working in the cultural heritage sector. We all are entitled to a safe work environment, which not only means physically but also mentally. As part of the Health and Safety Network's commitment to promote total worker health for AIC's membership, we are currently working to better understand the mental stresses conservators face in the workplace and developing resources that meet the needs of the community. The goal of the luncheon is to share broader themes on the different challenges our members face. Mental health related to works of art themselves, collections, memorials, and to the structure of the field of conservation (e.g., competitive, instability, poor compensation, etc.) will be discussed. Dr. Stephanie N. Arel, has conducted research on trauma in memorial museums around the world, culminating in her recent book Bearing Witness: The Wounds of Mass Trauma at Memorial Museums. Dr. Arel will be on the panel to discuss her findings along with members of the Health and Safety Network who will present the preliminary results of conservator-based focus group discussions organized by the Network and moderated by Dr. Arel.

Dr. Mark Wilson from Purdue University and Dr. Holly Cusack-McVeigh from Indiana University Indianapolis, members of the American Industrial Hygiene Association's (AIHA) Museum and Cultural Heritage Industry Working Group, will also present on their findings for a National Institute for Occupational Safety and Health (NIOSH)-funded grant on the study of Stress and Psychological Trauma in Museum Workers. As May is National Mental Health Awareness Month, we hope this luncheon will create a supportive environment to better understand these issues, promote the need to recognize mental health as part of a safe and balanced workplace, and provide tools and resources to approach individual mental health needs.

#### Succession Planning Trends and Tools in Collections and the Arts (+ \$39 / \$29 students) Room 355 A (Salt Palace)

Speakers: Tom Clareson, Michelle Eisenberg

Sometimes the most unexpected things that happen to cultural and arts organizations are internal. Staff transitions, whether unexpected or planned, can be stressful for all types of institutions, and the current outlook for the workforce pipeline is challenging.

Knowledge transfer from both professional staff and volunteers is

critical in many areas of operations and collections stewardship. And personnel at small arts and humanities organizations may be hard- pressed to make time for thoughtful succession planning amidst many competing priorities.

In 2023, members of 15 arts and cultural organizations participated in listening sessions supporting the Collections Stewardship Succession Planning Initiative, a joint effort by the Conservation Center and Lyrasis, funded by a Museum Leadership Grant from the Institute for Museum & Library Services. This input, along with insights from museum, library and arts professionals across the country, has led to the development of tools and resources to support better succession planning for cultural institutions.

Join Michelle Eisenberg, Executive Director of CCAHA, and Tom Clareson, Senior Consultant for Digital & Preservation Services at Lyrasis, for an update on the project findings and a preview of forthcoming resources. Participants will be asked to share additional input to tailor the deliverables to the needs of conservators and the arts and cultural organizations they work with.

During the course of our project research, CCAHA and Lyrasis have heard many unexpected stories about staff transitions. The aim of the Collections Stewardship Succession Planning Initiative is to ease the burden of succession planning and position cultural institutions to move forward with better resources for knowledge transfer, career development and recruitment. With proper preparation - scaled for the realities of the operations of small arts and cultural organizations - staff transitions can be opportunities for growth.

#### The Evolving Use of Leather in Conservation

(+ \$39 / \$29 students) Room 251 (Salt Palace)

Speakers: Holly Herro, René Larsen, William Minter, Katharine Wagner, Laura Weyrich, Kristi Wright

#### **Sponsored by Northeast Document Conservation Center**

Collaborative projects have the potential to uncover new perspectives and the ongoing exploration of leather by the Leather Discussion Group (LDG) is no exception. The group, established in 2016 to discuss the effects of leather dyes on leather, has evolved into a much larger project with many facets. What started as a discussion among a small group of book conservators now includes conservators in multiple disciplines as well as leather researchers,

suppliers, and leatherworkers in both the US and Europe. The group has learned a great deal about the ways in which people view leather, the philosophies behind its use, and how variations in training and region affect outlooks.

Additionally, recent broad-scale explorations of health and safety concerns, sustainability, and the environmental impact of leather production have led to a reduction in leather use due to a need to perform more research in some of these areas. This, combined with a need for further research on the long-term effects of recent leather treatments and the relative longevity of modern skins compared to traditional (stable) and industrial age (highly unstable) skins has tabled leather use in many cases where this is of paramount importance. Meanwhile, explorations of non-traditional leathers and leather substitutes have added new aspects to the practice that also need further study to establish their relatively stability, or lack thereof, in comparison to traditional leather. The project has led to many surprising discoveries and unearthed copious avenues for future collaborative study, such as with experimental tanning and metagenomic testing. From explorations of the potential effect of animal husbandry on skin quality to historic leather testing methods, research into various aspects of leather longevity is nothing new.

Shifting institutional and client priorities play a large role in the place leather has in any given setting. Where it was once ubiquitous as a bookbinding material, changes in the tanning process, ostensible longevity issues, training, and the availability of alternative materials have created a divide between typical institutional and private client trends. Institutional focus on rehousing or minimal treatment is economical yet often fails to return a book to its fully functioning potential. Meanwhile, individual clients often opt for more leather use with future handling in mind.

Come join the Leather Discussion group and our invited panelists for a lunchtime overview of the most recent undertakings in this explorative project. Among topics to be discussed are the group's experimental tanning project designed to assess modern leathers' microbial characteristics in differing tanning environments, the ways previous conservation treatments affect leathers' conditions, and the launch of a georeferenced database intended to serve as a global repository for past, current, and future leather use and research.

#### MAY 24 ▶ FRIDAY

① 12:00pm - 2:00pm

#### Choosing Materials for Storage, Exhibition and Transport

(+ \$39 / \$29 students) Salon F - Marriott City Creek

Moderator: Rachael Arenstein

Speakers: Sarah Freshnock, Rebecca Kaczkowski, Devon Lee,

Laura Gaylord Resch, Samantha Springer, Julia Sybalsky, Elena Torok

Sponsored by G.C. Laser Systems Inc. & Crystalizations Systems Inc.

This Lunch and Learn program will build upon recent efforts by the Materials Selection and Specification Working Group (MWG) to evaluate and refine Oddy testing protocols, and to develop online resources to support those who wish to use Oddy test results for materials selection. Presenters will introduce Oddy testing protocols that have been evaluated and refined through MWG's Round Robin testing conducted between 2019 and 2023. They will offer guidance and cost analyses to help evaluate key similarities and differences between each of these methods, and to inform decisions when adopting a new protocol in one's lab or studio. Participants will also be introduced to AIC Wiki content illustrating useful tips, tricks, and troubleshooting; templates and standardized language for describing test results; guidance for communicating test results with partners and vendors; and tips on filtering and sorting the new Materials Testing Results pages on the wiki to find useful information in selecting materials for storage, exhibition and transport. This interactive program will invite attendees to actively engage in the discussion, sharing their own experiences with Oddy testing, and offering feedback on other resources that could be developed to further benefit those involved in materials testing for collection care. Whether you are thinking about setting up an Oddy testing program, not sure how to describe your cruddy lead coupons, or just want to know where to find useful info on materials that are safe to use, this program is for you!

#### CIPP Panel on Early Career Conservators and Private Practice Work (+ \$39 / \$29 students) Room 251 (Salt Palace)

This lunch session will include a discussion about emerging/early career conservators and their work in private practice. This is a unique opportunity for you to learn from an informal panel of early career professionals in dialogue with established CIPP members. During the panel, we'll hear about their experiences working in private conservation studios during pre-program, graduate school, and post-graduate school internships. We'll also learn what students seek in private practice placements and how these experiences have influenced their career goals. Following the panel, there will be a Q&A session where we'll explore how we can facilitate connections between early career conservators looking for private practice experience and established studios looking to host interns.

To show our appreciation for our ECPN membership and to encourage participation and engagement with our ECPN colleagues, we'll be offering a significant reduction in the cost of the lunch for ECPN members. We value your contribution to our community and hope this offer will make your participation in the lunch session even more rewarding.

#### **Special Thanks to Our Sponsors**

A special thank you to the Salt Lake City conservation community, who have been so helpful in arranging regional events.

Thanks to the following funders for their support of our annual meeting programs:

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The Evolving Use of Leather in Conservation Luncheon

Northeast Document Conservation Center (NEDCC)

Choosing Materials for Storage, Exhibition, & Transport Luncheon

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Special thanks to the AIC Specialty Groups: ASG, BPG, CIPP, EMG, OSG, PMG, PSG, RATS, TSG, WAG, and individual donors to the FAIC George Stout Fund, in support of student participation.

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#### MAY 21 ▶ TUESDAY

ECPN & TSG Community Partnership Project (8:00am - 4:00pm)
Alf Engen Ski Museum at 2002 Utah Olympic Park

The Emerging Conservation Professionals Network and the Textile Specialty Group (TSG) will be leading a Community Partnership Project (CPP) on Tuesday, May 21 at the Alf Engen Ski Museum. This project will help conserve ski suits and accessories of the Barbara Alley Simon Collection which showcases the evolution of ski fashion, as well as developments in ski apparel technology, from 1968-1998. The Barbara Alley Simon Collection is truly a one-of-akind collection and is a cornerstone of the Alf Engen Ski Museum's collections. Thanks to everyone who volunteered to participate!

This project has been sponsored by and is a collaboration with the Utah Division of Arts and Museums.

 Scholarly Writing in Conservation Pre-session (1:00pm) Room 355 D (Salt Palace)

Come and join JAIC editor-in-chief Dr. Julio M. del Hoyo-Melendez where he will present an overview of the journal and its impact in the fields of conservation and heritage science. New Managing Editor Carmina Lamare-Bertrand will also introduce herself and discuss the journal. Dr. E. Keats Webb, JAIC Associate Editor and Imaging Scientist, will present on images and authorship, plus considerations when preparing images for your article including some best practices for publishing. She will share examples and experiences on these subjects.

Meet the Board and Nominating Committee (7:00pm) Exhibit Hall Demo Area

#### MAY 23 ▶ THURSDAY

② BPG Wiki Discussion: Conservation of Books and Paper in Historic House Settings, 12:00pm to 2:00pm Room 258 (Salt Palace)

Led by Book and Paper Group Wiki coordinators Sandrine Blais and Michelle C. Smith, this discussion session will inform the membership about the progress of the BPG Wiki, bring together people who have made contributions, and encourage the formation of new editing groups. New and improved wiki pages will be introduced. Attendees will be invited to provide input to shape the development of the wiki for the coming year. Note that lunch will not be provided, but food can be purchased in the Exhibit Hall.

Preventive Care Idea Fair, 1:00pm to 2:00pm Room 355 D (Salt Palace)

Back by popular demand, the Preventive Care Idea Fair is an innovative and informative session on all things related to presentative conservation. Stop by to speak with experts who will be stationed at tables. Enjoy coffee and cookies, and enter our raffle to win a free registration for next year's conference.

Sponsored by Tru Vue Inc.

#### THROUGHOUT THE MEETING

The Speaker Ready Room is in Room 155 D, Lactation Room in Room 260 A, and a Quiet Room in Room 260 B, all in Salt Palace Convention Center. Plus, don't miss our 6:45am Wellness events Wednesday through Friday!

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Installation view, *Arts of Korea*, Brooklyn Museum, on view beginning September 15, 2017. (Photo: Brooklyn Museum)



The restored Chinese screen in the Dining Cove at Taliesin West. Photo by Andrew Pielage. Courtesy the Frank Lloyd Wright Foundation. Scottsdale. AZ

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#### **TOUR OPTIONS**

#### Monday

2:00pm - 4:45pm Horseback Riding in the Utah Buttes (\$89) 2:00pm - 5:00pm LDS Church History Library Preservation (\$15) 2:00pm - 5:30pm Utah Museum of Fine Arts Collections & Storage (\$39)

2:30pm - 5:30pm Historic and Modern Walking tour of South Temple Street with

Interior Tour of Governor's Mansion (\$25)

3:00pm – 7:00pm Bonneville Salt Flats: A Geological Wonder (\$245)

4:00pm - 6:00pm Behind the Scenes: The Beehive House Under Renovation (\$15)

4:00pm - 7:00pm Mountain E-Bike Tour (\$149)

5:00pm - 6:30pm Historic and Modern Walking tour of South Temple

Street without Governor's Mansion (\$15)

#### Tuesday

7:00am – 10:00pm Bryce Canyon: A Small Group Adventure (\$399/\$429)

8:00am – 4:00pm A Day at Brigham Young University (\$55)

9:00am – 4:00pm Spiral Jetty and The Golden Spike National Park (\$389)

1:00pm - 3:00pm Behind the Scenes: The Beehive House (\$15)

1:00pm - 3:45pm Horseback Riding in the Utah Buttes (\$89)

1:00pm - 4:00pm LDS Church History Library Preservation (\$15)

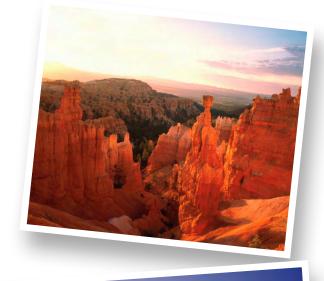
1:00pm - 4:00pm City E-Bike Tour (\$149)

5:00pm – 6:30pm Historic and Modern Walking tour of South Temple

Street without Governor's Mansion (\$15)

#### Saturday

9:00am - 12:00pm Mountain E-Bike Tour (\$149)





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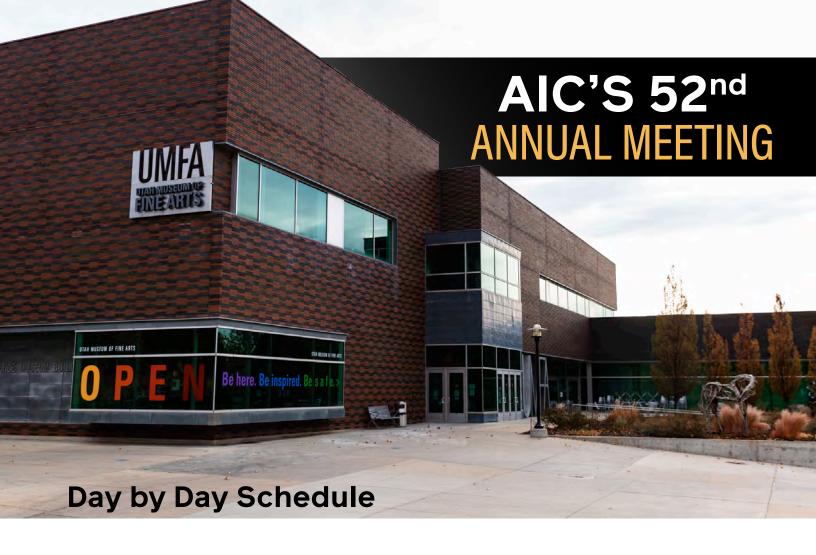
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#### **MAY 20 MONDAY**

#### **WORKSHOPS**

9:00am - 5:00pm Lasers in Conservation: Nd-YAG and Er-YAG Salons G-J, Marriott Downtown at City Creek, 75 S W

Temple St.

Sponsored by El. En. S.p.A. and National Center

for Preservation Technology and Training

9:00am - 5:00pm Lift Grounds: Hands-On Etching for Conservators,

Saltgrass Printmakers (412 S 7th W)

Be at the Marriott City Creek before 8:15am to

depart as a group.

1:00pm - 5:00pm Sketch-up: A Collaborative Design Tool for

> Installations and Exhibitions Room 355 A (Salt Palace)

#### **TOURS**

All tours depart from the Marriott Downtown at City Creek Main Entrance, 75 S W Temple St. Look for staff to guide you.

2:00pm - 4:45pm Horseback Riding in the Utah Buttes (\$89)

2:00pm - 5:00pm LDS Church History Library Preservation (\$15)

Utah Museum of Fine Arts Collections & Storage 2:00pm - 5:30pm

(\$39)

Historic and Modern Walking tour of South Temple 2:30pm - 5:30pm

Street with Interior Tour of Governor's Mansion

(\$25)

Bonneville Salt Flats: A Geological Wonder (\$245) 3:00pm - 7:00pm

Behind the Scenes: The Beehive House Under 4:00pm - 6:00pm

Renovation (\$15)

4:00pm - 7:00pm Mountain E-Bike Tour (\$149)

5:00pm - 6:30pm Historic and Modern Walking tour of South Temple

Street without Governor's Mansion (\$15)

#### MAY 21 TUESDAY

| WORKSHOPS                                                                                 |                                                                                                          | SYMPOSIA & PR   | RE-SESSION                                                                                                   |
|-------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------|-----------------|--------------------------------------------------------------------------------------------------------------|
| 9:00am - 5:00pm                                                                           | Lasers in Conservation: Nd-YAG and Er-YAG<br>Salons G-J, Marriott Downtown at City Creek, 75 S W         | 8:45am – 5:00pm | Symposium: Toward Art in Transit 2.0 (\$159), Room 255 BC, Salt Palace                                       |
|                                                                                           | Temple St.  Sponsored by El. En. S.p.A. and National Center for Preservation Technology and Training     | 1:30pm – 2:30pm | Pre-Session: Scholarly Writing in Conservation,<br>Room 355 D, Salt Palace                                   |
| 9:00am – 12:00pm                                                                          | Cultivating Competencies: Conceptualizing Inclusive Mentorship                                           | OTHER EVENTS    |                                                                                                              |
|                                                                                           | Room 255 D, Salt Palace                                                                                  | 8:00am – 4:00pm | ECPN & TSG Community Partnership Project: The                                                                |
| 9:00am - 5:00pm                                                                           | Caring for Neon Light-based Art,<br>Room 255 A, Salt Palace<br>Sponsored by Getty Conservation Institute |                 | Alf Engen Ski Museum<br>(3419 Olympic Pkwy, Park City, UT)<br>Be at the Marriott City Creek Main Entrance by |
| 9:00am - 5:00pm                                                                           | Introduction to Digital Preservation and Storage,<br>J. Willard Marriott Library, 295 South 1500 E       |                 | 7:45am to depart as a group.  Sponsored by The Utah Division of Arts and Museums                             |
| Utah Museum o<br>W Temple St.<br>Meet at UMOCA                                            | Collections Emergency Response and Recovery Utah Museum of Contemporary Art (UMOCA), 20 S                | 4:00pm – 6:00pm | AIC Awards Ceremony, Room 155 BCEF<br>Arrive at 3:45pm to enjoy cake!                                        |
|                                                                                           | Meet at UMOCA, directly across from Salt Palace                                                          | 6:00pm – 7:00pm | Microfading Tester International Discussion Group<br>(MFT-IDG) Meetup<br>Exhibit Hall, tables to the right   |
| <b>TOURS</b> All tours depart from the Marriott Downtown at City Creek, 75 S W Temple St. |                                                                                                          | 6:00pm – 8:00pm | Exhibit Hall Opening Reception                                                                               |
|                                                                                           |                                                                                                          | 7:00pm – 7:30pm | Meet the AIC Board & Nominating Committee,<br>Exhibit Hall near Demo Stage                                   |
| 7:00am – 10:00pm                                                                          | Bryce Canyon: A Small Group Adventure                                                                    | 7:30pm – 9:00pm | CIPP Members Happy Hour                                                                                      |
| 0.000 - 4.000 - 10                                                                        | (\$399/\$429)                                                                                            |                 | Salons G-I (Marriott at City Creek)                                                                          |
| 8:00am – 4:00pm                                                                           | A Day at Brigham Young University (\$55)                                                                 | 7:30pm – 9:00pm | ECPN Happy Hour for emerging professionals, students, and their supporters/mentors                           |
| 9:00am – 4:00pm                                                                           | Spiral Jetty and The Golden Spike National Park (\$389)                                                  |                 |                                                                                                              |
| 1:00pm – 3:00pm                                                                           | Behind the Scenes: The Beehive House (\$15)                                                              |                 | Salon F (Marriott at City Creek)  Sponsored by Getty Conservation Institute                                  |
| 1:00pm – 3:45pm                                                                           | Horseback Riding in the Utah Buttes (\$89)                                                               |                 |                                                                                                              |
| 1:00pm – 4:00pm                                                                           | LDS Church History Library Preservation (\$15)                                                           |                 |                                                                                                              |
| 1:00pm – 4:00pm                                                                           | City E-Bike Tour (\$149)                                                                                 |                 |                                                                                                              |
| 2:30pm – 4:00pm                                                                           | Historic and Modern Walking tour of South Temple<br>Street without Governor's Mansion (\$15)             |                 |                                                                                                              |



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#### MAY 22 WEDNESDAY

| 6:45am - 7:30am   | (Wellness) Run and Stretch                                                                                                                                                                        | LUNCHEONS, EVENTS, OR LUNCH IN EXHIBIT HALL                                    |                                                                                                                                                                                               |
|-------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| OPENING GEN       | Meet at the Marriott  IERAL SESSION - ROOM 155 BCEF                                                                                                                                               | 12:00pm – 2:00pm                                                               | (Luncheon) Easel Exchange (+ \$39 / \$29),<br>Room 355 D (Salt Palace)                                                                                                                        |
| 8:30am – 8:55am   | (Opening) Welcome, Room 155 BCEF (Salt Palace)                                                                                                                                                    | 12:00pm – 2:00pm                                                               | (Luncheon) Objects Tips Lunch (+ \$39 / \$29),                                                                                                                                                |
| 8:55am – 9:10am   | (Opening) In Honor of Juneteenth: Conservation of<br>General Order #3 at the National Archives<br>Speaker(s): Sonya Barron                                                                        | 12:00pm – 2:00pm                                                               | Salon F (Marriott at City Creek) (75 S W Temple St)  (Luncheon) Proactive and Reactive: Seismic  Preparedness and Lessons Learned (+ \$39/\$29),                                              |
| 9:10am – 9:25am   | (Opening) Investing in African American<br>Community Engagement at the UCLA/Getty<br>Conservation Program<br>Speaker(s): Anya Dani                                                                | 12:00pm – 2:00pm                                                               | Room 258 (Salt Palace)  (Luncheon) Socratic Dialogue: What to do with lacunae (+ \$39 / \$29)  Room 355 A (Salt Palace)                                                                       |
| 9:25am – 9:40am   | (Opening) Stitching Memories: Collaborating with<br>Trans Survivors to Preserve Their Photographic<br>Histories                                                                                   |                                                                                | (Contemporary Art) INCCA/CAN! Speed Mentoring,<br>Room 259 (Salt Palace)                                                                                                                      |
| 9:40am – 9:55am   | Speaker(s): Carolina Nastri  (Opening) Creating A Preservation Program:                                                                                                                           | 12:45pm - 1:00pm                                                               | Exhibit Hall Demo by Tru Vue Inc.: New Sustainable Glazing Product Research Exhibit Hall (Salt Palace)                                                                                        |
|                   | The Challenges of Engaging The Public<br>Speaker(s): Amy Barry                                                                                                                                    | 1:45pm – 2:00pm                                                                | Exhibit Hall Demo by Getty Conservation Institute: Acoustic Emission Monitoring Video                                                                                                         |
| 10:00am - 10:30am | Break in The Exhibit Hall<br>Hall 1 (Salt Palace)                                                                                                                                                 | SDECIALTYSE                                                                    | Exhibit Hall (Salt Palace)                                                                                                                                                                    |
| 10:00am - 5:30pm  | Poster Session in the Exhibit Hall                                                                                                                                                                | SPECIALTY SESSIONS  2:00pm - 2:30pm (Archaeological Heritage, Preventive Care) |                                                                                                                                                                                               |
| 10:40am – 10:55am | (Opening) A New Discovery of Chiura Obata's<br>Drawings,<br>Speaker(s): Stacey M Kelly, Yoshiyuki "Yoshi" Nishio                                                                                  | 2.00pm 2.00pm                                                                  | Underground Conservation: How the Geosciences and Humanities Can Preserve Historic Cemeteries Room 355 C (Salt Palace) Speaker(s): Grace Awbrey                                               |
| 10:55am – 11:10am | (Opening) "It Depends": Teaching Undergraduate<br>Conservation Students to Navigate and Embrace<br>the Shades of Gray<br>Speaker(s): Madeline Hagerman                                            | 2:00pm – 2:30pm                                                                | (Architecture) Architectural Artwork Removals: The Good, The Bad, and The Surprising Room 255 F (Salt Palace) Speaker(s): Tania Alam, Kevin Daly                                              |
| 11:10am – 11:25am | (Opening) "Distant; Digital; Dangerous?" Novel<br>Approaches to Contemporary Risk Management,<br>Object Access, and Display at The Victoria and<br>Albert Museum<br>Speaker(s): Vanessa Applebaum | 2:00pm – 2:30pm                                                                | (Book & Paper) New Applications of Lascaux Acrylic<br>Adhesive For Book and Paper Conservation<br>Room 155 BC (Salt Palace)<br>Speaker(s): Quinn Morgan Ferris, Marco Valladares              |
| 11:25am – 11:40am | (Opening) They Say Life Is Full of Surprises<br>It's an Occupational Hazard for Filming<br>Conservators,<br>Speaker(s): Claire Fry, Charlotte Tomlin                                              | 2:00pm – 2:30pm                                                                | (Contemporary Art, Private Practice) Close and<br>Continuous Collaboration: Stewardship in the<br>Conservation of the New York's Empire State Plaza<br>Collection<br>Room 355 B (Salt Palace) |
| 11:40am – 11:55am | Open Discussion                                                                                                                                                                                   |                                                                                | Speaker(s): Sarah Montonchaikul                                                                                                                                                               |
|                   |                                                                                                                                                                                                   | 2:00pm – 2:30pm                                                                | (Objects) Cannon Care: Resource for Understanding<br>Iron Cannon Coatings and their Preservation<br>Room 155 EF (Salt Palace)<br>Speaker(s): Liatte Dotan                                     |

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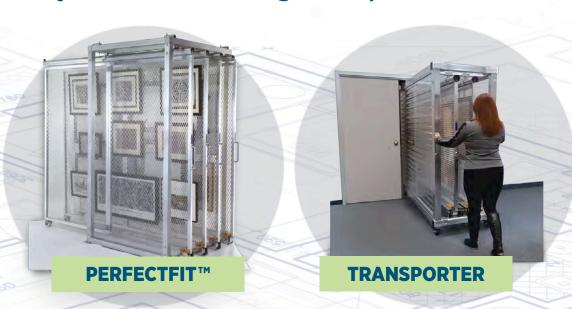
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| 2:00pm - 2:30pm | (Paintings) A Darkened Canvas and a Mysterious<br>Hand: Analytical Investigation and Sustainable<br>Approaches to the Cleaning of Morris Louis 'Slide'<br>(1962)<br>Room 255 BC (Salt Palace)<br>Speaker(s): Soraya Alcala | 2:30pm – 3:00pm | (Objects) The Lion, the Saint, and the Red Robe:<br>Technical Study and Treatment of a 17th-Century<br>Wax Diorama by Caterina de Julianis<br>Room 155 EF (Salt Palace)<br>Speaker(s): Adrienne Gendron                    |
|-----------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 2:00pm – 2:30pm | (Photographic Materials) New Originals and Former<br>Originals: Jeff Wall's Trân Dúc Ván<br>Room 255 E (Salt Palace)<br>Speaker(s): Jessica Keister                                                                        | 2:30pm – 3:00pm | (Paintings) Discovering Dalí<br>Room 255 BC (Salt Palace)<br>Speaker(s): Allison Langley, Katrina Rush                                                                                                                     |
|                 |                                                                                                                                                                                                                            | 2:30pm - 3:00pm | (Photographic Materials) Exposing A Photographer's Vision: The Hirshhorn Hologram and Its Many Challenges Room 255 E (Salt Palace) Speaker(s): Tess M. Cramer, Stephanie Lussier                                           |
| 2:00pm - 2:30pm | (Research & Technical Studies) "There Is No<br>Such Thing as a Green Solvent:" Updates from<br>Sustainability in Conservation's Greener Solvents                                                                           |                 |                                                                                                                                                                                                                            |
|                 | Project Room 355 EF (Salt Palace) Speaker(s): Gwendoline Fife, Rosie Grayburn                                                                                                                                              | 2:30pm – 3:00pm | (Research & Technical Studies) Safer Solvent<br>Selection for the Removal and Application of<br>Synthetic Resins                                                                                                           |
| 2:00pm – 2:30pm | (Textiles) Nizhónígo Hadadít'eh: Mounting Diné<br>Textiles for Exhibition<br>Room 255 A (Salt Palace)Speaker(s): Sháńdíín<br>Brown, Anna Rose Keefe, Jessica Urick                                                         |                 | Room 355 EF (Salt Palace)<br>Speaker(s): Melinda H. Keefe                                                                                                                                                                  |
|                 |                                                                                                                                                                                                                            | 2:30pm – 3:00pm | (Textiles) Preserving a Confederate Spy Balloon:<br>Adhesive Treatment of Coated Silk<br>Room 255 A (Salt Palace)<br>Speaker(s): Kayla Silvia                                                                              |
| 2:00pm – 2:30pm | (Wooden Artifacts) Unwrapped: Four Hundred Years of European Picture Frame History Finally                                                                                                                                 |                 |                                                                                                                                                                                                                            |
|                 | Revealed at The Ago<br>Room 255 D (Salt Palace)<br>Speaker(s): Julia Campbell-Such                                                                                                                                         | 2:30pm – 3:00pm | (Wooden Artifacts) Everything's Shrine: Removing<br>Difficult Coatings on a Carved Jain House Shrine<br>and Advocating for Realistic Treatment Timelines<br>Room 255 D (Salt Palace)<br>Speaker(s): Kelly Marie Rectenwald |
| 2:30pm – 3:00pm | (Archaeological Heritage, Preventive Care) Rediscovering Princess Carolina: Preventive Conservation as a Catalyst for Reengaging with an Archaeological Collection Room 355 C (Salt Palace) Speaker(s): William Hoffman    |                 |                                                                                                                                                                                                                            |
|                 |                                                                                                                                                                                                                            | 3:00pm – 3:15pm | (Wooden Artifacts and Poster Session) A Preliminary Look At Surface Finishes on 19th- Century Tibetan Furniture Room 255 D (Salt Palace)                                                                                   |
| 2:30pm – 3:00pm | (Architecture) Cultural Heritage Relocation and Reinterpretation of Collections: The Professional's                                                                                                                        |                 | Speaker(s): Jessica Chasen                                                                                                                                                                                                 |
|                 | Dilemma<br>Room 255 F (Salt Palace)<br>Speaker(s): David Wessel                                                                                                                                                            | 3:00pm – 3:30pm | (Archaeological Heritage, Preventive Care) Preventive Conservation of Archaeological Metals at the Japanese Institute of Anatolian Archaeology in Turkey Room 355 C (Salt Palace) Speaker(s): Alice Boccia Paterakis       |
| 2:30pm – 3:00pm | (Book & Paper) Making a Chinese Woodblock Print<br>Easy on the Eye: Merging Chinese Aesthetics with<br>Western Conservation Methods<br>Room 155 BC (Salt Palace)<br>Speaker(s): Ping-Chung Tseng                           |                 |                                                                                                                                                                                                                            |
|                 |                                                                                                                                                                                                                            | 3:00pm – 3:30pm | (Architecture) Taking It Back: Unveiling the Origina<br>1897 Finishes of the Chicago Cultural Center GAR<br>Rooms<br>Room 255 F (Salt Palace)<br>Speaker(s): Katharine George, Samantha Van<br>Kollenburg                  |
| 2:30pm – 3:00pm | (Contemporary Art, Private Practice) Private Practice, Public Impact: A Collaboration in Preserving Michael Richards' Legacy Room 355 B (Salt Palace) Speaker(s): Anne L. King, Eugenie Milroy                             |                 |                                                                                                                                                                                                                            |

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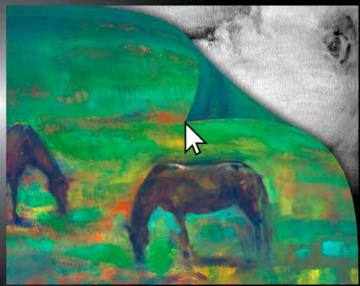
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| 3:00pm – 3:30pm | (Book & Paper) Soluble or Not? Research Outlining<br>Solubility of Water-Soluble Pencils and Pastels<br>Room 155 BC (Salt Palace)<br>Speaker(s): Lindsay Sisson                                                                 | 4:00pm – 4:30pm | (Architecture) What If We Find Hoffa? Managing<br>Large Scale Uncertainties<br>Room 255 F (Salt Palace)<br>Speaker(s): Xsusha Flandro                                                                                                                               |
|-----------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 3:00pm – 3:30pm | (Contemporary Art, Private Practice) Wade Guyton's<br>Inkjet Paintings: Artist's Materials, Technique, and<br>Conservation Challenges<br>Room 355 B (Salt Palace)<br>Speaker(s): Giuliana Moretto                               | 4:00pm – 4:30pm | (Book & Paper) Plotting a Treatment: The<br>Delamination and Bathing of an Eighteen Foot<br>Manuscript Map<br>Room 155 BC (Salt Palace)<br>Speaker(s): Allison Holcomb, Sara Leonowitz                                                                              |
| 3:00pm – 3:30pm | (Objects) Navigating The Changing Course: The<br>Evolving Treatment Protocol for the Smithsonian<br>National Air and Space Museum's 1896 Lilienthal<br>Glider<br>Room 155 EF (Salt Palace)<br>Speaker(s): Deborah Duerbeck Parr | 4:00pm – 4:30pm | (Contemporary Art, Private Practice) The '80s<br>Fascination with Tech Art and Their Conservation<br>Challenges<br>Room 355 B (Salt Palace)<br>Speaker(s): Emmanuelle Perron                                                                                        |
| 3:00pm – 3:30pm | (Paintings) Afraid of the Unknown? What are<br>Barnett Newman's Reds, Yellows and Blues?<br>Room 255 BC (Salt Palace)<br>Speaker(s): Corina Rogge                                                                               | 4:00pm – 4:30pm | (Objects) Tropical Treatment: Testing the Efficacy of<br>Pineapple, Papaya, and Kiwi Juices in the Removal<br>of Adhesives<br>Room 155 EF (Salt Palace)<br>Speaker(s): Mariana Di Giacomo                                                                           |
| 3:00pm - 3:30pm | (Photographic Materials) An Investigation of<br>Additives In Resin Coated Papers<br>Room 255 E (Salt Palace)<br>Speaker(s): Tess Bronwyn Hamilton                                                                               | 4:00pm – 4:30pm | (Paintings) Shedding Light on the Master of Light:<br>Technical Studies of Five Paintings by Joaquín<br>Sorolla y Bastida<br>Room 255 BC (Salt Palace)<br>Speaker(s): Kendall Francis                                                                               |
| 3:00pm – 3:30pm | (Research & Technical Studies) Barriers to Embedding Sustainability in Conservation Education and Practice Room 355 EF (Salt Palace) Speaker(s): Ellen Pearlstein, Justine Wuebold                                              | 4:00pm – 4:30pm | (Photographic Materials) Polaroid 20×24: Characterization and Investigation of Treatments and Preservation Methods Room 255 E (Salt Palace) Speaker(s): Paulina Miasik                                                                                              |
| 3:00pm - 3:30pm | (Textiles) Measuring Deformation of Tapestries:<br>Focusing on Mechanical Stress During Vertical<br>Display<br>Room 255 A (Salt Palace)<br>Speaker(s): Kisook Suh                                                               | 4:00pm – 4:30pm | (Research & Technical Studies) A Hairy Situation:<br>Revisiting the Species Attributions of Meret<br>Oppenheim's Fur-Lined Teacup at the Museum of<br>Modern Art                                                                                                    |
| 3:15pm – 3:30pm | (Wooden Artifacts and Poster) The Use of Fiber<br>Optics Spectroscopy for the Identification of Wood                                                                                                                            |                 | Room 355 EF (Salt Palace)<br>Speaker(s): Kyna Biggs, Caitlin Gozo Richeson                                                                                                                                                                                          |
|                 | Room 255 D (Salt Palace)<br>Speaker(s): Elly Stewart Davis                                                                                                                                                                      | 4:00pm – 4:30pm | (Wooden Artifacts) Time May Change Me: A 17th Century Kas Room 255 D (Salt Palace) Speaker(s): Emily McClain  (Textiles and Poster Session) No Time to Dye: Simulating Dye Recipes with the "Test Tube Method" Room 255 A (Salt Palace) Speaker(s): Abigail Lenhard |
| 3:30pm - 4:00pm | Break in the Exhibit Hall<br>Hall 1 (Salt Palace)                                                                                                                                                                               |                 |                                                                                                                                                                                                                                                                     |
| 4:00pm – 4:15pm | (Textiles) Inexpensive Methods for Small-Scale<br>Digital Textile Printing<br>Room 255 A (Salt Palace)<br>Speaker(s): Jacquelyn Peterson-Grace                                                                                  | 4:15pm – 4:30pm |                                                                                                                                                                                                                                                                     |
| 4:00pm – 4:20pm | (Preventive Care) Are We There Yet? Facilitation Is<br>Our Preventive Conservation Future<br>Room 355 C (Salt Palace)<br>Speaker(s): Rebecca Fifield                                                                            |                 |                                                                                                                                                                                                                                                                     |







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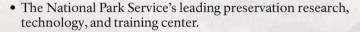
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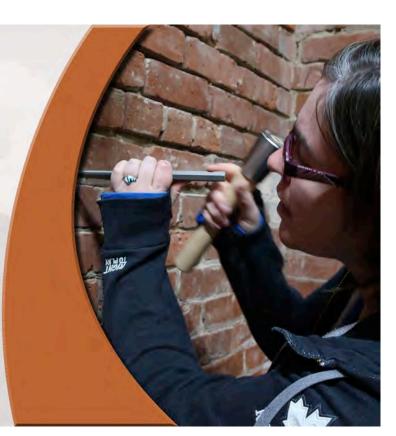


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| 4:20pm – 4:40pm | (Preventive Care) Purple Tea, Firebrats, and<br>Vibrations: Activating an 18th Century Gilded Salon<br>in a 21st Century Arts & Design School Housed in a<br>19th Century Building<br>Room 355 C (Salt Palace)<br>Speaker(s): Mary Coughlin            | 4:30pm – 5:00pm | (Wooden Artifacts) The Dahshur Boat of Senwosret<br>III: An Analytical Study of a 4,000-Year-Old Wooden<br>Boat<br>Room 255 D (Salt Palace)<br>Speaker(s): Gretchen Anderson, Mostafa Sherif       |
|-----------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 4:30pm – 5:00pm | (Architecture) Them's the Breaks: Managing Conservation Through Construction Room 255 F (Salt Palace) Speaker(s): Jennifer Kearney                                                                                                                     | 4:40pm – 5:00pm | (Preventive Care) Traditional Methods of Caring for<br>Cultural Heritage, Reimagined: A Look at Preventive<br>Care in Rajasthan, India<br>Room 355 C (Salt Palace)<br>Speaker(s): Elizabeth Salmon |
| 4:30pm – 5:00pm | (Book & Paper) Will The Circle Be Unbroken?: A Case Study in Addressing Acceptable Loss, Historic Conservation Techniques, and Project Burn Out on a 1732-1796 South Carolinian Church Register Room 155 BC (Salt Palace)                              | 5:00pm – 5:15pm | (Research & Technical Studies and Poster) Developing Genomic Tools to Determine the Maker of a Modern Gofun Paint Preparation Room 355 EF (Salt Palace) Speaker(s): Ann-Marie Abunyewa             |
| 4:30pm – 5:00pm | Speaker(s): Kathryn Boodle, Jessica H. Henze  (Contemporary Art, Private Practice) A Framework for Sustainable Courier Practices: Developing a Bookend Courier Workshop and Network Room 355 B (Salt Palace) Speaker(s): Lauren Fly, Samantha Springer | 5:00pm – 5:20pm | (Preventive Care) Street v. Art: A Case Study of Mold<br>Remediation and Community Participation at the<br>George Floyd Global Memorial<br>Room 355 C (Salt Palace)<br>Speaker(s): Nylah Byrd      |
| 4:30pm – 5:00pm | (Objects) Behind the Scenes with Joe Kubert, Comic<br>Book Legend (and Tape Enthusiast): Conserving<br>and Displaying an Artist's Desk                                                                                                                 | 5:00pm – 5:30pm | (Architecture) From the Ground Up: Revisiting San<br>Xavier's Main Cupola 29 Years Later<br>Room 255 F (Salt Palace)<br>Speaker(s): Starr Herr-Cardillo, Matilde Rubio                             |
| 4:30pm – 5:00pm | Room 155 EF (Salt Palace) Speaker(s): Leah Humenuck  (Paintings) While Angels Watched; Restoration of                                                                                                                                                  | 5:00pm - 5:30pm | (Book & Paper) A Medley of Map Treatments<br>Room 155 BC (Salt Palace)<br>Speaker(s): Heather Hendry                                                                                               |
|                 | Thomas Cole's Monumental Painting, The Angel<br>Appearing To The Shepherds<br>Room 255 BC (Salt Palace)<br>Speaker(s): Mark Lewis, Katelyn Rovito                                                                                                      | 5:00pm – 5:30pm | (Contemporary Art, Private Practice) Expect the Unexpected: Navigating the Complexities of Government Bureaucracy in Conservation Room 355 B (Salt Palace)                                         |
| 4:30pm – 5:00pm | (Photographic Materials) When the Pellicular<br>Burlesque Turns into the Pellicular Nightmare<br>Room 255 E (Salt Palace)<br>Speaker(s): Marie-lou Beauchamp                                                                                           | 5:00pm – 5:30pm | Speaker(s): Angela Campbell  (Objects) On with Her Head: The Treatment and Technical Study of a Queen Elizabeth II Doll from the                                                                   |
| 4:30pm – 5:00pm | (Research & Technical Studies) Novel Non-Invasive Method for Extracting Proteinaceous Binders from Panel Paintings Room 355 EF (Salt Palace) Speaker(s): Zhanyun Zhu                                                                                   |                 | 1950s<br>Room 155 EF (Salt Palace)<br>Speaker(s): Alyssa Rina                                                                                                                                      |
|                 |                                                                                                                                                                                                                                                        | 5:00pm – 5:30pm | (Photographic Materials) Tip Session<br>Room 255 E (Salt Palace)                                                                                                                                   |
| 4:30pm – 5:00pm | (Textiles) Tradition and Innovation: Evaluating<br>Conservation Treatments for a Buddhist Embroidery<br>Mounted as a Hanging Scroll<br>Room 255 A (Salt Palace)<br>Speaker(s): Sara Ribbans                                                            | 5:00pm – 5:30pm | (Wooden Artifacts) Cutting Corners: Reframing 3D<br>Technology in the Conservation of a 19th C. Gilded<br>Frame<br>Room 255 D (Salt Palace)<br>Speaker(s): Elly Stewart Davis                      |

| RECEPTIONS                                                  |                                                                                                 |                 | 300 Wakara Way, Salt Lake City, UT 84108                                                         |
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| 6:30pm – 9:15pm                                             | (Reception) ASG, OSG, and RATS at the Clubhouse<br>(\$55 members/\$29 students), 850 East South |                 | Sponsor(s): University Products and GUNNAR USA, INC.                                             |
| Temple Street, Salt Lake City, UT 84102<br>Sponsor: Conserv |                                                                                                 | 6:30pm – 9:15pm | (Reception) PSG, TSG, CAN!, and EMG at Utah<br>Museum of Fine Arts (\$60 members/\$29 students), |
| 6:30pm – 9:15pm                                             | (Reception) BPG and PMG at Red Butte Gardens<br>Orangerie (\$65 members/\$35 students),         |                 | 410 Campus Center Dr, Salt Lake City, UT 84112<br>Sponsor: Kremer Pigments Inc.                  |

### MAY 23 THURSDAY

| 6:45am – 7:30am | (Wellness) Yoga, Salon J, Marriott City Creek                                                                                                                                                                   | 8:30am – 9:00am | (Sustainability) A Toolbox for Spurring Climate                                                                                                                                                                  |
|-----------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 9:00am – 5:00pm | (Workshop) Respirator Fit Test (+ \$39)<br>Room 257 B (Salt Palace)                                                                                                                                             |                 | Action<br>Room 355 C (Salt Palace)<br>Speaker(s): Amy Crist, Roxane Sperber                                                                                                                                      |
| SPECIALTY SE    | ESSIONS                                                                                                                                                                                                         | 8:30am – 9:00am | (Textiles) Treatment in Reality: The Conservation                                                                                                                                                                |
| 8:30am – 8:45am | (Poster and Book & Paper Sessions) Analysis<br>and Assessment of the Degradative Properties of<br>Strawboard as a Secondary Support<br>Room 155 BC (Salt Palace)<br>Speaker(s): Jenni Krchak                    |                 | of an 18th Century Painted Silk Gown from the<br>Collection of Asian Civilisations Museum, Singapore<br>Room 255 A (Salt Palace)<br>Speaker(s): Chuance Chen                                                     |
| 8:30am – 9:00am | (Contemporary Art) Poured Color: The Pigmented<br>Latex Rubber Artwork of Lynda Benglis<br>Room 355 B (Salt Palace)<br>Speaker(s): Margo Delidow                                                                | 8:45am – 9:00am | (Book & Paper and Poster) The Production and<br>Deformation of Drying Boards<br>Room 155 BC (Salt Palace)<br>Speaker(s): Ting-Fu Fan, Yi-Chiung Lin                                                              |
| 8:30am – 9:00am | (Electronic Media) The Migration of Gary Hill's<br>Interactive Video Installation Tall Ships (1992)<br>Room 255 D (Salt Palace)<br>Speaker(s): Cass Fino-Radin, Daniel Mauro,<br>Samantha Owens                 | 9:00am – 9:15am | (Book & Paper and Poster) Soft Clouds: Material<br>Analysis of Historical Paste Papers from the<br>Rosamond B. Loring Collection of Decorated Papers<br>Room 155 BC (Salt Palace)<br>Speaker(s): Mitchel Gundrum |
| 8:30am – 9:00am | (Objects) The Surrealist and the Saint: A Two-<br>Sculpture Journey into Marisol and the 1960s<br>Room 155 EF (Salt Palace)<br>Speaker(s): Ruthie Rolfsmeyer                                                    | 9:00am – 9:30am | (Contemporary Art) Preservation of the Plastic<br>Objects in the Harvard Art Museums' Fluxus<br>Collection<br>Room 355 B (Salt Palace)<br>Speaker(s): Susan Costello                                             |
| 8:30am – 9:00am | (Paintings) Blurred Lines: Techniques, Materials,<br>and Ethical Considerations in Conserving the Hard-<br>Edge Paintings of Leon Polk Smith<br>Room 255 BC (Salt Palace)<br>Speaker(s): Elizabeth Nunan        | 9:00am – 9:30am | (Electronic Media) A Changing Solution for Ever-<br>Changing Challenges: Photoflicks and Photofictions<br>By Lucas Samaras<br>Room 255 D (Salt Palace)<br>Speaker(s): Joshua Churchill, Shu-Wen Lin              |
| 8:30am – 9:00am | (Research & Technical Studies) Advancing Conservation Techniques Through Deep Learning of Optical Coherence Tomography Images For Classifying Kozo-Fibered Papers Room 355 EF (Salt Palace) Speaker(s): Yi Yang | 9:00am – 9:30am | (Objects) A Flare for the Unexpected: Incendiary<br>Devices in the Collection of the Mariners' Museum<br>and Park<br>Room 155 EF (Salt Palace)<br>Speaker(s): Erik R. Farrell                                    |

| 9:00am - 9:30am | (Paintings) Called to Create/Called to Conserve: An Auxiliary Support for a Painting on Plywood, Birdman Trainer by Joe Light Room 255 BC (Salt Palace)                                                      | 9:30am – 10:00am  | (Electronic Media) Tending to Time-Based Media Art<br>in Aotearoa, New Zealand<br>Room 255 D (Salt Palace)<br>Speaker(s): Asti Sherring                                                   |
|-----------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 9:00am - 9:30am | (Photographic Materials) The Complex Light and Dark Storage Stability Behaviors of Different Dye-Sublimation Inksets Printed on Chromaluxe Standard ("Indoor") and Ext ("Outdoor") Coated                    | 9:30am – 10:00am  | (Objects) The (Inherent) Vices and Virtues of a<br>Dreamscape Parchment Paravent by Mohamed<br>Zouzaf<br>Room 155 EF (Salt Palace)<br>Speaker(s): Kathryn Boodle                          |
|                 | Aluminum Panels (often referred to as "Metal<br>Prints")<br>Room 255 E (Salt Palace)<br>Speaker(s): Henry Wilhelm                                                                                            | 9:30am – 10:00am  | (Paintings) From D-List to the A-List: Embracing<br>Maria Luigia Raggi's Unexpected Painting Supports<br>Room 255 BC (Salt Palace)<br>Speaker(s): Blair Bailey                            |
| 9:00am - 9:30am | (Research & Technical Studies) Wood Identification<br>in Historic Furniture: Optimization of Machine<br>Learning Approaches for Processing LIBS and<br>Py-GC/MS Data<br>Room 355 EF (Salt Palace)            | 9:30am – 10:00am  | (Photographic Materials) Seeing The Invisible: on<br>Multispectral Imaging of Photographs<br>Room 255 E (Salt Palace)<br>Speaker(s): Anna Seweryn                                         |
| 9:00am – 9:30am | Speaker(s): Richard R. Hark  (Sustainability) Building a Climate of Hope: Developing Climate Exhibits for Shared Engagement and Learning Room 355 C (Salt Palace) Speaker(s): Dr. Lynne Zummo, Lisa Thompson | 9:30am – 10:00am  | (Sustainability) AIC and FAIC's Commitment to<br>Sustainability<br>Room 355 C (Salt Palace)<br>Speaker: Tiffani Emig                                                                      |
|                 |                                                                                                                                                                                                              | 9:30am – 10:00am  | (Textiles) Surprising Sophistication: The Colorful Textiles of Karanis, Egypt                                                                                                             |
| 9:00am – 9:30am | (Textiles) From Dust to Display: Collaborative Re-<br>Assembly of an Object Received With Damage                                                                                                             |                   | Room 255 A (Salt Palace)<br>Speaker(s): Suzanne Davis                                                                                                                                     |
|                 | Room 255 A (Salt Palace)<br>Speaker(s): Megan Creamer                                                                                                                                                        | 9:45am - 10:00am  | (Book & Paper and Poster) A New Technique for<br>Strengthening of Naturally Degraded Acidic Paper<br>with Cellulose Fibers Coating<br>Room 155 BC (Salt Palace)<br>Speaker(s): Ryota Kose |
| 9:15am – 9:30am | (Book & Paper and Poster) Repairing Modern First<br>Edition Dust Jackets Without Fills or Inpainting:<br>A Conservative Approach                                                                             |                   |                                                                                                                                                                                           |
|                 | Room 155 BC (Salt Palace)<br>Speaker(s): Christopher Sokolowski                                                                                                                                              | 9:45am – 10:00am  | Contemporary Art) Embracing Angel's Orbit:<br>Replication as a Tool for Preservation of the Integral                                                                                      |
| 9:30am – 9:45am | (Book & Paper) POV: An Archives Conservation<br>Lab's Efforts in Reaching Out and Levelling Up<br>Room 155 BC (Salt Palace)                                                                                  |                   | Hologram Angel by Simone Forti and Lloyd Cross<br>Room 355 B (Salt Palace)<br>Speaker(s): Markéta Krausová                                                                                |
| 0,20am 0,45am   | Speaker(s): Ayaka Ajiki, Cassandra Tang                                                                                                                                                                      | 9:45am – 10:00am  | (Research & Technical Studies) Investigating Hydrogel Desalination of Egyptian Limestone                                                                                                  |
| 9:30am - 9:45am | (Research & Technical Studies and Poster) Plastics Bingo!: Identifying Plastics in the Collections of Cooper Hewitt, Smithsonian Design Museum Room 355 EF (Salt Palace)                                     |                   | Objects Using NMR-Mouse Spectroscopy<br>Room 355 EF (Salt Palace)<br>Speaker(s): Maggie Wang                                                                                              |
|                 | Speaker(s): James Hughes                                                                                                                                                                                     | 10:00am - 10:30am | Break in The Exhibit Hall                                                                                                                                                                 |
| 9:30am - 9:45am | (Contemporary Art and Poster) Plastilina, Plastiline,<br>Plasticine: A Study of the First Industrial Modeling<br>Pastes Invented at the End of the 19th Century                                              | 10:00am – 5:30pm  | (Poster Session) May 22-23, 10 am to 5:30 pm<br>Exhibit Hall                                                                                                                              |
|                 | Room 355 B (Salt Palace) Speaker(s): Sonia Tatiana J. Fraj                                                                                                                                                   | 10:30am - 10:45am | Exhibit Hall Demo by ClickNetherfield<br>Anatomy of a Showcase: A Case Study                                                                                                              |

| 10:30am - 11:00am | (Architecture, Preventive Conservation) Differential<br>Durability: Could Deterioration Be Hidden Within<br>Your Wall Assembly?<br>Room 255 F (Salt Palace)<br>Speaker(s): Cameron Moon                         | 10:30am - 12:00pm | (Sustainability) Life Cycle Assessment Panel<br>Discussion<br>Room 355 C (Salt Palace)<br>Speaker(s): Dr. Matthew Eckleman, Sarah Nunberg,<br>Cassandra Thiel                                                                                                     |
|-------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 10:30am – 11:00am | (Book & Paper) Starr-Crossed or Serendipitous? The Unexpected Move of Columbia University's C.V. Starr East Asian Library Room 155 BC (Salt Palace) Speaker(s): Emily Lynch, Eugenie Milroy                     | 11:00am - 11:15am | (Photographic Materials) Searching For Treasures:<br>Unidentified Early Color Photographs in Slovakia<br>Room 255 E (Salt Palace)<br>Speaker(s): Kitti Barathova                                                                                                  |
| 10:30am – 11:00am | (Contemporary Art) Does The Nose Know? Challenges and Successes During A Study of Montien Boonma's House of Hope Room 355 B (Salt Palace) Speaker(s): Catherine H. Stephens                                     | 11:00am - 11:30am | (Architecture, Preventive Conservation) Revealing<br>Hidden Threats: Monitoring Ambient Air Quality<br>to Preserve Silver Treasures in the 15th-Century<br>Mehrangarh Fort Museum, Jodhpur, India<br>Room 255 F (Salt Palace)<br>Speaker(s): Vikram Singh Rathore |
| 10:30am – 11:00am | (Electronic Media) The Landscape of Blockchain-<br>Based Art Preservation: Risk Assessment of 81<br>Horizons by Rafaël Rozendaal<br>Room 255 D (Salt Palace)<br>Speaker(s): Olivia J. Schoenfeld                | 11:00am - 11:30am | (Book & Paper Sessions) The Collections Won't Pack Themselves: A Preservation and Special Collections Collaboration Room 155 BC (Salt Palace) Speaker(s): Mary Leverance                                                                                          |
| 10:30am - 11:00am | (Objects) Preservation Efforts along Totem Trail at<br>Sitka National Historical Park: Navigating Climate<br>Change, Tourism, and the Global Pandemic<br>Room 155 EF (Salt Palace)<br>Speaker(s): Nicole Peters | 11:00am - 11:30am | (Contemporary Art) Niki de Saint Phalle's Tarot<br>Garden: Photogrammetry as an Aid in the<br>Documentation of the Sculpture Park<br>Room 355 B (Salt Palace)<br>Speaker(s): Damiano Aiello, Caroline Longo                                                       |
| 10:30am – 11:00am | (Paintings) Experiments With Vinyl Paint: Technical<br>Analysis of Two Paintings By Lancelot Ribeiro<br>Room 255 BC (Salt Palace)<br>Speaker(s): Patricia Smithen                                               | 11:00am - 11:30am | (Electronic Media) An Experiment in Art and<br>Technology: Negotiating with Time in Robert<br>Rauschenberg's Carnal Clocks<br>Room 255 D (Salt Palace)<br>Speaker(s): Adrian Hernandez, Daniella Briceño                                                          |
| 10:30am - 11:00am | (Photographic Materials) Identifying Material<br>Similarities Between The Photographs of Lola                                                                                                                   |                   | Villamil                                                                                                                                                                                                                                                          |
|                   | Álvarez Bravo and Tina Modotti<br>Room 255 E (Salt Palace)<br>Speaker(s): Bryanna Knotts                                                                                                                        | 11:00am – 11:30am | (Objects) Bones, Epoxy, and Cotton Balls, Oh My!:<br>The Treatment of Two Thornton Dial Artworks<br>Room 155 EF (Salt Palace)<br>Speaker(s): Kaela Nurmi                                                                                                          |
| 10:30am - 11:00am | (Research & Technical Studies) Evaluating the<br>Light-Stability of Roasted Arsenic Sulfide Pigments<br>Room 355 EF (Salt Palace)<br>Speaker(s): Celia Chari                                                    | 11:00am – 11:30am | (Paintings) Rediscovering and Restoring The<br>Harvard Art Museum's Cardona Altarpiece<br>Room 255 BC (Salt Palace)                                                                                                                                               |
| 10:30am – 11:00am | (Textiles) Eco-Friendly Nano Magnetic Sponge<br>Agent and a Multi-Analytical Approach to                                                                                                                        |                   | Speaker(s): Celia Chari, Alexandra Chipkin, Cristina<br>Morilla                                                                                                                                                                                                   |
|                   | Assessment the Use of Cross-Linked Polymer Used in Removing Rust Stains from Natural Dyed Protein-Based Textiles Samples. Room 255 A (Salt Palace) Speaker(s): HebaAllah saad                                   | 11:00am - 11:30am | (Research & Technical Studies) Using Projection Mapping to Reduce Damage to Light-Sensitive Paintings Room 355 EF (Salt Palace) Speaker(s): Alp Durmus                                                                                                            |

| 11:00am - 11:30am | (Textiles) Innovative Conservation Method of<br>Egyptian Historical Textiles by Using Covalently<br>Immobilized Enzymes on Nanoparticles<br>Room 255 A (Salt Palace)<br>Speaker(s): Mohamed Elbehery               | LUNCHEONS, EVENTS, OR LUNCH IN EXHIBIT HALL                                                    |                                                                                                                                                                                                                      |
|-------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                   |                                                                                                                                                                                                                    | 12:00pm – 2:00pm                                                                               | (Book & Paper) BPG Wiki Discussion: Conservation<br>of Books and Paper in Historic House Settings<br>Room 155 BC (Salt Palace)<br>Speaker(s): Sandrine Blais, Michelle C. Smith                                      |
| 11:30am - 12:00pm | (Architecture, Preventive Conservation) When The<br>Art's In The Way: The Complex Nature of Moving<br>Large-Scale Artefacts and Public Art                                                                         | 12:00pm – 2:00pm                                                                               | JAIC Editorial Board Meeting Deer Valley 2-3<br>(Marriott City Creek, 75 S W Temple St)                                                                                                                              |
|                   | Room 255 F (Salt Palace)<br>Speaker(s): Kelly Caldwell                                                                                                                                                             | 12:00pm – 2:00pm                                                                               | (Luncheon) Health and Safety Network: A Focus on<br>Mental Health (+ \$39 / \$29)                                                                                                                                    |
| 11:30am - 12:00pm | (Book & Paper) Wet Recovery: The National Library<br>of Jamaica's Perspective<br>Room 155 BC (Salt Palace)                                                                                                         |                                                                                                | Salon F (Marriott at City Creek, 75 S W Temple St)<br>Speaker(s): Stephanie Arel, Stephanie Black, Holly<br>Cusack-McVeigh, Mark Wilson                                                                              |
|                   | Speaker(s): Lisa-Ann Norris                                                                                                                                                                                        | 12:00pm – 2:00pm                                                                               | (Luncheon) Succession Planning Trends and Tools                                                                                                                                                                      |
| 11:30am – 12:00pm | (Contemporary Art) The Unexpected at Every Turn:<br>Yve Laris Cohen's Studio/Theater<br>Room 355 B (Salt Palace)                                                                                                   |                                                                                                | in Collections and the Arts (+ \$39 / \$29)<br>Room 355 A (Salt Palace)<br>Speaker(s): Michelle Eisenberg                                                                                                            |
|                   | Speaker(s): Yve Laris Cohen, Michele Marincola                                                                                                                                                                     | 12:00pm – 2:00pm                                                                               | (Luncheon) The Evolving Use of Leather in                                                                                                                                                                            |
| 11:30am - 12:00pm | (Electronic Media) Restoration of "Chance Words"<br>by Augusto de Campos: The Poem behind the<br>Scenes Written in Flash Code<br>Room 255 D (Salt Palace)<br>Speaker(s): Marcela Vieira                            |                                                                                                | Conservation (+ \$39 / \$29) Room 251 (Salt Palace) Speaker(s): Holly Herro, René Larsen, William Minter, Katharine Wagner, Laura Weyrich, Kristi Wright Sponsor: Northeast Document Conservation                    |
| 11:30am - 12:00pm | (Objects) Adventures in (Re)Constructing and                                                                                                                                                                       |                                                                                                | Center                                                                                                                                                                                                               |
|                   | Conserving a Thai Thammat<br>Room 155 EF (Salt Palace)<br>Speaker(s): Gregory Bailey, Angela Elliott                                                                                                               | 1:00pm – 2:00pm Preventive Care Idea Fair<br>Room 355 D (Salt Palace)<br>Sponsor: Tru Vue Inc. | Room 355 D (Salt Palace)                                                                                                                                                                                             |
| 11:30am – 12:00pm | (Paintings) Case Study: An Alternative to Canvas Lining Room 255 BC (Salt Palace) Speaker(s): Bitzy Couling  (Research & Technical Studies) Application of PECVD in the Conservation of Metallic Cultural Heritage |                                                                                                | oponson na vac me.                                                                                                                                                                                                   |
|                   |                                                                                                                                                                                                                    | CONCURRENT                                                                                     | r general sessions                                                                                                                                                                                                   |
|                   |                                                                                                                                                                                                                    | 2:00pm – 2:30pm                                                                                | (Concurrent: 3D Digital Technologies) Cultural<br>Heritage and 3D Printing: State of the Art and the                                                                                                                 |
| 11:30am – 12:00pm |                                                                                                                                                                                                                    |                                                                                                | Technology's Future<br>Room 255 E (Salt Palace)<br>Speaker(s): Meredith Noyes                                                                                                                                        |
|                   | Room 355 EF (Salt Palace)<br>Speaker(s): Mohamed Soliman Ali Khedr                                                                                                                                                 | 2:00pm – 2:30pm                                                                                | (Concurrent: Care, Empathy, and Community                                                                                                                                                                            |
| 11:30am - 12:00pm | (Textiles) Novel Synthesis of Nanoparticles-Based<br>Back Coating Flame-Retardant Materials for Historic<br>Textile Fabrics Conservation<br>Room 255 A (Salt Palace)<br>Speaker(s): Dina Abd ElGawad               |                                                                                                | Building) Developing a More Diverse Future for the<br>Field of Conservation through a Train-the-Trainer<br>Initiative<br>Room 155 EF (Salt Palace)<br>Speaker(s): Bianca Garcia                                      |
|                   | PMG Wiki Meeting Room 255 E (Salt Palace)                                                                                                                                                                          | 2:00pm – 2:30pm                                                                                | (Concurrent: Corporal Materials in Art) Ethical<br>and Practical Considerations in the Collection and<br>Conservation of Insignia III by Carlos Martiel<br>Room 255 F (Salt Palace)<br>Speaker(s): Annabelle F. Camp |

| 2:00pm – 2:30pm | (Concurrent: Embracing Intangible Dimensions) Reconsidering Agency in Conservation Practice: The Role of Devil's Club Root in the Display of a Tlingit Canoe Prow Room 155 BC (Salt Palace Speaker(s): Amy Tjiong                                                                    | 2:30pm – 3:00pm | (Concurrent: Towards Art in Transit 2.0 Follow-up) Panel Discussion on "Crate Performance and Sustainability Room 355 EF (Salt Palace) Moderator: Dale Kronkright Speaker(s): Arne P. Johnson, PE, SE, Julia Latané, Merv Richard, William Wei                                           |
|-----------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 2:00pm - 2:30pm | (Concurrent: Imaging Encounters) Surprising<br>Surfaces: Micro RTI For Investigating Cold-Worked<br>Glass<br>Room 255 BC (Salt Palace)<br>Speaker(s): Sarah Barack, Justine Wuebold                                                                                                  | 3:00pm – 3:30pm | (Concurrent: 3D Digital Technologies) Sculpting Solutions: 3D Technologies for Conservation Problem-Solving Room 255 E (Salt Palace) Speaker(s): Sean Billups                                                                                                                            |
| 2:00pm – 2:30pm | (Concurrent: Towards Art in Transit 2.0 Follow-up) Discussion of 2022 Survey on "Vibratory Impacts of Music and Transport on Museum Collections" and summary of pre-session symposium Room 355 EF (Salt Palace) Speaker(s): Vincent Beltran                                          | 3:00pm – 3:30pm | (Concurrent: Care, Empathy, and Community Building) Teaching Empathy in Conservation to Prioritize People Room 155 EF (Salt Palace) Speaker(s): Nina Owczarek                                                                                                                            |
| 2:30pm – 2:45pm | (Concurrent: 3D Digital Technologies) Transforming Cultural Heritage Preservation: The Power of 3D Technology, Bridging Past and Present With 3D Technology In Cultural Restoration, Accessibility, and Museum Mount Making. Room 255 E (Salt Palace) Speaker(s): Chris Hollshwander | 3:00pm – 3:30pm | (Concurrent: Corporal Materials in Art) Collaboration Through Repatriation: How International Repatriation Efforts at the Fowler Museum At UCLA Initiated Community Involvement, Shared Decision-Making, Challenges and Surprises Room 255 F (Salt Palace) Speaker(s): Christian de Brer |
| 2:30pm – 3:00pm | (Concurrent: Care, Empathy, and Community<br>Building) The Conservator and the Seven Stages of<br>Grief<br>Room 155 EF (Salt Palace)<br>Speaker(s): Marie-lou Beauchamp                                                                                                              | 3:00pm – 3:30pm | (Concurrent: Embracing Intangible Dimensions) Public Art Stewards: Lessons from a Flagship Training Program Room 155 BC (Salt Palace) Speaker(s): Margalit Schindler                                                                                                                     |
| 2:30pm - 3:00pm | (Concurrent: Corporal Materials in Art) Corporal<br>Materials In Contemporary Art: Multimodal Analysis<br>of an Exudating Human Fat-and-Wax Pillar<br>Room 255 F (Salt Palace)<br>Speaker(s): Oi Yan Michelle Chan, Lynn Lee                                                         | 3:00pm – 3:30pm | (Concurrent: Imaging Encounters) Technical Analysis of Inks Used for Scientific Annotations on the Harvard Astronomical Photographic Glass Plate Collection Room 255 BC (Salt Palace)                                                                                                    |
| 2:30pm - 3:00pm | (Concurrent: Embracing Intangible Dimensions) Conservation For Communities: A Model For Outreach To Tribal Audiences Room 155 BC (Salt Palace) Speaker(s): Rita Walaszek Arndt, Megan Brakob Narvey                                                                                  | 3:00pm – 3:30pm | Speaker(s): Elena Bulat, Thom Burns  (Concurrent: Towards Art in Transit 2.0 Follow-up) Panel Discussion on "Transit Logistics" Room 355 EF (Salt Palace) Moderator: Cayetana Castillo Speaker(s): Scott Pustai, Samantha Springer, Lisa Swedberg                                        |
| 2:30pm – 3:00pm | (Concurrent: Imaging Encounters) Curious  Damage Calls for Surprising Solutions: Catering to the Engineering Curious in the Conservation                                                                                                                                             | 3:30pm – 4:00pm | Break in The Exhibit Hall                                                                                                                                                                                                                                                                |
|                 | to the Engineering Curious in the Conservation,<br>Animation, and Preservation of Movable and Pop-<br>Up Books<br>Room 255 BC (Salt Palace)<br>Speaker(s): Katie Smith                                                                                                               | 4:00pm – 4:20pm | (Concurrent: Imaging Encounters) Below the<br>Surface of Braque's "Pitcher, Candlestick, and Black<br>Fish"<br>Room 255 BC (Salt Palace)<br>Speaker(s): Desirae Dijkema                                                                                                                  |

| 4:00pm – 4:30pm | (Concurrent: 3D Digital Technologies) Primary Results of Using the Scientific Documentation of 3D Laser Scanning and 3D Printing in King Khufu's Second Boat Reassembling Proposal Room 255 E (Salt Palace) Speaker(s): Mahmmoud Shehab | 4:30pm – 5:00pm                 | (Concurrent: Questioning our Assumptions) What<br>Does the Box Say? Improving Enclosure Design and<br>Labeling as a Result of User Research<br>Room 155 EF (Salt Palace)<br>Speaker(s): Amanda Hope, Lauren Telepak                            |
|-----------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 4:00pm – 4:30pm | (Concurrent: Changing Thoughts, Changing Practices) Contemporary Art Conservation in New York City's Art Market Environment Room 255 F (Salt Palace) Speaker(s): Mareike Opeña                                                          | 4:40pm – 5:00pm                 | (Concurrent: Imaging Encounters) Identifying<br>Multispectral Imaging Wavelengths to Create<br>"Recipes" for Analysis of Non-Visible Information on<br>Parchment and Thermal Paper<br>Room 255 BC (Salt Palace)<br>Speaker(s): Isabell Moyer   |
| 4:00pm – 4:30pm | (Concurrent: Embracing Intangible Dimensions) Museums of the 21st Century: Supporting Indonesian Institutions in a Changing Environment Room 155 BC (Salt Palace) Speaker(s): Saiful Bakhri, Kristal J. Hale                            | 5:00pm – 5:30pm                 | (Concurrent: Changing Thoughts, Changing<br>Practices) One Cannot Plan for the Unexpected:<br>Problem Solving during the Major Reinstallation of<br>the Princeton University Art Museum<br>Room 255 F (Salt Palace)<br>Speaker(s): Elena Torok |
| 4:00pm – 4:30pm | (Concurrent: Questioning our Assumptions)  Demystifying Our Metadata: Making Conservation  Documentation Accessible In The Digital Library At  The University of Illinois  Room 155 EF (Salt Palace)                                    | 5:00pm – 5:30pm                 | (Concurrent: Embracing Intangible Dimensions) Roundtable Discussion with all the speakers from this track Room 155 BC (Salt Palace)                                                                                                            |
| 4:20pm – 4:40pm | Speaker(s): Julia Cardinal, Jennifer Hain Teper  (Concurrent: Imaging Encounters) Exploring Variations in Green Pigment Degradation in Early Printed and Hand-Colored Works on Paper Room 255 BC (Salt Palace) Speaker(s): Yun Liu      | 5:00pm – 5:30pm                 | (Concurrent: Questioning our Assumptions) The Conundrum of Accepted Assumptions from Thousands of Tested Book Papers Room 155 EF (Salt Palace) Speaker(s): Andrew Davis, Fenella France                                                        |
| 4:30pm – 5:00pm | (Concurrent: 3D Digital Technologies) Creating the                                                                                                                                                                                      | RECEPTIONS, DINNERS, AND EVENTS |                                                                                                                                                                                                                                                |
|                 | Black Panther Custom Mannequin from Digital to<br>Physical<br>Room 255 E (Salt Palace)<br>Speaker(s): Willow Collins, Laura Mina                                                                                                        | 6:00pm – 8:00pm                 | (Reception) Dinner at the Utah Museum of<br>Contemporary Art – Reflections on Changing<br>Climate - Cost \$70<br>Utah Museum of Contemporary Art (UMOCA)                                                                                       |
| 4:30pm – 5:00pm | (Concurrent: Changing Thoughts, Changing<br>Practices) Bridging the Intangible: Two Generations<br>of Chinese Painting Conservators<br>Room 255 F (Salt Palace)<br>Speaker(s): Grace Jan                                                |                                 | 20 S W Temple St, in front of the Convention Center<br>Sponsor: ClickNetherfield                                                                                                                                                               |
|                 |                                                                                                                                                                                                                                         | 6:00pm – 8:00pm                 | (Reception) Wooden Artifacts Group (\$49 /\$35 for<br>students)<br>Squatters Brew Pub (47 W Broadway)                                                                                                                                          |
| 4:30pm – 5:00pm | (Concurrent: Embracing Intangible Dimensions)                                                                                                                                                                                           | 6:30pm – 8:30pm                 | Dine Arounds - Read and RSVP                                                                                                                                                                                                                   |
|                 | Great Salt Lake: Connections Between Fragile Ecology and Heritage Preservation Room 155 BC (Salt Palace) Speaker(s): Elisse Brautigam, Darren Parry, Justine Wuebold                                                                    | 7:30pm – 11:30pm                | Drag After Party at Why KiKi<br>69 West 100 South<br>Sponsor: AIC Research & Technical Studies Group                                                                                                                                           |

### MAY 24 FRIDAY

| 6:45am – 7:30am   | 45am – 7:30am (Wellness) Zumba, Salon J, Marriott City Creek                                                                                                                                                                         |                   | (Objects & Preventive Care) Arsenic: A Collection                                                                                                                                                                             |
|-------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 8:15am - 10:15am  | (General) Expectations and Realities: The State of Emerging Professionals in the Field Room 251 (Salt Palace) Moderators: Michaela Paulson, Steph Guidera Breakfast provided courtesy of Naoma Tate                                  |                   | Component Room 155 EF (Salt Palace) Speaker(s): Lisa Goldberg, Timothy Greening, David Hinkamp, Ingrid Neuman, Nancie Ravenel, Fran E. Ritchie, Kerith Koss Schrager, Julia Sybalsky, Melissa Tedone                          |
| SPECIALTY SE      |                                                                                                                                                                                                                                      | 11:00am – 11:30am | (Archaeological Heritage) Repeat Photography and<br>Virtual Reconstruction of Los Santos de Ángeles                                                                                                                           |
| 10:30am – 11:00am | (Archaeological Heritage) The Mystery of the<br>Frankenphora: Treatments and Ethics of a<br>Composite Amphora<br>Room 355 C (Salt Palace)                                                                                            |                   | de Guevavi, Tumacácori National Historical Park,<br>Arizona<br>Room 355 C (Salt Palace)<br>Speaker(s): Ha Leem Ro                                                                                                             |
| 10:30am - 11:00am | Speaker(s): Olivia Haslam  (Book & Paper) Assessing Collections at the Library of Congress: The Human Aspects for Sustainability Room 155 BC (Salt Palace) Speaker(s): Beatriz Haspo                                                 | 11:00am – 11:30am | (Book & Paper) Merging of Techniques to Unite<br>Historical Integrity with Function: Treatment of the<br>Hebrew Union College 1526 Prague Haggadah<br>Room 155 BC (Salt Palace)<br>Speaker(s): Ashleigh N. Ferguson Schieszer |
| 10:30am – 11:00am | (Contemporary Art, Electronic Media) Timekeeper:<br>Caring for a Complex Installation by Sarah Sze<br>Room 355 B (Salt Palace)<br>Speaker(s): Piotr Chizinski                                                                        | 11:00am - 11:30am | (Contemporary Art, Electronic Media) A Journey in<br>the Preservation of Time-Based Media: The Exam<br>of the Heritage Conservation Centre in Singapore<br>(Part I)<br>Room 355 B (Salt Palace)                               |
| 10:30am - 11:00am | (Paintings, Textiles) Laser Cleaning in the Treatment of a Vandalized Unprimed Canvas Room 255 BC (Salt Palace) Speaker(s): Bartosz Dajnowski, Amber L. Kerr Sponsor(s): Otego                                                       |                   | Speaker(s): Fabiola Rocco  (Paintings, Textiles) Henri Matisse's Silkscreen on Linen, Edition of 60, Oceanie, Le Ciel and La Mer, 1946-49: More Examples, Some Discoveries, Remaining Quandaries                              |
| 10:30am – 11:00am | 1:00am (Photographic Materials) Achievements and Reflections on a Three-Year Collaborative Project in Photograph Conservation                                                                                                        |                   | Room 255 BC (Salt Palace) Speaker(s): Mary Kaldany Sponsor(s): Otego                                                                                                                                                          |
|                   | Room 255 E (Salt Palace)<br>Speaker(s): Clara von Waldthausen                                                                                                                                                                        | 11:00am - 11:30am | (Photographic Materials) Photography: A Great<br>Change of Meaning                                                                                                                                                            |
| 10:30am - 11:00am | (Research & Technical Studies) Alteration of<br>Materials and of Meaning in an Early 16th C. Upper<br>Rhenish Devotional Manuscript<br>Room 355 EF (Salt Palace)<br>Speaker(s): Cindy Connelly Ryan                                  |                   | Room 255 E (Salt Palace)<br>Speaker(s): Pablo Ruiz                                                                                                                                                                            |
|                   |                                                                                                                                                                                                                                      | 11:00am – 11:30am | (Research & Technical Studies) Mechanisms<br>of Decay: Rapid Weathering of Outdoor Basalt<br>Sculptures                                                                                                                       |
| 10:30am - 12:00pm | (Architecture) Revisiting the Efficacy of Plaster<br>Repair Technologies of the Last 40 Years - an ASG/<br>APT Joint Panel<br>Room 255 F (Salt Palace)<br>Speaker(s): Heather Hartshorn, Naomi Kroll, Brooke<br>Russell, Mary Slater |                   | Room 355 EF (Salt Palace)<br>Speaker(s): Jane C. Gillies                                                                                                                                                                      |
|                   |                                                                                                                                                                                                                                      | 11:30am – 12:00pm | (Archaeological Heritage) Just Keep Consolidating:<br>Managing Challenge and Change with the Cypriot<br>Conservation Project<br>Room 355 C (Salt Palace)<br>Speaker(s): Emily Brown                                           |

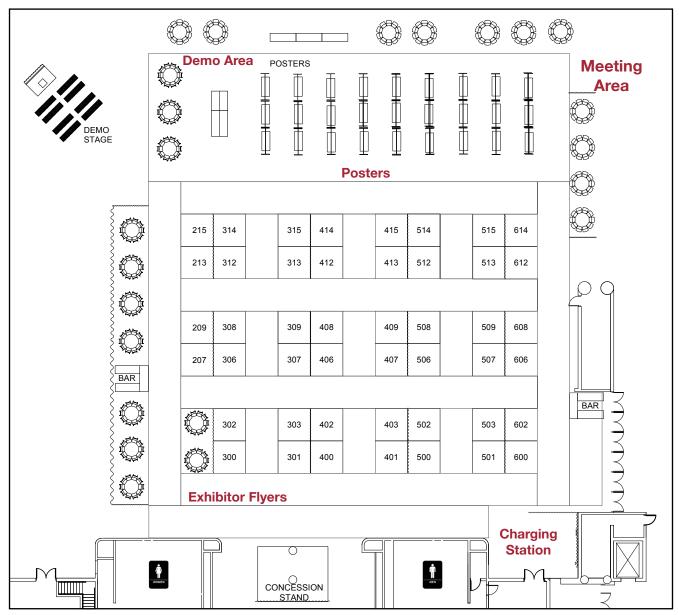
| 11:30am – 12:00pm                                                                                                                                                                                                                                                                                                                     | (Book & Paper) Sắc Phong – A Preliminary<br>Investigation of Vietnamese Imperial Proclamations<br>Room 155 BC (Salt Palace)<br>Speaker(s): Vu Do                                                                                                                                                                                              | 2:00pm – 2:30pm                                        | (Objects) Steel Yourself: Addressing Internal<br>Secrets of A Beverly Pepper<br>Room 155 (Salt Palace)<br>Speaker(s): Claire Taggart                                                                                                                                 |
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| 11:30am – 12:00pm                                                                                                                                                                                                                                                                                                                     | (Contemporary Art, Electronic Media) Dynamic<br>Objects, Evolving Collections: A New Approach to<br>Changeability at the National Museum of Australia<br>Room 355 B (Salt Palace)<br>Speaker(s): Asti Sherring                                                                                                                                | 2:00pm – 2:30pm                                        | (Paintings, Textiles) Unravelling Mysteries: The Discoveries and Challenges of Remounting an Oversized Thangka Painting Room 255 BC (Salt Palace) Speaker(s): Sun-hsin Hung Sponsor(s): Otego                                                                        |
| 11:30am - 12:00pm                                                                                                                                                                                                                                                                                                                     | (Paintings, Textiles) Conserving Canvas: Cotton Duck<br>Room 255 BC (Salt Palace)<br>Speaker(s): Ellen Davis<br>Sponsor(s): Otego                                                                                                                                                                                                             | 2:00pm – 2:30pm                                        | (Preventive Care) Art and Heritage in Transport:<br>Perception and Statistics Room 355 C (Salt Palace)<br>Speaker(s): William Wei                                                                                                                                    |
| 11:30am - 12:00pm                                                                                                                                                                                                                                                                                                                     | (Photographic Materials) A Legacy of Stars: Preservation of the Williamina Fleming Astronomical Glass Plates from Harvard College Observatory Room 255 E (Salt Palace) Speaker(s): Elena Bulat, Tess Bronwyn Hamilton                                                                                                                         | 2:00pm – 2:30pm                                        | (Research & Technical Studies) A Study of the<br>Use of Acacia Nilotica Seed Pods to Produce<br>a Distinctive, Black Paint for Bwa and Mossi<br>Polychrome Wood Masks in Burkina Faso<br>Room 355 EF (Salt Palace)<br>Speaker(s): Stephanie Hornbeck, Richard Newman |
| 11:30am - 12:00pm                                                                                                                                                                                                                                                                                                                     | (Research & Technical Studies) Not All That's White Is Salt: Encountering Lead Corrosion on Glazed Ceramics Room 355 EF (Salt Palace) Speaker(s): Isabel Wagner OR LUNCH ON YOUR OWN                                                                                                                                                          | 2:00pm – 4:00pm                                        | (Book & Paper) Art on Paper Discussion Session -<br>Tape and Adhesives: Techniques and Materials for<br>an Age-Old Problem<br>Room 155 BC (Salt Palace)<br>Speaker(s): Heather Hendry, Rebecca Pollak                                                                |
| 12:00pm - 2:00pm                                                                                                                                                                                                                                                                                                                      | (Luncheon) Choosing Materials for Storage, Exhibition and Transport (+ \$39 / \$29) Salon F (Marriott at City Creek) Speaker(s): Rachael Arenstein, Sarah Freshnock, Rebecca Kaczkowski, Devon Lee, Laura Gaylord Resch, Samantha Springer, Julia Sybalsky, Elena Torok Sponsor(s): G.C. Laser Systems Inc. and Crystalizations Systems, Inc. | 2:00pm – 4:00pm                                        | (Book & Paper) Library and Archives Discussion Session: Managing Collection Needs and Conservation Practices in the Face of Capacity Challenges Room 355 B (Salt Palace) Speaker(s): Christine Bethke, Genevieve Pierce Kyle                                         |
|                                                                                                                                                                                                                                                                                                                                       |                                                                                                                                                                                                                                                                                                                                               | 2:30pm – 3:00pm                                        | (Architecture) Synthesized Method of Identifying<br>Salt Efflorescence In Monuments & Buildings<br>Room 255 F (Salt Palace)<br>Speaker(s): Sonia Tatiana J. Fraj                                                                                                     |
| 12:00pm – 2:00pm                                                                                                                                                                                                                                                                                                                      | (Luncheon) CIPP Panel on Early Career Conservators<br>and Private Practice Work (+ \$39 / \$29)<br>Room 251 (Salt Palace)                                                                                                                                                                                                                     | 2:30pm – 3:00pm                                        | (Contemporary Art, Wooden Artifacts) A Macro-<br>Miniature: Conservation of a Large Paul Rudolph                                                                                                                                                                     |
| SPECIALTY SESSIONS                                                                                                                                                                                                                                                                                                                    |                                                                                                                                                                                                                                                                                                                                               |                                                        | Architectural Model<br>Room 255 D (Salt Palace)                                                                                                                                                                                                                      |
| 2:00pm - 2:30pm (Architecture) Lighthouses: The Evolving Character of an Unchanging Beacon Room 255 F (Salt Palace) Speaker(s): Susan Pranger  2:00pm - 2:30pm (Contemporary Art, Wooden Artifacts) Conserving Please Be Seated: Five Decades of Studio Furniture in Public Use Room 255 D (Salt Palace) Speaker(s): Christine Storti | _                                                                                                                                                                                                                                                                                                                                             |                                                        | Speaker(s): Elizabeth Peirce                                                                                                                                                                                                                                         |
|                                                                                                                                                                                                                                                                                                                                       | Room 255 F (Salt Palace)                                                                                                                                                                                                                                                                                                                      | 2:30pm – 3:00pm                                        | (Objects) Hubris or Humility? My Treatment<br>Approaches to Working with a Yoruba Orisa Figure<br>of Esu                                                                                                                                                             |
|                                                                                                                                                                                                                                                                                                                                       | Room 155 (Salt Palace                                                                                                                                                                                                                                                                                                                         | Room 155 (Salt Palace)<br>Speaker(s): Céline Wachsmuth |                                                                                                                                                                                                                                                                      |

| 2:30pm – 3:00pm              | (Paintings, Textiles) Embracing Mist-Lining: The<br>Structural Treatment of Two Canvas Paintings by<br>Edwin Austin Abbey at the Yale University Art Gallery<br>Room 255 BC (Salt Palace)<br>Speaker(s): Tirza Harris, Nikita Shah<br>Sponsor(s): Otego | 3:00pm - 3:30pm | (Research & Technical Studies) Eh, Voilà! Encountering<br>the Unexpected in the Treatment of Gustave<br>Caillebotte's 'Young Man at His Window'<br>Room 355 EF (Salt Palace)<br>Speaker(s): Douglas MacLennan |
|------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 2:30pm – 3:00pm              | (Preventive Care) Novel Flexible Mounting Systems for Fragile Objects: Making the Impossible Possible Room 355 C (Salt Palace) Speaker(s): Tony Sigel                                                                                                   | 3:30pm – 3:45pm | (Contemporary Art, Wooden Artifacts) Cellulose<br>Nitrate Film on the Big Screen: Treating an Eames FSW<br>(Folding Screen Wood)<br>Room 255 D (Salt Palace)<br>Speaker(s): Olav Bjornerud                    |
| 2:30pm – 3:00pm              | (Research & Technical Studies) When One's Upbringing Guides Scholarly Research: The Technical Examination of a (Purported) Mexican Religious Painting                                                                                                   | 3:30pm – 4:00pm | (Objects) Art in the Swamp: Outdoor Sculpture<br>Conservation at the New Orleans Museum of Art<br>Room 115 EF (Salt Palace)<br>Speaker(s): Ingrid Seyb                                                        |
|                              | Room 355 EF (Salt Palace)<br>Speaker(s): M. Fernanda Delgado Cornelio                                                                                                                                                                                   | 3:30pm - 4:00pm | (Paintings, Textiles) A Thoughtful Approach to the<br>Structural Treatment of Colonial Latin American                                                                                                         |
| 3:00pm - 3:30pm              | (Architecture) Water: Can It Be the Culprit and the<br>Savior?<br>Room 255 F (Salt Palace)<br>Speaker(s): George Reo, Rebecca Wong                                                                                                                      |                 | Paintings Room 255 BC (Salt Palace) Speaker(s): María Elisabet Carnero, Luciana Andrea Feld Sponsor(s): Otego                                                                                                 |
| 3:00pm - 3:30pm              | (Contemporary Art, Wooden Artifacts) Considerations<br>of a D. Tanning Sculpture<br>Room 255 D (Salt Palace)<br>Speaker(s): Caitlin Sofield                                                                                                             | 3:30pm - 4:00pm | (Preventive Care) Assessment of Air Quality within a<br>Historic House Museum: Particulate Matter and Gas<br>Phase Risks to Collections                                                                       |
| 3:00pm – 3:30pm              | (Objects) HuhThat's Weird: Revelations and                                                                                                                                                                                                              |                 | Room 355 C (Salt Palace)<br>Speaker(s): Liora Mael                                                                                                                                                            |
|                              | Reflections from the Treatment of a Heavily Restored<br>Staffordshire Pearlware Tankard<br>Room 155 EF (Salt Palace)<br>Speaker(s): Allison Kelley                                                                                                      | 3:30pm – 4:00pm | (Research & Technical Studies) What's on The Bag?<br>Technical Analysis of The Colorants and Printing<br>Techniques Utilized In Frank Stella's 1984 Tyler                                                     |
| Hang<br>Artw<br>Roon<br>Spea | (Paintings, Textiles) Invisible Suspension: A Tailored Hanging System For Darrel Ellis's Shaped Canvas Artwork 'Untitled (Bedroom Scene)' Room 255 BC (Salt Palace) Speaker(s): Jen Munch Sponsor(s): Otego                                             |                 | Graphics Bag<br>Room 355 EF (Salt Palace)<br>Speaker(s): Caroline Carlsmith, Devon Lee                                                                                                                        |
|                              |                                                                                                                                                                                                                                                         | 3:45pm – 4:00pm | (Contemporary Art) Blinking Outside The Box: The Treatment of Sol Lewitt's Wall Structure In Nine Parts, Each Containing a Work of Art by Other Artists, 1963                                                 |
| 3:00pm – 3:30pm              | (Preventive Care) Navigating CITES as an Arts<br>Institution: Challenges Encountered with Loans and                                                                                                                                                     |                 | Room 255 D (Salt Palace)<br>Speaker(s): Kaela Nurmi                                                                                                                                                           |
|                              | Acquisitions of Organic Materials at the Met                                                                                                                                                                                                            | CLOSING SESSION |                                                                                                                                                                                                               |
|                              | Room 355 C (Salt Palace) Speaker(s): Alice Fornari, Netanya Schiff                                                                                                                                                                                      | 4:00pm – 6:00pm | (Closing Session) 7th Annual Mistakes Session<br>Room 251 (Salt Palace                                                                                                                                        |

### MAY 25 SATURDAY

| Depart 8:00am    | (Tour) Arches and Canyonlands Adventure (\$799/\$849) | 9:00am – 5:00pm | (Post-session Seminar) Applying Sustainability                                                  |
|------------------|-------------------------------------------------------|-----------------|-------------------------------------------------------------------------------------------------|
| 9:00am - 12:00pm | (Tour) Mountain E-Bike Tour (\$149)                   |                 | Principles Cross-Departmentally at Collecting<br>Institutions (\$109), Utah Museum of Fine Arts |
| 9:00am – 4:00pm  | (Tour) Spiral Jetty and Golden Spike (\$389)          |                 |                                                                                                 |

### **Exhibit Hall Map**



**Entrance** 

Our Exhibit Hall will be open Tuesday night through Thursday, May 21-23. Join us Tuesday 6:00pm-8:00pm, and Wednesday and Thursday from 10:00am-5:30pm. The Exhibit Hall, The Hub and demo area, and posters are located in Hall 1. A concession stand with coffee and food items will be open during lunch both days.

Visit posters and enjoy refreshments while you peruse our vendors' offerings during session breaks on Wednesday and Thursday at 10:00am and 3:30pm. Don't forget that you can visit the booths any time the Exhibit Hall is open! Check the online schedule for exhibitor demonstrations.

Join us for a special Exhibit Hall Opening Reception on Tuesday, 6:00 to 8:00pm!

### **Exhibitor Profiles**

### Our Exhibit Hall is open Wednesday & Thursday, May 22-23, 10:00am-5:30pm

| <b>Exhibitor</b>                                       | <u>Booth</u> | <u>Exhibitor</u>                            | <u>Booth</u> |
|--------------------------------------------------------|--------------|---------------------------------------------|--------------|
| DIAMOND                                                |              | REGULAR                                     |              |
| Getty Conservation Institute                           | 409          | American Academy of Bookbinding             | 313          |
| Huntington T. Block Insurance Agency, Inc              | 300          | Archival Products                           | 302          |
| University Products, Inc.                              |              | Bev/Art                                     | 515          |
|                                                        |              | Bruker                                      | 512          |
| GOLD                                                   |              | Delta Designs                               | 500          |
| Click Netherfield                                      | 606          | Dorfman Museum Figures, Inc                 | 309          |
| Conserv                                                |              | EXPM- Keeping History Alive                 | 514          |
| Gunnar USA, Inc.                                       | 508          | GLASBAU HAHN America                        |              |
| Kremer Pigments, Inc.                                  | 301          | GeoSonics/Vibra-Tech                        | 502          |
| NEDCC   Northeast Document Conservation                | Center 602   | Getty Publications                          | 406-408      |
| Otego                                                  | 407          | Hiromi Paper, Inc                           |              |
| TandD LLC                                              | 400          | MAC Group US                                |              |
| Tru Vue, Inc.                                          | 314          | MegaVision                                  |              |
|                                                        |              | NEH   National Endowment for the Humanities |              |
| SILVER                                                 |              | Opus Instruments, LTD (Atik Cameras)        |              |
| Collection Care Services                               | 308          | Polygon US Corporation                      |              |
| Creative Vision Life Coaching                          | 312          | RH Conservation Engineering                 |              |
| EL.EN. S.P.A                                           | 401          | Talas                                       |              |
| Hollinger Metal Edge Inc                               | 507          | Turtle North America                        |              |
| Middleton Spectral Vision                              |              | Vaisala                                     |              |
| National Center for Preservation Technology & Training |              | Veritas Editions                            | 503          |
| (NCPTT)                                                |              | Zone Display Cases                          |              |
| SmallCorp                                              | 513          | 1 7                                         |              |
| •                                                      |              | AIC AND FAIC                                |              |
|                                                        |              | AIC & FAIC: Information                     | 213          |
|                                                        |              | AIC: Health & Safety Network                |              |

#### **DIAMOND LEVEL**

### GETTY CONSERVATION INSTITUTE Booth # 409

1200 Getty Center Dr., Ste. 700, Los Angeles, CA 90049, USA

Contact: Angela Escobar Ph: +1 (310) 440-7325 Email: gciweb@getty.edu

Website: www.getty.edu/conservation

The Getty Conservation Institute works to advance conservation practice in the visual arts, broadly interpreted to include objects, collections, architecture, and sites. It serves the conservation community through scientific research, education and training, model field projects, and the broad dissemination of the results of both its own work and the work of others in the field. In all its endeavors, the Conservation Institute focuses on the creation and dissemination of knowledge that will benefit the professionals and organizations responsible for the conservation of the world's cultural heritage. Sponsoring: Emerging Conservation Professionals Network (ECPN) Happy Hour.

### HUNTINGTON T. BLOCK INSURANCE AGENCY, INC. Booth # 300

2001 K St., NW, Ste. 625, Washington, DC 20006, USA Contact: Casey Wigglesworth

Ph: +1 (202) 429-8590

Email: casey.wigglesworth@huntingtontblock.com

Website: www.huntingtontblock.com

This Conservators Property Insurance Program was arranged for members of the American Institute for Conservation of Historic and Artistic Works. Insurance is provided on property of others in your care, custody, and control which is accepted by you for conservation. If you purchase coverage on property of others, you will also have the option of obtaining insurance on two additional types of property: 1) Your studio contents and art library, and (2) your field equipment (such as camera, microscope, etc.). *Sponsoring: Opening General Session.* 

### UNIVERSITY PRODUCTS, INC. Booth # 600

PO Box 101, Holyoke, MA 01041, USA

Contact: John A. Dunphy

Ph: +1 (413) 532-3372 Fx: +1 (800) 532-9281 Email: jadunphy@universityproducts.com

Website: www.universityproducts.com

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#### **Booth #606**

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Contact: Ryan Skorch Ph: +1 (856) 313-6688

Email: r.skorch@clicknetherfield.com Website: www.clicknetherfield.com

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### **CONSERV**

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Contact: Claire Winfield Ph: +1 (314) 629-3152 Email: claire@conserv.io Website: www.conserv.io

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### **GUNNAR USA, INC.**

#### Booth # 508

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Contact: Charles Woods Ph: +1 (360) 322-0302 Email: cwoods@gunnar-usa.com Website: www.gunnar-usa.com

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Email: roger@kremerpigments.com Website: www.kremerpigments.com

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### NEDCC | NORTHEAST DOCUMENT CONSERVATION CENTER

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Contact: Tahe Zalal Ph: +1 (978) 470-1010 Email: tzalal@nedcc.org Website: www.nedcc.org

Founded in 1973, NEDCC is the first independent conservation laboratory in the United States to specialize exclusively in treating collections made of paper or parchment, such as works of art, photographs, books, maps, manuscripts, etc. NEDCC is incorporated as a nonprofit in order to provide affordable conservation and preservation services to collecting institutions. *Sponsoring: Leather Use Luncheon.* 

### OTEGO Booth # 407

3213 N Kenmore Ave., Chicago, IL 60657, USA

Contact: Loic Rocaboy Ph: +1 (336) 260-0451

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### TRU VUE, INC Booth # 314

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SILVER

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Contact: Cynthia Kuniej Berry Ph: +1 (702) 530-6094

Email: cynthia@creativevisionlifecoaching.com Website: www.creativevisionlifecoaching.com

Cynthia Kuniej Berry is Owner and Founder of Creative Vision Life Coaching, LLC specializing in transformational coaching for conservators and anyone seeking support in creating a life you love living. Cynthia is a certified DBC, LMC (2022) by Brave Thinking® Institute; Professional Associate, Member in AIC/FAIC (1982) and professional conservator, trained in Cooperstown, graduate of Buffalo Art Conservation Program, MA, CAS (1988). She lives in Las Vegas, NV, with her husband.

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### HOLLINGER METAL EDGE, INC. Booth # 507

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Contact: Gabor Kemeny Ph: +1 (608) 831-2141

Email: gabor.kemeny@middletonspectral.com

Website: www.middletonspectral.com

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645 University Parkway, Natchitoches, LA 71457, USA

Contact: Jason Church

Ph: +1 (318) 356-7444 Fx: +1 (318) 356-9119

Email: jason\_church@contractor.nps.gov

Website: www.nps.gov/ncptt

The National Park Service's National Center for Preservation Technology and Training protects America's historic legacy by equipping professionals in the field of historic preservation with progressive technology-based research and training. Since its founding in 1994, NCPTT has awarded over \$7 million in grants for research that fulfills its mission of advancing the use of science and technology in the fields of archaeology, architecture, landscape architecture and materials conservation. Sponsoring: Lasers in Conservation Workshop

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#### **STANDARD**

### AIC COMMITTEE: SUSTAINABILITY Booth # 215

Contact: Kate Fugett

Email: sustainability@culturalheritage.org Website: www.culturalheritage.org/sustainability

The charge of the committee is to provide resources for AIC members and other caretakers of cultural heritage regarding environmentally sustainable approaches to preventive care and other aspects of conservation practice.

### AIC NETWORK: HEALTH & SAFETY Booth # 209

Chair: Susan Costello

Email: health-safety@culturalheritage.org Website: www.culturalheritage.org/health

The Health & Safety Network provides educational and technical information to the AIC membership to increase knowledge of safety hazards and general health issues related to the conservation profession. It offers information through lectures, workshops, displays, AIC's publications, AIC's website, a new forum, and other electronic and print media. It also addresses health and safety issues of concern to the AIC membership by maintaining current information through research, by collaboration with health and safety professionals and with other health and safety organizations, and, periodically, by statistically valid surveys, the results of which facilitate establishing priorities. Join the Health & Safety Forum at www.culturalheritage.org/health-safety-forum to ask guestions!

### AIC & FAIC INFORMATION Booth # 213

Email: contact@culturalheritage.org

Let's discuss how to get the most out of your membership and learn more about FAIC's programs.

### AMERICAN ACADEMY OF BOOKBINDING Booth # 313

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Contact: Wilber H. "Chip" Schilling

Ph: +1 (970) 728-8649 Email: chip@ahhaa.org

Website: www.bookbindingacademy.org

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100tii # 303

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Contact: Rui Mamede Ph: +351 21 466 1910 Email: rmamede@expm.com.pt Website: www.expm.com.pt

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### GEOSONICS/VIBRA-TECH Booth # 502

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Email: dancuny@macgroupus.com Website: www.macgroupus.com

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### **POSTERS**

### Explore the posters in the Exhibit Hall to discover new research.

Read the poster abstracts to familiarize yourself with the topics, then meet the poster authors to discuss their research at their posters on **Thursday, May 23, during the 3:30pm break**. Posters will be on view during all Exhibit Hall hours. All authors are listed and the presenters are in bold. Posters will be available online after the meeting.

- 01. Mapping Values and Brazilian Users'
  Expectations For The Lifetime of Modern
  and Contemporary Textile Heritage Objects:
  A Step Towards Modeling Change; Thiago
  Sevilhano Puglieri; Teresa Paula; Laís Sidou
- 02. Overview of the Work of the Leather Discussion Group, a Cross-Institutional Collaboration; Kristi Wright; Katharine Wagner; William Minter; Holly Herro
- 03. Introducing a Georeferenced Leather
  Database: Building a Collaborative Global
  Repository for Leather Research, Techniques,
  and Trends; **Kristi Wright**; Katharine
  Wagner; William Minter; Holly Herro
- 04. Step by Step: The Reconstruction of Waterlogged Leather Shoes; Johanna Rivera; **Melissa Allen**
- 05. Just Put One Foot in Front of the Other: The Twenty-Year Conservation Journey of Sixteen Archaeological Leather Shoes; Johanna Rivera; **Melissa Allen**; Nicholas DeLong
- 06. (Poster and Book & Paper) Repairing Modern First Edition Dust Jackets Without Fills or Inpainting: A Conservative Approach; Christopher Sokolowski
- 07. (Poster and Book & Paper Sessions) Soft Clouds: Material Analysis of Historical Paste Papers from the Rosamond B. Loring Collection of Decorated Papers; Debora Mayer; Mitchel Gundrum; Kelli Piotrowski
- 08. (Book & Paper) A New Technique for Strengthening of Naturally Degraded Acidic Paper with Cellulose Fibers Coating; Naoko Sonoda; Takayuki Okayama; **Ryota Kose**; Masazumi Seki; Yuki Tanaka
- 09. (Book & Paper) Analysis and Assessment of the Degradative Properties of Strawboard as a Secondary Support; Rebecca Ploeger; Theresa J. Smith; Jenni Krchak; Aaron Shugar
- 10. (Book & Paper) The Production and Deformation of Drying Boards; **Yi-Chiung Lin; Ting-Fu FAN** 范定甫
- (Contemporary Art) Blinking Outside The Box: The Treatment of Sol Lewitt's Wall Structure In Nine Parts, Each Containing a Work of Art by Other Artists, 1963; Elisse Brautigam; Kaela Nurmi; Nicholas Ecker

- 12. (Contemporary Art) Plastilina, Plastiline, Plasticine: A Study of the First Industrial Modeling Pastes Invented at the End of the 19th Century; **Sonia Tatiana J. Fraj**
- 13. (Research & Technical Studies) Developing
  Genomic Tools to Determine the Maker of a Modern
  Gofun Paint Preparation; Christopher Mason; Julie
  Arslanoglu; Jennifer Perry; Ann-Marie Abunyewa
- 14. (Research & Technical Studies) Plastics Bingo!: Identifying Plastics in the Collections of Cooper Hewitt, Smithsonian Design Museum; Sarah Barack; James Hughes; Jessica Walthew
- 15. (Textiles) No Time to Dye: Simulating Dye Recipes with the "Test Tube Method;" **Abigail Lenhard**
- Dyeing, Curling, and Conservation Hairspray:
   Reproduction of Pink Ostrich Feathers on an Ann
   Lowe Gown; Katherine Sahmel; Andrea Goldstein
- (Wooden Artifacts) The Use of Fiber Optics Spectroscopy for the Identification of Wood; Aaron Shugar; Elly Stewart Davis
- The Conservation of Tutankhamun's Gilded
   Wooden Bed; Abeer Thabet; Hadeel Khalil; Safwat
   Mohamed Sayed Aly; Dr. Hussein Kamal
- Galleries With Windows: Strategies for Collecting and Processing Light Data;
   Alayna Bone; Eric Breitung
- 20. Examination and Analysis of burnt stucco window In the stores of the Museum of Islamic Art, Cairo, Egypt; Amal Mohammed Lotfy; Nagah Abuseif; Mona Fouad Ali; Hala Mahmoud Afifi
- 21. The raw canvases of Morris Louis and Gene Davis: structural treatments using sailmaking techniques; **Amber L. Kerr; Keara Teeter**
- 22. Non-Drying Soy-Based Ink Prints: Handling and Storage Challenges; **Amy E. Hughes; Sarah Purnell**
- 23. Sharp Thinking: Thorns as Cleaning Tools in a North American Conservation Lab; **Arianna Johnston**
- 24. Preservation Challenges and Preventive Conservation Strategies for Manuscripts storing in the Museum of Islamic Art, Cairo; Ayman Elgohary; Mohamed Ezzat



### **POSTERS**

- Crossing the 'T's: Overcoming Mounting Obstacles at the Architecture Archives Exhibition; Cassandra Tang; Ayaka Ajiki
- Thinking Inside The Box: Housing Solutions For Unconventional Book Formats;
   Clare Manias; Andrijana Sajic
- Airtable as a New Tool for Fostering Collaborative Preventive Conservation Programs; Colleen Grant
- 28. Building A Better Clamshell Box: An Evaluation and Study of Commonly Used and Experimental Adhesives For Traditional Rare Book Boxes; Dan Paterson; Eric Monroe; Kelli Stoneburner; Claire Dekle; Kathryn Kenney
- What Do Conservators Think Today about the Protection of the Back of Painting on Canvas?
   Daniel Morales-Martín; Alicia Sánchez Ortiz
- 30. Silicone-Based Solvents for the Removal of Pressure Sensitive Tape; **Diane E Knauf**; Madalyn Meehan
- 31. [withdrawn]
- 32. Comparison of Colorimetric and Photographic Interpretation of A-D Strips®: L\*A\*B\* to RGB; **Emilie Duncan**; Molly McGath; Lindsey Zachman
- Narrating Change: Digital Storytelling as a tool for personal growth in conservation;
   Emily Williams; Teti Dragas
- 34. Conservation Documentation Archive at Duke University Libraries; **Erin Hammeke**
- 35. On the Border of Preservation: Where to Start? Establishing a Comprehensive Preservation Program at University of Arizona Libraries Special Collections; **Fleur van der Woude**
- 36. Conservation Sparks Change on Waste Management Outlook Conservation of Frescoes in the Shekhawati Region, India; Giovanna Carravieri; Sabine Cotte; Cecile Charpentier; Harpreet Tanday
- (Preventive Care) Street v. Art: A Case Study of Mold Remediation and Community Participation at the George Floyd Global Memorial; Nylah Byrd
- 38. Treatment of a 17th-Century Dutch Military Portrait: Reflecting on an Unexpected Lining Process; **Josephine Ren**; Fiona Beckett
- The Fiberglass Tissue Method: A Technique for Lining Fragile Iron Prior to Desalination; Kate McEnroe; Christina Altland

- 40. The COVID Cohort: Can Graduate Education Be Virtual and Successful? **Katharine Shulman; Kaeley Ferguson**
- 41. Finishing the non finito: How Tintoretto's "unfinished" Personification of Fidelity gained a new identity through conservation treatment; Katherine Eremin; Kate Smith; Georgina Rayner
- 42. What do you do with a Wasp Nest!
  Combining disciplines to find appropriate treatments and mounting of these little researched objects; **Kayleigh Spring**
- 43. Embracing the Challenges of an Unexpected Environment for Unique Cement Lanterns at the Topaz Museum in Delta, Utah; Kimberleigh Collins-Peynaud
- 44. Structural conservation of canvas paintings in Slovak restoration practice The dilemma between tear mending and lining; **Lucia Sefcikova**
- 45. Pulpable Texture: Using Andrea Peterson's ABM Board in Book Conservation; **Luke K. Kelly**
- 46. The Use of Paralloid 44 in Completion of Archaeological Glass: Applied Experimental Study; **Mohammad Hefny Abd Elkarim**; Hamdy Abd Al-Monem Mohamed
- 47. Anachronistic or Visonary? Evaluating Giovanni di Paolo's use of Silver Leaf on a Fifteenth-century Sienese Predella; **Molly E. Hughes-Hallett**
- 48. A Mamluk Copy of Fawaed El Mawaad: Investigation and Analytical Approach; **Mona Gawish**
- 49. The unexpected challenges: Scientific Preservation and Exhibition of Tutankhamun's Textiles at the Grand Egyptian Museum; NagmElDeen Hamza; Mohamed Ayad; Mohamed Ragab; Islam Shahin
- Observations In Micro-Air Abrasion: Removing Lead Paint and Corrosion, and Considerations For Recoating A "Life Car"; Nicole Peters
- 51. Selective Permeability Pouches: An Innovative Long-Term Storage Solution For Radioactive Material In Museum Collections; Olav Bjornerud; Lesley Mirling; Katerina Acuna
- 52. The Third Devil: Reconstructing Elements of an Altered 18th Century Cuzco School Painting; Patricia Smithen; **Jocelyn Hillier**
- 53. An Applied Study of The Effect of Using Laser on An Archaeological Cartonnage In Egyptian Museum, Cairo; **Raghda Mahmoud**



### **POSTERS**

- 54. Keep It Simple, Stupid: Three Complicated Projects With Uncomplicated Solutions; **Renee Jolly**
- 55. Becoming and Abiding: Partnering in the conservation of two contemporary thangkas; Renée Stein; Ella Andrews; Brittany Dolph Dinneen; Howard Sutcliffe; Buchung Nubgya
- 56. Why Can't We Be Friends? Technical Analysis and the Disputed Authorship of a Sixteenth-Century Italian Altarpiece; **Ruth Waddington**
- 57. Navigating change in conservation materials: Lessons learned while looking for a substitute for discontinued poly(vinyl acetate) resin; **Samantha Alderson**
- 58. Extracting the Wax-Resin from Mark Rothko's The Green Stripe, 1955: A Review of Results, Achievements, and Cautions; Sara Kornhauser; Desirae Dijkema; Bradford Epley; Anne Schmid
- Tiepolo's Bacchus and Ariadne: A rare example of an eighteenth-century painting with gold-leaf surface decoration; Sarah Murray; Barbara Berrie

- 60. Diagnostic Techniques Used on a Bronze Incense Burner from the Middle Kingdom Period at The Grand Egyptian Museum Conservation Center (GEM-CC); **Shaimaa Hemid;** Mamdouh Tahoun
- 61. When Art Meets Science: Establishing Cooperative Conservation and Exhibition with the Antique Machine Collections from Chimei Museum and National Science and Technology Museum; Shu-Han Yeh; Tui-Chen Yen; Cheng-Chung Huang
- 62. A Foray Into Fungal Dyes; **Steph Guidera**; **Heather Hodge**; **Kathleen Martin**
- 63. Book Odor Removal: A Comparison of Techniques; **William Minter**
- 64. Quilted Book Cozy; William Minter; Catherine Orochena
- 65. Structural Treatments of Textile Supports: Tear Repair of A Church Painting In 1889 The Use of Low Cost Heated Needle; **Wing yi Cheung**



Proper safety garb demonstration from "Sustainability for the Conservator: Mold Remediation," at the H&S Session at the AIC 42nd Annual Meeting.

## Come Visit the Health & Safety Booth!

Health & Safety experts to discuss your every need!

### Our booth is open Wednesday and Thursday in the Exhibit Hall

Email Health-Safety@culturalheritage.org Find resources online at www.culturalheritage.org/healthandsafety

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- Need a Safety Specialist to help you with your treatments? We have the contacts!
- Worried that your gloves won't protect against the solvents you use? See our Glove Selection Chart
- Concerned about chemicals or safety equipment in your studio? Come talk to us!

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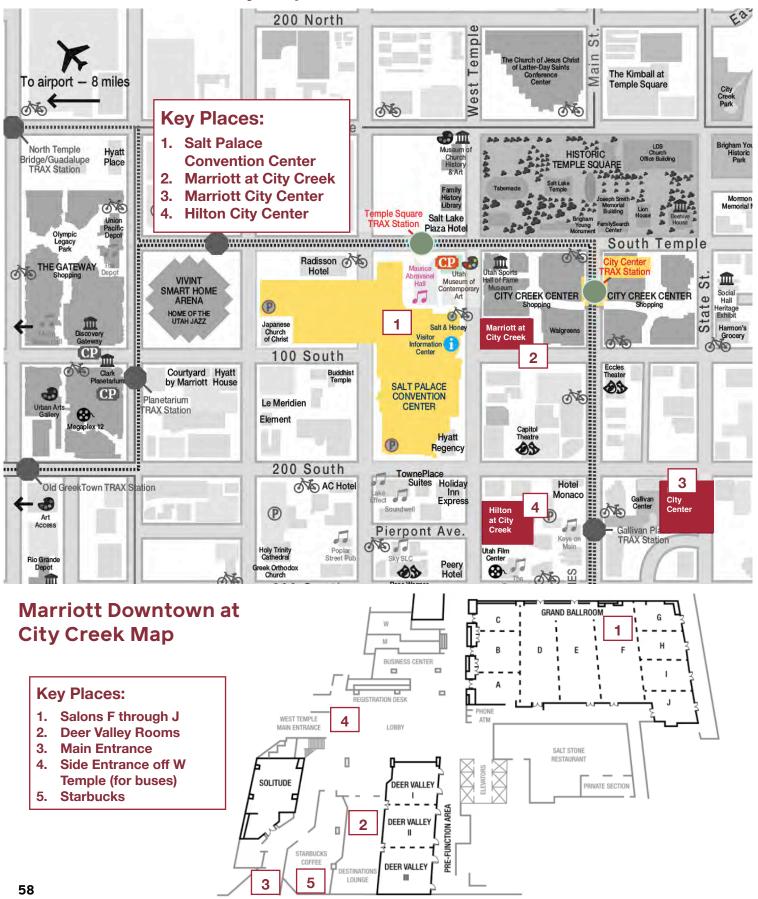
Special thanks to the AIC Specialty Groups: ASG, BPG, CIPP, EMG, OSG, PMG, PSG, RATS, TSG, WAG, and individual donors to the FAIC George Stout Fund, in support of student participation.



### Maps

**Offsite Departures:** Tours, workshops, and receptions will depart from the Marriott Downtown at City Creek. If you are boarding a bus, it will be at the side entrance. Otherwise, gather at the main entrance.

### **Downtown Salt Lake City Map**

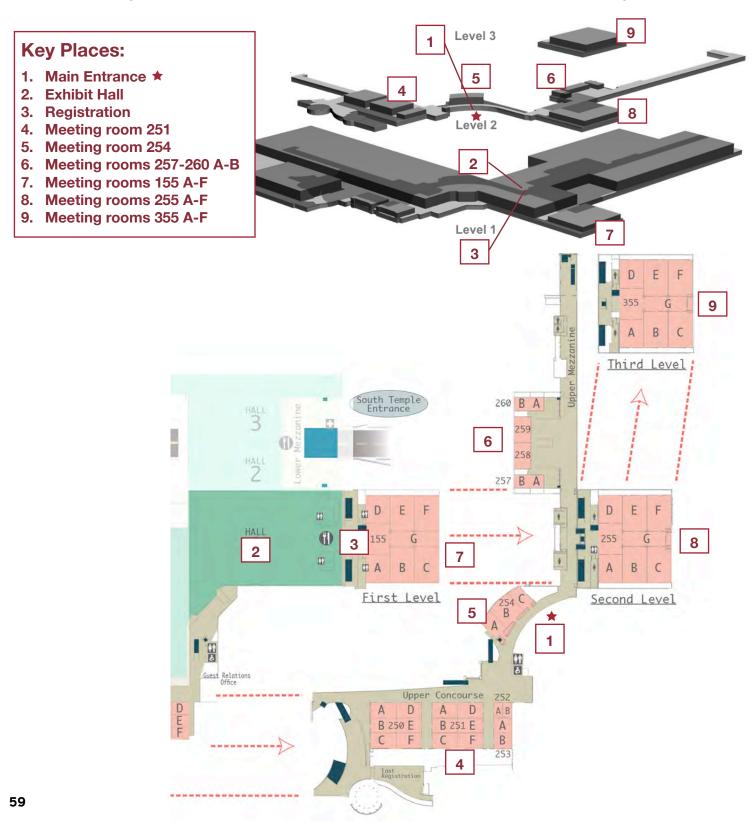


### Maps

### **Salt Palace Convention Center Maps**

**Navigating the Salt Palace:** The main entrances from the street are the East Entrance from West Temple and the South Entrance from 200 South. There are also entrances on the North and West sides of the building.

Meeting rooms are numbered by floor. The lower level rooms begin with 1; the Mezzanine (ground) level rooms begin with 2 and only in the northwest part of the Salt Palace is a meeting room located on the third floor. Meeting rooms 155, 255 and 355 are stacked on top of each other. The easiest way to reach these rooms from the Main or South entrances is from the Mezzanine Level. There are 10 exhibit halls: The five running north to south are labeled A through E. The five halls running east to west are numbered 1 through 5. We are using only Hall 1, near the main entrance, where the two exhibit wings connect.





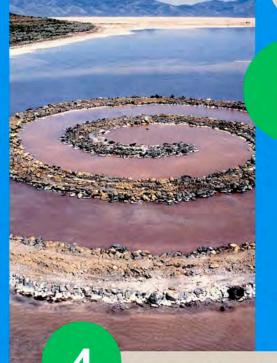


## SALT LAKE CITY

### **Top 5 Water Facts**



Salt Lake City's namesake, the Great Salt Lake, is the largest saltwater lake in the Western Hemisphere at 1,700 square miles (4,400 square kilometers).



The Great Salt
Lake is -- you
guessed it! -pretty dang salty.
In fact, it's
notably saltier
than the ocean
due to its lack of
an outlet, which
concentrates
minerals over
time.

Robert Smithson's *Spiral Jetty* built in 1970 illustrates the effects of climate change in the area succinctly: By 2021, the level of the Great Salt Lake was seven feet below when the spiral was built.

Meeting tip: Purchase your own AIC Salt Lake City souvenir Camelback stainless steel water bottle at the registration desk for \$35!



To learn about the Utah Museum of Fine Arts recent exhibit on climate change in Salt Lake, use this QR code. The Great Salt Lake is home to tiny brine shrimp, which thrive in its salty waters. These shrimp serve as a vital food source for migratory birds that visit the lake, making it a crucial ecosystem in the region.

The Jordan River flows through Salt Lake City and while its flow has been altered by human activities such as diversion for irrigation and flood control, efforts are underway to restore and preserve its natural habitat.

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#### **OPENING GENERAL SESSIONS**

### **Opening General Sessions**

### In Honor of Juneteenth: Conservation of General Order #3 at the National Archives

Sonya Barron

General Order # 3 is an original document of the United States government that bears witness to the events of June 19, 1865. This day is commemorated as Juneteenth and since 2021 is celebrated as a federal holiday. The Order was issued by U.S. Army General Gordon Granger in Galveston, Texas. It fulfilled the terms of the Emancipation Proclamation, which was signed by President Lincoln two and a half years earlier.

This presentation describes the journey of discovery of the original Order in the stacks of the US National Archives that served as context for decisions on the conservation and exhibition of the historic government ledger. The story of this conservation treatment is a lesson in treating a bound volume containing a document of monumental significance as a whole object in order to retain meaningful historicity and to ensure the physical stability of the displayed pages.

For the thousands of people including US Citizens and international visitors who see the Juneteenth order exhibited along with the Emancipation Proclamation, the conservation treatment outcome informs the viewer on the role of archives to preserve the written record in original formats when possible and practical. The presentation describes the debate on whether to disbind or retain the ledger format, the treatment itself, and some observations on the details of the complex treatment, including an unexpected detail in the midst of the project.

### Investing in African American Community Engagement at the UCLA/Getty Conservation Program

Anya Dani

The UCLA/Getty Interdepartmental Program in the Conservation of Cultural Heritage is addressing our changing and uncertain future from multiple angles, including an increased engagement with historically underrepresented communities. Our recently created Director of Community Engagement and Inclusive Practice position was specifically designed to employ a conservator who could help the Program contribute to the preservation of African American cultural heritage. In time, we hope to expand our model to serve other underserved communities. This presentation will cover the structure of this position as a model for engaging with underrepresented communities and further instigating DEIA progress. We include examples of our current work with community partners, and present challenges faced in our efforts.

The Community Engagement and Inclusive Practice initiative has a number of distinct goals. In addition to forming external preservation-focused collaborations with African American organizations, we also seek to codify inclusive thinking into the educational experience within our Program through developing collaborative projects for coursework, creating internship opportunities related to African American culture and history, providing diverse learning opportunities for students, and revising Program policies. Time for outreach and activism is also built into the role.

The American conservation field is woefully lacking in diversity. Although conservators handle a wide variety of cultural items, they typically work within a colonial framework in which African American material culture is overlooked. Here we present targeted investment in community engagement as a pathway towards increased inclusion of African American people and their cultural heritage. Too often DEIA work is an add-on to cultural heritage practices, and conservators of color regularly take on this extra work without additional compensation. We believe that DEIA advances are doomed to fail or will have very little long-term effect if there are not paid staff dedicated to this work.

Although the UCLA/Getty Conservation Program has a history of championing DEIA and community outreach projects, it became clear that a specific position was needed through which the Director could devote the majority of her time to creating collaborative projects with underrepresented communities. We also gave this position a local focus so that the Conservation Program could practice the ethos of being a good neighbor and reach out to those in our direct vicinity. This meant first extending a hand towards a wider circle of individuals within the UCLA community, followed by culturally specific arts institutions in Southern California and local conservators. We believe that it is the responsibility of conservators to respond to population diversity and to raise expectations by initiating conversations with historically underrepresented communities. With an open mind, conservators can respond to community needs while simultaneously working to revise our internal organizational cultures. In this way, embracing change will ultimately make our field more resilient to change and better positioned to contribute to preservation efforts that engage communities with their cultural heritage in addition to preserving it for the future.

### Stitching Memories: Collaborating with Trans Survivors to Preserve Their Photographic Histories

Carolina Nastri, Figueredo Carolina, Ornela Vega

The Trans Memory Archive (AMT for its acronym in Spanish) is a collaborative and independent project founded in 2012 by trans activist María Belén Correa as a result of her friendship with Claudia Pía Baudracco. During her lifetime, Claudia Pía has devoted herself to keeping photos and letters of herself and her friends with the intention of keeping a record of her life and the life of the transvestite/trans collective. For many years, the trans collective was marked by persecution and state abandonment, the denial of their identity in educational and health institutions and the continuous association with delinquency. Months before the approval of the Gender Law in Argentina, Claudia passed away and left as a legacy to María Belén the collection of photographs she had treasured. These photographs, survivors of exile, dictatorship and police repression, are the triggers of the Trans Memory Archive.

In its beginnings, the AMT was a virtual space organized through a private group within the Facebook platform. For more than two years, more than 1,400 members of the Argentine trans community shared their photographs, testimonies and memories from different regions of the world. In 2014, Cecilia Estalles, visual artist and current general coordinator, joined the project. Together with María Belén, they began to search for and collect the photographic and written material of the survivors with the intention of digitizing it and disseminating the project.

In September 2021, thanks to the International Trans Fund support, the team was able to rent a space specifically for its archiving tasks. At that time, I was called to train the conservation area to renew the storage systems for photographs.

The tasks within the AMT are carried out by a team made up of trans survivors over 50 years of age. With them we initiated a collaborative work of mutual and continuous learning. As a result, we generate models of paper envelopes for photographs, sewed by sewing machine, without adhesives. We also designed folded models of folders and boxes to contain the units and photo albums. We designed work strategies that would allow us to repeat our processes and to teach new members the tasks we had been performing.

The purpose of this work is to share an experience where the protagonists are the ones in charge of preserving the photographs and documents that recover their memory. They have gradually learned conservation and archival tasks. This allowed them to improve their procedures and expand their work in relation to the management of written, photographic and audiovisual material.

We believe that it is relevant for the field of conservation to incorporate voices that for years have been silenced and to highlight their work and collective struggle. One of the main strengths of the Archive is the commitment of its members and the conviction that the preservation of memory allows us to build a future with greater equality, dialogue and collective construction.

### OPENING GENERAL SESSIONS

### **Creating A Preservation Program: The Challenges of Engaging The Public**

Amy Barry

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Creating a Preservation Program: The Challenges of Engaging the Public

In the absence of any organized, skilled effort to further preservation people seek information in accessible places. The public generally have no method in which to gauge its value or acceptability. Cemetery conservation has been a growing field of interest for people that has resulted in many incorrect and damaging practices in the effort to conserve. Consequently, well-intentioned people have attempted repairs on historic stones that have caused more harm than good. Often when conservators speak of cultural heritage they are focused on work held in a museum or other venue with a custodial presence. This view completely ignores the heritage, artwork, and history found in cemeteries.

Research and laboratory testing for stone conservation, specifically for headstones has been driven by work done on east coast and southern states. It has yielded knowledge on the best practices going forward and the products that will not cause harm to the stones. Yet, this knowledge is not readily accessible or passed down to the public level in a way that the can discern what is correct. This knowledge gap in headstone conservation was the catalyst to create a preservation effort within the Utah Cemetery Program. The program specifically works to educate and connect the public with this knowledge and hands-on practice.

In my proposed presentation, I will talk about the creation of the preservation program for cemeteries and how it interacts with the general public, interested organizations, cemetery personnel and other practitioners. I will discuss the challenges of communicating the art and science of conservation with the public as we work to preserve the cultural heritage of our ancestors.

### A New Discovery of Chiura Obata's Drawings

Yoshiyuki "Yoshi" Nishio, Luke Kelly, Stacey M Kelly, Kyoichi Itoh

In August 2022, full scale charcoal preparatory drawings and over one hundred ink/sumi drawings were found inside Chiura Obata's four-panel folding screen. A prominent Japanese American artist of the twentieth century with a unique focus on the American West, Chiura Obata (1885-1975) was born in Japan, trained in traditional Japanese painting, and immigrated to the United States in 1903 at the age of 18. He remained relatively obscure until recent decades. Obata created sketches of the aftermath of the San Francisco earthquake, and watercolors and prints that celebrate the quiet beauty of the Sierra Nevada Mountains along with other western landscapes. He became a faculty member of the Art Department at the University of California, Berkeley in 1932. His body of work came during the early twentieth century at a time of high anti-Japanese immigrant sentiment, and the artist himself was forced into an internment camp in Topaz, Utah, during World War II.

In 2022, the Utah Museum of Fine Arts (UMFA) was gifted 35 of Obata's works from the artist's family. One of the works was "Horses", a four-panel folding screen that illustrates a synthesis of Japanese and American art techniques and the artist's mastery of sumi painting. This screen was not part of a 2018 retrospective on the artist at the UMFA due to condition issues.

Through a generous grant from the Bank of America's Art Conservation Project in 2022, "Horses" was sent to The Nishio Conservation Studio in Washington D.C. for conservation treatment that included full remounting of the painting. During the dismantling, a multitude of surprises were discovered including full scale preparatory charcoal drawings of "Horses" and over one hundred sumink study drawings hidden inside the screen — a finding worthy of a second conservation grant from Bank of America in 2023.

This four-panel folding screen was perhaps constructed by the artist himself with materials available to him at the time. The under-core lattice wood was made from American cedar, not sugi Japanese cedar. Japanese paper was difficult to source so the artist used his own practice sketches to build up the internal

layers of the screen. These rare drawings reveal Obata's academic training, teaching methods and artistry with his contemporary ArtDeco influences.

This presentation will provide an overview of Obata's work in the early 1930s, leading up to the production of "Horses" and his techniques featuring the unique fusion of Japan and California. The conservation treatment of the screen, along with the surprises found will be discussed. The four-panel screen, full scale preparatory drawings, selected works found within the screen, and a documentary video detailing this compelling story will be on view in Chiura Obata: "Layer by Layer, An Inside Look At Horses" – a special installation at the UMFA dedicated to the conservation work of this incredible discovery during the AIC Annual Meeting in Salt Lake City, 2024.

## "It Depends": Teaching Undergraduate Conservation Students to Navigate and Embrace the Shades of Gray

Madeline Hagerman

One of the things that frustrated me the most when I began my graduate training at University College London was learning there is no single "right" answer when it comes to conservation. My professors always seemed to say, "it depends" there are many ways to achieve the same goal and many wrong answers. I struggled to wrap my mind around this concept. I was so used to things being either wrong or right that this sent my perfectionist brain into an existential spiral. This is something that I see often in my undergraduate art conservation students at the University of Delaware. They want to be told what something is, when it was made, and what the best way is to treat it. It is surprising how often I have to tell students to start with Google and Jstor and look at museums with similar types of collections when they are working on conservation reports. I understand though; uncertainty is very uncomfortable and my current students spent most of their high school and part of college years on Zoom. I really appreciate my professors' approach. It gave us the opportunity to be wrong and problem solve. I try to pass this on to my undergraduate students. I believe embracing the shades of gray leads to research avenues, creative solutions, and student self-confidence in their decision making abilities. Even the language we use in conservation treatment proposals and condition reports incorporates this nebulousness: "probably," "possibly," "this evidence suggests." Our on-site analytical techniques are limited to a multiband light source, imaging techniques, and microscopy. Special projects can be further analyzed with the help of Winterthur Museum, Garden & Library's Scientific Research and Analysis Laboratory, but most student projects are limited to these visual techniques. Rather than being a hindrance, this allows students to develop critical thinking skills. We strive to teach them how to find this information, rather than challenging them to recall this very specific detail by memory. Even with my training, as a student I struggled to admit that I did not know something and was too intimidated to ask my supervisors, which led to me making a series of unnecessary mistakes in one of my internships. I see this tendency in my own students. I believe it is a product of the perfectionism promulgated by conservation programs, intentional or otherwise-the feeling that you can only enter the field by being a perfect, omniscient, full-formed conservator. I try my best to alleviate their fears. on the first day of each class I teach, I assure my undergrads that I am here to teach them, not test them. I can see a visible relaxation after I say these words. I still do not provide them with concrete answers, now I find myself saying "it depends," but I am happy to guide their research towards a more useful path.

### "Distant; Digital; Dangerous?" Novel Approaches to Contemporary Risk Management, Object Access, and Display at The Victoria and Albert Museum

Vanessa Applebaum, Clair Battisson

The Victoria and Albert Museum (V&A) has become increasingly focused on issues of object access and sustainability, while its Conservation department continues to preserve and maintain the 2.8 million objects in its collections to the highest level possible. This has conventionally presented a conflict and

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tension between departments within museums. This conflict has felt particularly acute during turbulent times, when the unexpected is the most frequent occurrence and the stakes seem high. For example, the V&A no longer assumes couriers will accompany loans out and tours, which has encouraged debate about how we in Conservation will continue to meet our preservation aims while also being pragmatic.

This presentation is about the implementation of a novel approach to risk management within the Conservation department at the Victoria & Albert Museum in London, specifically in the context of exhibitions and loans out decision making. This approach now allows the museum to default to 'yes' more often with a confidence that collections care and object protection remain our top priority, while also encouraging sustainability and more innovative conservation practice.

Using specific examples and use cases, the presentation will outline how concerns that are rooted in conventional 20th-century conservation practices can be alleviated, as well as the benefits and outcomes of using 21st-century strategic risk approaches that make best use of technologies and expertise to help an institution more easily achieve its wider goals of access, inclusion, and education. A risk-based approach does not allow us to control the outcomes of a project or event, but it does allow us to adequately plan for the unexpected.

### They Say Life Is Full of Surprises... It's an Occupational Hazard for Filming Conservator

Claire Fry, Victoria Marsland, Charlotte Tomlin

Filming on location provides a fantastic backdrop for our favourite film and TV programmes and a much-needed injection of funds for conservation projects at our treasured heritage sites. It also introduces risks of damage both to the built heritage and historic interiors and collections. Filming conservators specialise in managing the risks of damage when production companies use heritage venues as locations. Conservator input is critical during feasibility and planning stages as well as when supervising filming activities on site and evaluating lessons learned to share best practices and inform future projects.

Change is a permanent feature of the film industry in the UK. The growth in demand from streaming services means the industry is expanding rapidly, developments in technology have transformed the filmmaking process, introducing new equipment with new risks and progress in social safeguards prompted by 'me too' and union action have made positive strides in reforming the working environment. In response filming conservators have developed skills and resilience to cope with the increased and changing demand.

The purpose of planning is to avoid surprises on the day. The National Trust Filming & Locations Office handles four major film projects per month on average across England, Wales and Northern Ireland and much effort is spent on capturing intentions, consulting the relevant expert disciplines, checking risk assessments and method statements, and ensuring that the right information is specified in the filming agreement. However, making TV dramas and feature films is a creative process and inevitably there will be some changes of plan when the cast and crew are filming.

Past surprises have included last-minute requests for fire, food fights and fake blood, each presenting a myriad of additional, unforeseen risks to the built heritage, historic interiors and collections. The need for conservators on the ground who can manage these risks in a high-pressured environment has instigated the emergence of the filming conservator as a specialism in the UK. The filming conservator shares the knowledge and skills of a preventive conservator but thrives on working in a fast paced, everchanging environment, facilitating communication between the production company and the location and developing innovative solutions to reduce risk and facilitate filming in sensitive and challenging heritage sites. Filming conservators, such as Spencer & Fry, supervise the production prep, shoot and strike are expert in coping with surprises and managing the risks on the ground.

As an emerging specialism, the work of a filming conservator is an underrepresented topic in the conservation world. Whilst in the UK the specialism is becoming more recognised, it is unknown if this is the case worldwide. Filming projects in heritage locations can be intensive and overwhelming without

the right support. A specialist filming conservator, with preventive conservation knowledge and experience of working with productions in a fast-paced environment can provide the right support to manage the risks to collections, reduce the pressure on site staff and react to any last-minute surprises to facilitate a successful shoot.

### **Concurrent Sessions**

3D Digital Technologies: Finding a Place for Advanced Manufacturing in Cultural Heritage

### Cultural Heritage and 3D Printing: State of the Art and the Technology's Future

Jae Gutierrez, Meredith Noyes, Lauren Parish, Emma J. Richardson

Museums, libraries, and archives have seen a growing presence of 3D printed objects within the past 10-15 years, both in the context of objects entering collections and as a tool for preservation and access activities. As consumers of the technology, collecting institutions have applied 3D printing in applications such as conservation treatments, in the storage, display, and transit of objects, and education and public engagement activities. However, the fast development of the technology and the ever-growing variety of materials that can be printed present major challenges for institutions both using the technology and caring for 3D printed art. There is a clear gap in preservation guidance, and the scope of 3D printing, including the ways in which museums create, collect, and consume 3D printed objects, remains ill-defined.

As part of a recent Institute of Museum and Library Services (IMLS) funded project, the Image Permanence Institute (IPI) launched an international, field-wide survey on 3D printing and 3D printed objects in collecting institutions in 2022. The survey collected information from 95 individuals at institutions worldwide and assessed the ways in which collecting institutions are interacting with and using 3D printing. Data collected identified the types of 3D printed objects entering collections and strategies for their care, in addition to how 3D printing is being used as a tool in preservation and access activities. Overall, the survey found that many institutions are using 3D printing mainly to support exhibition and display activities and in conservation treatments. In both of these use cases, 3D printing was chosen primarily because it is a 'new and innovative' technique, as opposed to necessarily being the best tool for the job at hand. The survey also gathered information about major challenges that collections care professionals face when using 3D printing. For example, many users of the technology are concerned about the longevity and safety of 3D printed materials, and yet this is not stopping people from using the technology in their work.

While 3D printing has certainly found applications in collecting institutions where it increases efficiency of work, survey results indicated that the strengths and weaknesses of the technology within a cultural heritage context are still being discovered, and many more questions about the technology still remain. IPI has taken the results of the survey, combined with a literature review, information gleaned from conferences in the additive manufacturing industry, and site visits to collections that house 3D printed objects, to build a research agenda outlining major areas for future research around the use of this technology and care of 3D printed objects in collecting institutions. Some of these items include identification of 3D printed materials and processes, the chemical and physical stability of 3D printed materials, data management of digital assets associated with 3D printing, and sustainability. This presentation will share key findings from the field-wide survey and will discuss the gaps in understanding around the technology that can be addressed by future research, all within a cultural heritage context.

Transforming Cultural Heritage Preservation: The Power of 3D Technology, Bridging Past and Present With 3D Technology In Cultural

### Restoration, Accessibility, and Museum Mount Making

#### Chris Hollshwander

In recent years, 3D technology has emerged as a transformational set of tools in the realm of cultural heritage preservation. This poster explores the multifaceted applications of 3D technology, with traditional model making practices in cultural restoration, creation of replicas to enhance museum accessibility, mount making for exhibitions, and artifact storage and transportation. With the ability to capture intricate details, facilitate precise reproduction, and enhance preservation efforts, 3D technology has become an invaluable to the preservation of our rich cultural heritage.

#### **Cultural Restoration:**

One of the most compelling aspects of 3D technology is its role in cultural restoration. This set of case studies will delve into the ways in which 3D scanning, printing, and CNC machining can breathe new life into damaged or deteriorating artifacts. This set of examples will show where 3D technology has been employed to recreate lost or damaged sacred objects that are cultural treasures, in collaboration between the Smithsonian Institution and the native Alaskan Tlingit clans, enabling us to recover and appreciate their heritage in ways never before possible.

#### Creating Replicas for Museum Accessibility:

Museum accessibility is a central concern for institutions worldwide. 3D technology is making cultural heritage more accessible than ever before. Examples will show how 3D scans, 3D CAD modeling and digital sculpting are transformed into tactile replicas, enhanced by traditional model making, enabling visually impaired visitors to engage with artifacts through touch, for the National Museum of American History exhibitions "American Democracy" and "Many Voices, One Nation".

#### **Mount Making for Exhibition:**

Mounting and displaying artifacts in exhibitions pose unique challenges. Examples showcase how 3D technology can revolutionize mount making by providing custom-fit, aesthetically pleasing, and preservation-friendly solutions. Such as creating 3D printed "stand-ins" during the mount making process, resulting in safer production. Attendees will gain insights into the process of creating tailored mounts using 3D production processes, that are non-invasive and reduce artifact handling.

#### **Storage and Transit of Artifacts:**

Preserving artifacts during storage and transit is of paramount importance for cultural institutions. Examples will highlight how 3D CAD modeling assisted in the creation of a custom painting mount for exhibition and transportation. The process enabled limited handling of the painting, precise planning with conservation staff, and informing the traditional mount making process, to create a mount that that stabilized the object, and was utilized for exhibition and transportation.

Each of the case studies will site challenges, and successes of incorporating 3D technology into the display, preservation, and restoration efforts. Attendees will gain a comprehensive understanding of the potential and limitations of 3D technology in various aspects of cultural heritage preservation.

The intersection of 3D technology and cultural preservation represents a dynamic frontier where tradition meets innovation. Join us for an exploration of how this technology is shaping the future of cultural heritage conservation, restoration, and accessibility. Whether you are a curator, conservator, researcher, or enthusiast, this poster will inspire you with the possibilities that 3D technology offers in the realm of cultural heritage preservation.

### Sculpting Solutions: 3D Technologies for Conservation Problem-Solving

Sean Billups

This presentation serves as an introduction to 3D technologies as tools for

problem-solving in conservation practice. Starting with a brief overview of fundamental 3D technologies and the ways they relate, this talk then touches on various software tools for 3D modeling, along with insights into affordable 3D printing equipment such as FDM and resin printers, and their practical applications in everyday conservation work.

Practical uses of these technologies are showcased through examples such as custom-designed clamps for basketry, unique syringe tips, and a custom vacuum attachment system. Additionally, the presentation explores advanced open-source projects such as the Openflexure microscope—a cost-effective solution for microscopy. Furthermore, CNC milling's role in conservation, demonstrated by the fabrication of fill panels for architectural elements and removable upholstery caps for chairs, is discussed.

### Primary Results of Using the Scientific Documentation of 3D Laser Scanning and 3D Printing in King Khufu's Second Boat Reassembling Proposal

Takeshi Oishi, Mahmoud Ismail, Nour M. Badr, Mohamed El-Seaidy, Masataka Kagesawa, Hiromasa Kurokochi, Kadry Mitwally, Youssef Nabarawy, Ragab Salama, Mamdouh Taha, Sakuji Yoshimura, Eissa Zidan

During the first stage of the Egyptian-Japanese project, approximately 1,700 decayed and deteriorated wooden pieces were lifted from the pit. The process included first aid treatment and stabilizing the condition of wooden pieces. by 2023 all the wooden pieces were transported to the Grand Egyptian Museum (GEM) to start the second stage of work which included the final consolidation of all wooden pieces, scientific documentation, and developing a design of physical support for the boat parts, that serves the main purpose of resembling all the second boat at the new Khufu's boats museum inside the Grand Egyptian Museum (GEM).

The reassembly of historical artifacts, particularly those of immense cultural significance, poses unique challenges and opportunities for the integration of modern scientific technologies. This abstract presents the primary findings and outcomes of a project aimed at the reassembly of King Khufu's Second Boat, a priceless archaeological relic from ancient Egypt's 4th Dynasty-Old Kingdom period. Employing a multidisciplinary approach, this research endeavors to leverage cutting-edge 3D laser scanning and 3D printing technologies as tools for scientific documentation and reassembly.

The study revolves around the application of 3D laser scanning to capture precise geometric data of fragmented boat parts excavated near the Great Pyramid of Giza. Subsequently, this scanned data is processed, analyzed, and refined to create detailed digital models of the original boat components. In the case of fragmented or deteriorated boat parts, additional support structures may be necessary to ensure the stability and integrity of the reconstructed models. These supports may be custom-designed to fit each specific piece, providing the necessary reinforcement. After the digital structures are designed by 3D software, special 3D printing techniques are used to print the support for wooden parts.

Throughout this process, it's important to document each step carefully and preserve the digital models for research, educational, and preservation purposes. This includes archiving the 3D scan data and digital models for future reference.

In conclusion, these abstract indicate the importance of 3D laser scanning and 3D printing technologies as indispensable instruments in the intricate process of reassembling King Khufu's second boat.

### **Creating the Black Panther Custom Mannequin** from Digital to Physical

Laura Mina, Zachary Hudson, Matthew Lynn, Willow Collins

The National Museum of African American History and Culture collection includes one of the original Black Panther costumes worn by Chadwick Boseman. The hero suit was featured in the exhibition "Afro-futurism: A

History of Black Futures." This costume has high cultural significance and everyone involved understood the importance of creating a mannequin that could represent both the Black Panther and Chadwick Boseman in a strong and naturalistic pose. The mannequin was made of archival materials selected to help preserve the vulnerable and deteriorating synthetics of the costume, and included an invisible support system to allow for 360-degree viewing. The project combined digital and traditional processing methods including white-light scanning, CNC routing, hand sewing and needle felting. This presentation will cover the design and fabrication process from research and consultation through digital sculpting, milling and finishing steps. We will discuss the challenges, innovation, collaboration and successes of this process.

### **Changing Thoughts and Changing Practices**

### Contemporary Art Conservation in New York City's Art Market Environment

#### Mareike Opeña

Conservation theory has embraced sociological approaches to understand the complex care of modern and contemporary art. In these contributions (and in case-study based conservation literature) decision-making processes essentially assume museum-like conditions. Often implicitly, the artwork is naturally seen as a permanent part of a collection with indisputable cultural value and symbolic meaning. The predominant task for conservation practice is to preserve contemporary artworks for posterity, and to enable its exhibition for visitors willing to 'experience' art as a means of their personal, cultural enrichment.

Contemporary art for sale, however, is often viewed by a very different public: while galleries or auction houses are open to visitors, it is those individuals who seek to own art that matter most to dealers. Within the hierarchically structured art market, it seems the standing of such trade-partners (buyers and sellers) can be just as relevant during a transaction as the artwork itself. An artwork is not only considered for its cultural or symbolic meaning, but for its ideological value (to underscore a collector's prestige or a dealer's success), and its financial investment-potential.

Both sides of the trade scrutinize the work to reduce the uncertainty of such hard-to-define values. During this moment of ownership-transition, an artwork appears precariously vulnerable. This is where conservators' expertise is usually called upon to evaluate a more tangible (though no less fragile) aspect, the artwork's physical condition. They may suggest and execute treatment; their written (condition or treatment) report becomes crucial for the sale.

The art market relies on the beneficial effects of conservation. Yet conservation activity is hardly made explicit as traces of conservation appear to signal instability and an increased investment risk. This can have detrimental effects on the potential sale and even on the conservator's reputation.

Private practice conservators work in a field full of tensions: balancing their ethical standards with market expectations; providing a discrete service while fostering their reputation of expertise; treating often unusual materials under tight deadlines; preparing the artwork for an unknown trajectory of belonging. They are business managers, too.

After more than a decade of working in New York City's art market environment, I aim to investigate how conservation in private practice is done and what its role is in the context of the art trade. This topic has become my PhD research at Maastricht University (NL), and it will highlight three central issues: stakeholder networks, authority negotiation, and knowledge organization.

As more and more contemporary art never enters a museum collection, its care falls on conservators in private practice. I am focusing my research on their daily professional challenges to expand the theoretical contexts of conservation. To do this, I am taking a critical sociological perspective using qualitative methods combined with literature reviews of conservation, sociology of art, and economic sociology.

This presentation will start with an introduction of the research scope and will focus on common stakeholders in the art market environment, their (various) ideologies, and on observations on how conservators navigate this hierarchically structured network.

### Bridging the Intangible: Two Generations of Chinese Painting Conservators

Grace Jan

Beginning in 2008, American museums collaborated to preserve traditional Chinese painting conservation. Despite being a tradition over a thousand years old from China, it has only been a vital part of conservation in the U.S. for 35 years. The field was founded in U.S. museums by four apprentice trained conservators from China, but lacked a sustainable program in the U.S. to train the next generation. Supported by the Mellon Foundation, the Smithsonian's National Museum of Asian Art (NMAA) developed a program with objectives to strengthen the global network of Chinese painting conservators, addressing the need for conservators and establish a permanent structure to support a pipeline for training and care of collections.

This talk will give an overview of this program, focusing on the hands-on workshops and production of a documentary. These educational projects illustrate how our initial plans faced unexpected challenges, and our responses helped advance the field.

The workshops were initially designed to empower the next generation of conservators, with their diversity of training from China, Taiwan, Europe, and the U.S., to build relationships. However, it became clear the workshops would be enriched by senior conservators teaching the methods that the next generation was sharing but had not fully mastered. One year later, the workshop included six senior and eight younger conservators. This was the first time all senior conservators in the U.S. gathered to demonstrate and discuss their treatment practices. Both generations tested adhesives and colorants and practiced techniques, such as lining and dying silk fabric. We discovered the senior conservators were integrating non-traditional and traditional methods, such as using methyl cellulose and flour paste. The workshop also included discussions on treatment options for Chinese paintings. The constructive exchanges and inconclusive test results revealed the need for more dialogue, and the value of inviting the broader community of conservation advocates to help advance the field.

Another unanticipated change was transitioning the final educational symposium for fall 2020 to the production of a documentary. The pandemic made an in-person symposium impossible, so grant funds were repurposed to create an evergreen resource to document and raise public awareness. In 2021, the NMAA produced the film with director Eros Zhao and contributions from key institutions. This bilingual documentary honors the voices of trailblazing senior Chinese conservators, highlights the next generation carrying these traditions forward, and preserves the tangible and intangible heritage of Chinese culture. Through the barriers of developing and filming a documentary during the pandemic, we interviewed the conservators and created a living document that captures a moment of change between two generations as the field transitions into the future.

The NMAA Mellon Program anticipated a pipeline from one generation to the next, but no one anticipated that both generations would be empowered to shape the global network. Despite a tradition that is centuries old, Chinese painting conservation is a field that is evolving rapidly. After a decade, the Mellon program enabled Chinese painting conservators to lead this progress in the face of conservation's changing landscape.

## One Cannot Plan for the Unexpected: Problem Solving during the Major Reinstallation of the Princeton University Art Museum

Bart Devolder, Elena Torok

Construction is currently underway on a new building for the Princeton University Art Museum (PUAM), which has been closed to the public since 2020 and is anticipated to reopen in 2025. This new building, located in the heart of Princeton's historic campus, will feature reimagined gallery spaces for PUAM's encyclopedic collections, updated classrooms for object-based teaching, designated areas for visible storage, and a brand new two-story conservation studio.

Prior to the demolition of the old building in 2021, thousands of objects needed to be removed from the galleries and the Museum's surroundings. Among these were over a hundred large-scale and embedded works, including archaeological mosaics, architectural stone, and contemporary outdoor sculpture. Since many objects had been on long-term, continuous view since the 1960s, the Museum's closure provided PUAM with a unique opportunity to address as many conservation needs as possible during the brief window before reinstallation.

PUAM's small conservation team has been collaborating across Museum and University departments and with a wide network of skilled external conservators and specialists to safely remove these objects, complete multiple large-scale and complex treatments, and plan for their upcoming reinstall in the new building.

This presentation will discuss instances when projects did not go as planned, and how PUAM's team worked together to resolve these issues. Topics will include unanticipated object discoveries that instigated major changes to display, unforeseen challenges stemming from missing or long-lost documentation, surprise construction variables that required complete reworking of install planning, and reflections on decision-making, teamworking, and project management.

### Corporal Materials in Art: Preservation & Ethical Challenges

## Ethical and Practical Considerations in the Collection and Conservation of Insignia III by Carlos Martiel

Dana Mossman Tepper, Annabelle F. Camp

In 2022, the Arizona State University (ASU) Art Museum acquired Insignia III, an artifact created during a performance by Afro-Latinx artist Carlos Martiel (b. 1989 in Havana, Cuba). The piece consists of a hand-made flag of Mexico, in which the traditionally green area is black, and the traditionally red area is painted with human blood.

Martiel's artistic practice uses body and earthly substances, such as water, soil, blood, and stone to explore issues of race, isolation, and injustice. Over the years, he has presented scores of performances that have tested his body's ability to endure pain, deprivation, and physical strength, and during the course of the performance reduced his existence to his biological need to survive. More recently, Martiel has focused his work on the pain and experiences that black bodies have experienced in the U.S. and Mexico, in a body of work that he calls 'cuerpo' or 'body'. Each performance in the Insignia series utilizes the blood of a different persecuted group and produces the U.S. or Mexico flag stained red, black, and white. Insignia III utilizes the blood of Afro-Mexicans who self-identify as queer and refers to the suffering of black people in Mexico who are made to feel invisible.

Upon acquisition, it was apparent that the blood on Insignia III was actively flaking, and due to the young age of the piece (2021) and absence of any detail about the blood or donor, it was considered a biohazard by ASU Health & Safety. In anticipation of loan and display, it was deemed necessary to consolidate the friable blood, and the Museum hired Balboa Art Conservation Center to undertake the treatment. Following tests on mock-ups made with pig's blood, textile conservator Annabelle Camp consolidated the blood using an ultrasonic adhesive mist and mounted the textile for display.

This presentation will address the ethics of owning and displaying a living human's blood (with or without their input/approval), the health and safety considerations of working with contemporary pieces that include fresh blood, and the questions that have been raised regarding the acquisition and display of objects used or produced during performance art. The authors will outline the conservation treatment of unbound blood used as paint and the process of developing protocols for handling and storing artifacts with fresh blood in conjunction with the ASU Health & Safety specialists.

### **Corporal Materials In Contemporary Art:**

### Multimodal Analysis of an Exudating Human Fat-and-Wax Pillar

Marc Walton, Lynn Lee, Oi Yan Michelle Chan, Michael Schilling, Alessandra Guarascio

The incorporation of unconventional, biological-related media in contemporary works of art introduces unique challenges for analysis and degradation studies, often requiring interdisciplinary approaches. The diverse collection of the M+ Museum includes objects composed of corporal materials such as human fat, ash, hair, and blood. One such object, Civilization Pillar, is a 3.5-meter-tall sculpture created with human biomaterials collected and processed by the artists Sun Yuan and Peng Yu. It is composed of human fat gathered from 500 liposuction patients, which was mixed with waxes to produce two different textures. The sculpture consists of a hard wax mixture core surrounding a metal armature, with an outer layer of a soft wax mixture. The artists have also provided surplus materials of the hard wax and soft wax mixture reserved for conservation treatment.

Over time, the Pillar has exhibited of the production of a viscous and sticky exudate, which accumulated at the base surrounding the object. To understand the material profile of the sculpture and identify the underlying cause of the exudate, we are undertaking a multi-modal material investigation, involving a combination of analytical techniques including ATR-FTIR, GC-MS, and melting point analysis. By examining the material composition and studying the processing techniques employed by the artists, we aim to gain insights into the factors contributing to the observed condition issue.

In our ongoing investigation, ATR-FTIR analysis was conducted on the collected exudate samples as well as the two types of reserved materials: hard and soft wax-human fat mixtures. The obtained results revealed that the exudate exhibits a closer resemblance to the reserved hard wax mixture compared to the soft wax mixture. The insights gained from the ATR-FTIR analysis have guided our selection of appropriate mass spectrophotometric techniques, specifically THM-Py-GC/MS. This technique will be employed to achieve a more precise characterization of the fat and wax components present in the collected samples. It will also enable us to identify any degradation products and potential additives that may be present.

Based on our findings, it is believed that the production of exudate is a result of phase separation within the core (hard wax) mixture of the Pillar, potentially caused by incompatible components. This understanding of the underlying cause will inform our conservation approach to mitigate further exudate production and for collection care of this object. Furthermore, our research delves into the considerations required when approaching artworks composed of corporal materials.

# Collaboration Through Repatriation: How International Repatriation Efforts at the Fowler Museum at UCLA Initiated Community Involvement, Shared Decision-Making, Challenges and Surprises

Christian de Brer

For the last several years, the Fowler Museum at UCLA has pivoted attention and resources towards active engagement with members of the international communities represented in the museum's collections. This has led to some repatriations, but also invaluable information about items that weren't claimed. The Conservation Department of the Fowler Museum is at the forefront of several of these collaborations, generating conservation and other department processes for the deliberated items. Along with discussing developed protocols, this presentation focuses on three case studies: Maori, Australian Aboriginal and West Mexican communities and their items. Each one of these studies involved (and continues to undergo) distinct and surprising developments, with reasonable outcomes for all parties involved. NAGPRA related collections and regulations are briefly considered as a guide to developing international partnerships and agreements.

Embracing Intangible Dimensions: Community Engagement in Conservation and Collection Care and Conservation Science

### Reconsidering Agency in Conservation Practice: The Role of Devil's Club Root in the Display of a Tlingit Canoe Prow

Amy Tjiong

In 1999, a carved wooden sculpture in the collection of the American Museum of Natural History (AMNH) referred to as the "beaver prow" was repatriated to the Deisheetan Tlingit people of Angoon, Alaska. To convey a narrative about museum-community reconciliation and Native survivance to the museum public, Tlingit carver Joey Zuboff was commissioned in 2020 to carve a replica of the canoe prow, which he referred to as the original prow's "sister" or "shadow", for display in AMNH's newly renovated Northwest Coast Hall. When the shadow was delivered to the museum, staff discovered that Zuboff had packed the replica with two pieces of devil's club root, a thorny shrub native to the US Pacific Northwest used, in addition to medicinal purposes, for protection and to ward off evil spirits. Zuboff had requested that the root be exhibited together with the shadow because of this.

For Northwest Coast communities, the root is not an inert and passive material. It has, using a concept introduced by Jane Bennett, a vitality that communicates its intentions with humans and guides their behavior. It has such a significant role in Northwest Coast communities that the presence of devil's club root was incorporated as an integral part of the conservation efforts for the entirety of the renovation project. The material turn, represented by theorists such as Bennett, Tim Ingold, Vivieros de Castro and Bruno Latour, has argued for further exploration in understanding the complex, entangled relationships of humans and the material world. They call for a challenge to traditional Western ontologies, which have served as the foundation for conservation practice. It is with these ideas in mind that conservators can shift their understanding of the materials that they treat. The shadow and root will be discussed as an example that rejects the role of agency as a solely endowed human quality, instead highlighting ways within conservation to make space for community needs by acknowledging the agency of things. Ultimately, the beaver prow shadow is a case study demonstrating that by thoughtfully and reflexively incorporating other ways of knowing, we make room for a more thoughtful, ethical conservation practice.

### **Conservation For Communities: A Model For Outreach To Tribal Audiences**

Megan Brakob Narvey, Rita Walaszek Arndt

Minnesota is home to seven Anishinaabe tribes and four Dakota tribes, each a unique sovereign nation with its own government, its own history, and its own cultural identity. Beginning in 2022, a collaborative effort between the Native American Initiatives department and the Local History Services team at the Minnesota Historical Society (MNHS) was established to undertake conservation outreach to Tribal audiences in Minnesota. The goal of outreach was to reach a general audience of Tribal members, to provide a useful service, and to increase the audience's confidence in caring for their own valued belongings. This work was supported by a grant from the Mellon Foundation.

The Native American Initiatives (NAI) department at MNHS was created in 2016 to serve as an advocate for Native communities and Native nations at MNHS. It acts as a bridge between community needs and MNHS resources, engaging with Native communities and nations throughout the state and region, and ensuring Native voices, stories, and concerns are addressed in MNHS work. The Local History Services team at MNHS was founded in 1916, and for over a century it has supported smaller organizations across the state of Minnesota to interpret and preserve the history of their community. In 2019, Local History Services hired their first full-time conservator dedicated to supporting the capabilities of individuals and small organizations to care for their own collections.

The collaboration between NAI and Local History Services was key to successfully conducting two outreach open house events in White Earth Nation and

Upper Sioux Community, and the creation of an outreach event model that will continue to be used in the future. This presentation will bring together both departments to reflect on the design and the outcomes of the conservation outreach program so far. The presentation will also discuss how to increase the accessibility of conservation information for a general audience, what to expect when working with a new community, and important considerations for designing your own conservation outreach programs for Tribal audiences.

### Public Art Stewards: Lessons from a Flagship Training Program

Margalit Schindler

A cohort of eight Wilmington community members comprise the pilot program of the Public Art Stewardship Workforce Training Program. These members are local artists, activists, leaders, and community builders. Over the course of 6-months, the cohort has learned documentation and conservation fundamentals in order to execute a large-scale conservation survey of 20 works of art around Wilmington and recommend preservation options for their care. The key to navigating so many moving parts was building a curriculum with flexible content and scheduling that could allow for adjustments when necessary while still moving the group forward.

Housed at the Delaware Art Museum, the grant-funded project aimed to solve two problems at the same time: support the aging artwork throughout Wilmington, and support the learning and employment goals of local Wilmington artists. With the support of conservator Margalit Schindler, the inaugural group shattered stereotypes by showcasing the abilities of diverse Wilmington locals to learn and act as caretakers for the city's public art. The cohort brought together lived experiences and proficiencies to set the foundation of a progressive conservation curriculum, while navigating the inherent complexities of developing something new.

By working together to understand aspects of technology, fabrication, composition, degradation, and conservation of public art objects at the chemical level, the cohort completed a comprehensive conservation survey. Participants gained academic and hands-on skills including condition reporting, photographic and written documentation, data management, and basic maintenance of outdoor artworks. Participants, who range in age from 19 to 41 and span many walks of life, learned and executed graduate level condition reports after being introduced to conservation mere months prior. Additionally, they compiled their detailed findings into a database, which is publicly accessible online.

As the Program Conservator, Margalit was responsible for building, delivering, and executing a curriculum that could meet all participants where they are and provide a solid foundation in conservation ethics, resources, priorities, and basic materials science. Additionally, they managed the logistics of scheduling, transportation, supplies, and navigating with the cohort throughout the city as the group surveyed objects on site.

The only certain thing about this project was the guaranteed uncertainty of each day. From extreme heat and air quality advisories, to childcare falling through and the loss of a parent, the participants faced many unexpected challenges this summer. However, the biggest lesson is that not all uncertainties are created equal. Some you have no control over (weather, health, how and when other people respond, for example). There are times, however, when there is plenty within your control to plan and prepare for known uncertainty when it comes. Some examples include preparing a full curriculum ahead of time in order to pull appropriate content as it comes, changing the day's activities based on who is in attendance to avoid falling behind, gathering useful supplies ahead of time, and even scouting out public bathrooms near our site visits. This organizational system allowed for the flexibility necessary to pivot last minute when faced with the uncertainties over which we had no power.

## Museums of the 21st Century: Supporting Indonesian Institutions in a Changing Environment

Kristal J. Hale, Dr. Sandra Sardjono, Ajeng Arainikasih, Dr.

#### Christopher Buckley, Dr. Robert Pontsioen, Saiful Bakhri

This abstract offers a glimpse into the Museums of the 21st Century program, which combined practical, hands-on training with online workshops to support museum professionals in Indonesia's cultural sector through exchange, capacity-building, and knowledge-sharing.

Indonesia has a rich cultural heritage of tangible and intangible artistic and ceremonial practices, including indigenous preservation techniques that have been successfully practiced in villages and communities for hundreds of years.

Due to a complex array of factors such as the aftereffects of colonization, shifts in belief systems, and modernization many objects have left their original environments and are now in regional museums throughout the Indonesian archipelago. These objects are cared for by museum staff with various backgrounds and levels of expertise, who are shifted to new positions every two - three years by the Indonesian Ministry. This methodology is intended as a response to colonization with the goal of imparting intra-museum knowledge throughout the archipelago. Consequently, an individual may serve as in the roll of curator and/or conservator of maritime artifacts at one museum and textiles at another, by means of example.

This solution to a colonial problem creates challenges of its own, since individuals must adapt with creativity and resilience as they care for a variety of objects in various highly humid, equatorial environments.

The desire for conservation, and museology courses in Indonesia ignited extensive communications with museums in Kalimantan and Jakarta and inspired the creation of a supportive program, Museums of the 21st Century. This program involved collaborations between Tracing Patterns Foundation (Berkeley, CA), The Smithsonian Institute (Washington, D.C.), the American Institute for Indonesian Studies (Berkeley, CA), Institut Konservasi (Denpasar, Bali, Indonesia), and Museum Ceria (Jakarta, Java, Indonesia) to create a three-part, workshop focusing on conservation, curation, and education in museums.

This program was conducted in three succinct chapters. The first segment involved on-site training workshops at the Museum Tekstil Jakarta, the Museum Kalimantan Barat in Pontianak, and the Museum Balanga in Palangkaraya with additional participation from museums and cultural sectors in the neighboring vicinities.

At each location, there were three days of training, focused on one of the critical museum activities of conservation, curation and museum education, which included on-site visits, demonstrations, talks, and hands-on training. Participants were encouraged to discuss challenges and solutions in their institutions, including the local and indigenous preservation techniques they actively utilized.

The second part of the program involved seminars for workshop participants. Collaborating in groups, they focused on a museum object, researched its history, created a condition report and exhibition caption, and designed a museum activity.

During the third and final section of the program, Tracing Patterns Foundation and the American Institute for Indonesian Studies hosted three webinars. These were moderated by the Museums of the 21st Century team members with guest lectures by American curators, educators, and conservators, who shared their work

As a result of this program, a number of course participants were inspired to share their knowledge via local programing and have remained in contact with the Museums of the 21st Century team.

### **Great Salt Lake: Connections Between Fragile Ecology and Heritage Preservation**

Elisse Brautigam, Darren Parry, Justine Wuebold

Natural landscapes and their non-human components are as much a part of cultural heritage as man-made materials and their intangible elements. By acknowledging the fragility of these environments, cultural heritage conservators can better engage with the natural ecological connections that are intertwined with the source of heritage and belongings made by communities

local to these natural landscapes.

The concept of our project is part of a larger initiative to highlight local and significant ecological resilience concerns, and discuss their relation to cultural heritage and broader regional adaptation strategies. Communities near the Great Salt Lake have been chronicling the effects of climate change on the body of water, which has both functional and cultural value to those who reside near it, and are known to be affected by connected and related water sources. Indigenous voices and other under-represented communities have been sidelined from the conversation of growing concerns for the Great Salt Lake's survivability, and are only recently being consulted and considered in efforts to preserve the lake and its inhabitants.

In this presentation we will highlight regional perspectives and draw connections with ecological and cultural conservation communities, which have critical overlaps. Our profession has the capacity to think holistically and ecologically, not just in terms of waste and carbon footprint, but also in the way we view our systems and social context. As non-residents of Utah, we will engage a regional scholar of the Great Salt Lake to share their unique perspective and history, either live or as a recording to play during the presentation.

### Imaging Encounters with the Surprising & Unexpected

### Surprising Surfaces: Micro RTI For Investigating Cold-Worked Glass

Sarah Barack, Jessica Walthew

Reflectance Transformation Imaging (RTI) has been well established as a useful tool to study cultural heritage objects. Published studies vary widely vis-a-vis media focus, ranging from paper-based works, to archaeological stone, polished metal and more. Glass, due to its specular surface and transparency, presents particular challenges to this technology. Cooper Hewitt Smithsonian Design Museum (CHSDM) has embarked on an extended research project focused on recording cold worked glass surfaces using micro-RTI, in order to determine the most successful way to image this media through this technique as well as to investigate the surface morphologies and tool marks created through physical and chemical working methods. RTI capture strategies have varied from digital microscopy to a high-quality macroscopic camera lens. As research progressed, we received support to facilitate the creation of a bespoke four-way illuminated RTI dome featuring UV, IR, blue and white light LEDs.

This paper focuses on unexpected outcomes, learnings, and lessons gleaned along the journey into this research topic. Glass studied included 18th Century Dutch wheel cut vessels and diamond stippled glass, and 20th Century acidetched French glass. Wheel-cutting of glass surfaces traditionally relies on an abrasive oil slurry applied to copper wheels, which rotate as they cut into the surfaces. The technique flourished by the mid 17th Century and later in the Netherlands. Similarly, diamond tipped engraving, often executed by female artists, found favor throughout the same period while diamond stippling reached a pinnacle in the 18th Century. The cut and stippled forms on these cups, goblets and vessels create sculptural and even ghostly images that contrast with the light reflected from untouched surfaces.

In contrast, acid etching relies on hydrofluoric acid to cut into the glass surface rather than a mechanical tool or physical force. The technique comes into commercial use by the latter half of the 19th century. French glass firms such as Daum Freres took advantage of this technology to create frosted surface effects, while artists such as Maurice Marinot exploited the acid to create deep recesses and intricate surface textures. Samples prepared specifically for this study to complement the museum collections included both acid-etched flash glass as well as diamond engraved surfaces. Our talk will present strategies for successful RTI capture on reflective, water-white transparent glass using the methods discussed above, as well as deeply etched glass objects. We also investigated imaging cast proxies for challenging or awkward shaped pieces. Finally, we will discuss what we have learned about surface changes to the glass following varying working methods.

### Curious Damage Calls for Surprising Solutions: Catering to the Engineering Curious in the Conservation, Animation, and Preservation of Movable and Pop-Up Books

Katie Smith

The Hanson Rare Book and Baldwin Library of Historical Children's Literature Collections at the University of Florida contain hundreds of pop-up and movable books. These books span the breadth of paper engineering—from the earliest Lull volvelle to the intense Reinhart Disney pop-ups of today. Their contents contain the history of paper engineering: how they evolved through various publishing houses, adopted technologies from other industries, and propagated around the globe to become one of the most engaging and increasingly popular book forms of today, and yet many are actively falling apart.

Upon review of several of these engineering marvels, I found that the damage is not due to typical readership wear, but rather due to people's innate curiosity in how these mechanisms are made and function. Given the task to repair and maintain them for long-term use, I realized that a methodology that catered to the curious maker—giving those who are interested greater access to the engineering structures within these books—could preserve these items for longer. I also wanted to make these engineering structures more accessible for those who could not come to our reading room and spend time with the books in our collections (digital scans simply do not evoke the movement of these items). In this presentation, I will move the audience through the methodological changes we made and all the conservation decisions one must make when repairing these types of books, creating models for researchers, and utilizing animation software as a form of engagement and preservation.

Partnering with a digital specialist, we choose one mechanism/page in a book to animate. This page also undergoes scanning for the purpose of creating facsimiles and models that are eventually housed with the item and available for research. These models and facsimiles can be more roughly handled by those trying to understand the structure while still having access to the original they can see and carefully handle. The pdf model of the structure is also linked to the scanned book in our digital library, making it available for anyone to print out and re-create at home or in a classroom. The conservation issues that arise when animating movables and pop-ups with Adobe as well as 3D photogrammetry software will be discussed.

Considering the dearth of published papers discussing the repair of movables and pop-ups in professional journals, the history of the technologies that brought these books about is integral to understanding how to conserve these items back to working order and therefore will be discussed briefly even though imaging will be the main focus of this presentation.

### Technical Analysis of Inks Used for Scientific Annotations on the Harvard Astronomical Photographic Glass Plate Collection

Elena Bulat, Debora Mayer, Arthur McClelland, Thom Burns, Amanda Maloney, Georgina Rayner, Samara Ayvazian-Hancock, Tess Bronwyn Hamilton

The Harvard College Observatory (HCO), founded in 1839, today has a collection of 550,000 astronomical glass plate photographs. For over a century, the astronomical photographic glass plates functioned as scientific records and living documents that were often handled by multiple researchers who left various annotations directly on the glass plates in colored inks. The glass plates are known to have been cleaned of markings and re-used for different research purposes at different times. Many of the ink annotations were made by the often-uncredited Women Computers and Astronomers who worked at the HCO in the late 19th and early 20th centuries. Unfortunately, these important annotations on the plates obscured astronomical data. The talk focuses on the analysis of the inks, developing a protocol to image the plates to digitally omit the annotations yet still preserve the astronomical data, and the pivoting of the collections point of view towards holistic artifactual preservation.

Starting in 2004, the HCO's Digital Access to a Sky Century @ Harvard (DASCH) project endeavored to digitize the astronomical data in the majority of the Observatory's glass plate negatives to produce full photometry results for the entire sky. As a matter of procedure, plates selected for DASCH were first photographed and then cleaned of their historical annotations before digitization.

The Williamina Fleming Collection at Wolbach Library comprises 679 individually selected astronomical glass plate photographs with historic annotations still intact which represent the discoveries, research, and working process of the Women Computers. The collection is named in honor of Williamina Fleming (b.1857 - d.1911), the first Curator of Astronomical Photographs at HCO.

During the Covid-19 pandemic, HCO shifted priorities away from the digitization of purely the scientific information in the collection to embrace a more holistic preservation of the photographs considering the historic and cultural values of the plates too. This began a multi-year collaboration at Harvard University to address the preservation needs of the Williamina Fleming Collection.

A technical study of the inks used for the annotations was undertaken using reflection FTIR, microfading tests, and multispectral imaging. The reflection FTIR was used to noninvasively probe the chemical composition of the inks. The microfading test on the inks showed that they were somewhat photosensitive. These results provided guidance for the development of exhibition guidelines for the plates.

When multispectral imaging was conducted at the Weissman Preservation Center using a Video Spectral Comparator (VSC 8000) in 2022, it was found that the green, red, purple, and brown ink annotations on the plates were rendered transparent in transmissive IR at 850 nm. This showed a possible way forward for digitizing the scientific information without removing the historic annotations on the glass plates. In 2023, the Harvard Plate Stacks undertook more intensive exploration of multispectral imaging of glass plate negatives with R. B. Toth Associates, using a monochromatic 150 megapixel PhaseOne camera.

### Below the Surface of Braque's "Pitcher, Candlestick, and Black Fish"

Adam Neese, Desirae Dijkema

In 2017, Georges Braque's Pitcher, Candlestick, and Black Fish (Vase et poisson noir), 1943, underwent a long-awaited treatment at the Menil Collection in Houston, Texas. The painting was cleaned and its wax-resin extracted following the removal of its lining; the methodology of the structural treatment is described in the proceedings of the Conserving Canvas conference held at Yale University in 2019. Technical imaging throughout the treatment led to a deepened understanding of the work's early history by clarifying the design of a second underlying composition. It also led to the discovery of a third, as the removal of the stretcher and lining canvas, necessitated by the structural treatment, enabled infrared images of the back without their obscuring effects. Digital estimations of these earlier states bear striking resemblance to works from the 1920s and 1930s, thereby possibly extending the canvas's lifetime by more than a decade. The extension of the canvas's lifetime as revealed by technical imaging speaks to Braque's well-documented tendency to rework or paint over compositions, while linen shortages during the Second World War could have provided additional motivation for repainting beyond creative impulse. The presentation will focus on Pitcher's early history as revealed by technical imaging. Woven into that discussion will be a short explanation of how technical imaging informed the creation of the digital estimations.

## Exploring Variations in Green Pigment Degradation in Early Printed and Hand-Colored Works on Paper

Lieve Watteeuw, Yun Liu

Effective preservation strategies depend heavily on thorough material characterization. While recent years have witnessed significant advancements in the non-destructive identification of artists' materials in easel paintings, the technical analysis of paper-based artworks has lagged behind. This is primarily due to the unique challenges presented by paper-based art, including low analyte

concentrations and the delicate nature of the substrates.

Our poster presents an ongoing research initiative aimed at addressing this gap by providing insights into the identification and degradation of green pigments found in collections of early printed and hand-colored works on paper. Our focus on green pigments is motivated by the complex conservation challenges they present, such as self-discoloration, paper substrate discoloration, and paper corrosion. Our research is also inspired by the significance of the extensive and valuable collection housed at KU Leuven's Maurits Sabbe Library. This collection offers a unique opportunity to study these pigments within authentic historic objects.

This poster presentation highlights "Nouissime Hystoriarum Omnium Repercussions" (often translated as "Supplement to Universal History") (1503) by Jacobus Philippus Bergomensis, a classic Renaissance historical chronicle renowned for its rich woodcut illustrations depicting various historical scenes and figures. Several folios featuring extensive applications of different green pigments in pictorial areas are selected for in-depth study. In the initial stage, we employ narrowband ultraviolet-visible-near infrared (UV-VIS-NIR) multispectral imaging (NBMSI) and fiber optics reflectance spectroscopy (FORS) as primary non-destructive techniques for data acquisition. The NBMSI, equipped with a 150-megapixel camera and integrated software and hardware, allows for imaging at 16 wavelengths ranging from 365 nm to 940 nm and fluorescence imaging at various combinations of illumination and filters.

Analysis of the reflectance spectra suggests that malachite is the primary pigment on these folios. However, further investigation of heavily degraded areas on folio one reveals the presence of non-malachite green pigments, potentially more prone to degradation due to their discoloration to brown and the presence of breakage in the paper substrate. Comparison to the Kremer pigment checker suggests that this is a type of green earth pigment. Notable variations in the visual appearance of folios with the same pictorial schemes and the application of this green earth pigment to the identical motif are observed. These variations are likely related to different degradation states of the pigments.

This variation in degradation states within the same object offers a unique opportunity to gain insights into the degradation of green earth pigments in historic objects. Our analysis of the reflectance spectra reveals significant changes in the optical properties of the pigments during degradation, including increased reflectivity in the NIR range and enhanced fluorescence above 590 nm when stimulated by 450 nm light. This approach holds promise for characterizing the degradation states of green earth pigments through NIR and fluorescence imaging. Further investigations are needed to confirm the pigments' composition. Advanced methods for image analysis are under development to extract crucial chemical information. Additionally, the observed variations in degradation states on different folios provide insights into factors influencing degradation patterns, offering valuable information for preservation strategies.

## Identifying Multispectral Imaging Wavelengths to Create "Recipes" for Analysis of Non-Visible Information on Parchment and Thermal Paper

Leah Humenuck, Isabell Moyer

Multispectral imaging (MSI) is an established cultural heritage technique for identifying materials and revealing non-visible information such as underdrawings and erased or faded text. While this technology has had limited reach due to traditionally high costs and specialized equipment and training, a low-cost, end-to-end, portable system was developed by RIT's Imaging Science and Museum Studies Programs through a National Endowment of the Humanities grant (PR-268783-20), Multispectral Imaging System for Historical Artifacts (MISHA). MISHA images in the ultraviolet, visible, and infrared at 16 distinct wavelengths. This system has currently examined 200+ items (primarily parchment and paper) which lends to the analysis of the data to determine trends in the capture process, such as which wavelengths performed best with various materials. This research outlines the current progress of which wavelengths provide optimal results revealing non-visible information depending on an item's various factors (condition, age, and so on). The results will form a "recipe book" for MISHA users, and other MSI systems, providing guidance on wavelength selection and processing techniques, derived from visual assessment and computational analysis of the MISHA dataset. The impact of this will be to improve MSI practices for cultural heritage professionals who do not have an imaging background and shortening an item's exposure/handling time, reducing the potential damage to the item, and processing time and storage space for the multispectral images and software. For the research currently, results for various parchment and thermal paper items have been obtained with the potential to expand it to other items as well.

#### **Questioning our Assumptions**

### Demystifying Our Metadata: Making Conservation Documentation Accessible in the Digital Library at The University of Illinois

Jennifer Hain Teper, Quinn Morgan Ferris, Julia Cardinal

The process of conservation documentation in the course of treatment is intrinsic to the ethical transmission of the conservator's work. It records the state of an object before, during and after the changes brought about by treatment. It provides a chronicle of decisions made and actions taken. It is also meant to exist in perpetuity with the treated object as a critical archive of change in history over time. Considering the significant value that the process of documentation holds in understanding a collection object, it is strange to think that conservation documentation is rarely if ever easily accessible to researchers or scholars outside the holding institution. Especially given the impact that conservation work can have on the scholarly interpretation, why is our documentation not more widely available?

In the spring of 2022, following a substantial catalog migration, a small, interdisciplinary team at the University of Illinois Library decided to undertake the above question. Specifically, they hoped to pilot a project that allowed historic conservation documentation to be linked to existing catalog records for special collection items and view through the U of I's existing Digital Library platform. Such a tool would allow for the conservation history of collection items to be a part of academic interpretation, but furthermore, could directly point to the time and care taken for our collections, as well as an access point for conservation education to bring our otherwise "behind-the-scenes" field to the fore.

A straightforward idea in theory, the team quickly found a complex matrix of considerations to make this tool a reality. Creating a metadata profile in the absence of a clear and controlled vocabulary, or even consistent application of terms or writing conventions from practitioner to practitioner, was the first of multiple challenges. Making pragmatic choices for the user interface was yet another. The degree to which the treating practitioner was identified, a further question still. To what extent are we responsible to provide context for understanding conservation treatment documentation in addition to making it accessible? and would each of the U of I Library's Special Collections have equal enthusiasm for having their collection objects represented to the public in this way? This paper discusses the pathway towards truly making our conservation documentation fully accessible and the success and set-backs we are encountering along the way.

## What Does the Box Say? Improving Enclosure Design and Labeling as a Result of User Research

Lauren Telepak, Meg McMahon, Amanda Hope

How do users experience items in protective enclosures? Are they confident about how to use them, or do they feel uncertain? The experiences that researchers have while using the collections affect whether they feel included, respected, and empowered. The processes for paging items, using reading rooms, and handling objects can be intimidating and hard to navigate. If we don't provide instructions or make a process universally understandable, we limit who will use these valuable materials.

In the Enclosures Lab of Harvard Library Preservation Services, we strive to create enclosures for library materials that are intuitive to use. However, until recently, our ideas about what is intuitive were based only on our own

#### GENERAL SESSIONS: CONCURRENT

speculation. Because of our deep familiarity with preservation enclosures, our experiences were likely to be different from those of our users.

As far as we know, no research has been done on the usability of preservation enclosures. In 2022 we partnered with the Harvard Library's User Research Center to conduct a study of how library users engage with common enclosures used in the Harvard Library collections. We chose four structures to investigate: a three-flap phase box fastened with strings and washers, a corrugated clamshell box, a cloth-spine portfolio fastened with velcro, and a corrugated two-piece drop-front box. The eleven study participants included Harvard students and library staff members.

The participants were first asked to tell us about their level of experience using preservation enclosures. Then they were asked to open each enclosure, remove the item, replace it, and re-close it. We also asked for their feedback about the experience of using each enclosure. While observing the participants, we took notes that we later analyzed as a group for our final report.

The participants all expressed care for the library materials and the desire to handle them correctly. By design, the enclosure cued participants to handle the item with care, but many said they believed the item inside wasn't meant to be handled by them. Some pain points in using the enclosures included uncertainty about the order in which to close the flaps, not identifying or knowing how to use the drop front on the two-piece box, and uncertainty about the correct orientation of the box. Users expressed a desire for clearer instructions on handling the enclosure and the item inside.

We then queried the conservation community at Harvard and the AIC book and paper online community for examples of instructional labeling for library enclosures and used the results to improve upon our labeling. In October 2023 we completed a follow-up study in which users gave feedback on enclosures with improved labeling. Labels substantially decreased the confusion that we noted in the previous study. Users showed a preference for instructional diagrams and "friendly" language about care and handling.

Through this case study we hope to inspire our colleagues to become curious about the uncertainty their users bring to their interactions with preservation enclosures, and illuminate opportunities for creating enclosures that people can safely and confidently use in their research.

## The Conundrum of Accepted Assumptions from Thousands of Tested Book Papers

Andrew Davis, Amanda Satorius, Fenella France, Elizabeth Torres, Megan Zins

Often, the way to deal with complexity is to create categories that allow us to make sense of the world. However, challenge arises when those structures become rigid and siloed, allowing previously assumed knowledge to become the accepted theory. Over the four years of the Mellon-funded "Assessing the Condition of the National Collection" project, the preservation staff at the Library of Congress compared 500 of the same paper-based volumes of the same title from five different research libraries in distinct environmental regions of the United States through photo-documentation, visual assessment, and physical, chemical, and optical test methods. These roughly 2500 volumes were published throughout a 100-year period from 1840 to 1940, when Western paper production experienced wide-ranging changes, such as shifts from rag to wood pulp, sizing chemistry, and the use of new paper-making equipment. During testing, we were confronted daily with observations and technical data that did not align with our accepted assumptions of book paper materiality. We quickly found that sets of the "same" book frequently showed more differences than similarities in their materiality. We were expecting these "same" titles to largely be identical to each other. However, roughly 25% of the time, different copies of the same title showed evidence of significant differences in materiality, spanning printers' marks, predicted pulp composition, and physico-chemical properties. Our new "assumptions" were instead that the sets of books from this time period were surprisingly likely to be different in composition. These variations in composition were also found within the same volume, where at least 15% of books tested had multiple paper types. While mixed paper types within one volume are not completely unknown, the extent of their occurrence surprised us, making it difficult to generalize about specific measurements from

a single volume when we could clearly see material differences within that book. Some variations led to deeper explorations of why these trends occurred and what the practical preservation consequences might be. Some explanations may implicate societal changes that resulted in considerable experimentation in paper production, such as WWI, the economic downturn, increased mechanization, and different interest levels in specific literary categories. We found that the different geographic regions holding these books had no connection to their current condition. The technical testing data was complex and multivariate, offering no immediate clarity. To deal with this complexity, chemometrics and statistical modeling methods were employed to allow for the identification of subtle trends and more careful or alternative groupings in the data, such as the extent to which colorimetric properties can or cannot correlation to the physical condition. This work will discuss the various upending of our assumptions and broader learnings from this project as we continue to explore its data.

#### **Self Care**

## Developing a More Diverse Future for the Field of Conservation through a Train-the-Trainer Initiative

Bianca Garcia, Annabelle F. Camp

The Balboa Art Conservation Center has been on a path to redefine what it means to be a conservation nonprofit and a regional center that is responsive to the ever-changing needs of who we serve. Questions arose, such as "What is our duty to serve the communities in our region beyond traditional collections care services and support?" and "Who is our audience?". Students and educators outside of the conservation sphere were quickly identified as an audience and community for possible collaborations. With the majority of the advanced conservation training and recruitment efforts to introduce conservation to undergraduate students and K-12 students located on the east coast, BACC undertook the responsibility of fulfilling this need in the west.

BACC is also joining a larger call and mission to diversify the field of art conservation by making the field accessible to underrepresented communities. With programs already in place to serve college-level students or recent graduates interested in conservation, BACC decided to work with a younger audience to introduce the concepts of cultural heritage, preservation, and conservation earlier in their education. With these goals, BACC embarked on establishing its Workforce Development Initiative, designing and implementing programming to engage students at all educational levels in conservation. Over the past year, the programming has taken multiple shapes, as we have responded to the needs of our educational partners.

Ultimately, a train-the-trainer model was adopted with the idea that conservation education can be integrated into curricula. This is essential for establishing a sustainable outreach and advocacy model that is not dependent upon BACC's ongoing intervention and for dismantling existing barriers to conservation knowledge. A training bootcamp and toolkit were designed to support educators in introducing conservation to students in a classroom setting, weaving the ideas of preservation and conservation into their already established lesson plans and curricula to instill the concept of cultural heritage preservation. This will prepare students for conservation training in higher education or career settings and also highlight the role of preservation and conservation in the larger arts and culture ecosystem. While there are other conservation toolkits and K-12 education models in existence, they are mostly designed to be used in a museum setting and designed for people who are familiar with cultural heritage, preservation, and conservation language and concepts.

This presentation will focus on one case study, the partnership between BACC and a 5th grade teacher at Freese Elementary in San Diego, CA. During the partnership, BACC discovered that the interest and demand for this type of curriculum and training exists within the education system, that there are vast funding avenues for this training, and that the work is strengthened by collaborating with professionals outside the field of conservation, capitalizing on their expertise and skills to engage new audiences. Through this program, BACC is investing long-term in our San Diego community, and we hope this is a model that can be replicated elsewhere.

#### GENERAL SESSIONS: CONCURRENT

#### The Conservator and the Seven Stages of Grief

Marie-Iou Beauchamp

Grief is how we respond to a loss. The first thing that may come to mind when we think of grief is the loss of a loved one, but the stages of grief also apply to a much wider range of losses. To varying degrees, losing a friendship, an opportunity, or having to make peace with not achieving a goal we had for ourselves are all losses we must deal with in life and to which most of the grieving stages apply.

In the fall of 2022, I treated a cellulose acetate negative and ended up damaging the object beyond any possible use. Reviewing that treatment and how I reacted both professionally and personally to the situation allowed me to realize that I was grieving the loss of the object that was under my care and responsibility.

This presentation explores how the 'Seven Stages of Grief' model, developed in the field of psychology in the 1960s, applies to how a conservator might react and feel when conservation treatment ends up causing more harm than good. This philosophical and ethical reflection aims to normalize and acknowledge the emotional impact of bad outcomes and how it might affect our future decision-making processes in the short and long term for better and for worse. It is also a reminder of the importance of constantly maintaining best practices and adhering to the code of ethics of our profession.

## **Teaching Empathy in Conservation to Prioritize People**

Andrew Jenks, Nina Owczarek

The shift away from object-centered toward people-centered prioritization in decision-making for collections care and treatment approaches (see Clavir 2002 for example) is now core to professional practice as specified in AlC's Essential Competencies (2021). Conservators must have a foundation in "understanding issues arising from the ways that cultural heritage will be accessed or used, balancing stakeholders' needs with risks to the works, sites, or users" and "understanding of and sensitivity to the significance and values of cultural heritage in formulating preservation and conservation plans, treatments, analyses, testing and research." We develop this understanding in many different ways, including by learning about those people for whom the item(s) being considered for conservation are important.

Centering people is not to abandon our well-established conservation practices, but to complement them and the many choices we make by considering the impact we have on people through our treatments and care decisions. Bringing awareness to the role people play in conservation and developing a critical consciousness toward people and the impact of conservation work on people can help conservators make ethical care choices. If that consciousness is also an ingredient in developing robust and productive relationships, then developing empathic consciousness should be a goal in educating conservators.

This presentation shares the research methods used to consider how to cultivate critical consciousness in a conservation education setting. The research is attempting to build an understanding of how to place the ethics of care (sometimes referred to as feminist ethics) into conversation with collections care by examining students' critical consciousness of the relationship between objects and people via baskets. Using Fink's taxonomy for significant learning, we explore the human and caring dimensions in which students learn to care for objects and people.

Students in a basketry course served as a case study group. Their orientation towards people and also towards objects was measured at the start and end of the course with a survey, they were given written reflective assignments, and they were interviewed toward the end of the course to gauge if there was a change in their orientation towards either people or objects and to attempt identification of what specific educational methods played a role in engendering any change. The course was structured through a scaffolded series of lessons, research, and making activities that thread cultural learning and identification of object significance throughout.

By identifying the conditions for critical consciousness development, we can

explicitly teach it. When we encourage students to consider the people who make, use, and appreciate the objects they treat, the future conservators are better positioned to consider the impact of their treatment decisions and make choices that support those people. Since objects take on their importance based on values we ascribe to them, the ability to consider a range of value perspectives allows conservation practitioners to bring a more holistic approach to their work. A sustainable future of collections care must include meaningful considerations of those people who most care about the materials that we are preserving and conserving.

#### **Towards Art in Transit 2.0 Follow-up**

### Panel Discussion on "Crate Performance and Sustainability

Arne P. Johnson, PE, SE, Julia Latané, Merv Richard, William Wei

The theme of "Crate Performance and Sustainability" was touched upon in several presentations and a panel during the May 21 Towards Art in Transit 2.0 pre-session symposium. This session will continue the panel discussion among practitioners on topics such as crate design, the prediction of crate performance, assessing existing packing methods, and possible reductions in the environmental footprint of travel. Panelists will include Dale Kronkright (moderator, Georgia O'Keeffe Museum), Julia Latané (LACMA), Bill Wei (formerly of RCE), and Merv Richard (formerly of the National Gallery of Art).

#### **Panel Discussion on "Transit Logistics"**

Moderator: Cayetana Castillo; Speakers: Scott Pustai, Samantha Springer, Lisa Swedberg

The theme of "Transit Logistics" was a focus of several presentations and a panel during the May 21 Towards Art in Transit 2.0 pre-session symposium. This session will continue the panel discussion among practitioners on topics such as risk assessments for travel, new approaches to monitoring and couriering, loan agreements, and their impact in developing sustainable transit practice. Panelists will include Cayetana Castillo (moderator, Art Institute of Chicago), Samantha Springer (Art Solutions Lab), Scott Pustai (Total Fine Arts), and Lisa Swedberg (The Kiruna Centre).

## Discussion of 2022 Survey on "Vibratory Impacts of Music and Transport on Museum Collections" and summary of pre-session symposium

Vincent Beltran, JP Brown, Dale Kronkright, Cayetana Castillo, Kevin Marshal, Kaitlyn Sturgis-Jensen, Mark Ryan

This session will discuss the findings from the 2022 survey on "Vibratory Impacts of Music and Transport on Museum Collections", which indicated a noticeable variation in knowledge of shock and vibration issues and mitigation practices across institutions. We will also summarize the general findings from the May 21 Towards Art in Transit 2.0 pre-session symposium and discuss possible next steps for the field.

#### SPECIALTY SESSIONS: ARCHAEOLOGICAL HERITAGE

#### Archaeological Heritage

## Underground Conservation: How the Geosciences and Humanities Can Preserve Historic Cemeteries

Amy Van de Riet, Ben Terwilliger, Grace Awbrey, Blair Schneider

Conservation under the ground is just as important as preservation above the ground. Graves and cemeteries hold answers to many questions we have about the past which are difficult to uncover without disturbing burials. Geophysical methods allow researchers to see beneath the surface in a non-invasive manner. Two of these methods, electrical conductivity (EC) and ground-penetrating Radar (GPR), are being used to identify potential burials in a cemetery with a long history but few markers at the Southwest City Cemetery (sometimes referred to as "Southwest Cemetery") in Eudora, Kansas.

Geophysics can be useful in cemeteries as a non-invasive tool for conservation. EC and GPR provide valuable data that aids in preservation planning and can inform conservation and risk assessment efforts without any unnecessary disturbance. Additionally, geophysical methods can aid heritage researchers through the identification of unknown burials. In Eudora, Kansas, geoscience is working in conjunction with conservation methods to help preserve generational memory and conserve Southwest Cemetery, an African American cemetery. By providing a non-invasive and efficient way to map and assess subsurface structures and features, geophysics can help to improve our understanding of these important historical and cultural resources, and ensure that they are preserved for future generations (Beven, 1991; Kaulb, 2019). It is postulated that, through a combination of electrical conductivity, ground-penetrating radar, and conservation efforts, an under-represented community in a small Kansas town can come back to life through death.

Southwest City Cemetery was founded in the 1850's and was the first cemetery in Eudora. As the first cemetery in Eudora, it was used by most of the township for around ten years until white citizens decided to segregate burials. It is unknown exactly what happened, but beginning in the 1860's Southwest Cemetery became a primarily African American cemetery. Individual accounts have even suggested that white families disinterred their dead and moved them to the new cemetery, ultimately leaving the old cemetery for people of color (Beckman, 2019). The last burial known to take place was in the 1980s, based on visible headstone dates (Beckman, 2019).

Despite over 120 years of use, there are very few grave markings remaining making it difficult for drive-by traffic to know what the plot of land represents. The cemetery was once on the edge of town, but is now at the center of a popular neighborhood. The people interred at Southwest deserve to have their history preserved. Eudora has had a long history of African American occupation, and the goal of this project will be to remember the forgotten and connect them back to the community they rest within. This presentation will provide 1) an overview of the history and background of Southwest Cemetery; 2) results of the geophysical survey and historical research analysis of the site; and 3) recommendations for future preservation opportunities to recognize and remember an important community in Eudora's history.

#### Rediscovering Princess Carolina: Preventive Conservation as a Catalyst for Reengaging with an Archaeological Collection

Elsa Sangouard, William Hoffman

Princess Carolina was a South Carolina built, transatlantic trading vessel, launched in 1718. The ship was damaged in a storm in 1729, which resulted in its use as fill material for land expansion efforts in lower Manhattan, New York in the mid-eighteenth century. The remains of the ship were discovered under 175 Water Street in 1982 and were partially excavated. Recovered materials include nearly 400 timbers from the ship's bow structure along with 14,000 artifacts found within the hull used as landfill of both organic and inorganic materials. All artifacts were sent to Groton, Massachusetts for conservation while a

permanent home was identified. In 1985, the collection was donated to The Mariners' Museum and Park in Newport News, Virginia for use in a proposed gallery expansion with conservation efforts continuing for an additional three years. Exhibition of the bow and associated materials never came to fruition, and like many archaeological collections, the assemblage disappeared into storage.

In 2018, conservation personnel began a major project to address the preventive conservation needs of the ship's timbers which had been housed in non-climate-controlled storage for over 33 years. Following a condition assessment of the timbers, interest in the archaeological materials began to grow as staff across the institution started learning the story of the merchant ship, its artifacts, and why they were so significant. This renewed awareness set the stage for the development of a major rehousing initiative as well as scientific research focused on the effects of sulfur on formerly waterlogged wood, and revealed the incredible variety of objects contained within the fill collection.

However, reviving a project of this scale would take time, financial resources, and required gaining buy-in from Museum leadership, external and internal supporters, and donors. As a result, the rehousing of Princes Carolina's timbers to appropriate storage was not completed until the summer of 2023. The task necessitated the use of lifting and rigging equipment, multiple personnel, a large mobile freezer, a triage-like artifact documentation and cleaning area, and the reorganization of space within the museum to properly house and provide access to the collection.

This paper will discuss the challenges of reengaging with a dormant archaeological collection and highlight that preventive conservation can be a mechanism to do so using the rehousing of Princess Carolina's bow timbers as a case study. In addition, the paper will describe the building of project momentum (including fundraising through grants and donors) as well as the development of a multi-year stage-based and flexible conservation work plan.

#### Preventive Conservation of Archaeological Metals at The Japanese Institute of Anatolian Archaeology In Turkey

Alice Boccia Paterakis, Ian MacLeod

The JIAA is testing and developing means with which to predict the risk of metal corrosion and ways to both prevent and mitigate corrosion that will lead to practical solutions. The goal is to replace interventive conservation treatments involving costly and toxic materials with non-invasive treatments using green and sustainable products, or simply by controlling the environment on the micro scale when climate control is not available. Our annual minimum and maximum readings in our storerooms range from approximately 32% to 90% RH and  $2^{\circ}\text{C}$  to 40°C. We have developed a protocol that involves testing the voltage, pH, and chloride content of the bronze objects and of their associated soil that provides indications of susceptibility to corrosion. This work was published in the JAIC this year entitled "Integration of Laboratory and Field Measurements on Soil and Bronze Artifacts: Facilitating Conservation Treatment and Management of Archaeological Collections". We found that the bronzes measuring below a certain pH were most susceptible to corrosion. Burial depth has been found to be an important indicator of the porosity and degree of susceptibility of bronzes to corrosion in storage. Different corrosion processes were identified above and below the dripline in the soil profiles of archaeological sites. Recent tests that monitor oxygen depletion of bronze objects in Escal bags have shown the effectiveness of first drying bronze objects with ethanol and the overall effectiveness of this method for predicting corrosion activity. In some cases, desiccants and oxygen absorbers may not be required for the protection of bronze artifacts. Our recent tests involving microclimates show heat-sealed Escal bags can hold their seal for up to 10 years (and perhaps longer) and that silica gel will remain dry in the bags for this length of time. For these reasons the JIAA is switching from the more costly RP-A oxygen scavengers to color-indicating silica gel (to avoid including rather costly RH strips or dataloggers in the bags). Recent JIAA tests comparing cysteine, AMT, and BTA show cysteine as a much more effective corrosion inhibitor and that this inhibition may be lost through handling or by wetting the object. Corrosion inhibitors may be reserved for those objects destined for display in the museum when climate control is inadequate or non-existent. We have begun testing iron objects to

#### SPECIALTY SESSIONS: ARCHAEOLOGICAL HERITAGE | ARCHITECTURE

determine if similar means of risk detection and prevention may be applicable. Our student interns have been testing green corrosion inhibitors such as garlic, black pepper, and ginger on copper and mild steel. We have had good results to varying degrees with all green inhibitors tested to date. The corrosion inhibitors were initially tested on new metal test coupons and recently we started testing some of them on archaeological bronzes. Five possible options are presented for the preventive conservation of archaeological bronzes: 1)applying chemical corrosion inhibitors, 2)drying bronze objects in ethanol by immersion before placing them in Escal storage bags, 3)storing bronze objects in Escal with a desiccant such as color-indicating silica gel, 4) storing bronze objects in Escal with an oxygen scavenger such as RP-A, and 5) no protective microclimate or treatments necessary based on the determination of low risk for corrosion.

### The Mystery of the Frankenphora: Treatments and Ethics of a Composite Amphora

Olivia Haslam

The use of substituted and manufactured ceramic fragments are both known to be historic restoration techniques. Unexpected cracking of an amphora's handle at The Mariners' Museum and Park, in Newport News, Virginia, would lead to a treatment full of pivots. As will be highlighted, through conservation, it was identified that three to four different amphoras had been used to reconstruct a Dressel 1 type held together internally by iron dowels. Lack of information relating to this reconstruction made the discovery a surprise. Only when the iron dowels in the ceramic had begun to corrode was there an indication that alterations had been made to the artifact.

While keeping the historic reconstruction would highlight past techniques and allow for interpretation to use it for display, the instability of the iron dowels meant further damage to the amphora was inevitable if left in place. Discussion with curators about the reconstruction and understanding of the Frankenstein-like nature of the amphora changed as treatment progressed.

This paper will provide an overview of the treatment and ethical challenges associated with the mechanical removal of the embedded iron dowels and additional reconstruction materials along with overpaint, and artificially applied marine growth. In addition, discussion will be given to what was learned about the composite object's history during the conservation treatment and how that knowledge plus treatment limitations led to a final decision on how the object would be presented post-conservation.

## Repeat Photography and Virtual Reconstruction of Los Santos de Ángeles de Guevavi, Tumacácori National Historical Park, Arizona

Frank Matero, Ha Leem Ro

Since its abandonment in 1775, the mission Los Santos Ángeles de Guevavi has undergone severe erosion and loss. Although its incorporation into Tumacácori National Historical Park in 1990 has guaranteed protection, the site's preservation still challenges the park as to the best methods for its interpretation and display.

Current conservation measures employ the application of a sacrificial mud shelter coat, a technique commonly employed at the park and at other exposed NPS adobe ruin sites. These protective shelter coats, however, have rendered the eighteenth-century adobe church and associated mission structures difficult for the visiting public to understand and appreciate.

This research examines the use of repeat photography and virtual reconstruction of Guevavi Mission to visualize and quantify deterioration of the church while also improving visitor understanding of the site. Repeat photography processed through JuxtaposeJS provides an interactive mode of viewing changes over time, while 3D modeling creates a digital reconstruction of the complex during its occupation. Both methods taken together also provide a a semi-quantitative means of documenting material loss of the Guevavi Mission church over time and monitoring loss and the efficacy of current and future preservation methods.

## Just Keep Consolidating: Managing Challenge and Change with the Cypriot Conservation Project

**Emily Brown** 

The John and Mable Ringling Museum of Art is preparing 201 ancient Cypriot artifacts for permanent installation in the historic Museum of Art building in Sarasota, FL. This installation will constitute the first significant and extensively researched and interpreted exhibition at our museum, highlighting a small portion of the over 3,000 antiquities in the collection, which is the third largest collection of its kind in North America. A majority of these objects were purchased by John Ringling in the late 1920s from the Metropolitan Museum of Art, which was deaccessioning a portion of their extensive collection of ancient Cypriot art excavated by Luigi Palma di Cesnola in the late 19th century. The aim of this paper is to present an overview of the goals of the Cypriot Conservation Project and how it fits within the context of a busy and vibrant museum program, as well as highlight the various challenges and successes that have presented themselves amidst other institutional priorities and a demanding staff workload. These challenges include managing unexpected shifts in the overall project timeline and funding, balancing other demands on staff time, and the availability of contracted conservators to assist. In addition, shifts in treatment approach based on research, collaboration, examination, and preliminary testing, and their impact on the overall installation design will also be discussed. Finally, the primary author will reflect on her experience managing the conservation end of this complex project and lessons learned while preparing these extraordinary and unique objects for display.

#### **Architecture**

### Architectural Artwork Removals: The Good, The Bad, and The Surprising

Tania Alam, Kevin Daly

Conservation work in larger architectural projects must be nimble. The time and care required to do good work are often threatened when they are perceived as stifling project momentum, never more so than when surprises occur.

To protect historic fabric including significant art, architectural conservators have become an indispensable part of the construction industry. Incorporating a conservator's precise work into such projects requires careful planning. Nevertheless, they often find themselves encountering surprises – both good and bad. This presentation discusses the means to include conservation work into larger projects, despite those surprises.

A masonry restoration project at a Manhattan public school required the temporary removal of a significant painted-steel sculpture. This was necessary to protect the sculpture from any damage while the surrounding brickwork was replaced. During this process, however, the team discovered that several project parameters were different from expectations. The sculpture was larger and less robust than expected, and the installation site was constrained by hidden structures. Moreover, further research revealed a previous conservation campaign, which challenged assumptions about the treatments required. Frustrating as the circumstance may be, the Architect, Engineer, Contractor, Conservator, and the Owner had to come together to devise a workable and safe solution, fast. A rigid frame of easily accessible parts was developed by the Engineer in close consultation with the Contractor's and Conservator's needs. The design ensured that the sculpture could move without affecting the surrounding structure, that the piece could be safely stored during the larger project's work, and that conservation treatment of the sculpture could be done during the storage period. Teamwork saved the day.

Of course, not all surprises are stressful, some work in favor of the conservators.

A restoration project at another Manhattan public school included removal of multiple terra cotta tile art pieces from the brick exterior. A program of work was developed for their removal based on documentation, survey, design

drawings and probes done adjacent to one of the medallions. When the work began, several inconsistencies were discovered. The medallions were not anchored into the surrounding masonry with threaded rods on all four sides (or even two) as anticipated; and adhesive was used to secure the tiles to the brick inset on one side. However, to the relief of the Conservator and Contractor, carefully removing the bricks from only one side of the art pieces allowed them to be removed with little to no difficulty and without any damage. In this project, non-compliance with original shop-drawings and poor workmanship, surprisingly, benefited all parties involved.

Not all challenges are the same, and there is no "one solution fits all" answer for even similar challenges. Responsive problem-solving and communication skills are the most important tools that conservators need in order to face, embrace, manage, and resolve unexpected challenges.

#### Cultural Heritage Relocation and Reinterpretation of Collections: The Professional's Dilemma

#### David Wessel

The disciplines of cultural resource preservation and conservation now have additional complexities due to the rise of political and social movements that highlight injustice and bias. Cultural resources are being moved, taken out of public view, reinterpreted and in some cases, destroyed. Ownership legitimacy of cultural resources is being questioned, many times from indigenous peoples, and in some cases change in title of property is being sought. Management of cultural sites may not be commensurate with the importance of the site to the underserved community of which it is representative. Further, some institutions are seeking to monetize artwork or other cultural resources to pay for the survival of the organization. Clients may be cultural institutions, municipal arts commissions, state historic preservation offices or profit-making entities that are responding to external pressures as well as tensions from within.

Professionals are being asked to participate in the moving, concealing or reinterpreting of artwork that may not reflect the artist's intent. Also, architects, engineers and conservators may be asked to consult, design, or execute treatments for the stewardship of cultural resources that put them legally at risk. Compounding this hazard is that, in many cases, decisions are being made within a short horizon due to political pressures. In some cases, the professional may find that a client's wishes put them at odds with industry standards such as the AIC Code of Ethics or The Secretary of Interior's Standards.

How should professionals proceed when engaged in these situations? Distancing themselves from the controversy is not a solution and may lead to improper treatments of loss of the resource.

This presentation will review several examples of moving, reinterpretation and transfer of ownership of cultural resources and the role of the preservation professional in the process. In one case legal action was taken against the consultant resulting in a multi-year lawsuit. The presentation will conclude with reflections on how the professional may maneuver through the repurposing of artwork or cultural resources and offer some practical suggestions.

#### Learning Objectives:

- Awareness of challenges for stewards of cultural resources that are the focus of political movements.
- Legal implications for the professional in dealing with repurposed artwork and historic sites.
- Methods of minimizing risk for the professional.
- Technical considerations in moving artwork.
- Considerations in the transfer of title of cultural resources

#### Keywords:

- Relocation
- Repurposing
- Risk
- Ownership

## Taking It Back: Unveiling The Original 1897 Finishes of the Chicago Cultural Center GAR Rooms

Katharine George, Samantha Van Kollenburg

The Chicago Cultural Center building was completed in 1897 as the first permanent home of the Chicago Public Library. The designers, Shepley, Rutan & Coolidge, worked in collaboration with the decorative arts studio of Louis Comfort Tiffany to create the elaborately decorated Neo-Classical building, which occupies an entire city block. The north wing of the building includes a series of rooms dedicated to the Grand Army of the Republic (GAR).

The library began outgrowing its space in the mid-1960s, which spurred conversations about demolition. Support for keeping and restoring the building led to its placement on the National Register for Historic Places in 1972 and efforts were made throughout the late 1970s to restore and revitalize the space for its future job as a center for arts and culture. By this time, the colorful decorative finishes were viewed as outdated and many of the original decorative schemes were covered with flat beige paint.

While the original marble-clad walls and much of the antiqued metallic plaster ornament remained in the GAR Rooms, the original paint schemes were a mystery until the 2020-2021 restoration, when paint analysis found the dynamic and colorful schemes that complemented each room's stone, wood, and metalwork. The plaster finishes utilized pigmented oil glazes over both paint and metallic leaf to create a range of decorative effects such as faux antiqued metal that were meant to reflect the individual character of each space. Analysis confirmed that some of these original finishes were left exposed, but others were hidden under multiple layers of beige paint. The existence of the "buried" original finishes and their lasting integrity launched the campaign to restore over 8,400 square feet of original decorative schemes in the rooms.

An appropriate conservation treatment approach was determined after extensive feasibility testing. This included overpaint removal, consolidation, and restoration techniques. The original concealed finishes were exposed by meticulously removing layers of post-historic paint to reveal the nuanced, hand-painted surfaces of 1897 design. The re-exposed finishes were then conserved, and areas of loss were carefully reintegrated. The result was the original artisan's work, where present, rather than a recreation.

As a result of the GAR Room restoration, a seminal work in the history of decorative architectural finishes was re-exposed. The GAR Room finishes give unique insight into the aesthetics at the turn of the twentieth century. The palette consists of rich metallic colors such as oxidized reds, greens, yellows, and bronze. Aluminum leaf ornament is layered with many different colored glazes to capture the appearance of aging bronze. These colors mimic the palette of many Tiffany lamps: the finishes are not bright and shiny but rather aged and grand.

Thus, the "un-restoration" of the GAR Rooms at the Chicago Cultural Center are an example of conservation work applied on a huge scale that re-exposed the entirety of an original work by 1897 artisans.

### What If We Find Hoffa? Managing Large Scale Uncertainties

Xsusha Flandro

Thousands of skyscrapers decorate the landscape of the United States. As they continue to pop up in cities from coast to coast many of the existing ones are ageing. In New York City alone there are over 1 million buildings, with an average age of 53 years. of this million 15,695 of them are over six stories and of those, 7000 are skyscrapers (over 115 ft. tall). The probability of encountering unknowns during restorations on buildings of this size is one hundred percent.

In New York City there is a local law—FISP (Façade Inspection & Safety Program) formally known as Local Law 11, which requires the inspection of all buildings over six stories high every five years. This inspection law had roots in a 1979 incident when a piece of terracotta fell and killed a college student. The law was expanded and made mandatory in 1998 after a large portion of a 39-story brick

façade collapsed onto Madison Avenue. Currently, most urban centers have adopted similar inspection requirements.

With these cyclical inspections comes cyclical maintenance programs. However, maintenance on a large-scale historic structure is very different from just setting up a scaffold here and there. Mobilization of a forty-story building can cost more than the maintenance repairs themselves and can easily range from 2 to 4 million dollars. Surprises will be discovered during construction work, and assumptions must be made and repairs budgeted for what isn't known prior to mobilization.

Expectations are managed by using historic construction documents from the building itself or from similar aged and sized structures. Managing large scale unknowns is a skill that not all conservators are familiar with, and how these uncertainties are planned for can make or break a restoration project. This presentation will provide examples of challenges that have arisen on buildings of this size and general guidelines for best practices when approaching large scale uncertainties in conservation.

#### Them's the Breaks: Managing Conservation Through Construction

Jennifer Kearney

A mural on a Modernist icon, a landmarked Beaux Arts interior atrium, a Broadway theater: these sites seem to have little in common beyond their historical and architectural significance, but for a conservator developing a work program and monitoring them through construction they represent the same cautionary tale of the need for planning and coordination between disciplines. But even with extensive preparation, there are always surprises or mishaps along the way that must be addressed.

Documentation, materials testing, and probes are the foundation upon which architectural conservation is built, but when the information this testing provides doesn't tell the whole story the entire project can suffer. Architects, contractors, and owners rely on the results of conservation testing to plan their projects and entire design concepts are guided by the early findings from small-scale analysis. Limited by access, schedule, or budget, this testing may not be comprehensive enough and may not represent all conditions in the field. Conservators need to anticipate that additional access later in the construction process will uncover new challenges, illuminate discrepancies between record drawings and as-built conditions, or reveal previously unknown materials.

A conservator likes to work under controlled circumstances, but an active construction site is usually anything but orderly, even with the best construction manager. Whether the scope consists of a single element or an entire complex, the people working on a jobsite will have an impact on the work – sometimes literally as with an unsecured tool falling through a gap in protection netting. Even with years spent developing a comprehensive plan, something will inevitably go wrong and a solution will be needed to fix it... fast.

Using three case studies: a Louis Kahn Bath House mural, an ornate courthouse lobby, and a New York theater, this presentation focuses on how the conservator can and should be involved in the planning, monitoring, and execution of work not only at the beginning, but also throughout the construction process. It investigates how a limited conservation scope at the beginning of a project can have an outsize impact when new information is discovered later. and it discusses how to develop and reinforce relationships with trades, owners, and other partners who may not have a background in conservation or preservation to ensure buy-in, especially when that has an impact on budget and schedule.

## From the Ground Up: Revisiting San Xavier's Main Cupola 29 Years Later

Dr. Nancy Odegaard, Matilde Rubio, Timothy L. Lewis, Starr Herr-Cardillo, Susie Moreno

In the spring of 2023, a team of local conservators and outside technicians performed conservation and stabilization work in the main cupola of San Xavier del Bac for the first time in 29 years.

San Xavier's spectacular baroque interior and ambitious dome and vault construction make it a premier example of Spanish Colonial art and architecture. Its interior walls are adorned with polychromatic murals dating to 1797, executed in fine detail and applied a secco atop a gesso preparation layer, layers of limesand plaster of varying granulometry and thickness, and a brick support. Paints were made with imported pigments including vermillion, prussian blue, and orpiment—a significant expenditure for a church at the frontier of the Pimeria Alta in the late 18th century; Rutherford Gettens looked at some of these paints. San Xavier del Bac exists within a unique contemporary cultural context: it is an active church, owned by the parish and staffed by the Franciscan Friars, located within the tribal community of Wa:k in the San Xavier District of the Tohono O'odham Nation. Church management handles day-to-day operations, while conservation and preservation activities are funded and coordinated by the nonsectarian nonprofit Patronato San Xavier. Within the tribal community, there is a strong sense of cultural ownership; tribal members are appointed as church bell ringers, comprise Feast Committees, and take on other roles related to the church.

The first major conservation campaign took place between 1990 and 1997 by European and East Coast-based conservators, who cleaned and stabilized the wall paintings and statuary using modern methods and materials of the time. Four apprentices from the local tribal community were trained to assist. Since then, a local team, two of whom were part of the 1990s crew, have directed conservation work. Informed by decades of observation of the building's unique conditions, they refocused conservation protocols on the use of traditional materials and methods. Given the complex nature of the building along with its role as an active church, performing routine, sustainable care is an ongoing challenge, but one now directed with input from the local community.

This session will recount the collaborative process along with the means and methods used while revisiting the main cupola, which sits 53 feet above the church floor. The cupola was identified as a priority given the presence of large cracks and crack systems, history of water infiltration, soiling, biodeterioration, aged original paint and coating, and aged restoration fills, all in a harsh desert with minimal preventive maintenance. The large scope of work—both surface and structural— accessibility challenges, and a desire to limit disruption of church functions led us to seek additional skilled hands to expedite the project. This time, our local team trained and oversaw a group of outside technicians, students, and skilled volunteers to complete the work, all of whom were unfamiliar with the specifics of the site. Progress was shared with more than 100 members from the tribal and religious community through a series of tours and discussions.

## Differential Durability: Could Deterioration Be Hidden Within Your Wall Assembly?

Speakers: Cameron Moon

In the last fifty years, awareness of preventive conservation as a holistic approach to heritage buildings has heightened. However, its actual implementation has remained slow to catch on, due in part to deferred maintenance and lack of funding facing many organizations and property owners. Additionally, thinking preventively runs counter to the reactivity of the building industry. We are usually called to respond to deterioration that has progressed to the point where it is visible. We typically perform a condition assessment, which leads to testing and treatment recommendations, and implementation of an intervention. But what do we do if there is no evidence of damage on the surface? Could we consider potential deterioration hidden within a wall assembly? Instead of reacting to what we see on the surface, could we shift our thinking to prevent deterioration before it becomes apparent?

One deterioration factor inherent in many heritage buildings is the differential durability of materials within wall assemblies. Differential durability is how the useful service life of building materials differs between components within an assembly. By considering the different durabilities and vulnerabilities of materials, we can act preemptively to anticipate potential deterioration between interior and exterior surfaces. Methods to predict the service life and durability of modern buildings are well established and have been increasingly applied to heritage buildings in the last decade. However, the results have been extremely variable and highly subjective. It is worth changing the approach to durability

and service life from quantification to a comparison of relative durabilities, to understand which material is the weakest link in an assembly.

I demonstrate a methodology for qualitatively evaluating comparative durability and vulnerability in heritage buildings using two buildings as case studies. I present a decision diagram that identifies each material and its position in an assembly, assesses comparative durability of materials, identifies causal factors of deterioration and vulnerability of protective layers, and proposes interventions. While I have developed the methodology for relatively simple building envelopes, it can be applied to modern buildings or be used when designing interventions.

I focus on buildings constructed in the first half of the twentieth century when building technology and materials proliferated and designers and builders experimented with new assemblies. With the Industrial Revolution and the advent of new building materials in the late nineteenth and early twentieth centuries, exterior wall assemblies became more complicated. Architects and builders experimented with new materials, including reinforced concrete, Portland cement, and architectural terra cotta, to build multi-component walls. These walls introduced the issue of differential durability to building envelopes. Each material that comprised them had a different service life, increasing potential aging and failure points. The construction industry experimented with fabrication and installation, responding to failures by introducing new materials, changing their composition, or assembling them in different sequences. We see this same experimentation today as new materials come onto the market and buildings are designed to be increasingly weathertight. As more modern buildings become historic, the issue of differential durability will become an urgent conservation issue.

#### Revealing Hidden Threats: Monitoring Ambient Air Quality to Preserve Silver Treasures in the 15th-Century Mehrangarh Fort Museum, Jodhpur, India

Vikram Singh Rathore, Vandana Singh, Sunayana Rathore

The preservation of art objects and valuable collections within historical buildings poses a unique challenge, primarily because these structures were not originally designed to protect such items sustainably. One notable example is the 15th-century Mehrangarh Fort Museum in Jodhpur, India, which houses an irreplaceable collection. This fort, stretching over 500 yards in length, ranks among India's largest forts. The museum houses an extensive and invaluable collection of silver artifacts, ranging from pure silver to electroplated variations, each representing various forms and types of silver objects. Recognizing the significance of preserving this remarkable collection, an educative program on conservation and preservation of silver artifacts was designed incorporating air quality risk assessment. The collaborative endeavour was part of the in-house training program hosted by the Mehrangarh Art Conservation Centre, Mehrangarh fort, Jodhpur in October 2022 under the Tata Trusts- Art Conservation Initiative Project. This assessment sought to quantify the concentrations of pollutants employing non-invasive, on-site pollutant sampling devices. The collected samples underwent laboratory analysis, utilizing Gas Chromatography for gaseous pollutants and Atomic Absorption Spectrometry to detect elements. The air monitoring survey had a specific emphasis on safeguarding the historic silver collection while assessing indoor microclimate, air pollution, and suspended particulate matter deposition.

Measurements were made in following locations inside the museum complex:

- Open courtyard
- Open Howdahkhana gallery displays finest example silver elephant seats from 17th-19th century in well-defined spaces with proper natural light and ventilation
- Two closed showcases from the Daulat Khana Gallery. One of the cases displays Solid Silver Idol of Goddess Gauri (Case I) that is being worshipped by her Highness and another case displays seven decorative silver objects (Case II).
- · Storage room for reserved silver collection

The analysis of air quality revealed unexpected and critical findings. Firstly, the outdoor environment displayed a minimal concentration of H2S, nearly at the detection limit, posing no immediate concerns. Secondly, monitoring in the open Howdah gallery indicated lower H2S levels due to natural ventilation. Thirdly, and the most striking findings was the alarmingly high levels of H2S in the closed showcases in Daulat Kahana Gallery. Surprisingly, despite the high H2S concentration in Case I, corrosion of silver was at its lowest. This was attributed to factors such as low humidity and pH levels due to its location, as well as textile barriers. Additionally, the formation of Cu2S suggested the presence of copper, possibly in jewellery or the idol itself, indicating a possible Aq-Cu alloy. In contrast, Case II showed higher corrosion levels, including sulfide and oxides of silver, indicating elevated humidity, alkalinity or the presence of strong oxidizing agents. Objects of both the cases underwent further analysis for their elemental composition using handheld XRF. Finally, in stark contrast, the storage room exhibited the worst conditions, marked by high concentrations of H2S, ozone, ammonia, and particulate matter (PM 2.5 and PM 10). The survey showed that adverse conditions arose from the incorporation of modern materials into the traditional structure, high RH, elevated alkalinity, pollutant accumulation etc.

In conclusion, the assessment of air quality within the Mehrangarh Fort Museum has revealed unexpected findings, particularly concerning the alarmingly high indoor levels of H2S and other pollutants, posing a significant risk to the precious silver artifacts. Furthermore, this study underscores the significance of collaborative projects and emphasizes the necessity of capacity-building training programs, highlighting the delicate balance required between scientific conservation efforts and the constantly evolving external environment.

### When The Art's In The Way: The Complex Nature of Moving Large-Scale Artefacts and Public Art

Kelly Caldwell

Conservators often wear many hats: advocate, scientist, artist, curator, designer, mount maker; project manager but what about engineer or rigger? on projects where objects are imbedded within historic buildings or public spaces, removals and relocation are a frequent requirement. With increasing adaptive reuse of spaces and code upgrades to infrastructure, a conservator is needed to consult or advocate in the safe handling, removal, relocation, and treatment of large-scale integrated artworks.

When buildings and public spaces undergo large-scale rehabilitation, embedded historic elements or public art add layers of complexity to the planning and practical needs for the spaces, but also the artworks themselves. Examples include the rebuilding of a public plaza where site specific public art must be temporarily relocated; or when historic interiors must be selectively removed and reinstalled for HVAC and sprinkler upgrades. This is also the case when museums upgrade and artworks that are built into the base building are deconstructed.

Artwork relocation projects are complex, necessitating different trades and skill sets working together to define a solution. Sequencing the removals and reinstallation is a key component for schedules and budgets to stay on track. Involving a conservator early in the design process can help to facilitate a more streamlined process with minimal interruptions and surprises. This presentation will discuss how the combination of technical input provided by a conservator supports or conflict with design and structural engineering requirements as well as, how the role of the conservator often expands into different fields to navigate and direct the required interventions for a successful large-scale move.

#### Revisiting the Efficacy of Plaster Repair Technologies of the Last 40 Years - an ASG/APT Joint Panel

Heather Hartshorn, Naomi Kroll, Brooke Russell, Mary Slater

The aim of this panel discussion is to review the history and efficacy of plaster treatment methods utilized over the past 40 years. Each panel member will present on an aspect of historic plaster, describing the different materials and systems that exist in historic American structures. This will be followed by an

overview of treatment types available today. After the panelists present, the Q and A session will commence. Audience participation is highly encouraged! We hope to hear people's experiences over the years, and to address any burning questions.

## Lighthouses: The Evolving Character of an Unchanging Beacon

Susan Pranger

Lighthouses are a readily recognizable and dependable landmark for marine navigation but have undergone many changes over the last 150 years and continue to face new challenges from a changing climate and from economic constraints. A comparison of four lighthouses on the Pacific coast of Oregon and Washington: Cape Blanco, Heceta Head, Yaquina Head, and North Head, show the impact that changing materials, operations and maintenance procedures, and weather conditions have had on the condition of these iconic structures. Almost 90 lighthouses were built along the west coast of the United States to aid marine commerce, most during the second half of the 19th century. Their initial construction and operation by the United States Lighthouse Service was highly standardized but adapted to local conditions and available materials. The operation of oil or kerosene lamps required constant supervision by a team of residential lightkeepers who also regulated ventilation and provided regular maintenance of the painted cast iron and lime washed stucco and brick towers. After the US Coast Guard assumed ownership and operation of most lighthouses in the 1930s, residential keepers were gradually eliminated as the lighthouses were converted to electric lights and were fully automated by the 1960s. During this same period, in an effort to exclude the harsh marine weather while reducing maintenance, the USCG infilled windows, closed vents, and replaced lime stucco and whitewash with modern cement stucco and elastomeric coatings. However, wind driven rain penetrated the tiniest crevasses, and eventually saturated both cast iron and masonry, where the moisture was trapped by impervious coatings and lack of ventilation. The preservation movement of the late 20th century focused attention on the deteriorated condition of the lighthouses, and led to increased advocacy, and transfer of most lighthouses to federal or state agencies, although the Coast Guard retained ownership or responsibility for maintaining most of the navigation lights. Cape Blanco was partially renovated in the 1990s but today has multiple layers of impermeable paint and is suffering from internal moisture damage. Yaguina, Haceta Head and North Head were extensively restored in the early 21st century with traditional materials that are more sympathetic to the original construction, but continue to fight internal humidity, metal corrosion and algae, lichen and abrasion of the exterior finishes. Partnerships between state and federal agencies and other advocacy groups have increased advocacy and stewardship of the lighthouses but the harsh weather has proven to be a formidable foe.

## Synthesized Method of Identifying Salt Efflorescence In Monuments & Buildings

Sonia Tatiana J. Fraj

Salts found in buildings and monuments are ionic compounds that can dissolve in water. When the water evaporates, they crystallize as hydrated molecules which increases their volume, emerging as efflorescence that generates chemical and physical changes in the porous systems of various types of masonry. Damage to masonry from salts can both greatly disfigure the surface of the masonry visually, but also deteriorate the material to the point where it becomes structurally unstable. The main factor that effects how salts crystallize and form efflorescence in porous systems is the frequency and speed of wetting and drying cycles. While weather cycles are the most common drivers of wetting and drying cycles, routine cleaning and/or wetting from sprinkler systems can also contribute to these cycles. Additionally, there are other factors that must be taken into account to understand/determine the content of salts and how aggressive/disruptive they can be to the porous system.

This paper establishes a synthesized protocol that will help identify soluble salts in monuments and buildings by analyzing multiple factors that are either external or inherent to the object of study (monument/building), as well as identify the agents and mechanisms of degradation. This proposed protocol

has been developed using one (1) of several stone columns that supports the colonnade that encircles the market of Sant Andreu in Barcelona as a case of study. This market colonnade was likely built between 1914 and 1923 and is composed of fifty (50) columns. The column chosen as the subject of this study was differentially affected by salt efflorescence compared to the adjacent columns. The subsequent research protocols discussed in this paper aimed to identify why this was so.

While examining and analyzing soluble salts/efflorescence is not new to the fields of conservation and building science, the author developed a synthesized approach after researching a range of investigation and examination techniques used across a variety of different countries. Many analysis techniques are very complicated and/or focus on one aspect of the salts rather than the site as a whole. While developing this protocol, the initial phase included a study of the structure of the colonnade and the column, the compositive materials of these (with POM), as well as the environment and climate. During the second phase, both dry and wet samples of salts were extracted from the stone for analysis. The wet samples were analyzed with an instrument to determine their ionic concentration as well as analyzed with chemical reagents to qualitatively identify sulphates, chlorides, nitrites and nitrates. The dry samples were encased in polyester resin and observed under POM and SEM. After having reviewed and evaluated the different techniques available and utilized globally by the field, these protocol steps were selected so that the average conservator could use them in their practice, even with relatively limited access to high-tech instruments, and still produce results that guide best practices for mitigation of damage due to soluble salts/efflorescence.

#### Water: Can It Be the Culprit and the Savior?

Rebecca Wong, George Reo

The building in our study is the focal point of a prominent site and was constructed over a period of forty years. Dedication of the site occurred on February 14, 1853, and completion and dedication of the interior of the building occurred on April 6, 1893. The building was designated a National Historic Landmark in 1964 and is a contributing building in a historic district that was listed in the National Register of Historic Places in 1983. The above-grade walls of the building are constructed of quartz monzonite quarried from a nearby canyon. Quartz monzonite is an igneous rock that is similar in composition and texture to granite but contains lesser volumetric proportions of the common granite-forming mineral quartz.

Unexpected soiling deposition at the building's exterior masonry facades was evaluated as part of a seismic retrofit and stone masonry repair program. Onsite investigative and laboratory work was performed to identify the likely source of the soiling deposits that were created through the ongoing retrofit and repair program. After onsite assessments and sampling began, additional field and laboratory studies were conducted that resulted in an extensive evaluation to characterize the soiling and examine several potential cleaning approaches.

Over the course of the retrofit and repair program, multiple conditions of soiling were identified at the quartz monzonite stone masonry. Soiling patterns were determined to be based on a range of exposures and correlated to varying moisture conditions. The soiling patterns were consistent with locations where water was likely introduced into the wall system through ongoing seismic retrofit operations. Subsequent field and laboratory studies identified that soiling contained oxidized forms of iron and/or iron compounds bound in common masonry-derived salts. Water introduced into the wall system from retrofit activities most likely resulted in visible migration of soiling components to the exterior surface of the stone masonry. A program of cleaning studies was developed with an aim to isolate and target soiled portions of the stone masonry. Cleaning studies included multiple chemical cleaning systems, such as poultices, proprietary cleaners, and micro-abrasive cleaning systems, to evaluate their effectiveness prior to conducting large-scale cleaning mockups with the project masons.

This presentation considers the procedures of the assessment and the results and findings of the field and laboratory studies used to identify and determine the cause of the soiling. These studies were essential in developing customized cleaning processes to mitigate the targeted soiling and its potential for recurrence.

#### **Book & Paper**

## New Applications of Lascaux Acrylic Adhesive For Book and Paper Conservation

Quinn Morgan Ferris, Marco Valladares

Lascaux Acrylkleber adhesives have been in use in paper conservation for over a decade. The combination of the working properties of elastic acrylic film and its ability to be both heat- and solvent- activated--as well as dilutable with water and alcohol—makes it a unique resource in the realm of conservation. It provides all the benefits of using acrylic adhesive in treatment with more control and less risk than PVA, all while being significantly more reversible.

In a pursuit to delve deeper into the interactions of Lascaux Acrylkleber with other traditional conservation adhesives favored for their reversibility, conservators at the University of Illinois undertook a series of experiments. To begin with, we were curious about Lascaux 303HV's performance in terms of changing the mechanical characteristics of paper fibers, as well as its behavior when used with other types of reversible adhesives, such as wheat starch paste. Experimentation with varying the concentration of each adhesive, as well as testing the best methodology for the preparation of mending tissue with combined adhesives were also areas of research interest. Once we arrived at a promising formulation, we created additional testing protocols to better understand the working characteristics of Lascaux in combination with wheat starch paste applied over historic papers—including different paper stocks with test mends applied at different points in the simulated treatment process.

After early success in creating extremely fine, elastic, strong, tonable and versatile remoistenable tissues for mending and lining applications, the authors decided to test the aging characteristics of this new Lascaux/paste combination. This presentation discusses the experimental procedure and ultimate data from attempting to ascertain to what extent Lascaux might prove suitable for further applications within the domain of book and paper conservation.

#### Making a Chinese Woodblock Print Easy on the Eye: Merging Chinese Aesthetics with Western Conservation Methods

Ping-Chung Tseng

Inpainting is a common technique used to compensate areas of loss in pictorial art. Over the years, methods of loss compensation have developed to include reversibility, greater respect for the remaining original elements, and allowing for distinction between original and inpainted passages.

Traditionally, for Eastern Asian paintings, "master mounters" carried out the entire conservation process. Throughout the centuries, they played the role of what we now call a "conservator." The process requires wet cleaning, removing old mountings, patching and infilling losses, inpainting, and remounting. Chinese master mounters have always considered inpainting the most critical process. Even today, concealing losses with perfect inpainting is their ultimate goal.

In Chinese paintings conservation, there are separate terms, one for connecting color and another for connecting lines; an approach that seeks to match the surviving areas as perfectly as possible. Consequently, imitative inpainting has always been considered to be the standard.

However, this practice of flawless, memetic inpainting presents two ethical issues: 1) when discoloration or inappropriate repairs occur, a full remounting is required to reverse the inpainting; and 2) it can be difficult even for conservators to distinguish between inpainted and original passages. Because remounting introduces water, often risking loss to original paint, it can be considered overly aggressive and incompatible with modern theories of conservation.

This paper will focus on a case study of remounting a rare 18th-century Chinese woodblock print and how to inpaint the areas of loss that can simultaneously follow the Chinese traditions and satisfy contemporary conservation ethics.

The woodblock print depicts a scenic view of Yueyang Tower with the Eight Immortals gathering around Dongting Lake, having a majority of loss in the clouds and one of the central figures. The printed lines in the sky were relocated incorrectly; half of the figure's robe and body were missing and poorly inpainted. Adjusting the images and re-inpainting the losses were essential for this project. Losses in the figure required reinterpretation of the figure's robe and the body gesture. Several inpainting proposals were carefully considered with curator and colleagues in the Cleveland Museum of Art's conservation department.

Once the reconstruction of the figure's robe was decided, an inpainting method was designed to satisfy both the Chinese tradition and current conservation standards of reversibility. Rather than inpainting directly on the original paper surface or underlying mounting paper as typically done by Chinese masters, paper inserts were affixed within the losses and inpainted to connect and imitate printed lines and tones, making this approach fully reversible without remounting the entire artwork.

Furthermore, pigments used in the inpainting process were also selected to be detectible under ultraviolet induced visible fluorescence. This compensation approach is presented as a creative and practical option to the field of Chinese Paintings Conservation, bridging Chinese aesthetics with more current conservation standards.

### Soluble or Not? Research Outlining Solubility of Water-Soluble Pencils and Pastels

Rosaleen Hill, Scott Williams, Lindsay Sisson, Jennifer Poulin

Water-soluble pencils and pastels have been produced and utilized since the early 1900s. Water-solubility, originally developed to aid in the clean-up of waxy graphic media, soon became a desirable property for artistic practice. As such, water-soluble graphic media was integrated into the works of Jackson Pollock, Sarindar Dhaliwal, Saul Steinberg and other artists' collections. Due to the myriad of ways artists can apply this media, it can be challenging to visually distinguish it from their non-soluble pencil and pastel counterparts, as well as traditional watercolor washes. This is further impacted by the limitations of media labels, product data sheets, and the nature of artistic practice, which has made it difficult to track artworks made using water-soluble graphic media in collections. As previous studies have indicated, unlike traditional watercolor, water-soluble pencils can remain soluble long after they are applied due to their water-soluble waxy binder. The differences in their solubility behaviours paired with how easily they can be mistaken for other media can have dire consequences for artworks in collections. Additionally, there is little literature exploring the natural aging properties of these materials; therefore, the need for further exploration of these materials has been identified (Buttle Et al., 2015).

This research explores the composition, aging, and solubility behaviours of seven water-soluble graphic media: Caran D'Ache Neocolor II Aquarelle Water-Soluble Wax Pastels and Museum Aquarelle Watercolour Pencils; Brevillier's Cretacolor Aquarelle Oil Pastels; Derwent Inktense Ink Pencils; Faber-Castell Albrecht Dürer and Goldfaber Aqua Watercolour Pencils; and Gallery by Mungyo Watercolour Crayons. Fourier Transform Infrared (FTIR) spectroscopy, Pyrolysis-Gas Chromatography-Mass Spectroscopy (Py-GC-MS), and portable X-ray fluorescence (XRF) were used to identify the binder, bulking agents, and colorants. Preliminary analysis has indicated the presence of polyether-polyols and other sugars instead of traditional gum binders which may contribute to the media remaining soluble over time as previously described. Thermo-aging in hybridization tubes was undertaken on media that were applied to Arches Hotpress watercolor paper. A set of aged and unaged samples were then immersed in baths of commonly used paper treatment solvents: distilled water, ethanol, acetone, ethyl acetate and toluene. Any color shift resulting from these baths was monitored with a Konica Minolta CM-700d color spectrophotometer while the relative amount of media was tracked using ATR FTIR.

All research samples and data, in addition to pencil and pastel sets acquired will be added to Queen's Artist Material Archive to support the development of a long term-natural aging study of these materials. An additional goal of the Artist Material Archive will focus on the creation of a database of External-Reflection FTIR spectra to help distinguish water-soluble graphic media from non-soluble

pencils and pastels. This method will allow conservation professionals with access to FTIR to identify unknown media without damaging or sampling an artwork. This definitive baseline for future identification and material research will aid in the study of conservation concerns and treatment options for contemporary water-soluble pencils and pastels.

### Plotting a Treatment: The Delamination and Bathing of an Eighteen Foot Manuscript Map

Allison Holcomb, Sara Leonowitz

An 1898 manuscript map of parts of Puerto Rico, from the Spanish-American War, came to the lab at Harpers Ferry Center from San Juan National Historic Site as part of a group of laminated materials. Its eighteen foot length presented unique challenges for both treatment and safety. The map had been sandwiched on cloth with three layers of cellulose acetate and had already begun to produce a distinct vinegar smell. This talk will briefly cover the variations in delamination treatment on two smaller maps, and how the smaller scale treatments informed the larger treatment. The focus will be on the plan for treatment, materials, set up, method, safety, and lessons learned in the process. The object and treatment were intimidating. By sharing this treatment, the goal is to provide a manageable framework that others might use as a starting point for future projects.

# Will The Circle Be Unbroken?: A Case Study in Addressing Acceptable Loss, Historic Conservation Techniques, and Project Burn Out on a 1732-1796 South Carolinian Church Register

Jessica H. Henze, Kathryn Boodle, Audrey Jawando

Often in a professional conservation setting we are open about discussing the things we can or can't do but are less forthcoming about the grey areas—the shoulds, the ifs, the maybes, the things we intuit about an object that are based in experience but are hard to explain or quantify. What is it that pushes us over the edge to take on a risky treatment that is outside of our normal comfort zone? Or a treatment that another conservator has perhaps stepped back from due to the degree of difficulty? Is it hubris or is it something that the object is telling us that lets us know in our gut that we can make a positive change—that we can make an inaccessible object accessible if we are willing to establish and hold the line on a degree of acceptable loss? In treating the 18th century register for the Independent Circular Congregational Church, the senior book and paper conservators took on the daunting task of addressing 250+ leaves that had gone through a previous WPA-era conservation treatment and a partial attempted treatment from 2009. The deterioration of the paper and iron gall ink, crumbling silk linings, and a failed binding had rendered the object completely unusable. However, as it was the record of one of the oldest continuously worshipping congregations in the South and a National Historic Landmark, the information contained within was of great importance to the state historical society and they wanted it to be able to be read beyond the first few pages.

It was obvious on examination that this piece would stretch the limits of what we normally consider to be an acceptable level of loss, and also, possibly, the skills of the individuals who undertook the treatment. The senior conservators worked to create a flexible treatment plan to stabilize the leaves that addressed the previous treatments and allowed the conservators to support each other both technically and emotionally to avoid project burnout. Dividing the work, creating check points, and working with the imaging department to create a high-resolution digital record prior to starting work were all key in ensuring that the object was treated in a manner that limited the loss of media, paper and information. While these are all things that we do instinctively once we get to a certain point in our careers, this project threw these techniques into sharp relief, forcing a reassessment of treatment biases, technical skills, and of the purpose and limits of conservation treatment at this moment in history.

#### A Medley of Map Treatments

Heather Hendry

As a busy regional lab specializing in paper, CCAHA paper conservators deal with a wide range of maps from a variety of clients. This talk will describe several recent innovative treatments addressing specific issues in maps that may have wider application to solve other challenging problems.

Case Study 1: A brittle and fragmented hand-drawn map lined on fabric, 1872. This map needed backing removal, washing, and relining, but the media was too soluble for normal washing and lining, while the paper was too fragmented to risk backing removal without immediate stabilization. The map was placed face-down, dry, on the suction table and the backing was removed mechanically, while the suction held the fragments in alignment. It was then lined with strips of a 5 gsm tengujo tissue pre-coated with Jin Shofu wheat starch paste, activated with a light mist. Once lined, the map could be handled safely to be placed face up to be washed on the suction table so that the soluble media could be monitored at all times. Significant discoloration reduction and physical stabilization was achieved without displacing the many loose fragments or affecting the media.

Case Study 2: Multiple 6 x 8 foot hand drawn maps, 1896. Seventy-one hand-drawn survey maps on single sheets of heavy, machine-made paper were lined on fabric and stored on rolls. Due to their size, the client requested stabilization and digitization, but they needed to remain on their (mostly intact) fabric linings and return to their rolled storage. The major issue was severe horizontal tenting that could not be addressed by standard washing, relining, and flattening. CCAHA conservators tested and perfected a system of local repairs to hold the tents flat to allow imaging capture of the information and prevent the ongoing cracking.

Case Study 3: Oversized varnished maps. The ongoing conversation on varnished maps has brought together conservators from across the country to share different approaches to remediating discolored varnish. Solvent removal of discolored varnish remains a common approach, however, this carries inherent health risks to the conservators. CCAHA has developed an easy, low-cost system to convert our fume hood into a "fume room" to keep staff safe when solvent treatments are too large to fit inside the fume hood. As time allows, I may include other tips on washing and relining fragmented cloth mounted wall maps.

## Analysis and Assessment of the Degradative Properties of Strawboard as a Secondary Support

Rebecca Ploeger, Theresa J. Smith, Aaron Shugar, Jenni Krchak

Backing boards are commonly used as secondary supports for artwork but often degrade over time and subsequently adversely affect the primary support. As a fiber furnish, straw was used relatively briefly in paper and board production during the mid-to-late 19th century. Two strawboard samples, one with facing papers, one without, were analyzed to determine their degradative properties and whether they are safe materials to be in contact with artwork. PLM and fiber staining along with SEM identified the fiber furnish as a type of pure straw; ATR-FTIR identified the presence of proteinaceous material and an oil or resin in the facing paper, possibly from an adhesive layer, but lack of such materials within the board; material suitability testing identified one sample as permanent (copper coupon) / temporary (lead and silver coupons); pH testing determined the relative alkalinity of the board samples. While the alkaline pH of the board material suggests a potential benefit to the artwork by slowing degradation, the strawboard material is inherently structurally unstable on its own.

### The Production and Deformation of Drying Boards

Yi-Chiung Lin, Ting-Fu Fan

Drying boards are one of the most frequently used equipment in Eastern painting and calligraphy conservation and mounting studios, aiming to dry and flatten artworks. Traditional drying boards are made of wooden boards, or a combination of wooden boards and paper, or wood strips with paper such as the classic Japanese-style Karibari.

High-quality wood strips and craftsmanship can be costly, limiting the options available to some studios and conservators and reducing the likelihood of use.

In this article, I will share how to use aluminum extrusion brackets instead of wooden strips and combine them with paper to create drying boards with the same functionality. This method allows for easy production of drying boards in any desired size, offering lightweight, high structural strength, and resistance to deformation. Moreover, connecting drying boards of the same size can also provide a convenient option for occasional conserving or mounting of larger artworks.

#### Soft Clouds: Material Analysis of Historical Paste Papers from the Rosamond B. Loring Collection of Decorated Papers

Debora Mayer, Mitchel Gundrum, Kelli Piotrowski

Paste paper is a style of decorated paper which was first in popular use in Germany and nearby countries as book papers, wall coverings, and furniture linings from around 1600 to the 1830s. Though culturally and technically distinct from more popularly recognized marbled papers, ambiguous terminology and a lack of academic literature have led to confusion and ignorance among both public and specialized audiences. While pigment analysis is a proven provenancing technique for paintings and illuminated manuscripts, this research is the first to address its potential for paste-decorated papers. A bibliographic survey was conducted to catalog color, pattern, and publication/production data for 255 paste paper objects from Harvard University's Rosamond B. Loring Collection and several private collections. 16 of these were selected for an analytical survey involving stereomicroscopy, x-ray fluorescence spectroscopy, and multi-spectral imaging techniques including IR reflectography and false-color imaging. The results mark the first known analytical investigation of historical paste paper colorants, revealing trends in the use of indigo and Prussian blue pigments and additives including alum, chalk, and orpiment. These insights, especially as a supplement to pattern statistics from dated objects, demonstrate the potential for improved characterization of paste papers through material analysis.

## Repairing Modern First Edition Dust Jackets Without Fills or Inpainting: A Conservative Approach

Christopher Sokolowski

The modern first edition dust jacket—so often discarded in its day—has become the part of a book that holds the most historical and commercial value. Despite this increase in their artifactual status, I have observed extensive cosmetic restorations to valuable dust jackets over the years that don't suit their rarity and importance. This talk will demonstrate nearly invisible repairs to damaged modern first edition dust jackets using a lightweight kozo tissue precoated with Klucel G (hydroxypropylcellulose) adhesive and leaving losses to be filled visually by a toned or printed secondary jacket placed underneath the original. The advantage of this approach is that the dust jacket retains its authentic condition while appearing complete when viewed from a short distance on exhibit. A dust jacket in poor condition can easily be made to look better or its poor condition can be emphasized, depending on the needs of curatorial interpretation.

These subtle and easily reversible strategies for loss compensation were developed to satisfy a curatorial brief at the Houghton Library of Harvard University in

early 2023 to return a once disassociated and broken dust jacket for E.E. Cummings's The Enormous Room (1922) to usable condition for display and then storage on its book thereafter. The goal was to make the jacket appear as though it did not have losses from a distance in the exhibition while avoiding invasive and time-consuming fills in order to leave the jacket as original as possible.

The core of this talk will be an illustrated and stepwise review of The Enormous Room dust cover treatment along with my rationale for avoiding any aqueous techniques with this type of material. Additional examples of this treatment approach will be shown where greater compensation for design and text was required of the secondary jacket. Information on sourcing, scaling, and color-correcting digital files to match the original jacket will be provided. Finally, It is hoped that the visibility of the post-print of this presentation in the Book and Paper Group Annual will show that there is a conservative yet aesthetically satisfying alternative to the in-painting and fills common in current dust jacket restoration.

### POV: An Archives Conservation Lab's Efforts in Reaching Out and Levelling Up

Cassandra Tang, Sanira Beevi, Ayaka Ajiki

The wheels started turning in a different direction for conservation in the National Archives of Singapore 3 years ago. Tucked away in a picturesque hillside building, the conservation team operated in the shadows, as a back-of-house function. Driven by the goal to raise the profile of conservators, stoke an interest in conservation resulting in pride in and respect for the meaningful work conservators do, a progressive route was charted for the team targeting outreach, education, and engagement.

#### Outreach

We were eager to challenge preconceptions of conservation being deadly serious business, with no room for humour. From a dearth of conservation-related posts on our institution's social media 2 years ago, conservation is now front and centre, gracing social media platforms such as Zoom, Instagram, YouTube and most recently TikTok, making archival conservation sexy again!

Notably, Conservation in NAS, a 10-episode TikTok series, threw the spotlight on our conservation team. The series highlights behind-the-scenes conservation processes at NAS. It has garnered 1,465,200 views and climbing (the average view per clip is 146,520). Most hearteningly, the comments section has been ripe with queries on how one can join the profession. It also won the National Library Board's Outstanding Innovation Award in 2023 – a recognition for being the first conservation series from an institution in our local TikTok scene. Ultimately, it has endeavoured to make conservation education accessible, eliciting wonder and reaching new audiences.

#### Education

It is no surprise that conservation practices are varied around the world. With limited educational institutions offering conservation training especially in Asia, such educational opportunities or professional training might be out of reach for many aspiring conservators. To tackle the issue of making conservation training accessible for our team, we created a comprehensive in-house professional training programme that serves a dual purpose of being an induction programme for new conservators and as a progressive training model for conservators to develop their competencies at beginner, intermediate and expert levels.

Taught by veterans in the team who have cultivated a wealth of experience training on the job, this model also serves as a means of sustainable knowledge transfer. Born during the Covid Pandemic when we were sorely missing travel, it was aptly named the "Training Passport", where conservators 'travel' to new experiences and challenges and obtain a stamp when they reach their destinations. While putting together the sessions which targeted skills necessary for a paper conservator, from cooking wheat starch to cutting mat boards to sizing and lining, we also made sure to include training for operating the lab equipment in the lab. This ensured that crucial knowledge and know-how did not solely rest on one or two conservators' shoulders but are now part of the skill set of every member of team. Supplemented by a curated list of external online courses, we have been keeping abreast with the dynamic conservation landscape.

In early 2024, we will be extending an abridged version of this training to a group of conservators in neighboring countries and helping to raise the standard of conservation for in the region.

#### Engagement

Necessitated by internal incidents with hazardous chemical agents and agents of deterioration, the Archives Conservation lab designed a first ever internal records handling programme for our library and archives staff. NLB has a mandate to collect, preserve and manage Singapore's public and private archival records of historical and national significance for their long-term preservation. As recent local and international events demonstrate, it is not enough for conservators alone to be apprised of the potential hazards in collections. Anyone who has exposure to physical records needs to be alert and informed of the signs of potential risk, and how to respond and protect oneself.

A component of our Collections Disaster Management Plan, it covers agents of deterioration, assessing condition of records, staff health and safety measures, best practices in records handling, how to identify health hazards and mitigating steps to be taken. It has changed the way collection staff approach records, prioritizing their health and safety. Communication is smoother and quicker with clear escalation channels when the unforeseen happens. Staff and users are educated to understand the vulnerability of the materials which they are handling.

Our training which focuses on the special care required to ensure the long-term preservation of records has also been extended to include participants beyond our organisation, with external collection owners, archivists, and conservators from other local GLAM organisations to cover a wider group of users. This strengthens and cements the unifying role we play in preservation- as agents of change, actively engaging an otherwise rather fragmented local conservation community.

This three-pronged approach has transformed the role we play as conservators in our organisation. We are highly encouraged and motivated to do more and to do better – to make conservation accessible to all.

#### A New Technique for Strengthening of Naturally Degraded Acidic Paper with Cellulose Fibers Coating

Naoko Sonoda, Takayuki Okayama, Ryota Kose, Masazumi Seki, Yuki Tanaka

From the mid-19th century until about 1990, acidic paper-based materials were produced in large quantities throughout the world. Unfortunately, the use of acidic paper reduced the paper's strength due to chemical reactions during long-term storage. Although efforts have been made to mitigate this degradation through deacidification such as the Bookkeeper (BK) method, it remains difficult to restore the strength of degraded paper. The authors have developed an innovative coating method using fine cellulose fibers (FCF) as a strength-enhancing treatment after deacidification of degraded paper. FCF are defined as nano or submicron fibers prepared from cellulose fibers by miniaturization, and are characterized by high optical transparency and chemical affinity with the cellulose. This method was patented and registered as a Japanese patent in February 2022.

Prior to FCF coating, the BK method was conducted on naturally degraded wood-free paper, after which the paper was wetted and excess of water was removed on a vacuum suction table. Until now, FCF coating process has been done manually using a coating bar. In this study, we developed a compact coating machine that enables continuous coating on both sides of degraded paper by passing through two rolls in sequence. As optimized conditions, a coating speed of 4 m/min and a gap of 1500  $\mu m$  between the rolls were selected for the coating of commercial FCF. Freeze drying, thermal drying, and vacuum drying were attempted as drying conditions for the paper after coating, with vacuum drying being the most appropriate. In this experiment, vacuum drying was performed at 40°C. Under this condition, the coating amount was approximately 1.2 g/m2.

While BK treatment of degraded paper did not change the tearing strength

of the paper, FCF coating treatment increased the tear strength of BK-treated paper by 1.2 times. Comparing the tear strength of papers after accelerated aging showed that BK-treated paper was 1.2 times stronger than the untreated paper, indicating that degradation was inhibited. Furthermore, BK-treated paper coated with FCF was 1.4 times stronger than untreated degraded paper. This indicates that the combination of BK treatment and FCF coating treatment can achieve both degradation suppression and strength improvement. The legibility of the original paper remained unchanged after the FCF coating treatment, and the increase in thickness due to FCF coating was about 1% of the original thickness.

Good experimental results were also obtained in the possibility of lowering the drying temperature from 40°C to 30°C and in the preparation from raw materials (Hardwood bleached karft pulp) of FCF suitable for the coating.

## Starr-Crossed or Serendipitous? The Unexpected Move of Columbia University's C.V. Starr East Asian Library

Rachael Arenstein, Eugenie Milroy, Alexis Hagadorn, Emily Lynch, Emily Holmes, Morgan Adams

In November of 2022, Columbia University Libraries' staff were notified that the entire contents of the C.V. Starr East Asian Library had to be moved off-site before the end of the academic year. Required construction to update the historic building's fire suppression system would begin in June 2023, leaving the library six months to relocate a circulating collection of roughly 1 million volumes, and an extensive special collection of artifacts, scrolls, rare books, and archival material. While there was ample precedent for transport and off-site storage of the circulating collection, the special collections presented a different set of challenges. Portions of the collection were not fully cataloged on an item-level, creating an initial hurdle as the size and scope of the project was not clear. Another major issue was housing, as many of the 3D objects were not housed suitably for a move.

Given the tight time constraints and project scale, a team of object conservators, archivists, packers, riggers, and movers were contracted to augment in-house expertise and capacity. This collaborative group comprising more than 30 team members managed to complete the project on time and within budget. Over five months, the contract team created over 4,000 inventory records in a custom-designed Airtable database representing over 17,300 items. Standard and custom sized boxes, designed to fit on the University's library shelving were used to pack the collection for transport in a manner and with materials designed to also be safe for long-term storage upon the return of the items after construction is complete. What initially seemed like an unexpected ordeal for the library wound up becoming a fortuitous opportunity, providing construction money for an inventory and rehousing project that would likely not have been otherwise funded.

While it is widely known that libraries hold more than books and works on paper, the depth and breadth of the 3D collections at Starr posed a challenge requiring cross-specialty collaborations and solutions. Each storage room, cabinet, and bank of shelving held surprises. The partnership between the Libraries' Preservation Division and the contractors enhanced the project as every firm contributed their expertise and experience in housing and moving artifacts, small and large. This paper will focus on the collaborative tools, workflows, mistakes, and lessons that allowed the team to invent and adapt solutions throughout the fast-paced project.

#### The Collections Won't Pack Themselves: A Preservation and Special Collections Collaboration

Mary Leverance, Sally Crutcher, Estefani Mann, Amber Cooper

Major building renovations required the complete removal of collections, materials, and staff from two levels in Mullins Library at the University of Arkansas in 2022. Due to an accelerated timeline, Libraries staff had an unexpectedly short timeframe for to plan for the move and to pack materials. This talk will address

how the Libraries Preservation Unit collaborated with Special Collections staff to prepare and pack approximately 80,000 collection items for the move out of the building. Preparations began in January 2022, with a deadline of everything moved from the building by November; renovations began mid-December.

The first steps taken by Preservation and Special Collections staff were to establish guiding principles for the project, assess collections, and identify temporary storage locations based on material usage. Preservation staff were familiar with Special Collections materials in general but preparation of various material types for packing required a quick assessment of storage conditions and items needing preservation attention. This assessment allowed for basic triage (e.g., Mylar covers for volumes with red rot, using pre-made four-flap enclosures) while notes were taken on issues to address once collections are moved back into the refurbished space. Preservation staff provided guidance on packing procedures, trained Libraries staff in packing, ordered appropriate supplies, and implemented easy and low-cost solutions for packing a variety of materials, including multimedia, rare books, oversize books, and objects. While there is some literature on packing collections for a move, preservation staff spoke with others in academic libraries who have recently completed a move, learned from their insights, and implemented various tips on packing.

Moving collections inherently carries a degree of uncertainty—timelines shift, or surprises are found on shelves—and this project was not an exception. Unexpected events were experienced over the course of the project: plans to make compact shelving space more accessible did not pan out, issues with the HVAC meant running portable dehumidifiers for a few months, repeated conversations about packing and moving flat files with different moving companies took place, and staff needed to take time from their regular job duties to help pack materials. Preservation and Special Collections staff managed problems as they arose, and ultimately met the final deadline for the move.

### Wet Recovery: The National Library of Jamaica's Perspective

Lisa-Ann Norris

There is no doubt that changes ,uncertainties, and surprises are inevitable aspects of life.however,how we adapt and respond to them when faced with different adversities is what matters most. The field of Preservation and Conservation is a field in which changes, uncertainties and surprises occur frequently. We see changes in the different equipment that are used to undertake conversation works, processes and of course emerging technologies which is one of the main perpetrators of change in this twenty-first century. Global warming ,natural disasters and globalization are also factors to contend with in the field of Preservation and Conservation .This poster will examine how an uncertain event took us by surprise at the National Library of Jamaica.it will also examine how the event was handled and how it has allowed us to embrace the changes that came about because of this event. This event that is being referred to is a flood that took place at that took place at the National Library of Jamaica on April 16,2016. This flood was due to broken main connected to a cooling system from the microfilm processing lab. This resulted in water seeping through the roof from the fourth floor of the buildings to the ground floor.it resulted in a horrific experience for the National Library of Jamaica team, who was faced with such an uncertain event that began over the weekend (Saturday) until it was discovered the Monday on reopening the library for its usual business. There was a trail of destruction on every floor. Map cabinets filled with water and watersoaked maps, which resulted in them being discolored, soaked and extremely fragile.Manuscripts,books,and rare books among other paper-based items from the collection were affected. How was such, a situation was handled and what changes did it bring about for the organization will be discussed and analyzed thoroughly in the presentation of the poster. Finally, expecting the unexpected and embracing change, uncertainty, and surprise is a valuable mindset that can lead to personal and professional growth, enhanced resilience, and the ability to adapt effectively. By understanding the inevitability of change, embracing uncertainty, and re framing surprises as opportunities, individuals can navigate through life's unexpected twists and urns with confidence.it is also important for us to remember that change should not be seen as a deterrent but instead be viewed as an invitation to discover new possibilities.

## BPG Wiki Discussion: Conservation of Books and Paper in Historic House Settings

Sandrine Blais, Michelle C. Smith

Led by Book and Paper Group Wiki coordinators Sandrine Blais and Michelle C. Smith, this discussion session will inform the membership about the progress of the BPG Wiki, bring together people who have made contributions, and encourage the formation of new editing groups. New and improved wiki pages will be introduced. Attendees will be invited to provide input to shape the development of the wiki for the coming year.

The majority of the session will be a guided discussion, during which attendees will be asked to provide input on the development of new content on the wiki. This year's discussion topic is the Conservation of Books and Paper in Historic House Settings. Together we will brainstorm and lay the groundwork for a new wiki page on this topic. We expect to touch on a wide range of issues and materials including wallpaper, bookshelves, frames, globes, trunks, housekeeping, mold, pests, the use of reproductions, and more. We welcome conservation professionals from all specialties who are interested in helping build a shared resource for caretakers of historic house collections.

## Assessing Collections At The Library of Congress: The Human Aspects For Sustainability

Beatriz Haspo

The Library of Congress (LOC) is the world's largest public library, with over 170 million items, containing 838 miles of shelving in three buildings in Washington, D. C., and other facilities. Like any other institution, the Library of Congress struggles with storage space.

This paper will present the integrated approach to space management and collection needs: the Space and Emergency Management Survey -- the Stacks Survey, developed for the nearly 22 million books, pamphlets and other printed of the General Collections at the Library of Congress. Besides the survey methodology and results, it will emphasize how the survey design focused on the human component, using an innovative, inclusive, and equitable approach.

This is the first time in the history of the institution that such a large-scale survey for the General Collections has been conducted. Using tablets for portability, a team of 96 people is surveying around 95,000 sections in collections areas of the Jefferson and Adams buildings, where General Collections are stored, dedicating a one-90-minute shift/week/person to the project. The survey was developed with a minimum number of questions needed to gain the most possible data in key areas in a short time focusing on inventory, environmental risks, condition, and space issues and capturing images of sections. The survey of each section takes less than 5 minutes. As part of the survey, sections are also being documented with images, constituting the first ever comprehensive visualization of each section of the General Collections in the history of LOC.

As the Project Manager I have been responsible for engineering the design, planning the logistics, staff training and overseeing its implementation. This paper will share testimonials about how the survey has been empowering staff of various backgrounds conducting the survey and impacting their understanding of the collections, storage areas, and the role they play in sustainable preservation.

The stacks survey is an important initiative that will provide information to support preservation actions for years to come. But the impact on the team will go much further, beyond numbers.

#### Merging of Techniques to Unite Historical Integrity with Function: Treatment of the Hebrew Union College 1526 Prague Haggadah

Ashleigh N. Ferguson Schieszer

Over a series of years, treatment was performed at the Preservation Lab on

one of the earliest printed Haggadot in history, a historical text central to the Jewish Passover. The book, printed in 1526, is owned by Hebrew Union College (HUC) located in Cincinnati, OH. A unique treatment was created to restore the functionality of failing reformatted book pages that varied in differing dimensions — some previously trimmed to a fraction of their prior size while other pages were left uncut. The goal of treatment was to reunite pages of differing dimensions within historical leather covers while keeping to the original sewn book structure.

This talk introduces the evolution of printed Haggadot and how this fully illustrated edition influenced future printed text. A brief historical background is supplemented with discussion of prior treatments performed at the Preservation Lab that represent other historical advancements of Haggadah imagery through time. Showcasing these additional Haggadah treatment examples paves the way for the merging of history, as well as conservation solutions that lead to the unique treatment.

This multifaceted book treatment utilizes both a wide set of paper and book conservation techniques. For example, pages contained both printed and handwritten leaves that required disparate wet treatments. Early printed leaves were treated to remove prior poorly-aged taped and cockled repairs in a traditional wet bath, while handwritten songs added in the back of the binding required a specialized calcium phytate treatment to preserve handwritten iron gall ink. After wet work, we were then faced with the atypical book need to inpaint lost dirt found beneath prior repairs to preserve the evidence of use.

To conquer the challenge of rebinding different page dimensions, both encapsulated pages and paper leaves were united and sewn together onto raised supports to preserve the historical covers and binding structure. First, a model was created to experiment with rebinding prior to performing treatment and to propose the unique treatment solution to stakeholders. Once selected, the new reformatting solution involved welding encapsulated pages to paper hinges to create folios that could be sewn through onto supports. Techniques used to rebind two sets of texts of different sizes included considerations traditionally made for rebinding vellum textblocks that need to be protected from moisture to prevent cockling and damage to the text.

The final solution was non-traditional and unexpected. The textblock spine consisted of paper folds, many of which were attached to plastic encapsulated leaves. Introducing moisture during rebacking was a known risk that could cause cockling condition issues, similar to what brought the book to the lab in the first place; however, with the use of an ultrasonic welder and introduction of little moisture, this solution proved surprisingly successful to facilitate reuse of the historic leather cover and recombine pages.

Following treatment, HUC has since presented the binding during Passover celebration. Its historical technological advancements have been highlighted from tours to online virtual presentations within the Jewish Federation Community, broadening exposure of the history of the religious text to a wider audience.

### Sắc Phong – A Preliminary Investigation of Vietnamese Imperial Proclamations

Emily Hamilton, Theresa J. Smith, Jiuan Jiuan Chen, Aaron Shugar, Fiona Beckett, Victor Chen, Vu Do

Sắc phong are official decrees or edicts issued by the Vietnamese imperial court, typically by the emperor. The historic craft of creating these documents was previously veiled in royal secrecy and lost since the fall of the feudal state. The knowledge of materials used and subsequent conservation implications remain unknown. The current study comprises an analysis of two Sắc phong imperial manuscripts and a replica, brought from Vietnam to the Garman Art Conservation Department in 2022. The goal of the analysis was to investigate the materials and historical techniques used to better understand their creation and potentially inform future conservation efforts.

Sắc phong were composed in Chữ Nôm (Sino-Vietnamese) characters on special yellow handmade paper, adorned with depictions of spiritual animals and imperial symbols. These decrees served as authoritative documents for various purposes, including legal, administrative, and ceremonial matters. They embodied imperial authority and conveyed the ruler's commands, carrying

significant legal weight in the society of their time. Sắc phong played a pivotal role in the governance and administration of Vietnam throughout its history. They were instrumental in conveying orders, codifying laws, acknowledging achievements, and documenting significant events. Sắc phong hold a prominent place in Vietnam's cultural heritage, reflecting the nation's historical governance and administrative practices. They are cherished for their artistic and historical significance.

An investigation of historic and modern methods of making this type of paper was undertaken. This included contacting local papermakers in Vietnam and collecting samples of the fibers used for analysis and identification. Comparative studies were conducted using polarized microscopy to examine the differences between Dó, a common Vietnamese papermaking fiber, and Japanese Kozo fiber to gain a deeper understanding of their characteristics. Liquid chromatography equipped with detection by diode array spectrophotometry and mass spectrometry (LC-DAD-MS) were used to analyze the paper dye comprehensively. In tandem, we performed X-ray fluorescence spectroscopy (XRF) to identify the gilding materials used. Various imaging techniques were applied to further examine the manuscript's manufacturing process.

The results indicate that the scroll was created through a combination of wood-block printing and free-hand drawing. Dó, while being a unique paper-making fiber, shares similar bast fiber characteristics with Kozo fiber. Several natural and synthetic dyes, including rutin extracted from the dried flower buds of the Sophora tree, were identified as the primary components used for paper dyeing. XRF analysis reveals a substantial presence of copper and zinc, suggesting the use of brass pigment and possibly influenced by Western techniques.

As limited published scientific investigation exists regarding the materials and techniques employed in the creation of this type of manuscript, further understanding of the materials and their processing is pivotal for extending their longevity through preventive conservation efforts. It is hoped that this study provides a starting point for further research into Sắc phong and possibly facilitates the revival of this forgotten art.

## Art on Paper Discussion Session - Tape and Adhesives: Techniques and Materials for an Age-Old Problem

Rebecca Pollak, Heather Hendry, Jodie Utter, Meredith French

Our topic is Tape and Adhesives: Techniques and Materials for an Age-Old Problem and our two speakers are Rebecca Pollak and Heather Hendry.

Rebecca Pollak, Associate Paper Conservator at the Thaw Conservation Center, Morgan Library & Museum will be presenting a talk co-authored by Adam Novak and Teresa Duncan, PhD, entitled Introduction of fundamental experiments and applications of a non-aqueous gel for adhesive removal on paper. She will discuss the solvent gel Sylgard 184 PDMS (Dow Corning) and how it can be used to soften adhesive through a controlled release of solvent and/or solvent vapors. A case study will be presented demonstrating the removal of neoprene contact adhesive adhered to tracing paper.

Our second speaker, Heather Hendry, is Senior Paper Conservator at the Conservation Center for Art and Historic Artifacts. Her talk is entitled A Utilitarian Approach to Tape Removal. Heather will discuss a methodology that prioritizes efficiency and minimizes solvent exposure to the conservator; a system that works for most of the tape challenges conservators encounter. This system uses a minimum of testing and stresses methods of non-solvent reduction (mechanical, heat, and electric erasers), followed by limited solvents and non-gel poultices as needed. A discussion will follow that encourages audience members to share their experiences and ideas regarding tape and adhesive reduction.

#### SPECIALTY SESSIONS: BOOK & PAPER | CONTEMPORARY ART

#### Library and Archives Discussion Session - Managing Collection Needs and Conservation Practices in the Face of Capacity Challenges.

Moderator: Kim Norman, Heather Hamilton

Christine Bethke, Genevieve Pierce Kyle

Genevieve Kyle of the Harry Ransom Center will present on our session topic, Managing Collection Needs and Conservation Practices in the Face of Capacity Challenges. Genevieve will describe procedures and workflows for the intake of acquisitions at the Ransom Center and discuss ideal situations versus the inevitable challenges around incoming collections.

The LACDG recently shared a brief survey with Book and Paper Group members, regarding acquisitions as they relate to preservation. Additions to collections are bound to involve conservators, whether it be early in the process or later when condition issues arise. Acquisition processes could hardly vary more across our institutions. We will discuss our survey findings and would love to have your input.

#### **Contemporary Art**

#### Close and Continuous Collaboration: Stewardship in the Conservation of the New York Empire State Plaza Collection

Alfred Lippincott, Abigail Mack, Ellen Rand, Sarah Montonchaikul

Monumenta Art Conservation and Finishing LLC holds the contract with the New York State Office of General Services to care for and maintain the sculptures in the Nelson A. Rockefeller Empire State Plaza Art Collection (ESPAC). of particular historical and artistic significance is the monumental outdoor sculpture collection that has occupied the plaza for more than half a century which includes works by George Sugarman, Louise Nevelson, Ellsworth Kelly, Claes Oldenburg, and Clement Meadmore. The contract, representing the largest financial commitment to art conservation in the history of the collection, includes treatment of 15 large-scale and monumental sculptures that require major structural and surface remediation. These generational treatments are enormous undertakings led by Monumenta conservators and fabrication staff, who have the unique opportunity to collaborate with the original fabricator of many of the sculptures: Lippincott's LLC.

ESPAC is certainly unique among fine art collections generally, but more importantly it was meant to be distinct from other municipal art collections from its inception. Formed as part of Rockefeller's vision of New York's capital city, the collection was an ambitious mid-century architectural urbanscape, built to act as the central work-force location for state employees of New York State. The plaza environment was the State's large-scale "blank canvas," designed to be activated by monumental sculptures. Lippincott Inc. was at the forefront of the Abstract Expressionist interest in ever-larger sculpture as the fabricator of choice for many artists represented in ESPAC's holdings.

ESPAC's collection, rooted in a municipal mindset, differs in condition from that of outdoor sculpture of the same period held in private or museum settings. Competition for State funding, shifting priorities of elected officials, and poorly documented interventions by State-employed tradesmen have directly affected the current state of preservation of these works. The conservation decision-making process is further complicated by many years of insufficient traditional curatorial and registration oversight, which has resulted in the loss of critical information about artist intent for the sculptures' appearance and display. In some cases, even the most fundamental aesthetic questions (such as identification of original paint color) cannot be answered by traditional art historical investigation in the collection records. Now, in the midst of major conservation treatments, the inclusion of Lippincott in the conservation process has been instrumental in informing the path for treatment.

Of the eleven outdoor sculptures treated to date, five works were originally

fabricated by Lippincott's. Their treatments were directly informed by Lippincott's firsthand experience with their fabrication. From advising on the construction and disassembly of sculptures to helping to triangulate the appearance of original painted surfaces, Lippincott's has provided key archival information as well as a working knowledge of fabrication during Monumenta-led conservation treatments. Lippincott's involvement has brought greater understanding of the artist's intent to both conservators and curators.

## Private Practice, Public Impact: A Collaboration in Preserving Michael Richards' Legacy

Eugenie Milroy, Melissa Levin, Anne L. King, Alex Fialho

A.M. Art Conservation, established in 2009, has had the privilege of working with a diverse clientele, including private collectors, artist estates, museums, and galleries. While we offer our expertise for individual projects, our most gratifying experiences stem from cultivating enduring relationships with our clients and making a lasting impact on the preservation of their collections. In this paper, we aim to spotlight one particularly significant collaboration: a seven-year ongoing endeavor focused on the research, exhibition, and guardianship of the artistic legacy of Michael Richards (1963-2001). This collaborative initiative brought together A.M. Art Conservation, curators Melissa Levin and Alex Fialho, alongside other art professionals, and the estate of the artist.

Michael Richards, an artist of Jamaican and Costa Rican heritage, left a mark on the art world with his nationally and internationally exhibited works. His portfolio encompassed multi-part indoor and outdoor sculptures, time-based media, installations, and drawings. He garnered recognition in museum collections, earned prestigious awards, and participated in numerous residency programs. Tragically, his life was cut short on September 11, 2001, after working overnight in his World Trade Center studio.

In 2016, during the curation of a survey exhibition marking 15 years since Richards' passing, Levin and Fialho contacted Dawn Dale, Richards' cousin, who had become the custodian of his work. Despite Richards' meticulous packing and Dale's dedication to his legacy, the artwork had endured the ravages of a storage facility fire, multiple relocations, and suboptimal conditions. The resurfacing of numerous prescient and impactful sculptural artworks, along with fragments, molds, studies, drawings, photos, slides, and ephemera from his life, led to a sustained commitment to and advocacy for Richards' art and legacy.

A.M. Art Conservation's involvement tracked a conventional path of stabilizing and preparing the works for display, carefully managing both time and budget constraints. We approached the holistic body of work in a triage format, prioritizing actions to benefit the most vulnerable pieces within the allocated time frame. Over time, fresh insights into the work emerged through archival photos, discussions, and recollections from Richards' friends and colleagues.

As the collaboration progressed, additional artworks surfaced, and with the curators preparing for a traveling retrospective, we assumed a leadership role in establishing comprehensive museum practices and engaged fellow professionals to address the collection's requirements. Working with the curators we proposed treatments and budgets, and they ultimately secured a generous grant from the Mellon Foundation. The funding facilitated continued treatment, improved storage conditions, enhanced packing and transportation protocols, and the design of a collection management database. This paper will discuss the challenges and successes of managing an ongoing collaboration in a private practice context.

Since 2016, Michael Richards' work has been exhibited at five national venues including The Bronx Museum of the Arts and the Museum of Contemporary Art North Miami. Through our collaborative efforts, we have reduced the collection's risk and empowered the estate to better preserve the work while increasing the artwork's exposure to wider audiences.

## Wade Guyton's Inkjet Paintings: Artist's Materials, Technique, and Conservation Challenges

#### Giuliana Moretto

Since 2004 the American artist Wade Guyton (b. 1972) has used Epson inkjet printers as one of his main artistic tools to create both small and large-scale abstract and figurative paintings. Guyton's process involves the feeding of a primed linen canvas through an inkjet printer, allowing 'mistakes' such as low toner, misalignments, creases, and ink pooling to generate the final image.

The use of a primed canvas rather than a substrate created specifically to receive inkjet ink (e.g. coated inkjet paper or PET) creates on one hand the artist's recognizable and loved style; on the other hand, it presents a variety of unique preservation and conservation challenges. For example, due to the pigment ink droplets not being absorbed into the material but sitting on top of the oil-based primer, the surfaces are not only water soluble but also extremely sensitive to the touch: any pressure causes irreversible change to the surface, making handling and packing of these works very challenging. Consequently, most surface changes are irreversible and treatment options are limited.

As the machine-made surface gives the illusion that we are faced with a durable and stable artwork, understanding that this inkjet-printed canvas is highly sensitive and prone to damages is an essential to the process of caring for these paintings.

I have worked closely with the artist's studio since 2010, and throughout my career in private practice, I have had the opportunity to examine or treat more than 80 inkjet paintings. This long-lasting relationship with the artist has given me the possibility to collaborate with him, to observe his creative process and to conduct interviews specifically pertaining to conservation. Because the materials and the printing technique Guyton employs straddle a broad range of material specializations; discussions, and collaborations with professionals from other conservation specialties and disciplines have been crucial to my current treatment approach.

This presentation will illustrate the artist's process and many of the treatment challenges specific to this manipulated material, as well as reflect on a theoretical framework of how to approach works composed of subverted materials.

## The '80s Fascination with Tech Art and Their Conservation Challenges

Emmanuelle Perron

The concept of "expecting the unexpected" is essential to the art conservator. We must carefully test and be prepared to adjust our treatments in accordance. However, we are also required to give cost and time estimates to the client before even touching an artwork. This leads to challenging situations particularly for complex, aged, technological artworks from the 1980s.

Sometimes, we find ourselves asking simple questions like "have they tried turning it on again?", or "can we SAFELY turn it on again?", or "what is it even supposed to do?". Oftentimes records are scarce, so you gather what little information you can from residents or employees that have been around the longest. Once a treatment proposal has been established, there is always the issue of finding spare parts that are often not produced anymore. These challenges must be overcome since these artworks are truly starting to show their age and desperately require restauration [conservation].

Olga Zeldakova created "L'horloge" in 1983. It consists of painted steel pillars with an aluminum cube structure standing 30 feet high above an air vent. The cube contains four quadrants with light bulbs arranged in circular patterns. The artwork is part of the "one-percent initiative" and is located outside in a very busy area of Montreal. There were no videos available of the clock functioning, but the general information is that the clock would indicate time with red lights and chimes. However, the noise apparently bothered the residents, so it was turned off decades ago. The cube containing the electrical parts of the clock is only accessible through a trap door and carefully built scaffolding. We were called to propose a treatment without knowing the current condition of the artwork. Obviously, this led to a lot of surprises, such as the extent of the corrosion beneath the layers of paint, the reality of just how busy the area around it is and the actual functional state of the clock itself.

André Mongeau created the "Horloge solaire" in 1983 to be integrated into a building. This artwork, also part of the "one-percent initiative", is composed of

glass fiber optical cables running through the wall of the building that capture the light outside and shine through a plexiglass disk located in a now abandoned staircase. An additional element to the artwork is a laser canon located inside the building across the street that was intended to shine a red laser beam into the glass exterior captor, which allegedly turned the light specks red at night. Again, no videos of this artwork in action were available. Accounts from the artist say the laser beam never worked properly. Examination of the artwork after deinstallation revealed the fiber optics were fractured and had shrunk. In addition to this, the laser canon had caught fire. Now the challenges we faced were "where can we find glass fiber optic cables?", "can we reinstall a new safer laser canon?" and "will it work?".

#### A Framework for Sustainable Courier Practices: Developing a Bookend Courier Workshop and Network

Lauren Fly, Samantha Springer

Couriers are a vital part of the cultural heritage ecosystem, ensuring the safe movement and installation of artworks across multiple locations. The additional skills and experience conservators bring to the courier role tangibly benefit the lender, borrower, and cultural heritage object. From a business perspective, adding this service offering provides the conservator with an additional income stream and can be a valuable tool for expanding their network. The Bookend Courier Model, a form of contract or third-party courier, is particularly relevant in the light of the global climate crisis as it significantly reduces the environmental impact of loans.

Recent research suggests that lenders are reluctant to use contract couriers because it is difficult to find trusted people to fill the role. In seeking a way to overcome this issue, the authors have identified three primary barriers to finding a suitable bookend courier: a scarcity of training opportunities for private practice conservators, a lack of recognition that private practice conservators can serve as independent couriers, and the unreliability of personal networks in a desired geographic region.

This talk will focus on addressing training opportunities and highlighting this service offering by private practices. The authors will discuss a workshop they have developed based on internationally accepted registrarial standards to train independent conservators to successfully act as contract couriers and integrate this service into their business model. Concurrently, the authors have been raising awareness of the Bookend Courier Model through presentations to allied professionals. To further support both conservators who would like to offer this service and those looking for trusted professionals to serve in that role, the authors are working on the development of a Collections Courier Network (discussed during the Toward Art in Transit 2.0 symposium). The network will address the need for a database of collections care professionals who can serve as independent couriers.

## Expect the Unexpected: Navigating the Complexities of Government Bureaucracy in Conservation

Angela Campbell

The National Park Service (NPS) is responsible for the conservation, maintenance, and preservation of over 50 million artifacts, 36 million of which reside in the 82 Parks and Historic Sites that are part of the Northeast Region. The region's area extends from Virginia to Maine and includes historic structures and collections that represent countless facets of American history. While conservation as a field is highly specialized, navigating the many rules and regulations surrounding government work and government contracting also requires a specialized skill set. This talk seeks to demystify some of the complexity surrounding federal work and to ensure that independent conservators are able to navigate the solicitation process.

The Historic Architecture, Conservation, and Engineering Center, based in Lowell, MA, is home to the regional conservation lab where conservators with a variety of specialties work on materials ranging from 15th century works on

paper to 21st century bronze monuments. Even with a robust group of conservators carrying out both bench work and administrative work, the needs of the NPS collections easily outnumber the capacity for in-house work. As such, NPS often requires outside conservation assistance, most commonly when an unexpected or detrimental event occurs.

Working for and with the federal government to ensure that our nation's cultural resources are "preserved unimpaired... for the enjoyment, education, and inspiration of this and future generations" in accordance with the NPS mission statement, is both a great challenge and a great responsibility, but can also be lucrative and professionally rewarding. Understanding the expectations of and requirements for government contracting enables both NPS and independent conservators to successfully work together to ensure that our nation's historic artifacts are preserved and protected for generations to come.

### Poured Color: The Pigmented Latex Rubber Artwork of Lynda Benglis

Christina Bisulca, Elizabeth Homberger, Margo Delidow

Lynda Benglis, an artist with a prolific career spanning over several decades, has left an indelible mark on the art world with her innovative and unconventional approach to materials and techniques. Spanning several decades, her work has consistently pushed the boundaries of artistic expression. Notably, her pioneering use of non-traditional materials has presented distinctive challenges for conservators seeking to preserve her ground-breaking artworks.

This paper focuses on Benglis' iconic latex artworks, particularly those created between 1968 and 1970. These works involve the artist pouring pigmented latex rubber onto the floor, yielding distinctive aesthetic and tactile qualities. Conserving Benglis' latex pieces entails addressing the unique challenges stemming from the materials and techniques utilized during their creation. The inherent nature of latex necessitates specialized conservation approaches that balance preserving the original appearance of the artworks while mitigating further degradation.

This study examines the latex works from this period held in public institutions, with a specific focus on "Contraband" (1969) in the Whitney Museum of American Art and "Planet" (1969) in the Detroit Institute of Arts. Close collaboration with Benglis and her studio is also crucial to comprehending the precise timeline and methods employed in producing these works. A technical study was also undertaken to compare the materials used in these two sculptures, which include natural rubber latex and various fluorescent pigments. Based on these results and Benglis's description of her processes, reproductions of pigmented latex were prepared and aged under elevated temperatures to assess how the materials properties are affected with exposure to different humidity conditions. Results were then connected with the condition issues noted in Benglis's latex artworks.

By delving into the intricate interplay between aesthetics, materiality, and conservation, this paper dissects the multifaceted challenge of conserving the latex paintings. It investigates the technical aspects of her distinctive artistic process, dissecting the complex composition of the latex medium and its interactions with environmental factors that contribute to degradation. Furthermore, the study elucidates the novel conservation techniques required to preserve both the visual and tactile elements of these works, given their three-dimensional surfaces. By unraveling the intricacies of Benglis' artistic process, analyzing material behavior over time, and developing innovative conservation methodologies, this paper offers insights into the nuanced world of conserving Benglis' latex artworks, honoring her legacy and adding to the scholarship of art conservation.

#### Preservation of the Plastic Objects in the Harvard Art Museums' Fluxus Collection

Susan Costello, Georgina Rayner

The Harvard Art Museums are focusing on the preservation of their Barbara and Peter Moore Fluxus Collection after a recent survey revealed most of the works of art contain plastics, many of which are unstable. The Moores' collection consists of 121 editions from the early 1960s through the late 1970s and includes prototypes, rare works, and variations of the same work.

Fluxus emerged in the early 1960s as a loosely organized international group of about 40 artists who challenged conventional ideas of what constitutes art. Fluxus rejected the notion that a work of art is unique and can only be created by a single artist. They produced collaborative works in a wide range of media including poetry, music, film, newspaper, books, performances, and objects mostly consisting of Fluxkits. The original group of Fluxus artists dissolved by the 1970s, but Fluxus continues today.

The majority of objects in Harvard's Collection are Fluxkits, which are multiples produced in unnumbered, unlimited editions. Most take the form of small boxes with various contents, usually low-cost ready-made objects, and printed works on paper. The boxes were intended to be inexpensive alternatives to unique and valuable art objects and are interactive requiring the viewer to open them and handle the contents.

Caring for the Fluxus Collection is challenging because over 70% of the objects contain plastics. One Fluxkit can contain over 10 different plastics, and often includes one or more of the five most at-risk plastics that are deteriorating at an accelerated rate (cellulose nitrate, cellulose acetate, rubber, plasticized polyvinyl chloride and polyurethane foam). These plastics are failing and their interactions with each other are causing damage. One of Fluxus' main premises is that artwork is in constant flux so deciding how much intervention is acceptable for these objects is difficult.

The Museums' preservation strategies will be presented and are driven by the Collection's need to remain accessible for teaching and research. The bulk of the work is preventive to improve housing and separate different plastics from each other with Mylar to prevent further damage. Components are being kept together whenever possible, and only in a few rare cases have any been removed and housed separately. In addition, works of art are being filmed to capture their interactive nature, and existing and new artist interviews are being used to help inform how to care for the Collection. Finally, over 20 objects have been treated, some recently, but the majority were completed almost 20 years ago. These treatments will be revisited to see how both the repairs and the plastics have aged. Highlights will be presented from the treatments, which include surface cleaning, adhering broken elements, stabilizing cracks, and consolidating lifting veneers and paint. Case studies where no treatment was carried out will also be discussed. The high number of plastics in the Fluxus Collection makes its preservation challenging, but the work being undertaken at the Museums will allow the continued use of these objects and extend their lives further into the future.

## Plastilina, Plastiline, Plasticine: A Study of the First Industrial Modeling Pastes Invented at the End of the 19th Century

Sonia Tatiana J. Fraj

With the second industrial revolution (1870-1914), materials typically used in the making of art underwent a substantial transformation in order to meet new expectations that would fulfill the needs of the artist. In sculpture, traditional processes were used until the very end of the 19th century. Traditionally, softer materials such as wax or clay would be used for producing the original sculpture models by the artist, that would then be transferred into a more durable material.

The sculpture models made in clay were inconvenient in that once the clay would dry the artist could not make modifications to the model. Using wax also proved problematic, as it does not resist high temperatures very well and also lacks ductility. By the mid 19th century there are records of recipes that were

being developed to modify waxes in order to impart more ductile proprieties. These hand-mixed, homemade formulas came to be known as modern modeling materials. However, it is not until the end of the 19th century that modeling pastes were being developed in a more industrial manner.

The materials used to form these original positive models were often recycled and repurposed for other sculptures after being cast in plaster or transferred directly to another more durable material. Therefore, it is very rare that they would have been preserved. However, some do survive, such as the collection at the Rodin Museum in Paris. These extant original positive models are so important because they are often the only pieces produced that were made directly by the artist's hands. They often still have the artist's fingerprints and can give clues into the artist's creative process. After being modeled, these models were often taken by others to be transferred into plaster, stone, metal, etc., with some possible final intervention of the artist. In these instances, one can note the changes from these original models to the final sculpture. Even rarer, some works only exist as these original positive models.

This paper will affirm that there are three (3) different modeling pastes with similar characteristics but different formulations that were invented during the period of 1879 and 1897. These new modeling pastes were dry to the touch, permanently malleable, and resistant to heat. It is known that artists like August Rodin, Edgar Degas, and Ismael Smith had used these new formulated modern modeling materials to produce their original models.

The goal of this research was to better understand the origins of these modeling pastes and their chemical characteristics which could then be used to positively identify them at various artwork original models. In addition to identifying these materials, the research also involved observing the main issues of the aging material and how they interact with other materials over time, as well as providing tools to fellow conservators in order to help them with the conservation process of these rare artwork models made with early modeling pastes.

## Embracing Angel's Orbit: Replication as a Tool for Preservation of the Integral Hologram Angel by Simone Forti and Lloyd Cross

Markéta Krausová, Evelyne Snijders

This presentation will present the results of the thesis research, concerning itself with the considerations of replication as a tool for the preservation of an integral hologram, focusing on a case study Angel (1976) by performer Simone Forti and holographer Lloyd Cross. Angel is an installation, the main part of which is a 360° integral hologram, showing a recording of Forti's choreography - movement of breath and flight. Angel is one of the few collectible works by Forti, embodying high performativity, and a playful spirit, characteristic of the artist's oeuvre. The light and heat exposure during the display is of concern, as it accelerates further deterioration of the materials, jeopardizing the image's quality and longevity. There is not many interventive treatment options, emphasizing the need for preventive care. Angel's susceptibility and intriguing appearance lead to higher safety display policies, limiting the recipient's accessibility to the work. The owner's initiative was to try to look for alternatives that would enable longer and safer display, considering replication as one of the options.

The research investigated the problematics from both technical and ethical sides, considering the features defining the work's identity. According to the artist, the hologram was determined as a vital part of the work, accentuated by its characteristic nature inviting the recipient to move and interact. To achieve this, it is essential for the work to be freely exhibited in space, to invite the viewer to an interaction, orbiting around it on a loop and performing unusual and repetitive movements. This 'hologram dance' hologram is meant to metaphorically reflect the repetitiveness of a movement, which is strongly related to Forti's studies of movements of animals in captivity – and their repetitiveness. Based on that, Simone Forti marked the correct presentation of the work in space as essential for shaping the work's meaning. Thus, any precautions muting the performativity and interactivity of the work, vital for its metaphorical and expressive nature, are contrasting the work's intended identity.

It was found the replication can be executed by photochemical means, though there are only a few specialized studios left capable of making an integral hologram copy. As there is no other known existing version of Angel, it is suggested to be referred to as a master hologram. In the past, Forti expressed her concerns about the future display of one of her holograms, consenting to the creation of an exhibition copy. This evidence suggests that material authenticity and/or singularity can be assessed as auxiliary to conceptual authenticity. Considering practices with masters in other conservation fields, the suggestion is to approach the holographic film in the same manner, presuming the presentation of an exhibition copy would not diminish the recipient's experience, nor decrease the original's value. Replication can therefore be seen as a tool for the preservation of master holographic film, enabling longer display without compromising its longevity, and an option for looser display policies helping to regain the work's interactivity.

#### Does The Nose Know? Challenges and Successes During a Study of Montien Boonma's House of Hope

Lynda Zycherman, Kyna Biggs, Catherine H. Stephens, Soon Kai Poh

Conservation scientists and conservators at the Museum of Modern Art (MoMA) collaborated on a project to better understand the scented components used to create Montien Boonma's (b. Thailand, 1953 – 2000) large scale installation, House of Hope. Conceived in 1996, the piece is comprised of more than 400 painted wooden stools, over 1,300 strings of scented prayer beads, and an enormous steel grid which are assembled together to create a structure meant to evoke a Buddhist temple. The installation is finished by a custom painted mural, made using glutinous rice powder and various spices, that encircles the temple on three sides and must be recreated for each installation. The minimum space required for the installed piece is 13'(H) x 23' (W) x 29' (D) (4m x 7m x 9m). A major feature of the installation is the olfactory experience generated by the beads and mural. The team at MoMA took on the task of identifying the spices used to create the beads as well as those found in 8 bags of powders shipped to the Museum with the rest of the piece since limited information was provided. Written reports indicated the beads were made from herbal medicines and email communications with foundations and individuals previously involved with the work indicated that powders shipped along with the piece were either pure materials or blends of colorants and spices. Various methods were used to identify the composition of the beads and powders, including consultation with purveyors at Asian spice shops in Manhattan and Queens, communication with the artist's former assistant, and technical analysis including solid phase micro-extraction gas chromatography-mass spectrometry (SPME-GC-MS), Fourier Transform infrared spectroscopy (FTIR), optical microscopy, and Raman spectroscopy. Several unexpected obstacles were encountered during this project: analyzing spices and powders that were nearly 30-years-old and had perhaps lost their scent, changed color, or chemically degraded; incomplete documentation; cross-contamination of materials; and language barriers. It was determined that the beads and wall painting were made using different spices. Beads were bound using pine cone honey, turmeric, ginger, and thyme, and other natural foodstuffs. One of the powders used to create the wall painting was identified as Yaa hom, a traditional Thai medicinal mixture used to treat nausea and dizziness. Unfortunately, some of the volatile organic compounds (VOCs) in the Yaa hom permeated the other powders stored in close proximity, making it difficult to identify them. This project explores the unique challenges that arise when working with contemporary artwork, especially those where a key facet is scent, an element that requires thoughtful consideration to recreate. With a greater understanding of the materials, the work completed here will hopefully guide future installations of the piece.

#### Niki de Saint Phalle's Tarot Garden: Photogrammetry as an Aid in the Documentation of the Sculpture Park

Elyse Hamp, Mario Santana Quintero, Caroline Longo, Damiano Aiello, Flavia Perugini, Luigi Barazzetti

Franco-American artist Niki de Saint Phalle created the Tarot Garden (II Giardino dei Tarocchi), a sculpture park which is considered her lifetime biggest

achievement, over a twenty-year period between 1978 and 1998. The Tarot Garden is located in southern Tuscany near the town of Capalbio, on a site with a rich archeological history dating back to the Etruscan period. The structures and sculptures within the Tarot Garden are inspired by the main 22 figures from the Tarot Major Arcana, and are often monumental in size; in fact, de Saint Phalle lived inside one of these structures –The Empress – intermittently during the Garden's creation. The sculptures and structures are made of various materials including painted fiberglass-reinforced polyester resin, cement, and thousands of ceramic tiles and mirrors in the manner of Anton Gaudi's Parc Guell. De Saint Phalle referred to herself as "the architect" of the garden while acknowledging the centrality of collaboration to the project,1 producing the structures in conjunction with prominent artists such as her husband Jean Tingueley, and with local residents, particularly in the fabrication of the colorful ceramic tiles, which were handmade on site.

After de Saint Phalle's death in 2002, stewardship of the Tarot Garden was passed to the Fondazione il Giardino dei Tarocchi, with support of the artist's estate, The Niki Charitable Art Foundation. Given the varied materials used in the creation of the sculptures and their constant exposure to the environment, comprehensive documentation and a maintenance plan were deemed necessary to promote efficient management and care of both the sculptures and the park at large. The Getty Conservation Institute (GCI) has committed to provide support in the Tarot Garden's preservation through an ongoing project in conjunction with the Carleton Immersive Media Studio (CIMS) of Carleton University.

This paper will address the interdisciplinary collaboration between the Fondazione, GCI, and CIMS in creating a robust long-term preservation plan for the Tarot Garden, including various forms of digital documentation, condition assessments, and interviews with living collaborators and current site caretakers. A variety of recording methods were used to document the site, including terrestrial laser scanning (TLS), aerial, terrestrial, and panoramic photography, Global Navigation Satellite Systems (GNSS) surveying, and total station (TS) surveying. Significant challenges for documentation were posed by the large size, irregular shape, and immersive siting of the structures, in addition to the specular reflection of the ceramic and mirrored tiles on their interior and exterior surfaces. Methods were specifically developed to overcome these challenges utilizing solutions from point cloud and photogrammetric processing. Furthermore, these comprehensive documentation strategies resulted in the creation of tangible digital assets including measured line drawings, orthorectified images, a Geographic Information System (GIS), and a photographic record portfolio. This paper will investigate how this cache of digital assets actively functions in tandem with the site maintenance plan and the training of onsite caretakers to promote holistic conservation efforts of both physical and intangible aspects of the site.

[1] Niki de Saint Phalle, The Tarot Garden (Berne: Benteli Publishers, 1997), 5-6.

### The Unexpected at Every Turn: Yve Laris Cohen's Studio/Theater

Michele Marincola, Lynda Zycherman, Naomi Kroll, Yve Laris Cohen

The artist Yve Laris Cohen installed and performed his work, Studio/Theater, at the Museum of Modern Art in the fall of 2022. Using the charred and twisted remains of the Doris Duke Theatre, destroyed during a devastating fire at the dance center Jacob's Pillow, Laris Cohen created a kinetic sculpture and architectural installation for the museum's performance studio. In a series of alternating performances, Preservation and Conservation, the artist set the sculpture in motion while conversing with performers in a series of interviews. The Preservation cast included the Jacob's Pillow archivist, a former director of the center, and the architect of the burned building. Preservation explored how choreography and dance performance are recorded and transmitted, and the role of place within history and stewardship. The Conservation cast included the conservators and co-authors Zycherman, Marincola, and Kroll Hassebroek; a theater consultant who had worked on the MoMA studio; and a gastroenterologist. Their conversations consisted of sequential individual interviews that were unique to each performance; Laris Cohen rarely repeated his questions over the course of the twelve performances, and never in the same way. Cast members were not privy to conversations other than their own and were asked not to discuss their responses with other members of the cast during the run of the show to avoid cross "contamination" of answers. The unexpected became the norm: the artist and other performers were constantly surprised by what one asked and the other answered, and (in retrospect) by the common themes that nevertheless emerged between interviews and across performances.

The artist organized a detailed plan for preservation of the work that reinforced and intertwined with its central themes. The plan included a court reporter recording every performance on an antique stenography machine, transcriptions generated from those steno notes, and the stewardship of the sculptural materials themselves: over one ton of metal and wood theater fragments. Laris Cohen's careful plans, however, were upended by an unfortunate series of events. This talk will present Studio/Theater as considered a year later by its creator and some of its actants. We will address: what is the relation between documentation - in this case, still photography and a single video recording of the dress rehearsal - and preservation of the work? Can a conservator act as collaborator and component in a work of art, and also function as a conservator of the work? How did the novel role of performer impact the conservators' professional perspectives, particularly when encountering the unexpected? and how does the artist now regard the preservation and conservation of his fragile and complex work of art?

### Timekeeper: Caring for a Complex Installation by Sarah Sze

Jeffrey Warda, James Hughes, Elizaveta Yuzhakova, Esther Chao, Agathe Jarczyk, Tess Bronwyn Hamilton,sasha arden, Piotr Chizinski

Sarah Sze's Timekeeper (2016) is a multifaceted installation work consisting of 46 video projectors, 38 video files, 3 computers, live access to the Flickr photo-sharing platform, 6 loudspeakers, 6 Arduino microcontrollers, and 7 servo motors—in addition to more than 1,000 different sculptural components such as tables, chairs, ladders, powered household objects, books, rocks, food, inkjet prints, tape, and paper. These elements are assembled through the aid of a 525-page installation manual that details over 375 independent attachment points and follows a numbering and tagging system developed by the artist's studio to track each element. The complexity of Timekeeper's preservation needs, and installation parameters were difficult to fully anticipate at the time of acquisition. The more staff investigated the work, the more questions surfaced. This necessitated multiple in-depth, cross-departmental research projects and continual dialog with the artist.

Beginning at the time of acquisition in 2017, a broad group of collections care staff at the Guggenheim Museum evaluated the material components of the work and developed solutions for the short- and long-term viability of its technologies. This work was carried out by conservators in objects, time-based media, and paper; art handlers; registrars; media arts staff; and included invaluable contributions from graduate student interns, fellows, and other staff within the museum. Through a six-year process, this work culminated in the exhibition Sarah Sze: Timelapse (March 31 –September 10, 2023) at the Solomon R. Guggenheim Museum, NY.

Even with a meticulously well-documented installation manual and direct communication with the artist and studio staff, it became clear that the artwork would need to be fully installed in order to make necessary repairs and modifications, and to complete a comprehensive documentation of all the elements of the work. A month-long treatment installation in 2022 allowed time for staff to rework the software-based elements; service, repair, or replace video projectors; re-print or replace paper elements; develop a new way to attach these elements to prevent further damage; replace unstable food elements that are part of the work; leverage new single board computer hardware; build a multi-channel open-source playback system and network-based projector control; and further articulate the installation manual with greater detail.

For staff involved in the preservation and installation of Timekeeper, it was the invaluable time spent learning the artist's language that was most unexpected and rewarding. The participation of the artist and her studio throughout these activities taught the team her visual and conceptual language, which was translated into documentation resources. The installation of Timekeeper provides a

model for the collaborative and multi-faceted effort needed for the preservation of complex installation works and demonstrates the need for flexibility when faced with unfolding questions.

#### A Journey into the Preservation of Time-Based Media: The Example of the Heritage Conservation Centre in Singapore (Part I)

Melanie Barrett, Alex Soo, Ariane Lo, Christel Pesme, Mar Cruz, Jo-Anne Wong, Kezia Toh, Fabiola Rocco

The Heritage Conservation Centre (HCC) was founded in 2000 under the Singapore National Heritage Board (NHB) to serve as a repository and conservation facility for the management and preservation of Singapore's National Collection. The collection is highly eclectic and comprises over 250.000 items ranging from traditional ancient artefacts to complex contemporary time-based media (TBM) installations. In the past twenty years, the TBM National Collection has increased exponentially and is currently counting more than 230 media works acquired primarily under the purview of two institutions, the National Gallery Singapore (NGS) and the Singapore Art Museum (SAM).

Several strategies to cater for the needs of the digital collection have been undertaken over the years. In 2019, HCC staff from collection management and conservation, joined together to create an informal TBM task force, which immediately started advocating for a backup server. In view of the limited resources and lack of specialised in-house expertise, the team initiated a conversation with local experts, with the aim of creating storage redundancy and sharing expertise across institutions. At the same time, the task force explored different options for digital preservation storage and performed an initial collection survey, which, even if incomplete, provided valuable insights into the makeup of the collection. Although these exercises did not provide immediate solace, they raised awareness of the gap between collection growth and the institutional limitations to care for media artworks. Based on these past efforts the urgency to develop the professional institutional capacity as well as establish tailored policies and workflows became visible to the upper management.

The window of opportunity to speed up the quest to hire specialized staff arrived with the designing of the new Our Singapore Heritage Plan 2.0, a 5 years-long master plan to shape the next chapter of the nation's heritage and museum landscape. In view of the board's decision to foster the acquisition of contemporary design and thanks to the result of the previous assessments, the positions of TBM conservator and digitalization manager were opened. Currently, the newly established cross-departmental TBM Working Group has launched a multi-phase preservation plan focused on conceptualizing institutional goals, implementing a risk assessment of the collection, and vetting new policies to organically sustain the long-term care of the expanding media collection.

With this talk, we aim to share our experiences and the pivots we have made while embracing the challenges that digital preservation poses. It is hoped that by sharing HCC's ongoing journey we could offer a pathway to other regional institutions in South East Asia that are facing the pressing issue of caring for their digital collection.

## Dynamic Objects, Evolving Collections: A New Approach To Changeability at The National Museum of Australia

Asti Sherring

The museum is in a moment of transition. The digital revolution has disrupted the archetype of the 20th-century museum. We are-moving from a place of tradition and contemplation into an active space, driven by experience and both in-person and virtual connectivity. This transition is driven by cultural changes in the present day which are increasingly mediated by technologies with the ability to engage human senses in different ways, therefore creating new connections" (Sherring 2020).

In response to these cultural and societal shifts, the future impact and relevance of 21st century museum will be played out across both the physical and digital landscape. Our crucial role as cultural stewards "to define, describe and

prolong the existence of cultural material" (Wain and Sherring 2021) therefore also needs to change – in response to and anticipation of – these societal shifts.

Since early 2022 the National Museum of Australia has been undertaking the Changeable Collections Project, which identifies both the thinking and activities required to acquire, manage, and make accessible changeable and digital collections. The long-term goal of this program is to develop and implement a philosophical approach that applies to all NMA objects and will support new ways to collect, manage, preserve, activate and provide access to the Museum's collections.

Changeable heritage is defined as "an object that is dynamic, variable and relational, where change is inherent to its ongoing meaning, value and significance". Changeable heritage is defined by the necessity of an object to adapt, evolve, and transform its tangible and intangible states over time as an intrinsic part of its survival and continuity.

The concept of Changeable heritage contrasts with the notion of static or fixed cultural heritage objects, which remains unchanged and preserved in an original form or preferred authentic state. Recognising the changeable nature of cultural heritage is crucial for ongoing preservation and activation within a museum environment. This approach acknowledges that culture is not something static and unchanging, but rather a vibrant and adaptive force that is reflected in the continual evolution and expression of the cultural heritage objects in our care. By viewing NMA objects through a lens of change we will enhance our understanding, management, and care of collections by ensuring that our collections can develop, evolve and remain significant as time, contexts and audiences change. These re-evaluations inform new decision-making paradigms and provide theoretical underpinnings for approaches that permit change in the material of the object to preserve authenticity in the experience of the object. Authenticity can be seen to lie not in keeping things the same, but in understanding how and why things have changed.

"There will always be new objects which enter into our collective heritage space and present previously unanticipated challenges. As the museum continues to explore the dichotomy between physical and virtual spaces, it is imperative that our ability to develop new practices for new materials is not stagnated by the traditional principles of significance, value and change" (Sherring 2020).

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Alison Wain & Asti Sherring (2021) Changeability, Variability, and Malleability: Sharing Perspectives on the Role of Change in Time-based Art and Utilitarian Machinery Conservation, Studies in Conservation, 66:8, 449-462, DOI: 10.1080/00393630.2020.1860672 https://doi.org/10.1080/00393630.2020.1860672

### Conserving Please Be Seated: Five Decades of Studio Furniture in Public Use

Christine Storti

Since the mid-1970s, the Museum of Fine Arts, Boston has acquired artisan furniture for gallery seating. For 48 years, the seating served simultaneously as visitor seating and accessioned art. 75 seats and growing, this collection portrays the diverse work of American studio furniture makers, from new interpretations of historic designs to futuristic creations in aluminum and steel.

This paper reviews the conservation practices for Please Be Seated, in light of their continued use in the museum's galleries.

### A Macro-Miniature: Conservation of a Large Paul Rudolph Architectural Model

Elizabeth Peirce

Paul Rudolph (1918-1997) was an American architect and former dean of the school of architecture at Yale. After his passing in 1997, the Library of Congress acquired a significant amount of the Rudolph's archive, including several architectural models. The models were made across a range of dates and from a wide variety of materials, including foamcore, blotter, plywood, acrylic sheeting, thick veneer, coated wire, cast aluminum, dried moss, and basswood. Several pieces have been stored in their original shipping crates in off-site storage, and not accessed for some time.

Four of the models were selected for loan as part of a retrospective on Rudolph's work slated to open in September of 2024. Two of the large models were in poor condition, and had been on open display in the archive before coming to the Library. They had accumulated a significant amount of dust and grime on their surfaces, some of which had become concreted after a water event prior to acquisition. The wet wooden elements had severely curled, loosening some of the joins. Insufficient support during shipping also caused significant damage, particularly on the model of the Colonnade. The Colonnade is made of four floating modules which slide over a central tower. Each module is supported by two metal pins which are not fixed in place. Jostling during shipment caused some of these pins to shake loose, which led to the partial collapse of the modules. Because of its extensive damage, the Colonnade tower model was selected for this talk. It had sustained both water and physical damage, requiring cleaning, humidification, consolidation, and recreation of both plastic and wooden elements. Treatment of the tower, standing at 68 inches when fully assembled, was a collaborative effort between the lead conservator and several technicians, and included training on wet- and dry-cleaning methods, stain reduction using gels, cleaning and reattaching plastic elements, and recreation of missing pieces.

#### Considerations of a D. Tanning Sculpture

Caitlin Sofield

Rainy Day Canapé is one of a small subset of three-dimensional work in the catalog of the artist, Dorothea Tanning. She had a long and varied career as an American artist whose work spanned seven decades and crossed media boundaries. While Tanning is best known for her Surrealist paintings, her collective works include commercial illustrations, painting, drawing, printmaking, sculpture, set design, costume design, fiction, and poetry. Between 1965 and 1982, Tanning created 15 individual sculptures and one room installation that included an additional 6 sculptures. The sculptures are all cloth covered; she used found objects and stuffing to achieve her intended forms.Rainy Day Canapé is one such object and has been in the collection of the Philadelphia Museum of Art (PMA) since 2002 (accession number 2002-86-1).

The PMA's sculpture was made in 1970 and features intertwined body parts emerging from the upholstery of a loveseat. The sculpture's materials are listed in the PMA records as upholstered wood sofa with wool, polyester, and rayon plainweave cover, wool batting, cardboard, and ping-pong balls. However, in 2018, a small area of degraded polyurethane foam was discovered in the form of powder emerging from a gap in the seam of the tweed cover near the bust of the reclining figure. This was an interesting and unexpected find as Tanning was not known to have used polyurethane in her work. However, due to the nature of the sculpture's construction, identifying the internal materials and their various conditions would be difficult and invasive. Furthermore, Tanning has been quoted saying that she felt these cloth sculptures should have the lifespan of an ill person. How does the conservator/curator/institution tasked with preserving such works for future generations navigate the ethical challenge of such a specific artist's wish, especially when faced with the knowledge that the work features a rapidly degrading material that has the potential to fundamentally change the form of the sculpture?

It became clear that this work required focused attention to plan for its future. Rainy Day Canapé has been requested for loan many times since it was acquired by the museum in 2002, and the 2019 retrospective of Tanning's work held at

two popular museums in Europe will only increase her visibility and interest in her sculpture. By conducting extensive object examination and multiple forms of documentation, literature review, personal interviews, and archives research a more in depth understanding of the complex nature of this work and the artist was gained. Is there a way to honor the artist's wishes/expectations while also making the sculpture available to both present and future audiences? This presentation will discuss Tanning, Rainy Day Canapé, and the actions and recommendations necessary to manage these seemingly conflicting goals.

#### Cellulose Nitrate Film on the Big Screen: Treating an Eames FSW (Folding Screen Wood)

Olav Bjornerud

The husband-and-wife duo Charles and Ray Eames are some of the most influential designers of the 20th century. The Eames' designs, organic and inspired, softened industrial materials, bringing them into the homes of a wide consumer base. While they experimented and worked with a range of materials, they are particularly known for their pioneering use of molded plywood. Released in 1946, the FSW (folding screen in wood) exemplifies the Eames' design philosophy.

The FSW in The Metropolitan Museum of Art's modern and contemporary collection is composed of six molded plywood segments joined in sequence with woven hinges. The plywood segments are veneered with mahogany and have a bell curve-shaped profile. Fully extended, the screen measures 58  $\frac{1}{2}$  in long and 68 in tall.

Pieces of furniture are enmeshed in the events of daily life that occur around them, capturing records of those activities in the form of wear from regular use, or scratches made by young children and stains from a spilled drink. The Eames FSW is a particularly dynamic object, meant to be moved, opened and closed, and repositioned in endless configurations. The Met's screen bears the markings of an actively used domestic object, including home repairs likely made with materials the original owner had on hand.

In a museum context, the purpose of The Met's FSW has changed. It is no longer a specific screen in the home of a specific family—it has become an archetypal example of a design object. Evidence of the screen's previous life now distracts from its most important attributes, chiefly form and materiality. The surfaces of the Met's FSW exhibited deep scratches in the finish as well as fourteen patches of overpaint that starkly contrasted with their surroundings. Two sections of one of the woven hinges had detached from their housings.

This paper will detail the treatment of The Met's FSW, completed as part of the author's 3rd year graduate internship. Rather than focus on specific outcomes, it will describe the decision-making process that guided the treatment. This process was complicated by the screen's finish, which was identified as containing cellulose nitrate using the diphenylamine spot test. Working within the limitations imposed by the sensitive finish, retouching using Maimeri Ketonic Resin Colours with ShellSol D38 was ultimately decided to be the best course of action for addressing the overpainted patches. The scratches in the finish were re-saturated with 20% Plexigum PQ611 in Shellsol D38 and the woven hinge resecured with Lascaux 498 HV. With this paper I hope to illustrate the challenging decisions involved in treating a consumer object that has undergone changes both intentional and incidental.

#### Blinking Outside The Box: The Treatment of Sol Lewitt's Wall Structure In Nine Parts, Each Containing a Work of Art by Other Artists, 1963

Elisse Brautigam, Kaela Nurmi, Nicholas Ecker

Electronic media works often pose challenges with preservation and display, but when the electrical components are 60 years old, even more complicated decisions must be considered. With the 1963 mixed media artwork Wall Structure in Nine Parts, Each Containing a Work of Art by Other Artists by American artist Sol LeWitt (1928-2007), there was concern about exhibiting the work with the aged thermal flasher relays and electrical wiring, as well as accurately representing the original Artist intent.

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The artwork consists of nine boxes joined together in a 3x3 orientation, each containing an artwork by a different artist that is revealed by lights flashing on and off. The corner boxes are each illuminated by a 10-watt lightbulb, and the remaining boxes are illuminated by a single 75-watt lightbulb in the center box. The lights are wired on two different thermal flasher relays: one for the four corner bulbs and one for the central bulb. The relays turn their corresponding lights on and off. Switching at slightly different rates, the corner bulbs and central bulb oscillate over time between switching in unison and switching oppositely.

In 2022, a full condition assessment was carried out, and while the sculpture could still be turned on, the original electrical components were in various states of degradation. The relays were causing the lights to turn on and off sporadically and inconsistently. Glenstone's conservation team and electrician were concerned about the possibility of electrical arcing or an electrical fire when the relays ultimately fail, as the mechanics of thermal flasher relays leave them prone to gradual degradation over time. There was also some concern about yellowed wires and splices held together with degrading electrical tape.

Conversations with the Artist's Estate, the LeWitt Collection, and a conservation colleague who had treated a similar LeWitt sculpture were influential in developing the most sympathetic and authentic treatment approach for Wall Structure in Nine Parts, Each Containing a Work of Art by Other Artists. These discussions lead to a consensus about how to best preserve the electrical functionality in the long term.

The Estate-approved treatment was carried out in collaboration with Glenstone's licensed electrician to properly address the aged electrical components. The project involved rewiring the entire work without altering the original appearance of the piece. New relays were programmed to best approximate the existing timing. Lightbulbs were replaced with modern equivalents to ensure they do not burn out during the duration of an exhibition. Additionally, a stockpile of lightbulbs was acquired to ensure the artwork can be displayed in the future. The original electrical components removed from the Artwork were accessioned in the museum's Artist Material Archive for safe storage and future reference. The poster showcases a successful collaborative treatment of an aging electronic media artwork that allows the piece to be safely displayed as the Artist intended, while ensuring the possibility of any necessary future modifications.

#### **Electronic Media**

### The Migration of Gary Hill's Interactive Video Installation Tall Ships (1992)

Samantha Owens, Cass Fino-Radin, Daniel Mauro

For more than 50 years, American artist Gary Hill has pushed the boundaries of moving image art and technology. An early innovator of video art and interactive computer-based installations, Hill's work has been foundational to the development of intermedia and expanded cinema. This presentation focuses on the recent conservation of Hill's Tall Ships (1992), a sixteen-channel interactive video installation built upon the combination of custom analog and digital technologies, now migrated to newer technologies while maintaining the unique imaging system at the core of the work.

Tall Ships was originally commissioned for the exhibition documenta IX in Kassel, Germany in 1992 and would go on to tour the world throughout the following decade. Tall Ships consists of sixteen black-and-white CRT projectors custom-built by the artist that hang in a long, completely dark corridor. Each projector is connected to one of sixteen laserdisc players that are controlled by a DOS-based computer with software coded by multimedia designer and frequent collaborator Dave Jones. Appearing in the image of each projection is a person sitting in the distance. When visitors walk into the corridor, the only light emitted comes from these faint figures. The images are high contrast yet soft with an ethereal quality, with no border framing the projection. As a visitor walks closer to the image, their steps trigger electronic switches in the floor that then signal the figures in the video to get up and walk toward the visitor,

meeting them face-to-face. The figures stand there, life-size, wavering, staring back at the visitor until the visitor steps away, triggering the figure to also step away and walk back to the distant position where they initially sat.

Glenstone Museum in Potomac, Maryland has worked closely with Small Data Industries of Rochester, New York and artist Gary Hill to conserve the work for future preservation and exhibition. Necessary to its original creation and now its conservation has been tinkering with technologies in unexpected ways. This presentation will walk through the process of maintaining the custom projectors that are essential to the look and feel of this work, while detailing the migration from a DOS-controlled, LaserDisc source to a streamlined Raspberry Pi-based backend, and novel methods that were devised for assessing the fidelity of the new iteration to the original. The authors will also discuss the unexpected positive outcomes of an estimated reduced energy use and carbon footprint for exhibiting the work with the updated technologies. This presentation sheds light on the unique challenges and approaches inherent to working with custom analog and digital moving image technologies and best practices for preparing them for a fast-moving future of ever-evolving time-based media art.

#### A Changing Solution For Ever-Changing Challenges: Photoflicks and Photofictions By Lucas Samaras

Shu-Wen Lin, Joshua Churchill, Mark Hellar

The San Francisco Museum of Modern Art (SFMOMA) has been acquiring media works since the 1970s, and in 1987, SFMOMA formed one of the earliest Media Arts curatorial departments in the United States. A cross-departmental collaborative group Team Media began in 1994, but it was not until 2006 when the Photography Department welcomed their first media art accession. PhotoFlicks and PhotoFictions was created by Lucas Samaras in 2005, and it showcased the artist's interests in self-portraiture and image manipulation. The artist replicated his workstation at his studio for viewers to explore his photographic and audiovisual archives. The work comprises 4,432 photographic files in iPhoto and 60 iMovie files on a Mac Mini, presented with an Apple Cinema HD Display 23" monitor, an Apple mouse, a custom printed mouse pad with instructions, portable speakers, an Ikea Hannes Desk, and three Design within Reach Bellini chairs. At the time of acquisition, interviews were conducted in order to explore strategies related to acquisition, display, loan and long-term preservation.

After learning the work was selected for the Sea Change exhibition in 2023, seventeen years after its first installation, members from Curatorial, Conservation, Registration, and Collections Technical collaborated to revisit past records and documentation. We discovered that speakers and furniture were selected and provided by the gallery. They were neither used at the artist studio, nor were they the same style or model used by the artist. With this key information, we were able to set up our scope of work to focus on the Mac. After experimenting with different tools and options, QEMU was employed to emulate Mac OS 10.3.8 systems. It allowed us to exercise the work in its native environment and observe unresolved and emerging challenges ranging from technological obsolescence to gallery maintenance requirements. We also came across seventeen slideshows in iPhoto that were not listed in artwork medium descriptions. Together, we examined the viability of some past proposed solutions. We carefully laid out a roadmap to perform various levels of migration for both software and hardware components, and investigated potential implications and changes associated with each approach.

We presented our findings and migration plans to the artist's representative and collaborator to gain their feedback. Approved by the gallery and our curator, we started exploring different methods to export digital content out of iPhoto to Photos in macOS Ventura. During the process, Conservation and Collections Technical worked closely with our staff from IT to tackle unexpected issues. To name a few obstacles, iPhoto 5.0 and Photos 7.0 have drastically different interfaces and display mechanisms, and slideshow was not designed to be transferable. Additionally, we implemented different tools to limit access to a variety of functions in OS Ventura to reduce gallery maintenance. Addressing the rapidly changing and proprietary nature of Apple systems and products, we aim to share our strategies and thinking process to adjust our practices to preserve, assess, migrate and provide access to the work on our internal server and in our gallery spaces.

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## Tending to Time-Based Media Art in Aotearoa, New Zealand

Asti Sherring

This presentation will discuss the outcomes of The Museum of New Zealand Te Papa Tongarewa National Time-Based Media Art Capability Building Project 2023 - 2024, which was implemented to strengthen the long-term care and preservation of the national collection of time-based media art.

The project has an internal Te Papa-focused component and an external outreach component that aims to build capability across Aotearoa, New Zealand's gallery and museum sector. The work program has been built around the guiding principle of Mana Taonga, which is a key statement for our National Museum and at its core is the recognition that there still exist living relationships and connections between taonga and their cultures of origin.

The internal capability project had five key focus areas: review, policy and procedure development, collection management, education and strategy development. The national gallery sector capability building project will be achieved through a series of workshops aimed at institutions that collect time-based media artworks in both metropolitan and regional centres.

Rose Cangadis-Douglass has been appointed to the fixed-term role of Assistant Conservator Time-Based Media Art — the first role of its kind in New Zealand. The project will also draw on expertise from staff across Te Papa, and Asti Sherring, Manager of Changeable and Digital Collections at the National Museum of Australia. Te Papa's initiative in collaboration with the National Museum of Australia has provided the opportunity for discussion of real-world challenges and opportunities and has fostered a national community of practice around the preservation of time-based media art in New Zealand.

#### The Landscape of Blockchain-Based Art Preservation: Risk Assessment of 81 Horizons by Rafaël Rozendaal

Olivia J. Schoenfeld, Ellen Jansen

This thesis research – The Landscape of Blockchain-based Art Preservation: Risk Assessment of 81 Horizons by Rafaël Rozendaal – written by Olivia Schoenfeld (University of Amsterdam) in June of 2023 aims to pinpoint the vulnerabilities and future prospects of blockchain-based art (also known as non-fungible tokens or NFTs), including its conservation. Blockchain-based artworks are still considered to be in new and relatively uncharted territory in terms of conservation. While it may seem soon to be worrying about the obsolescence or deterioration of a technology that is so new, it is an inevitable truth. There are misunderstandings by the public and professionals that believe simply adding artworks to the blockchain preserves them for the future. This misconception exists due to the narrative referring to blockchain as a omnipotent, omniscient, and omnipresent entity. A correct understanding of the technology is essential and gives the basis required for conservators to become knowledgeable advocates that push for further preservation strategies to be implemented.

This is especially true since well-known artists such as Beeple, Damien Hirst, Erik Calderon, and Rafaël Rozendaal use this technology and have been acquired by museums, institutions, and private collectors more often. Unfortunately, blockchains have a plethora of failure points. It is essential to conduct risk assessments and have protocols set in place to help mitigate not only any loss of information about an artwork but also its significance and authenticity. Since blockchain-based artworks likely do not completely fit the mold of existing methodologies — whether it be risk assessment, preservation strategies, or institutional documentation protocols — they necessitate more research into where the bottlenecks are in the conservation of these artworks.

The research is conducted according to the Brokerhof risk assessment methodology for the case study of the blockchain-based artwork series 81 Horizons (2021) by Rafaël Rozendaal. The risk assessment methodology begins by compiling documentation of 81 Horizons' making, history, and context. The series' intricate anatomy, character, and identity are described using various research methods including interviews. After establishing the artwork's meaning and

values, the pertinent risks to 81 Horizons are identified and described. These risks are deemed applicable to many other blockchain-based artworks, as well. The last portion of the assessment pinpoints the biggest threat to the artwork, where technological obsolescence is found to be the front-runner. This largest risk is discussed in terms of existing preservation strategies drawn from the conservation of variable media artworks - storage, migration, emulation, and reinterpretation — and is analyzed in the context of 81 Horizons. The ensuing obstacles and ethical dilemmas that arise from such strategies are reflected upon, followed by the legal and sustainable issues that still remain and are in need of more research.

As more and more artworks using blockchain technology find their way into institutions, there will be increasing pressure to have possible future preservation protocols put into place for their battle against obsolescence, among other risk factors. Thus, the research on the use of an existing risk assessment approach to help identify vulnerabilities and diagnose preservation solutions is well-timed and much needed.

#### An Experiment in Art and Technology: Negotiating with Time in Robert Rauschenberg's Carnal Clocks

Christine Frohnert, Reinhard Bek, Adrian Hernandez, Daniella Briceño Villamil

Deeply reflecting the new and swiftly evolving technological landscape of their time, Robert Rauschenberg's Carnal Clocks(1969) serve as a prime example of collaborations between artists, engineers, and manufacturing companies, and the use of innovative materials and processes in contemporary art. A unique series of 15 timepieces conceived by the artist, the free-standing artworks feature a concealed clock-mechanism with custom-made electronics and 48 incandescent light bulbs that subtly illuminate mirrored, silkscreened photographs on acrylic sheets to convey the passage of time. In this presentation, a condition survey of 11 Carnal Clocks in the Robert Rauschenberg Foundation (RRF) collection will be discussed as a case study to offer new insights into the management of temporal and material changes in time-based media art conservation. In addition to historical and comparative analysis, the authors conducted an experiment to measure time drift and accuracy across each of the Clocks. Their idiosyncratic behavior prompted questions not only about how their material properties have changed over time, but also about how their function as "clocks" hinges on fluctuating cultural perceptions of time. As a result of this research, the authors presented recommendations to the RRF for an acceptable threshold for clock drift and a solution for its correction, aiming to strike a balance between presenting the artwork authentically and aligning with the technological and institutional needs and values of the present. This proposal has undergone deliberations with RRF collection managers, as well as curators and conservators from other institutions with Carnal Clocks in their collections. Drawing from these conversations, the applicability of contemporary values and challenges associated with present-day exhibitions is discussed, addressing time and staffing constraints in exhibiting institutions, the growing significance of public programming and engagement, and the management of obsolete technology. Through this research, the authors shine a light bulb on how we value time in time-based media conservation.

This project was made possible by the generous support of Voices in Contemporary Art (VoCA) and the Robert Rauschenberg Foundation. VoCA played a crucial role in establishing the partnership between the RRF, the Winterthur/ University of Delaware Program in Art Conservation, and the Conservation Center of the Institute of Fine Arts at New York University

Keywords: Values-based decisions; Contemporary art; Time-based media art; Carnal Clocks; Robert Rauschenberg

#### SPECIALTY SESSIONS: ELECTRONIC MEDIA

## Restoration of "Chance Words" by Augusto de Campos: The Poem behind the Scenes Written in Flash Code

Marcela Vieira

Chance Words, by poet, translator and literary critic Augusto de Campos was conceived in 2006 by the poet himself, using the technology of the software Flash. Thus, Augusto de Campos, who had just acquired his first computer, was able to further his research on color and form as poetic elements, while adding effects made possible by the computer, such as movement and sound. It has been 26 years since De Campos' clipoems first appeared, and during that time, the works have become increasingly endangered, not only due to the end of Flash, the software with which he created his works, but also due to the obsolescence of hardware such as the CD player, which has become an increasingly rare device.

Chance Words brings to light the interesting journey leading up to the encounter between Concrete Poetry and the digital environment. Chance Words takes on new aspects with the discovery of the virtual medium, which lends itself perfectly to the experiments of the Concretist vanguard: the interactivity between reader and object was transferred to the click. The typographical experiment is stimulated by chromatic options that suggest, with varying degrees of emphasis, the gradual transformation of Chance Words into its final form, Change Worlds. Chance Words was originally built with Flash technology, which announced the end of its activities in December 2020. This particular work by Augusto de Campos, like many other significant artworks which are part of the history of digital art, was at risk of disappearing.

aarea (www.aarea.co), an online platform founded in 2017 to showcase artworks created specifically for the internet, got in touch with Augusto de Campos to remake some of his digital works that were made in the Flash program. One must take into account that the restoration of digital artworks is subject to the transformations of society and consequently find itself in a permanent state of evolution. In the version presented by aarea, the piece was reprogrammed by Adriano Ferrari, aarea's technology consultant, in order to ensure its continued existence. But what we discovered in this process of reworking the work is that the poem Chance Words was also present in the code of Flash, since the color used in the work was guided by a special nomenclature of the code.

The presentation we propose here takes into account the "lost" poem, since the original code is no longer present in the new version of the project.

## Timekeeper: Caring for a Complex Installation by Sarah Sze

Jeffrey Warda, James Hughes, Elizaveta Yuzhakova, Esther Chao, Agathe Jarczyk, Tess Bronwyn Hamilton, sasha arden, Piotr Chizinski

Speakers: Piotr Chizinski, Jeffrey Warda

Sarah Sze's Timekeeper (2016) is a multifaceted installation work consisting of 46 video projectors, 38 video files, 3 computers, live access to the Flickr photo-sharing platform, 6 loudspeakers, 6 Arduino microcontrollers, and 7 servo motors—in addition to more than 1,000 different sculptural components such as tables, chairs, ladders, powered household objects, books, rocks, food, inkjet prints, tape, and paper. These elements are assembled through the aid of a 525-page installation manual that details over 375 independent attachment points and follows a numbering and tagging system developed by the artist's studio to track each element. The complexity of Timekeeper's preservation needs, and installation parameters were difficult to fully anticipate at the time of acquisition. The more staff investigated the work, the more questions surfaced. This necessitated multiple in-depth, cross-departmental research projects and continual dialog with the artist.

Beginning at the time of acquisition in 2017, a broad group of collections care staff at the Guggenheim Museum evaluated the material components of the work and developed solutions for the short- and long-term viability of its technologies. This work was carried out by conservators in objects, time-based media, and paper; art handlers; registrars; media arts staff; and included

invaluable contributions from graduate student interns, fellows, and other staff within the museum. Through a six-year process, this work culminated in the exhibition Sarah Sze: Timelapse (March 31 –September 10, 2023) at the Solomon R. Guggenheim Museum, NY.

Even with a meticulously well-documented installation manual and direct communication with the artist and studio staff, it became clear that the artwork would need to be fully installed in order to make necessary repairs and modifications, and to complete a comprehensive documentation of all the elements of the work. A month-long treatment installation in 2022 allowed time for staff to rework the software-based elements; service, repair, or replace video projectors; re-print or replace paper elements; develop a new way to attach these elements to prevent further damage; replace unstable food elements that are part of the work; leverage new single board computer hardware; build a multi-channel open-source playback system and network-based projector control; and further articulate the installation manual with greater detail.

For staff involved in the preservation and installation of Timekeeper, it was the invaluable time spent learning the artist's language that was most unexpected and rewarding. The participation of the artist and her studio throughout these activities taught the team her visual and conceptual language, which was translated into documentation resources. The installation of Timekeeper provides a model for the collaborative and multi-faceted effort needed for the preservation of complex installation works and demonstrates the need for flexibility when faced with unfolding questions.

#### A Journey into the Preservation of Time-Based Media: The Example of the Heritage Conservation Centre in Singapore (Part I)

Melanie Barrett, Alex Soo, Ariane Lo, Christel Pesme, Mar Cruz, Jo-Anne Wong, Kezia Toh, Fabiola Rocco

The Heritage Conservation Centre (HCC) was founded in 2000 under the Singapore National Heritage Board (NHB) to serve as a repository and conservation facility for the management and preservation of Singapore's National Collection. The collection is highly eclectic and comprises over 250.000 items ranging from traditional ancient artefacts to complex contemporary time-based media (TBM) installations. In the past twenty years, the TBM National Collection has increased exponentially and is currently counting more than 230 media works acquired primarily under the purview of two institutions, the National Gallery Singapore (NGS) and the Singapore Art Museum (SAM).

Several strategies to cater for the needs of the digital collection have been undertaken over the years. In 2019, HCC staff from collection management and conservation, joined together to create an informal TBM task force, which immediately started advocating for a backup server. In view of the limited resources and lack of specialised in-house expertise, the team initiated a conversation with local experts, with the aim of creating storage redundancy and sharing expertise across institutions. At the same time, the task force explored different options for digital preservation storage and performed an initial collection survey, which, even if incomplete, provided valuable insights into the makeup of the collection. Although these exercises did not provide immediate solace, they raised awareness of the gap between collection growth and the institutional limitations to care for media artworks. Based on these past efforts the urgency to develop the professional institutional capacity as well as establish tailored policies and workflows became visible to the upper management.

The window of opportunity to speed up the quest to hire specialized staff arrived with the designing of the new Our Singapore Heritage Plan 2.0, a 5 years-long master plan to shape the next chapter of the nation's heritage and museum landscape. In view of the board's decision to foster the acquisition of contemporary design and thanks to the result of the previous assessments, the positions of TBM conservator and digitalization manager were opened. Currently, the newly established cross-departmental TBM Working Group has launched a multi-phase preservation plan focused on conceptualizing institutional goals, implementing a risk assessment of the collection, and vetting new policies to organically sustain the long-term care of the expanding media collection.

With this talk, we aim to share our experiences and the pivots we have made while embracing the challenges that digital preservation poses. It is hoped that

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by sharing HCC's ongoing journey we could offer a pathway to other regional institutions in South East Asia that are facing the pressing issue of caring for their digital collection.

**Objects** 

#### Dynamic Objects, Evolving Collections: A New Approach To Changeability At The National Museum of Australia

Asti Sherring

The museum is in a moment of transition. The digital revolution has disrupted the archetype of the 20th-century museum. We are-moving from a place of tradition and contemplation into an active space, driven by experience and both in-person and virtual connectivity. This transition is driven by cultural changes in the present day which are increasingly mediated by technologies with the ability to engage human senses in different ways, therefore creating new connections" (Sherring 2020).

In response to these cultural and societal shifts, the future impact and relevance of 21st century museum will be played out across both the physical and digital landscape. Our crucial role as cultural stewards "to define, describe and prolong the existence of cultural material" (Wain and Sherring 2021) therefore also needs to change – in response to and anticipation of – these societal shifts.

Since early 2022 the National Museum of Australia has been undertaking the Changeable Collections Project, which identifies both the thinking and activities required to acquire, manage, and make accessible changeable and digital collections. The long-term goal of this program is to develop and implement a philosophical approach that applies to all NMA objects and will support new ways to collect, manage, preserve, activate and provide access to the Museum's collections.

Changeable heritage is defined as "an object that is dynamic, variable and relational, where change is inherent to its ongoing meaning, value and significance". Changeable heritage is defined by the necessity of an object to adapt, evolve, and transform its tangible and intangible states over time as an intrinsic part of its survival and continuity.

The concept of Changeable heritage contrasts with the notion of static or fixed cultural heritage objects, which remains unchanged and preserved in an original form or preferred authentic state. Recognising the changeable nature of cultural heritage is crucial for ongoing preservation and activation within a museum environment. This approach acknowledges that culture is not something static and unchanging, but rather a vibrant and adaptive force that is reflected in the continual evolution and expression of the cultural heritage objects in our care. By viewing NMA objects through a lens of change we will enhance our understanding, management, and care of collections by ensuring that our collections can develop, evolve and remain significant as time, contexts and audiences change. These re-evaluations inform new decision-making paradigms and provide theoretical underpinnings for approaches that permit change in the material of the object to preserve authenticity in the experience of the object. Authenticity can be seen to lie not in keeping things the same, but in understanding how and why things have changed.

"There will always be new objects which enter into our collective heritage space and present previously unanticipated challenges. As the museum continues to explore the dichotomy between physical and virtual spaces, it is imperative that our ability to develop new practices for new materials is not stagnated by the traditional principles of significance, value and change" (Sherring 2020).

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## Cannon Care: Resource for Understanding Iron Cannon Coatings and their Preservation

Fran E. Ritchie, Liatte Dotan, Nicole Peters

Speakers: Liatte Dotan

In the fall of 2022, the National Park Service Harpers Ferry Center (HFC) embarked on a year-long project aimed at understanding the conservation practices and materials used to care for outdoor iron cannons, thanks to a generous grant from the Samuel H. Kress Foundation (administered by the Foundation for Advancement in Conservation and the Gettysburg Foundation). Outdoor cannons and artillery are subject to humidity and temperature extremes, airborne abrasives, pests, ultraviolet radiation, and prolonged moisture from weather-related events. Routine exposure to these conditions can cause premature failure of protective coatings and paint systems, leading to rust and eventual deterioration of the metal structure. As a result, the public display and interpretation of the historic cannons can appear as general disrepair and neglect. Current procedures for treating these objects involve clearing the surface of corrosion and the removal of previous coating systems, followed by the application of a new protective primer and top-coat system. Cannon coatings have traditionally been paints, but over the past few decades new materials have been introduced, including: epoxies, polyurethanes, waterbased emulsions, and other materials that offer a more durable, longer-lasting coating system that can be applied safely and more efficiently.

The basic procedure for coating outdoor cannons and artillery is relatively straightforward and understood by conservators and caretakers alike. However, the complexity lies within the selection and application of an optimal coating system deemed appropriate for an individual cannon. This selection is primarily informed by specific condition issues observed, previous treatment campaigns, the cannon's geographic location and immediate environment, and consideration of the personnel available and responsible for coating procedures.

This research project focused on compiling and interpreting data to create a comprehensive resource that delineates specific materials, equipment, procedures, and considerations for the treatment and cyclic maintenance of outdoor iron cannons. By surveying the condition of 192 cast iron cannons on display around Gettysburg National Military Park memorial field, interviewing and receiving treatment case studies of past NPS projects, and performing the application of several treatment materials, a final "Resource for Understanding Conservation Coatings for Outdoor Iron Cannons" was produced that can be utilized by conservators and collections caretakers alike in planning and supervising coating treatment campaigns.

## The Lion, the Saint, and the Red Robe: Technical Study and Treatment of a 17th-Century Wax Diorama by Caterina de Julianis

Katherine Eremin, Angela Chang, Georgina Rayner, Adrienne Gendron

A 17th-century diorama with wax figures titled St. Jerome in the Desert provided a unique opportunity for technical study and conservation treatment at the Straus Center for Conservation and Technical Studies at the Harvard Art Museums. A skillfully executed example of a rarely encountered art form from this period, the diorama captures many facets of religious life in 17th-century Italy as a devotional object with overtones of memento mori. As is the case for many wax objects dating from this period, the diorama blurs the lines between religious object, work of fine art, and anatomical model. The artist, Caterina de Julianis, was a Neapolitan nun whose legacy has been overshadowed by that of her male teacher in art historical scholarship; few firmly attributed examples of her work exist in public collections. The goal of the project was therefore to add to the body of knowledge about this artist's working methods and materials and to shine a light on a lesser-known female artist, as well as to prepare

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the object for eventual display. The diorama is composed of a wooden frame built around an interior box enclosed behind glass, which contains pigmented beeswax figures and scenery, glass, an oil painting on copper, and plant fiber elements. Careful consideration was made in the decision to open the enclosed diorama to accurately assess its condition and facilitate instrumental analysis. This investigation characterized the artist's materials and techniques but also revealed the presence of old and unstable restoration materials, many of which were obscuring original surfaces. The specific locations of these materials indicated that the previous restoration campaign involved a near-complete disassembly and reassembly. Treatment involved surface cleaning, partial disassembly, removal of old restoration materials, consolidation, and aesthetic compensation. Although the treatment necessitated a degree of compromise due to changes made during the previous restoration campaign, it ultimately resulted in stabilization and improved legibility of the composition.

#### Navigating The Changing Course: The Evolving Treatment Protocol for the Smithsonian National Air and Space Museum's 1896 Lilienthal Glider

Malcolm Collum, Daniel Ravizza, Maggie Bearden, Jay Flanagan, Deborah Duerbeck Parr

The Smithsonian National Air and Space Museum is undergoing a multi-year renovation project that has enabled some of our aviation treasures to be thoroughly examined for the first time in decades. One such artifact is a glider built and sold by the German aviation pioneer, Otto Lilienthal. Lilienthal studied aerodynamics and methodically tested various wing designs through the 1890's. He was a great inspiration to the Wright brothers, who adopted his experimental approach and built on his data. Lilienthal flew more than 2000 flights and established the first factory for gliders to be sold to the public. The Smithsonian National Air and Space Museum's glider is one of the 9 "Normalsegelapparat" gliders Lilienthal sold to the public and is the only Lilienthal glider in the western hemisphere.

During the gallery renovation's planning stages, an initial survey characterized the glider as needing only surface cleaning and stain reduction. Records indicated that the glider had gone through three previous restorations and that it was still in good condition. Upon closer inspection and during the more detailed treatment proposal phase, questions began to arise about the accuracy and structural stability of the glider. The fabric slated for stain reduction was a 1960's replacement that was incorrectly constructed. The wood frame retained old repairs related to its first test flights alongside new breaks. The metal hardware was almost entirely replacements that mis-represented Lilienthal's innovative design. The growing concerns warranted a thorough examination of the artifact. Traces of evidence extant on the original materials prompted extensive historical research and collaboration with Lilienthal experts in Germany. As we learned more about the artifact, our treatment protocol shifted towards reversing the previous ill-informed restorations and to embrace the new information derived from current collaborations and material analyses.

Navigating this changing course of the treatment plan yielded many pleasant surprises and some challenges. Newly revealed features of the glider, such as an early safety feature, a clearer understanding of the original hardware's functional design, and the re-discovery of an original Lilienthal vertical stabilizer were all highlights of this process. However, the greatest challenge was in finding ways to "unrestore" the glider and reintegrate missing components without impacting the original elements. Historically relevant damages needed to be preserved while carefully retaining structural integrity with reversible repairs.

As we gained knowledge about our glider and considered our technical capabilities, we adjusted the treatment protocol. Guided by current ethical standards we utilized the highest level of craft skills to return the glider to its original configuration while expanding the field's body of knowledge regarding Lilienthal gliders for all of the museums and scholars involved.

## Tropical Treatment: Testing the Efficacy of Pineapple, Papaya, and Kiwi Juices in the Removal of Adhesives

Mariana Di Giacomo, Anna-Colette Haynes, Jasmine Keegan

Conservation treatments done in museum settings often include the use of archival adhesives and high-grade solvents obtained from approved vendors. However, many of the objectsinmuseum collections have been made or previously repaired with adhesives that are not considered archival or conservation-grade, complicating the work of conservators that attempt to remove them. of special interest are thermoset and aged thermoplastic adhesives as they are virtually impossible to remove with traditionally-used solvents, together with the possibility of irreversible damage caused by their removal.

At the Yale Peabody Museum, after encountering numerous objects that had adhesives not affected by traditional solvents, we decided to search for non-traditional options. Previous work done on the removal of epoxy from a mastodon tusk using pineapple juice inspired our search for novel ways to treat objects. The long-term effects of epoxy resins have been known in conservation for decades, including persistent issues with aging properties and reversibility. Epoxies have been historically used in glass restoration but its use is not reserved only for this purpose; preparators and collectors often use it on large, heavy fossils and minerals due the adhesive's strength in comparison to conservation-grade adhesives. The need to reverse epoxy joints that do not have a reversible adhesive barrier becomes fundamental for several object materials.

The goal of this work was to test the effectiveness of pineapple juice, as well as papaya and kiwi juices in the removal of aged adhesives, both from older objects and test samples. Older objects containing visible adhesives obtained at thrift stores were employed as test objects. Samples were obtained and analyzed using Fourier Transform Infrared Spectroscopy (FTIR) at the Institute for the Preservation of Cultural Heritage at Yale University. In addition, samples were prepared on plexiglass using adhesives known to have been used in the repair of objects, especially by the general public. These were then aged artificially. For the removal of the adhesives, all samples were treated with pineapple, papaya and kiwi juices, as well as with their corresponding enzymes (bromelain, papain, and actinidin, respectively).

Preliminary results suggest that the pineapple juice is able to soften some aged adhesives, which can then be removed mechanically. Not all objects are suitable for this kind of treatment, due to the possibility of staining, damage, and even increased risk of pest activity.

The most important goal of this study is not the identification of which adhesives these juices are able to remove or even whether the isolation of the enzymes is a better technique altogether, but to find a simple, non-hazardous method of adhesive removal in conservation. This goal becomes especially important when considering that many institutions worldwide are not able to purchase certain solvents as part of their daily practice due to cost, availability of high quality options, and even national security concerns. We hope this study is a first step in finding a good solution to a problem that is widespread in conservation.

#### Behind the Scenes with Joe Kubert, Comic Book Legend (and Tape Enthusiast): Conserving and Displaying an Artist's Desk

Leah Humenuck

Joe Kubert was a comic book artist legend, working famously for DC Comics creating Sgt. Rock and Hawkman, among others. His drafting desk was recently gifted to the Rochester Institute of Technology's Cary Graphic Arts Center to be the center piece of the Cary Graphic Comic exhibit. Before it could be presented to the public the desk required undergoing some conservation treatment which required creative and collaborative process to solve its challenges. I am a book and paper conservator and initially asked to work on this project to find an unobtrusive solution to obscuring the prolific private contact information

that covered the desk, without making it look like it was obviously redacted. As the project unfolded, much more needed to be done. Kubert's desk required reattachment of handmade cardboard shelves that topped the desk all over. These were originally created and attached by various kinds of tape some of which had failed or were weakened These cardboard shelves also needed to bear weight as their contents had to be replaced. Their reattachment required creative use of linen tape, rare earth magnets, and adhesive combinations. Overarching all of this was the need to keep the aesthetic appearance as much as possible to 1) be as similar in appearance as when Kubert last used the desk and 2) the desk would be viewed closer than six feet within the exhibition space to minimize distractions. This project became a collaboration among myself, the curators, and other object conservators who assisted me in answering questions about the options and alternatives for the different challenges that came up along the way. This project was a joint effort between the Rochester Institute of Technology Cary Graphic Arts Center and myself, Heritage Conservation and Consulting.

## On with Her Head: The Treatment and Technical Study of a Queen Elizabeth II Doll from the 1950s

Alyssa Rina, Catherine Matsen

In 1968, the Arizona State Museum (ASM) accessioned three dolls made in 1953 by Richard and Ilse Ottenberg. The dolls were made to commemorate the coronation of Queen Elizabeth II and include a Queen Elizabeth II doll and two Lady in Waiting dolls. The dolls were accepted during a period when the museum was building a global collection, but quickly became outliers in the ASM collections as the museum has since refined their mission to focus on Indigenous cultural materials of the southwest and northern Mexico. In 2022, the dolls were approved to be researched, treated, deaccessioned, and donated to a small, non-profit museum in Tucson.

The dolls were selected as a suitable technical study project given their little provenance, rarity, and how they represent an important form of craft not often discussed in conservation literature. Two other examples of Queen Elizabeth II Ottenberg dolls were found on auction websites, but no other examples of the Lady in Waiting dolls were located. As research progressed, it became evident that very little information about the Ottenbergs and their manufacture process was described in conservation or doll literature. Doll catalogues and auction sites classify the dolls as a composition material or a composite made of sawdust, glues, and other additives. However, analysis of the ASM's Ottenberg dolls with Fourier-Transform Infrared Spectroscopy (FTIR) and Pyrolysis-Gas Chromatography Mass Spectroscopy (PyGC-MS) suggested otherwise. FTIR indicated calcium carbonate or a likely filler. PyGC-MS revealed a monomer for either isoprene or 1,3-pentadiene—the former suggesting a natural rubber while the latter a synthetic rubber. Limonene, a solvent used during rubber-manufacture, was also present in the PyGC-MS spectrum. These findings could suggest a rubber-based material or a mixture with rubber present. Research and additional analysis to specify the exact type of rubber-based material is ongoing and speak to the realities of using instrumental analysis to characterize an aged material with many additives. While data interpretation and further scientific research is ongoing, information gathered from preliminary analysis guided the conservation treatment of the dolls.

All three dolls required stabilization before being deaccessioned and donated. The head of the Queen Elizabeth II doll was broken at the neck with the head entirely detached. Both left feet of the Lady in Waiting dolls were also detached at the ankles. Research into conservation-grade adhesives used on rubbers and subsequent testing was conducted following scientific analysis. This led to the selection of Jade R for reattaching all elements Reattaching the head of the Queen doll was complex due to the limited points of contact for adhesive application. A mechanical attachment was developed in conjunction with Jade R to secure the head of the doll. The conservation of the Ottenberg dolls resulted in the stabilization and visual integration of the dolls, which are now stable enough to enter the care of an institution without conservation expertise. Additionally, the information gathered from scientific analysis and ongoing research have contributed to a body of knowledge about doll manufacture and materials from the early 1950s.

## The Surrealist and the Saint: A Two-Sculpture Journey into Marisol and the 1960s

Rebecca Ploeger, Emily Hamilton, Jiuan Jiuan Chen, Aaron Shugar, Ruthie Rolfsmeyer

Maria Sol Escobar was known to most simply as the artist Marisol. Her most famous works are witty, blocky portraits, which often explore class divides while dealing with themes of feminism and isolation. She rose to fame in the early 1960s and retreated by the end of the decade. Though she continued to create art, she never again reached the level of fame she attained in the 1960s.

When Marisol passed away in 2016, her collection was bequeathed to the Buffalo AKG Art Museum. Amongst this collection are the two sculptures that this project focuses on: ABCDEFG & Hi (1961-62) and Father Damien (1966-67). These two sculptures are bookends to Marisol's highest moment of fame. The dapper, suit and umbrella clad ABCDEFG & Hi was thought to represent an unknown man, whose identity was revealed partway through this project as the surrealist jeweler Carlos Alemany. This piece was created for the 1962 Stable Gallery solo show that made Marisol an overnight sensation. Five years later, Father Damien, a simple man who was motivated by compassion for the ill, became her subject matter. She expressed passion for Father Damien's story and only a year later she herself began living a simpler life, retreating from fame, ending the decade in the way it began.

Although Marisol is a well-known artist, whose fame has been rekindling since her death, there have been very few studies of her materials and methods. Through multimodal imaging and scientific analysis, her techniques are given their due attention. X-radiography shows hidden construction elements, reflectance transformation imaging (RTI) and photogrammetry reveal marks not readily visible in raking light, UVA-visible fluorescence unveils the nature of a pearl tie pin, and x-ray fluorescence (XRF) analyzes the diamond set upon it. This research is especially meaningful as these sculptures will embark on a traveling exhibition of Marisol's work, which will introduce the artist to new audiences across North America.

In addition to technical studies, the sculptures required conservation treatment. The main condition concerns in common were the loss of original elements, crucial to the reading of the works:Father Damien'shand and ABCDEFG & Hi's original umbrella were both missing. The hand required replication and the umbrella needed replacement with a fitting substitution. The choice of replica material for the hand came down to ethical considerations of original material versus conservation grade replica. Because of the stability and the unique visual characteristics of the original material, a mixture of synthetic and natural waxes, the same material was chosen for the replica, with a discreet inscription at the bottom, identifying it as such. The umbrella had a storied history of replacements by the artist, so it was necessary that the chosen replacement of the 1962 version be removable, should later versions be desired for display. To meet this criterion, the umbrella was mounted using rare earth magnets and existing dowels. This research contributes to the technical understanding of Marisol's work, providing new insight into her materials and working methods.

## A Flare for the Unexpected: Incendiary Devices in the Collection of the Mariners' Museum and Park

Erik R. Farrell

The Mariners' Museum and Park was founded in 1930 as a nature reserve and a museum for any and all topics relating to humanity's interaction with the waters. At the time of the museum's founder, Archer Huntington was the owner of Newport News Shipbuilding and Drydock Company, and the institution was built by Huntington and Homer Ferguson, the shipyard's president. Ever since, the museum has retained a relationship with local shipbuilding, Navy, Coast Guard, and other organizations relevant to the museum's mission. The collecting mission of the museum is vast — any and all objects, art, books, and archival records associated with human interaction with the water. This is inclusive of maritime trade, exploration, naval conflict, lifesaving services, fishing, recreation, and many more areas. Materiality within the collection is equally varied as a result, with objects ranging from watercolor art on paper, to bronze and iron

artillery, to modern racing catamarans with composite carbon fiber, titanium, and aluminum. While this breadth of collecting captures as complete a history of maritime activity as possible, it can also have some unexpected consequences, as not all of the materials which are collected are benign.

As part of an ongoing survey of storage conditions, conservators identified a subset of objects with the potential for high risk to personnel and infrastructure, consisting of artillery, ordnance, ammunition, and incendiary devices. In this aspect, the museum's collection extended beyond the limits of in-house experience to safely analyze and mitigate hazards, with objects such as 19th and early 20th century lifesaving and distress flares, whaling bomb lances, and military ordnance. In dealing with these objects, Mariners' Museum sought advice from Naval History and Heritage Command (NHHC). NHHC collections carry similar themes and materials to Mariners' Museum, and their recent experience verifying that the inert status and documentation of their ordnance is in alignment with modern military standards could be adapted to fit the civilian materials at Mariners' as well. Following NHHC's recommendations and working with regional Explosive Ordnance Disposal teams, Mariners' Museum established procedures and policy to retain as much material as possible while mitigating any active dangers to people and collections facilities. This presentation will detail the ordnance survey results, the decision-making process for retention of materials, and the results and consequences of the process, following the collection of incendiary flares as examples. By detailing this information, this provides an example of some of the unexpected dangers that can be found in collections, a system for flagging and mitigating those dangers, and resources and information for other institutions to help facilitate non-destructive and less-destructive inerting of active incendiary and explosive devices.

## The (Inherent) Vices and Virtues of A Dreamscape Parchment Paravent By Mohamed Zouzaf

Kathryn Boodle, Terra L. Huber

Mohamed Zouzaf is a contemporary artist who is best known in certain parts of Europe and his home country of Morocco. However, even those new to his work will feel familiarity and warmth in their hieroglyphic and petroglyphic symbology. He draws deeply on his Amazigh culture's traditions and languages to create a fluid, but meticulous composition that invokes a meditative, almost spiritual connection with viewers who engage with his pieces.

One of his works though, despite all its beauty, has created a conundrum for several conservators since its creation in the late 90s as it is both a work of art and a functional object meant to exist outside of a museum setting. The piece is a composite object—a double-sided four panel paravent screen comprised of paper-covered plywood covered with multiple parchment fragments and fit into a carved wood frame—all attached and built by the artist. Zouzaf used the skins in their entireties as the basis for his drawings, often preserving their curving arcs and sharp angles when cutting down the skins into pieces, then puzzling them together across the panels to create a harmonious form. The parchment pieces are decorated with Zouzaf's unique symbols using handmade pigments from materials gathered in the Atlas Mountains and finished with an unknown coating that gives the screen a glowing golden quality.

All of these components have their own conflicting properties that were enhanced by the fact that it is meant to exist in a lived environment—and that the final environments it passed through ended up being vastly different from that of its origin of Morocco. Most prominent of the concerns affecting the screen was the failure of the original adhesives used to attach the parchment to the panel. This separation began shortly after the screen left Morocco and resulted in it being conserved twice—once in Paris, France and once at NEDCC in Andover, MA—before the third, most recent intervention. In conducting the most recent treatment of this piece at NEDCC again, the previous methods were examined more closely and modified to find the balance needed to straddle the line between artistic intent, environmental restrictions, and object materiality by drawing on traditional conservation parchment mounting techniques as a foundation. Various paper and protein substrates were tested, as well as broad range of adhesives to determine the most flexible and stabilizing solution. Reacting to and the reactivity of the treatment provided a unique challenge

as the addition of hinges to hold the pieces in a way that embraced the artist's intent, but allowed for intentional flexing was not an easy line to walk. Overall, it was hoped that utilizing an adaptive attachment would result in less future interventive work while embracing the living nature of the paravent's components.

#### Preservation Efforts along Totem Trail at Sitka National Historical Park: Navigating Climate Change, Tourism, and the Global Pandemic

Curtis Sullivan, Al Levitan, Casey Oehler, Nicole Peters

National Park Service Harpers Ferry Center (HFC) has a long history of working with Sitka National Historical Park on the preservation of their outdoor totem pole collection located throughout the park's Totem Trail. Since the early 1980s, HFC Conservators have performed detailed condition surveys, conservation treatments, and collaborative work with local Indigenous carvers. Over the years, detailed condition assessments of the poles have focused on pest damage, pole and support post structural issues, repair performance, and more recently- the efficacy of cyclical maintenance procedures. This comprehensive documentation resource has served as a reference point for how the poles are aging in the coastal rainforest, ultimately informing the duration of their display in Totem Trail. The documentation has also been a useful baseline source to which all current and future condition assessments are compared.

In recent years, HFC Conservators have observed an influx of previously unrecorded condition issues and unanticipated problems associated with climate change, increased tourism, and the effects of the COVID-19 global pandemic. Coastal erosion and increased annual precipitation have influenced pole fabrication techniques by Indigenous carvers and rerouted designated pole installation sites, while global warming has introduced new migrations of wood-damaging insects to southeast Alaska. The Alaska cruise ship tourism boom has generated a spike in park attendance, which correlates with an influx in pole graffiti and damage associated with vandalism. Atmospheric and environmental pollutants are being emitted by nearby "overflow" cruise ships now docked in close proximity to Totem Trail. Conversely, the absence of tourists and community members along the trail during the height of the COVID-19 pandemic escalated bear and squirrel activity, resulting in more severe damage to the lower parts of poles and new nesting areas inside support posts and pole cavities.

As a result, conservators, carvers, and park staff have had to pivot their approaches to preserving, carving, and caring for the totem poles and reevaluate current practices being implemented. This presentation will cover the transformation of preservation efforts by HFC Conservators along Totem Trail throughout the years, the impact of climate change and tourism, recent collaboration and insight from local carvers, and the trajectory for preservation efforts in the future.

### Bones, Epoxy, and Cotton Balls, Oh My!: The Treatment of Two Thornton Dial Artworks

Kaela Nurmi

Thornton Dial (1928-2016) was a bricklayer, an iron worker, and a carpenter, but today he is most well known as an artist. He spent his life in Bessemer, Alabama where he developed a rich self-taught practice using found objects that had been used and discarded by others to create art. He would join his found materials together and then finish everything in paint, noting that the work, "ain't finished till you got the feeling that it's finished." Dial's work was largely unknown until the founding of the Souls Grown Deep Foundation in 2010 which led to his art being in museum collections across America.

Glenstone's collection has two works exemplifying Dial's use of found objects, The Color of Money: The Jungle of Justice, 1996 and The Art of Alabama, 2004. Both artworks required conservation attention, offering a unique opportunity to delve into a singular Artist's process while developing individual treatment plans for each piece's unconventional materials. The Color of Money is an assemblage painting with overlayed found materials, including clothing, plastic toys, faux plants, epoxy, and metal, secured to canvas on wood. The surface

is finished with dark green spray paint, with splashes of red, yellow, orange, and blue paint scattered across. The Art of Alabama has three-components: an assemblage sculpture, a wooden box, and a yellow painted concrete statue. The assemblage is made of wood, metal cans, plastic bottles, bones, fabric, and metal scraps, all joined together with wires and paint splattered across the surface. The wooden box is painted, with collaged newspaper clippings on one side. Treatment for The Color of Money needed to address a detached cotton ball, detached and cracked epoxy, and areas of lifting components. The Art of Alabama required a more complex treatment, including stabilizing and filling losses in the concrete statue, consolidating lifting newspaper and fragile paint on the wooden box, and consolidating the lifting paint throughout the assemblage.

The Color of Money includes plastic bags, Splash Zone epoxy, cotton balls, and acrylic paint, all of which I sourced to create mock-ups and carry out extensive testing prior to treatment. With The Art of Alabama, the condition issues were more difficult to re-create with the available resources and instead relied more on my past-experiences treating similar materials. Pulling from paper and paintings conservation, the results of my The Color of Money tests, and conversations with conservation colleagues, I developed comprehensive treatment plans for both artworks. During the treatments, I was confronted with unforeseen challenges - unidentified bones, paint that was stiff and brittle, wood that was significantly deteriorated, and fragile plastics. With each obstacle, I modified my techniques, ensuring I approached distinct materials with the necessary care. The treatments were successful in stabilizing all components, allowing both artworks to be safely exhibited. Storage solutions were modified for better preservation when the works are not on view. These two Dial artworks shared many similarities, but each piece presented its own set of challenges that strengthened my understanding of materials and broadened my conservation toolbox.

### Adventures in (Re)Constructing and Conserving a Thai Thammat

Stephanie Hulman, Katharine Shulman, Angela Elliott, Gregory Bailey, Jennifer Mikes

As part of a 2002 gift from the Doris Duke Charitable Foundation, the Walters Art Museum acquired a large architectural Thai Buddhist pulpit or thammat. A thammat is a raised platform used in temple complexes by Buddhist monks for teaching and recitations. Historical examples of thammats in Thailand range from small thrones to elaborate pavilions. The Walters' thammat is an elaborate example outside of Thailand and, at fourteen feet tall, an unusually large object in the museum's collection. The raised wood platform, accessed by ladder, is topped with six columns that support a double-eaved roof with heavily ornamented gables, cornices, and brackets. The entire wood structure was originally assembled using pressure-fit wood joinery with a limited number of forged nails. Much of the exterior surface is decorated with an elaborate scheme of carvings, lacquer, and spectacular mirrored glass mosaics.

The Walters' thammat is a rare example of this type of architecture in a museum collection. When acquired, it was disassembled into over 100 pieces and placed in storage. Almost two decades had passed when the curatorial team decided to include it in a new permanent installation of Asian and Islamic art. Objects conservators coordinated the project to assess, document, treat, and assemble this object for the first time at the museum. As much architecture as object, the thammat posed many challenges, including minimal prior documentation of the construction, limited onsite working and storage spaces, challenges in moving large sections, deterioration of original components, a non-original coating, work in public spaces during COVID restrictions, and the coordination of a large team of staff and outside contractors to accomplish the work.

Examination, historical research, and materials analysis yielded new insights into the original manufacture, history, and condition of the thammat. Among the greatest surprises and challenges was the degree to which the structural integrity of the thammat had been compromised by previous interventions. While treatment of decorative surfaces was difficult and time-consuming, significantly more effort than originally anticipated was needed to reestablish structural integrity for safe installation- and eventually, deinstallation. The intricacies of this puzzle and the large size of the thammat necessitated creative problem

solving to test fit sections numerous times and carefully label and document each part.

This work culminated in two days during which custom scaffolding was built and conservators collaborated with specialized contract art handlers to finalize the assembly. The thammat has anchored the new Southeast Asian galleries at the Walters since 2023, where it continues to engage visitors with its scale, placement, and glittering decoration. Throughout the project, cross departmental museum staff worked together to share discoveries and develop more interactive and inclusive ways of sharing findings in the galleries.

#### **Arsenic: A Collection Component**

Lisa Goldberg, Timothy Greening, David Hinkamp, Ingrid Neuman, Nancie Ravenel, Fran E. Ritchie, Kerith Koss Schrager, Julia Sybalsky, Melissa Tedone

Arsenic is a well-known hazardous material with potentially severe short and long-term health consequences that was a common component of 18th, 19th, and 20th century collection items. These items include a wide variety of natural science specimens and taxidermy mounts, pharmaceutical materials, dyes in textiles and paper, and historic dry pigments. While our understanding of the breadth of arsenic presence in cultural heritage items is growing, especially with recent work on its identification in the "Poison Book Project," it remains difficult to determine actual exposure risks to conservators, museum staff, and the public.

This joint session between the Preventive Care Network and the Object Specialty Group will acquaint participants with the range of collection items containing arsenic as an intrinsic component, and will help initiate discussions among conservators about hazards, handling, and access. Panelists will present brief case studies to provide examples of risk management, exposure assessments, and handling protocols to control risks associated with these collection items.

## Steel Yourself: Addressing Internal Secrets of A Beverly Pepper

Claire Taggart

The founders of the Nasher Sculpture Center, Raymond and Patsy Nasher, began cultivating an exemplary collection of modern sculpture in the mid-1960s. During the proceeding decades of dedication to the arts, they befriended practicing artists; one such artist was American sculptor Beverly Pepper (December 20, 1922 - February 5, 2020). The Nasher archives contain exchanges between the Nashers and Pepper outlining acquisitions or offering personal updates. These letters – and other artwork archives – highlight the intimate nature of the Nashers' collecting practice. Intermixed with these exchanges are questions regarding restoration and care of two Pepper works in the Nasher collection. Early on, Black Angel (1967) and Venezia Blu (1968), two large-scale outdoor sculptures composed of stainless steel and painted interior mild steel panels, posed challenges to their caretakers. This is evident in the need for repainting at regular intervals over the last forty years.

As one of the first artists to use and experiment with various steel alloys (including stainless and Cor-Ten), Pepper did not shy from complicated techniques. In 1962, she was invited to make work for a festival in Spoleto, Italy, for which she pushed through gender norms of the time and learned to weld. In these early metal sculptures, she sought to utilize these techniques and create a – seemingly more manageable – hollow form. Both Black Angel and Venezia Blu are composed of these repeating square units, as are others in collections around the world.

After reviewing conservation documentation for Black Angel spanning four decades, it became clear that nearly every Dallas-based sculpture practitioner had repainted the interior mild steel panels. Yet the underlying cause of persistent paint failure remained. Unfortunately, the hollow form composed of stainless steel and mild steel had fostered a generative environment for galvanic corrosion. While not unusual that this combination of factors would coalesce into material failure over time, additional mysterious factors within the construction of the pieces meant that the many documented attempts made to passivate and repaint the surface would only be temporary.

Knowing of structural issues concerning these works, Pepper encouraged employing outside specialists to repair her work, including auto-body experts. With approval from the Beverly Pepper studio and foundation, rather than attempting another treatment in-house, Black Angel was sent to a trusted stainless steel fabricator for assessment and repainting earlier this year. What was discovered upon paint removal resulted in the unforeseen decision to replace the corroded mild steel panels with stainless. This intervention was pursued after verification from stakeholders, as the goal was to restore the work to exhibitable form once again. Collaboration between the Nasher, the fabricator, and the artist's studio and foundation aimed to set a benchmark in the treatment of these complex constructions; it also lead to a better understanding of the desired paint surface sheen and paint system options.

Beyond outlining material replacement and paint requirements, this paper hopes to prepare caretakers for what exists within the framework of these important pieces, and help catalyze action when faced with heavy decisions about their treatment.

## **Hubris or Humility? My Treatment Approaches** to Working with a Yoruba Orisa Figure of Esu

Céline Wachsmuth

During my graduate internship at the Denver Art Museum, I worked on many objects slated for display in the reinstallation of the Arts of Africa and Arts of Oceania Galleries. Foremost among them was my work with a carved figure of the Yoruba orisa, Esu. Esu is commonly known as the "Trickster God" and this Esu figure had a few tricks of his own to share with me and the laboratory. The main condition issue with this Esu figure was the significantly denatured hide strands. In addition to being brittle, powdery, and inflexible, they are holding a significant amount of weight from being threaded with cowrie shells. This figure has undergone several previous treatments, most of which were failing prior to my treatment in 2023. Not having much experience treating hide, I turned to my colleagues for advice. Amidst the suggestions and conversations, I was pointed in the direction of an Alaska based conservator with a trick for using Tyvek to line and support hide. I tested this method and tweaked it to suit the needs of Esu's treatment. This talk will detail my conversations and experimentation with different backing materials, adhesives, and application methods.

Additionally, this talk will explore an ethical debate that started when I first began the initial assessment and background research. Esu is an orisa who receives many offerings and it is likely that this figure would have received them during his use-life. When confronted with this knowledge regarding an Indigenous American object, there is increasingly a professional consensus to find a way to leave some sort of offering for the material or being in question. This is not so straightforward for powerful objects of other cultures. I struggled with whether it would be right of me, a white non-Yoruba person, to leave offerings for Esu. I slowly grew the conversation to a wider net of colleagues resulting in mixed opinions. Ultimately, I decided to leave offerings. It was after I made this decision that I learned the then Anderman Family Curatorial Fellow for Arts of Africa is Yoruba and spoke with him and the Mellon Curator of Native Arts about my decision. I will detail my thought process and conversations in hopes of continuing the nuanced discussion of leaving offerings when there is no cultural representative who can be easily contacted for quidance.

## Huh...That's Weird: Revelations and Reflections from the Treatment of a Heavily Restored Staffordshire Pearlware Tankard

Allison Kelley

A heavily restored early 19th century Staffordshire lead-glazed refined earthenware tankard bearing the rare inscription "AMERICA INDEPENDENT 1776" was recently gifted to The Colonial Williamsburg Foundation. With the 250th anniversary of the Declaration of Independence approaching, a great interest in displaying this tankard meant extensive conservation treatment needed to take place. The actual condition of the tankard on arrival was obscured by overpaint covering the entire surface. No records of prior restoration are known despite the object belonging to the family of the donor since the mid-19th century. Throughout this project I had to make treatment decisions in response to new information about the condition of the tankard as it was revealed, developing a plan in phases without knowing what the next phase would require. The surprises encountered along the way led to investigations that often yielded more surprising results.

Digital X-radiography prior to treatment revealed an impact fracture with associated fragments, cracks, and voids and past restoration campaigns with invasive repairs including extensive removal of original material to insert six metallic rivets across the cracks. Phase one of the treatment required removal of the overpaint to understand the condition of the ceramic surface. After numerous applications of a Laponite RD poultice with acetone, I removed the coating layers revealing quite a few surprises including a glaze that was heavily abraded in areas of past repair, localized amorphous black/brown stains, and lead rivets that were corroding and lifting from their cavities. This secondary examination revealed that the rivets were likely a preventive measure against the worsening of the cracks and served no structural repair function. FTIR analysis lent insight to the prior restoration materials used such as PVA bulked with gypsum, helping date some of the previous repairs to the mid-20th century. A ceramic repair reference book from this period makes specific mentions of techniques requiring the application of a rotary blade to remove ceramic body followed by the insertion of repair materials, almost identical descriptions of the present lead repairs and a loss at the rim of the tankard that was mechanically altered before filling. The amorphous, localized stains were less forthcoming with their origin story. SEM-EDS and XRF analysis were largely inconclusive and visual examination only confirmed the strange nature of the stains present both in areas with exposed ceramic body and beneath glaze that was intact.

With some questions answered and some remaining, I had to move forward with treatment despite a degree of uncertainty. I consulted recent publications, colleagues, and my own intuition for guidance and determined that safety and aesthetics were the priorities of this treatment. With full curatorial support, I proceeded with removing the lead rivets entirely as they posed a health and safety risk, were actively deteriorating, and served no structural purpose. I pursued stain reduction via bleach application where possible to unify the visual appearance of the tankard. The remaining aesthetic compensation aims to approach the original intention that the previous owners clearly valued without obscuring the present condition overall.

## Art in the Swamp: Outdoor Sculpture Conservation at the New Orleans Museum of Art

Ingrid Seyb

I came to the New Orleans Museum of Art in 2022 to take up the position of the first ever on-staff objects conservator, a role funded by a grant from the Mellon Foundation. This presentation will detail the work involved in founding a new program of outdoor sculpture conservation in a harsh climate, including research, maintenance, and remedial treatments.

NOMA has one hundred sculptures displayed outdoors, soon to be one hundred and one, mostly sited within the Sidney and Walda Besthoff Sculpture Garden which surrounds the museum on its north and west sides. Some of these sculptures were previously installed for decades outside the headquarters of K&B Incorporated, the result of passionate collecting by the Besthoffs during Sidney's years as CEO of that company. In 1998, the Besthoffs began aggressively donating works to NOMA for a planned 5 acre garden, which opened in 2003 with fifty sculptures. Steady donations continuing after the opening, mostly from the Besthoffs, were capped in 2019 with an expansion of the garden footprint by 6.5 acres and the addition of 27 further sculptures. Together, the two halves of the garden today have become a city institution in their own right: a magnet for out-of-town visitors, and a much-loved hangout and exercise location for residents.

Outdoor sculpture requires constant attention even in the most benign of climates, which New Orleans certainly is not. There are a number of serious challenges to preservation. Though only one sculpture suffered major damage from Hurricane Katrina in 2005, hurricanes are a constant concern, particularly for the three kinetic works. We often find paints have a shorter lifespan than the manufacturer suggests, likely due to the heat and humidity. The garden ponds and embankments teem with birds, nutria, and other animals which seem to

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delight in leaving droppings on all the sculptures. Visitors frequently climb on the sculptures, despite signage and staff presence. With only a few days per year of help from NOMA's small and busy team of preparators, just keeping the sculptures clean is a challenge. A project management app helps with communication and documentation of group work days, streamlining a necessarily diffuse process and preventing confusion about which sculpture gets which treatment practices.

Beyond simple cleaning and waxing, many sculptures are overdue for major treatment. I began to study the treatment histories, paint systems, patinas, and artists' preferences as soon as I arrived, but much is left to discover. In some cases, these issues are thorny, such as the Arnaldo Pomodoro, for which executing the artist's current preferences would result in a substantial change from the sculpture's original 1971 appearance. Several sculptures, in my opinion, were unsuitable for permanent outdoor display due to materials or design, and conversations are ongoing about which of these, if any, might be possible to relocate indoors. Preservation choices must be made in balance with the artists' visions for their works, the needs of visitors, and the integrity of the garden as a total work of art in its own right.

#### **Paintings**

#### A Darkened Canvas and a Mysterious Hand: Analytical Investigation and Sustainable Approaches to the Cleaning of Morris Louis 'Slide' (1962)

Soraya Alcala, Per Knutås, Silvia Russo

Over the past decades, the conservation field has explored new methodologies to replace traditional approaches to cleaning cultural heritage. Atmospheric oxygen, lasers, hyper-absorbent tissue, and gels are a few additional "tools" to safely control the removal of surface deposits or oxidized materials.

The Museum of Fine Arts Houston (MFAH) has partnered with the GREen Endeavor in Art ResToration (GREENART) consortium (G.A. 101060941, www. greenart-project.eu) to test greener alternatives for the cleaning, coating, consolidation, and packaging of selected artworks within its extensive collection. Among these artworks, this contribution focuses on Morris Louis' Slide (1962) and presents preliminary considerations related to its analytical investigation and cleaning treatment.

In his last years, American Color Field painter, Morris Louis (1912 – 1962) perfected his technique based on thinned washes of acrylic pigments used to "stain" unprimed cotton duck canvases. During the Stripe period, which lasted ten months before his untimely death in 1962, Louis created fewer than 75 paintings. These Stripe works are characterized by adjacent tall bands of vibrant colors obtained by pouring highly diluted Leonard Bocour Magna acrylic formulations to saturate the canvas weave. Louis' unique use of large canvases allowed him to control the flow and stain of the acrylic paints, resulting in some of the most iconic works of Color Field Painting.

Slide, an example of Louis' Stripe paintings in the MFAH collection, has several conservation issues despite its generally stable condition. An overall yellowing is present, along with significant areas of staining that disrupt its intended appearance. The central area of blank canvas with uneven stains appears to have resulted from a cleaning attempt. Liquid staining in a drip pattern heavily affects the painting, especially at the lower edge, making it unsuitable for displaying in the museum galleries. The tacking edges were covered with black electrical tape, leaving a gray residue when removed. In 2013, some unsatisfactory cleaning tests ranged from agarose gel with citrate, DTPA, and benzyl alcohol to buffered solutions thickened with xanthan gum and free solvents.

For this conservation campaign, the painting was first documented using technical photography, colorimetry, and digital microscopy. Then, MA-XRF investigation of the painting was carried out to characterize the materials used and identify areas with diagnostic or uneven elemental composition that could help us understand the appearance of the painting to its conservation history. The

canvas' overall discoloration could, in fact, have been caused by oxidation, a coating, or a past treatment involving a surfactant that has since oxidized as the covered areas of the canvas do not present discoloration. MA-XRF investigation revealed the unexpected presence of titanium-rich areas, uncovering the image of a human hand in the center of the canvas, whose origins are still under study.

In a second step, cleaning tests using greener alternatives were performed, which are discussed within this contribution. These preliminary attempts were tailored to the characteristics of the painting and designed within the GREE-NART project with the aim to remove both staining and electrical tape residues and revive the appearance of the painting.

#### **Discovering Dalí**

Allison Langley, Katrina Rush

In preparation for the 2023 exhibition Salvador Dalí: The Image Disappears, paintings conservators, scientists, and curatorial colleagues at the Art Institute of Chicago took a deep dive into the museum's holdings of oil paintings by Salvador Dalí (11 May 1904 – 23 January 1989). The team carried out examinations, scientific analysis, and archival research to understand how Dalí created pictures in the early 1930s. While most of the museum's works from this period are small in scale and populated with figures, animals, and objects painted with tightly detailed brushwork, one painting stood out with its uncharacteristic loose brushwork, rubbed surface appearance, and relatively empty composition. Known for many years as Visions of Eternity, this unusually large Dali painting has been a true cornerstone of the Art Institute's collection of modern and contemporary art since its acquisition in the late 1980s. However, gaps in the provenance and decisive differences in the materials and handling, distinguished this work from the others, raising questions about the origin of the painting. In tandem with the ongoing research, the painting was treated to remove a discolored coating and layers of overpaint. The conservation treatment proved instrumental to the understanding of the painting, revealing condition issues that served as clues to its history, and fueled the collaborative research that ultimately resulted in a new title, a new creation date, and a new origin story. This paper describes the results of the technical examinations of the Art Institute's Dali paintings, and elaborates on the series of unexpected conservation and curatorial discoveries that revealed Visions of Eternity to be a long-forgotten portion of a famous mural from Dalí's 1939 New York World's Fair surrealist pavilion, Dream of Venus.

## Afraid of The Unknown? What Are Barnett Newman's Reds, Yellows and Blues?

Corina Rogge, Bradford Epley

Barnett Newman (1905-1970) was one of the most iconic artists of the Abstract Expressionist movement in the United States of America, known for his large color field paintings that in their expression of composition and color struck many viewers as repetitive. One befuddled individual after viewing a Newman show asked "How simple can an artist be and get away with it? There was absolutely nothing there."[1] Despite the apparent similarity of his works to casual observers, Newman was very leery of repetition; his wife, Annalee, said that he "hated redundancy, that he wanted above all to avoid repeating himself and that each painting had to be for him like a person, a unicorn."[2] This concern may have been why Newman only ever created one formal series of paintings that he considered a cohesive grouping: Stations of the Cross: Lema Sabachthani (1958-1966), which was limited to a black and white palette. He did sometimes choose to revisit a concept or problem and created series of paintings with the same name.[3] One exemplar of this category are the four paintings titled Who's Afraid of Red, Yellow and Blue (1966-1970), which explored the titular colors. Newman created only a single other work that contained all three primaries, Chartres (1969), one of his few works exploring triangular-shaped canvases. Despite containing the three primary colors, the title of this work indicates Newman did not consider it part of the main series.

The four works in the Who's afraid series, created over a period of four years varied in their media, oil or acrylic, and in their size, the smallest being the first of the series at  $190.5 \times 212.9$  cm and the largest the last at  $274.3 \times 604.5$  cm. The first of the series was sold in 1967; thus, it was not available to Newman

as a reference when finishing Who's Afraid III (1967-68) or during the creation of Chartres and Who's Afraid IV (1969-70). These works have also never been exhibited together, leaving photograph-based comparisons as the only means to assess their similarities- a fraught undertaking. Thus, we do not really know what Newman's reds, yellows, and blues are- are they even the same color? To understand Newman's artistic vision and his interpretation of the primary colors we have scientifically documented the color of the reds, yellow and blues on Chartres and Who's afraid I, II, and IV, and the materials he used to create them. Our findings reveal that while he had a clear and consistent vision of what 'red' is, his yellows and blues, particularly the latter, varied widely both in tonality and materiality, a previously unappreciated and surprising complexity of his work.

[1] M. Stevens: 'Power and Melancholy', New York Magazine, Jan 16, 1995 (1995), pp.58-59, p.58.

[2] Y.-A. Bois: 'On Two Paintings by Barnett Newman', October, 108 (2004), pp.3-34, p.3.

[3] Examples include Onement I - IV and White Fire I - IV.

## Shedding Light on the Master of Light: Technical Studies of Five Paintings by Joaquín Sorolla y Bastida

Karen Trentelman, Devi Ormond, Kendall Francis, Olivia Kuzio

Joaquín Sorolla y Bastida (1863-1923) was one of the most prominent Spanish artists of the late nineteenth/early twentieth centuries. His exceptional talent in capturing the brilliant luminosity of his Mediterranean surroundings and native Spain earned him the title 'Master of Light'. An investigation into the materials and techniques of five of his paintings in the collection of the J. Paul Getty Museum - Pepilla and her Daughter (1910), The Wounded Foot (1909), Hall of the Ambassadors, Alhambra, Granada (1909), Corner of the Garden, Alcazar, Sevilla (1910), and Court of the Dances, Alcázar, Sevilla (1910) - provided the opportunity to study Sorolla's methods, use of materials, and approach to portraiture, landscapes and social/beach scenes at a singular moment in his career.

Pepilla and her Daughter is a portrait of a Romani woman and her child festively adorned in traditional flamenco-style Andalusian dresses. Its conservation and current gallery hang mark an important moment of visibility for the painting, now on display for the first time in over two decades. During its treatment, a technical study was carried out to elucidate Sorolla's material and compositional choices. Examination of the canvas preparation, underpainting, pigments, and paint application were carried out using infrared reflectography (IRR), photomicrography, scanning electron microscopy with energy dispersive X-ray spectroscopy (SEM-EDS), and macro X-ray fluorescence (MA-XRF) mapping. The findings from these analyses provide primary evidence of Sorolla's working practice as documented in contemporary photographs and letters by the artist. For example, that he cut his own canvases to unique sizes was supported by thread count analysis, and that he used post-industrial, synthetic paints purchased from commercial suppliers was supported by the identification of pigments including cadmium yellow, chromium oxide green, and cobalt blue by XRF measurements.

The other four paintings in the Getty's collection, which include a beach scene and three landscapes, were likewise studied. Photomicrography has highlighted similarities in Sorolla's creative strategies for paint mixing and application among these scenes to achieve specific visual effects. For example, wet-inwet swirling of multiple colors together to impart a rippling, dynamic quality in dappled, sunlit areas, and the depiction of three-dimensional architectural details such as stucco-like textures and balusters through deliberate flicks of paint. Although still ongoing, preliminary results suggest Sorolla was consistent about his choice of pigments - and pigment mixtures - to evoke a particular mood. For example, the deep, warm tones in Pepilla elicit the tender feelings in the mother-daughter bond that is portrayed, while the beach scene of The Wounded Foot is composed of lighter, brighter, and more energetic color mixtures. Colorimetry and color difference analysis of representative colors from each painting will be visualized in CIELAB space to examine these trends and confirm these observed patterns quantitatively, while XRF and RIS-based pigment identification and mapping will provide a snapshot of Sorolla's palette during these two years. Because his paintings are found in collections across

the US, these findings will hopefully inspire additional studies to establish a more comprehensive overview of Sorolla's working methods and materials over the course of his career.

## While Angels Watched; Restoration of Thomas Cole's Monumental Painting, The Angel Appearing To The Shepherds

Mark Lewis, Marla Curtis, Jennifer Myers, Katelyn Rovito, Catalina Vasquez-Kennedy

In February 2022, conservators at the Chrysler Museum began examining and treating Thomas Cole's monumental, 8' x 16' painting, The Angel Appearing to the Shepherds, painted in 1834. This treatment was carried out while it remained on view in the American art gallery. Visitors were welcome to watch and ask questions to learn more about conservation, the artist, and 19th-c painting practices.

Thomas Cole was a well-known landscape painter and founder of the New York City-based group of landscapists, the Hudson River School. The Angel Appearing to the Shepherds is Cole's largest canvas-it measures more than eight by fifteen feet-and one of his earliest and most ambitious attempts at historical landscape painting. Though it was completed in just a few short months, he began planning and sketching three years prior during his first trip to Europe.

Shortly after its completion, the mural hung in the Boston Athenaeum. When the building caught fire in 1889, the canvas was taken off the stretcher and rolled without any additional solid support and put into storage, where it remained for decades. A photograph, taken in 1948 when the painting was briefly unrolled, showed the extensive tears, creases, and widespread paint loss incurred in storage. When the painting was restored in the 1970s, the canvas was wax-lined to a new, heavyweight fabric and the losses were filled and retouched.

Although the structural work from the earlier restoration remained stable. The painting was selected for treatment because the synthetic coating applied in the 1970's had yellowed and darkened significantly and the retouching no longer matched. Many of the details of the composition were obscured. The challenge being that it is not only one of the largest paintings in the collection but also the most badly damaged, which would become apparent as the treatment proceeded.

Conservators thoroughly examined and documented the painting to better understand the materials used by the artist and how it was painted. Technical examination included cross sectional analysis, ultraviolet, infrared and X-ray florescence. This provided valuable insights into the condition and structure of the paint layers and revealed the artist's compositional changes.

After extensive testing less toxic solvents were chosen to remove the discolored coatings and retouching. A layer of B72 acrylic resin varnish in Shellsol A100 was applied to the surface by brush. Losses were filled with a wax resin material which could be embossed with canvas texture using heated spatulas and silicone molds. Final retouching was carried out with Gamblin aldehyde paints.

Although it was a huge undertaking, requiring hundreds of hours, the results were quite rewarding. The collaboration between our team of conservators proved effective at problem solving throughout every step of the process. Interacting with the public gave us the opportunity to share our work and to engage with visitors in a direct and meaningful way.

#### Blurred Lines: Techniques, Materials, and Ethical Considerations in Conserving the Hard-Edge Paintings of Leon Polk Smith

Kelsey Marino, Elizabeth Nunan, Kaitlin Ammon

Leon Polk Smith (1906-1996) was a singular and fascinating queer artist of Native American ancestry. During his lifetime, Smith showed nationally and internationally in major museums and historically important galleries, yet art critics often lamented his underappreciation. Now recognized as a forerunner

of American Hard-Edge painting in the 1950s, his distinctive shaped canvases and multi-canvas assemblages stand out as unique explorations of color, space, and form. Smith's lifelong exploration of these artistic elements was influenced by the Midwest landscape of his childhood, spent on Native American territories in present day Oklahoma, and the cityscape of New York City, the chosen and loved home of his adulthood. Contemporary art conservators are familiar with the inherent susceptibility of color field paintings to damages that can alter how the work is perceived, with large cracks, stains, and other changes having the ability to severely disrupt the intended appearance. Smith faced these challenges in repairing his own work during in his lifetime, addressing the damages that arose from frequent handling, packing, and shipping. In addition to his own occasional restorations, the artist also had an affinity for the NYC-based conservator Daniel Goldreyer, preferring his interventions over other recommended professionals.

Through a relationship with the Leon Polk Smith Foundation, the authors have examined hundreds of Leon Polk Smith paintings and acquired a detailed understanding of the artist's changing working methods over his lifetime. Combining primary source records from the artist's archive - including artist interviews, personal correspondence, and historic conservation records - with in-depth visual examinations and empirical investigation, we have created a foundational text for understanding the roles that the artist's material's natural degradation, extensive exhibition history, and past restorations play in the long-term preservation of the artist's oeuvre. We discuss the artist's influential career, studio practice, and technique; identify the artist's palette and materials, historical framing, and display; and discuss his attitude toward the conservation of his works and the consequences for their future treatment.

## Called to Create/Called to Conserve: An Auxiliary Support for a Painting on Plywood, Birdman Trainer by Joe Light

Sue Ann Chui, Derek Lintala

A recent acquisition from the Souls Grown Deep Foundation by the National Gallery of Art, Birdman Trainer by Joe Light, a painting in enamel on plywood, required treatment to stabilize the structure, and the fabrication of an auxiliary support for display in an exhibition that showcases this new collection.

In 2020 the National Gallery of Art acquired a selection of 40 artworks from the Souls Grown Deep Foundation, all made by black artists from the southern United States in the 20th century. In preparation for the exhibition that showcases this collection, Called to Create: Black Artists of the American South, which opened in September 2022, many pieces required treatment that involved four conservation departments at the museum. One of these pieces is Birdman Trainer, 1987, by Joe Light, painted in enamel on plywood. In addition to treatment to stabilize the structure, the fabrication of an auxiliary support was required for its safe display.

All of the artists in the Souls Grown Deep collection recycled materials to create their works. For his painting support, Joe Light re-used a section of wood paneling, a thin 3-ply structure, the type you would find in a residential setting in the mid-twentieth century such as Prefinished V-Plank Weldwood Plywood for interiors. In this instance, he applied the paint to the original backside of the paneling. In its former context, this side would have been the front. As formerly used material, pre-existing damage was present in the support, but the goal of the treatment was to only stabilize the structure, and to preserve the condition in which the artist found the panel.

As the painting is not intended to be framed, and the plywood paneling was never meant to be self-supporting, an auxiliary support was designed to allow the panel to be displayed upright without sagging. For thin panels, a perimeter strainer is often used, but for this painting the design was modified to give the appearance that the panel was self-supporting. The attachment system was simplified from a spring mechanism to a washer since the panel is a manufactured wood product that was fabricated to be dimensionally stable and non-reactive to the environment. The epoxy adhesive that is normally used to attach the hardware to the panel, Araldite 1253, unfortunately, was discontinued, so testing was carried out to find a suitable alternative. By applying traditional approaches to a non-traditional painting, the treatment of Birdman Trainer was

a success by allowing it to be safely displayed and appreciated by the public.

(Note: A poster and shorter version of this paper will be presented at the conference Wood Science and Technology III, October 19-21, 2023 Maastricht, The Netherlands)

#### From D-List to the A-List: Embracing Maria Luigia Raggi's Unexpected Painting Supports

Blair Bailey, Robert Simon, Daniela Molinari

Following the 2017 #MeToo movement, many large Western museums, galleries, and art fairs mounted exhibitions exploring the work of female artistshistoric, modern, and contemporary- in an effort to better reflect our world. These efforts have pushed scholars to expand the 'European Old Master' canon beyond the likes of Sofonisba Anguissola, Artemisia Gentileschi, and Élisabeth Vigée Le Brun to include the works of talented and well respected during their time artists like Elisabetta Sirani, Lavinia Fontana, and Rosalba Carriera. As museums and collectors alike rush to acquire art reflecting all genders in their Old Master collections, the emphasis on these newly re-appreciated artists has increased general art market interest for old master paintings by lower tier, less well known female artists.

Until recently, a group of Italian Rococo style capricci (idealized landscapes) were attributed to "Master of the Prato Capricci," with the Prato referencing the Museo Civic in Prato housing many of the works. Two paintings, clearly by the same artist as those in the Prato, appeared on the art market. However, these two were initialed and dated thus allowing all of the works to be assigned by art historian Consuelo Lollobrigida to their original artist- Maria Luigia Raggi. Maria Luigia Raggi (1742-1813) was a Genoese cloistered Turchine nun who may have escaped from her convent for a period of time to Rome- some might even say a she was a nun on the run. Lollobrigida wrote a monograph on the artist and her work as part of her discovery.

During recent conservation treatments of two signed and dated paintings, technical analysis was carried out to determine Raggi's methods and materials. Early scholar cataloging efforts noted the Master of the Prato Capricci worked in tempera and watercolor on paper attached to canvas. However, during the course of these treatments at ArtCare Conservation, it was determined these works were executed directly onto a primed canvas with no paper support present. By embracing these unexpected supports and working methods, this discovery has encouraged additional investigation and display of Raggi's work in museums around the world. This paper will discuss Raggi's materials and methods, including XRF analysis of her pigments, and what both of these may mean for our understanding of her within the larger art market of the time, as well as her impact on the art market today.

### Experiments with Vinyl Paint: Technical Analysis of Two Paintings by Lancelot Ribeiro

Patricia Smithen

Lancelot Ribeiro (1933-2010) was an Indian-British abstract painter from Bombay who settled in England in 1962. This was a fertile period for painterly experimentation in London, with local artists becoming influenced by the American Abstract Expressionists exhibited at the Tate Gallery, the American Embassy and in new commercial galleries featuring avant-garde art. Many artists were looking for alternatives to traditional oil paints and they turned to a range of options; Gillian Ayres (1930-2018) purchased Spectrum vinyl dispersions to mix her own paint in the mid-1960s, Paul Huxley (1938-) recalled buying high quality vinyl emulsions from a shop in Turnham Green and Marc Vaux (1932-) worked with oil-based house paints before turning to acrylics and, later, incorporating nitrocellulose automobile paints. Some artists, like Ribeiro, directly approached resin manufacturers to obtain experimental mediums for their practice. Ribeiro had heard about poly vinyl acetate (PVAc) medium from his brother, artist F.N. Souza (1924-2002), who purchased 'Marvin Medium' directly from the industrial suppliers, Margros. Ribeiro was enterprising, approaching many industrial suppliers for information and samples. In the artist's archive, managed by his daughter, Marsha Ribeiro, there are fifteen responses to his inquiries, including one from Scott Bader, who recommended that he use acrylic binder instead of

PVAc, providing a technical leaflet and sample of Texicryl AM655.

A technical study of two works on cotton canvas from 1970 by Ribeiro illustrates how the artist made and applied his own paints. Ribeiro incorporated inks, dropping liquid colourants into viscous media resulting in branched patterns, contrasting these with smooth glossy fields or raised patterns of translucent PVAc paint, exposed ground layers and touches of felt tip pen inks. This paper presents the analytical and imaging results, comparing these to the technical observations of the paintings to highlight how they complement each other. Techniques used include scanning XRF, FTIR, HIROX microscope examination, and imaging with the VSC8000.

The experimental painting techniques by artists can increase the risks of inherent vice. Observations of change and degradation in these two works will be featured, along with conservation issues resulting from the applications of thick films of PVAc paint.

### Rediscovering and Restoring The Harvard Art Museum's Cardona Altarpiece

Celia Chari, Cristina Morilla, Alexandra Chipkin

Do you know [of] a Spanish primitive that was more or less ruined? Is it of any use to you as study piece? Can it be saved?

With these words John Coolidge, the former director of what is today the Harvard Art Museums (H/AM), reflected in 1949 on the so-called "Cardona Altarpiece", an extraordinary 14th century panel painting attributed to Arnau Bassa (1348). This "Nativity with Saints" represents one of the finest known examples of gothic workshops in Barcelona and was dismissed for decades at H/AM due the complex condition issues of the support and paint layers. In 2022, as part of a broader program focused on the recuperation of the overlooked legacy of Spanish paintings at H/AM, the Cardona Altarpiece was chosen not only to recuperate a never-exhibited masterpiece, but also make a broader contribution to the Museum's mission through research, teaching, and dissemination. Initially thought to require routine treatment, the need for extensive structural conservation and integration of irreversible conservation campaigns was eventually revealed. This paper delves into the journey of managing such unforeseen challenges.

The Cardona Altarpiece tells us a story of displacement, disassembly, and reintegration. This work is a fragment of a much larger altarpiece now dispersed between Spain (National Museum of Catalonia) and the United States (H/AM). During examination, it became apparent that not only had the work been separated from the rest of the altarpiece and cut down but was a pastiche of various original elements reassembled to look like an integral painting for the art market. In its current form the fragment appears to be a full altarpiece, including a central panel featuring a banco with three roundels and two flanking side pinnacles. A comparative study with the other part in Barcelona revealed that the pinnacles had been raised, roundels had been nailed to the painting's lower portion, and lower passages of the side pinnacles were transferred to new wood supports (by means of the strappo technique). This new structure was held by a heavy dense mahogany cradle.

The rich journey of this fragment is further intertwined with at least two significant interventions during the 20th century. Archival documents from the 1920's found in the Berenson archives (I Tatti) as well as scientific evidence gathered during the treatment, provided valuable insights into the painting's previous appearance around the time it was being considered for the American market. The dilemma regarding whether to preserve the previous overpaints or reveal what is left of the original remains on the table.

Effectively navigating these unforeseen challenges demanded a collaborative strategy, engaging the expertise of specialists from The Metropolitan Museum of Art, The National Museum of Catalonia, Harvard's Art History department. The ongoing intervention requires careful consideration of time, authenticity, and memory as fundamental elements of the restoration process. It requires a technical art history-oriented display that clearly conveys the material history of this fragmented artwork within the context of the museum. This treatment underscores the importance of interdisciplinary collaboration and creative problem-solving.

#### **Case Study: An Alternative To Canvas Lining**

Oliver Watkiss, Bitzy Couling

When canvas lining is not viable, what tools remain in the conservator's arsenal? In recent decades, the conservation community has acknowledged a potential decline in hands-on treatment skills, particularly those relating to complex structural treatments. Irrevocable damage suffered by countless paintings by way of uninformed and underprepared structural treatment has led towards a watershed movement away from involved structural treatments and associated instruction, prompting training initiatives to be launched internationally in an effort to preserve and build upon generations of knowledge.

This case study revisits the opportunity for renewed discussion of structural conservation methodology, and a practical exploration into stabilization measures undertaken as an alternative to canvas lining in an effort to preserve access to the canvas verso. Specific challenges in the treatment of this twentieth-century, oil on canvas painting included canvas shrinkage, tented paint, improbable media, and sentimental value, which had resulted in a complex interplay of instabilities with no simple solution. This discussion will navigate the advantages and disadvantages, as well as provide practical demonstrations, of consolidation techniques for paint on deformed canvas supports, canvas re-sizing, and loom-tensioning methods.

#### Laser Cleaning in the Treatment of a Vandalized Unprimed Canvas

Amber L. Kerr, Bartosz Dajnowski, Keara Teeter

Sponsors: Otego

In 1989, a masterwork of Washington Color School painter Morris Louis (1912–1962) was discovered vandalized with pencil marks during a routine gallery check. The painting, Beta Upsilon, was completed in 1960 by Louis a short time before his death by cancer. The artwork is the second largest in his unfurled series, which are recognized by the undulating rivulets of color that progress inward from the outside edges of the painting, with an expansive area of unprimed (raw) canvas exposed in the middle of the composition. The vandal had emulated the undulating colors by drawing two mimicking pencil lines, one along each side of the painting, and each one measuring over 32 inches in length.

Initial testing of the surface at the time of the event showed that removal of the pencil mark was not going to be easy. All conventional methods of treatment at that time were causing the mark to smudge or recede further into the textile, and due to the mechanical nature of the treatments, the woven fibers would become disrupted permanently. The expansiveness of the canvas was also a factor, as any localized cleaning of the areas affected would necessitate the overall cleaning of the expansive surface.

Thus began a research and testing project that would span over thirty years. This involved three generations of conservators at the Smithsonian American Art Museum, a multitude of consultations with experts in the field, and the diligence of conservators to wait for science to aide in finding the ethical solution for the removal of the pencil marks.

This presentation will discuss the ethical challenges of advocating for a delayed treatment of an iconic work in a collection, along with an overview of the research and collaborative work that led to the creation of a new laser for use in the treatment of unprimed canvases. It will also highlight the challenges overcome during the treatment of this oversized canvas; which included the design of a custom-built worktable, innovative methods for tracking the progress of the laser application during treatment, monitoring the progress of cleaning with micro-cameras and digital tools that aided in the documentation and spot-checking of the canvas at all stages of the project.

#### Henri Matisse's Silkscreen on Linen, Edition of 60, Oceanie, Le Ciel and La Mer, 1946-49: More Examples, Some Discoveries, Remaining Quandaries

Mary Kaldany, Rebecca T. Johnson-Dibb, Patsy Orlofsky

Sponsors: Otego

Ongoing research at the Textile Conservation Workshop for the treatment of a suite of Henri Matisse textile artworks builds on work initially published in JAIC 2014, Vol. 53, No. 4. New treatment of 8 additional panels has increased our knowledge of the peculiar sensitivities of the materials and their wide-ranging conditions. The Océanie series, an edition of 60 oversized silk-screened linen wall panels arose from a collaboration between the artist Henri Matisse and textile designer Zika Ascher in 1946-1949. From 1940, until his death in 1954, Matisse was occupied with cutting shapes from paper that he arranged on surfaces to form the exuberant compositions of his last years. Two groups of Tahitian inspired cut-outs, pinned to the walls of his studio, were used as templates for the Océanie textile panels, le Ciel and la Mer. Thirty signed and numbered copies of each design were produced and are now dispersed throughout museums and private collections all over the world.

This artwork presents challenges that require the dual expertise of the painted textiles conservation sub-specialty that this joint session addresses. Unpublished historical records, and analytical and empirical testing yielded information about the improvisational nature of their manufacture, origins of the linen cloth, the dye-stuff, the preparation layer, the printing ink, the division of the edition between Ascher and Matisse, and the signing protocols.

Each panel consists of a dyed beige linen substrate with floral and faunal motifs silk-screened with oil-based, white printing ink. Although Ascher and Matisse had aimed for a decorative textile in which the ink fully permeated the linen, they were unable to achieve the design without a viscous, oil-based ink that sat atop the linen, barely penetrating the substrate. Fabricated in a war-time work-room, plagued by shortages, each formulation fell short of standardization. The resulting artworks consist of thick islands of paint-like motifs on a 13-foot expanse of unrestricted, light-weight, plain-woven linen cloth.

Since the 2014 JAIC article we have been fortunate to examine and treat 8 additional examples revealing a fuller scope of condition, affording a broader understanding of the original materials and how they have responded to specific environmental factors. Seventy-five years have elapsed since fabrication, spawning a surprisingly wide range of condition problems making each panel unique. Condition issues across the edition consist of inherent light-aging susceptibility, a strong tendency to crease, and the propensity of the sized linen to blemish because of its hypersensitivity to even the slightest hint of moisture. Printing ink conditions range from pristine to water-damaged, abraded, skinned, badly flaking and poorly over-painted. Augmented by research into artist's intent, methods of fabrication, and materials analysis, a wider-range of treatment practices have necessarily evolved.

Conclusions include current solutions for stain mitigation, humidification/ flattening on the suction table, printing ink consolidation with the ultrasonic nebulizer, and retouching. Persistent thorny questions, such as an unusual motif-ghosting phenomenon, puzzling fabrication techniques, identification of dye-stuff, stain reduction methods, ethics of retouching ink, and keeping up a current roster of the 60 panels are presented for discussion.

#### **Conserving Canvas: Cotton Duck**

Laura Mina, Michael Duffy, Matthew Skopek, Ellen Davis

Sponsors: Otego

In July 2023, The Harvard Art Museums, in partnership with the Museum of Modern Art and the Whitney Museum of American Art, hosted Conserving Canvas: Cotton Duck. The workshop was funded through the Getty Foundation's Conserving Canvas initiative and was the first structured, collaborative training opportunity to offer a comprehensive overview of the material

characteristics of cotton duck and holistic approaches to its conservation. Workshop sessions, led by expert instructors from diverse backgrounds and specializations, covered the history of manufacture, supply, and use of cotton duck, aqueous light bleaching procedures and the effect of liquid water on cotton duck, alternatives to washing for local and overall treatment, and structural repairs including tear mending and suturing. The international participant cohort also brought valuable new perspectives to the workshop program, and by contributing their unique experiences and ideas, deepened and enriched the established discourse on the conservation of paintings on cotton fabric. A synthesis of the workshop's inherently interdisciplinary and interconnected lessons will be presented here for the first time. The design, administration, and outcome of Conserving Canvas: Cotton Duck centered around the professional exchange between textiles and paintings disciplines. This type of contribution will hopefully foster increased interdisciplinary collaboration, while guiding fresh approaches to the preservation of modern and contemporary art.

## Unravelling Mysteries: The Discoveries and Challenges of Remounting an Oversized Thangka Painting

Sun-hsin Hung

Sponsors: Otego

Taiwan's National Palace Museum (NPM) houses seven huge densely-colored silk thangkas 'Amitayus Buddha' from the Qing dynasty, painted during Emperor Qianlong's reign (1736–1795). Originally a set of nine, the other two thangkas are currently within Taiwan's National Museum of History collection. The thangkas' format, dimensions, subject and materials are consistent throughout: each painting depicts one large Amitayus Buddha surrounded by 11 smaller ones, bringing the overall total to 108, a significant number in Buddhism representing wholeness and the abolishment of all troubles. How this set of paintings ended up in separate museums is another story in the WWII saga.

This thangka embodies the typical Tibetan Buddhism tradition of using Chinese prepared silk. At the same time, the high-quality blue, yellow and red kinran (gold brocade) used as its mounting fabric suggests the Japanese Buddhist paintings' mounting format. Yet, the scroll's lower border is longer than the upper border, which aligns with the traditional Tibetan thangka style. While uda paper was used as its lining papers, the ornate hanging rings were of an uncommon material and form, posing challenges in their temporary removal and reinstallation following treatment. The opening direction of the scroll differs from the Chinese tradition, and while the bottom roller is a circular rod of the Chinese tradition, the unique knob design follows neither Chinese nor Japanese tradition.

Was this thangka mounted in the Chinese, Japanese, or Tibetan tradition? An investigation into its mysterious provenance and materials proved necessary.

This thangka suffered extensive water damage, resulting in delamination (damage) of lining papers, mold damage, cracks in the stave, creases on the painting, pigment loss, and severe embrittlement of the yellow and red kinran that made it necessary to reproduce the brocade in the original design for the remounting of the painting. During the mounting delamination (treatment process) it became apparent that this was not the painting's first conservation attempt. It could be deduced from the remaining backing paper and subsequent lining papers that parts of the mounting format had been modified. The original wooden stave and roller remained intact, however, together with hidden paper amulets written in cinnabar ink. Vibrant and saturated colors that had been applied as primers onto the back of the painting revealed a characteristic technique of densely-colored paintings while increasing the difficulty of detaching the backing paper.

Due to its oversized dimensions, a wooden support structure was made for the delamination process. Facing was done for media consolidation, which also kept the dimensional changes of the paper and mounting fabric under control without tearing. Every step of the treatment process was a challenge in itself, such as the reinstallation of the stave, roller, and paper amulets in their respective original positions. Over the course of four years, this thangka was

restored to a smooth and supple state, and its conservation concluded with satisfactory results.

Google [https://drive.google.com/drive/u/0/folders/1nN-WQFq1SK0R42dlgleNKbmBIE3co8QZ]

#### Embracing Mist-Lining: The Structural Treatment of Two Canvas Paintings by Edwin Austin Abbey at the Yale University Art Gallery

Nikita Shah, Cynthia Schwarz, Tirza Harris

Sponsors: Otego

In recent years, with the focus on structural conservation spearheaded by the Getty-funded "Conserving Canvas" Project, there has been increased awareness of the Mist-lining technique developed at Stichting Restauratie Atelier Limburg (SRAL) in the 1990s. However, published case studies for Mist-Lining outside of SRAL have been scarce. In this presentation, the authors will describe two recent Mist-Linings undertaken at Yale University Art Gallery with special attention to why this technique was chosen, and highlight the adaptability as well as the versatility of the technique in treating painting with a range of condition concerns both expected and unexpected.

The main principle of the Mist-Lining Technique is, to have a minimal adhesive layer that is as open as possible on the lining fabric, to achieve a reversible nap-bond. The adhesive is sprayed mist onto a roughened lining fabric. The water content in the adhesive is allowed to evaporate. It is then aligned with the original canvas prior to bond formation. The adhesive is regenerated in a low-pressure envelope using solvent vapor. Once the adhesive becomes tacky, low-pressure is used for bond formation between the lining and the original canvases.

This presentation focuses on the structural treatment, specifically Mist-Lining, of two paintings by Edwin Austin Abbey. The two paintings, Unknown Figure (c. 1890's) and Apotheosis (c. 1902-1911) are studies by Abbey for his mural paintings and have been made in different ways. The treatment of these paintings in preparation for an upcoming exhibition on Abbey in the fall of 2024, provided an opportunity to study Abbey's techniques shedding new light on his use of unique materials as well as their response to conservation treatments. Differing condition concerns on each painting led them to be Mist-Lined in preparation for the exhibition.

Unknown Figure is modest in size (37 x 32 inches) with a gilded background that was prepared using gold leaf with a kneeling figure painted on the gilded background. It came to the Art Gallery unstretched and with its upper tacking edge cut off. The gilded background is on a soft, temperature-sensitive mordant layer and the gilding is coated in a toning layer. This structure led to a surface that is very sensitive to heat, pressure, and many solvents. In weighing treatment options, an edge-lining was considered in order to stretch the painting. However, most edge-lining adhesives would require heat and/or pressure to activate. Mist-Lining provided a gentle alternative using only low pressure that conformed to the gilded surface without causing textural changes.

The other painting, Apotheosis is a sizable painting (68 x 68 inches) with an extremely brittle canvas. The canvas has split along the foldover edges and in many areas along the tacking margins. A previous treatment has left the canvas partially saturated in wax-resin where large patches reinforced areas of weakness. In this case, local tear mending was considered. However, the extent of embrittlement of the canvas, exacerbated by uneven wax-resin saturation, also led to Mist-Lining as a reversible and gentle reinforcement of the canvas.

### Invisible Suspension: A Tailored Hanging System For Darrel Ellis's Shaped Canvas Artwork 'Untitled (Bedroom Scene)'

Speakers: Jen Munch

Sponsors: Otego

This talk presents a custom display innovation crafted specifically for Darrel Ellis's ca. 1987 acrylic on canvas painting, Untitled (Bedroom Scene). This painting portrays a woman in a bedroom, its scene stretching to the uniquely-shaped canvas's edges—approximately trapezoidal in form. Having never been displayed before, the challenge arose to safely exhibit it within the 2022-2023 "Darrel Ellis: Regeneration" exhibition, jointly organized by The Baltimore Museum of Art and The Bronx Museum. Collaborating with the curator and the artist's estate representative, a decision emerged to design a hanging mechanism that would elegantly 'float' the artwork on the gallery wall.

Darrel Ellis' art blends painting, printmaking, photography and drawing, often centering on identity and memory as expressed through portraiture. Untitled (Bedroom Scene) is part of a large series based on photographs Ellis took at his mother's apartment, with its canvas's trapezoidal shape possibly echoing the photo projection process.

The devised hanging system involves an aluminum rod inserted into a sewn canvas sleeve. The sleeve is securely attached to the upper edge using BEVA 371 adhesive. The two ends of the rod are supported by Z-clip hardware installed on the wall. The canvas sleeve is precisely sewn to hold the hanging rod snugly, maintaining necessary tension and preventing any top-edge sagging. Additionally, four rare earth magnets concealed within canvas pockets, combined with self-adhesive steel discs affixed to the wall, serve to align the lower edges against the wall, preventing the lower edges from flaring forward.

The design and implementation of this system were carried out in 2021-2022 by Jen Munch of Jen Munch Art Conservation, a New York City-based private practice. The use of a hanging rod in a tensioned canvas sleeve is believed to be a unique display solution for a work on canvas. Magnetic mounting systems are also uncommon for paintings on primed canvas, and this may be the first recorded instance of their use. Magnetic display systems are now common for textile and paper works. This is due in large part to the work of Gwen Spicer, the author of the 2019 book "Magnetic Mounting Systems for Museums and Cultural Institutions."

This system prioritizes the use of economical and durable materials. It can also be removed if needed in the future. Additionally, the aluminum hanging rod can be substituted with a steel rod to make it compatible with the commercially available SmallCorp Magnet Slat system designed by Gwen Spicer for textile display. It is an adaptable solution for evolving needs.

#### A Thoughtful Approach to the Structural Treatment of Colonial Latin American Paintings

Laura Eva Hartman, Luciana Andrea Feld, María Elisabet Carnero

Sponsors: Otego

This paper details the use of thread by thread tear mending technique utilized in the treatment of a series of colonial Latin American paintings, belonging to the Museo Histórico Provincial Dr. Julio Marc in the city of Rosario, Argentina.

Finding suitable techniques for the intervention of this particular type of painting is essential as their materiality corresponds directly to their historical context. Colonial Latin American paintings are complex in their materiality, often exhibiting features unique to their creation. Original repairs to the canvas support including sewing and paper repairs are examples of this rich material information. The textile and its preparation in particular serve as important material documents, begging to be preserved for future research and interpretation.

During this project the works were treated following a series of meetings and study days with experts in various specialties. The treatments were designed to preserve every aspect of the textile support, including original repairs and

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preparations. This paper will detail the treatment approach reached following these meetings, and discuss the importance of networking, spreading of techniques and materials among colleagues, and training of emerging conservators.

### **Photographic Materials**

### New Originals and Former Originals: Jeff Wall's Trân Dúc Ván)

Jessica Keister, Mary Wilcop, Travis K. Snyder, Chris Michaels

The reproducibility of film-based and digital photography provides conservators with the regular existential thrill of asking 'what is real?'. Ongoing dialogues within the field investigate the idea of what constitutes an original and who gets to define it. The idiosyncratic terminology used to describe prints themselves - vintage, reserve, period, exhibition, modern, posthumous, reprint, etc. - suggest the varying degrees of originality or authenticity that the possibility of multiples presents. This paper will discuss the challenges of documenting the history and existence of what may be described as New Originals and Former Originals, and questions regarding the use of the Former Original for scholarship and research.

Jeff Wall's monumental lightbox Trân Dúc Ván was created in 1988 and acquired by Carnegie Museum of Art in 1990. A popular work for loan and exhibition, fourteen years after the acquisition, Wall surprised the museum by creating a new original version of Trân Dúc Ván. Written correspondence between Wall and museum staff reveal that the decision was unprompted and unrelated to the physical condition of the original print. t. Wall explicitly specified that the new original, made possible by technological improvements in digital image manipulation, should be considered "the definitive work". While this New Original was enthusiastically displayed and loaned, the Former Original was also retained by the Carnegie, rolled and crated, and placed into deep storage.

In the years since the switch from Former to New Original occurred, incomplete documentation, vague collection database entries, staff turnover, and a possibly poor initial understanding of the nature of the swap combined to create significant uncertainties in the originality of both versions of Trân Dúc Ván. The surprising emergence of a second, heavily damaged version of the Former Original transparencies, as well as a reserve print of the New Original further complicate the ways that the work has and has not been documented and described.

### **Exposing A Photographer's Vision: The Hirshhorn Hologram and Its Many Challenges**

Stephanie Lussier, Taylor Healy, Gwenaelle Kavich, Thomas Lam, Shannon A. Brogdon-Grantham, Tess M. Cramer

CW (content warning): This presentation will cover material that depicts racism and racist organizations both visually and in text.

This presentation covers the investigation of the only hologram in the Hirshhorn Museum and Sculpture Garden's collection, an untitled, 1983 work by William Christenberry. The hologram—and holography itself—was identified as an understudied area in the field of conservation during a 2016 collections survey. The research presented in this talk provides an introduction to holographic history, identification, approaches to display, and materials analysis.

To display a hologram is to nearly determine the exposure of the image. In other words, to illuminate a hologram is to re-expose the artist's vision. This is a tremendous responsibility arguably unforeseen in the field of photograph conservation. Given that the Hirshhorn's object portrays potentially triggering subject matter, it is all the more important that the artist's complexity of concept is not lost due to a disservice in display. The image forming material of a hologram is a void of transparent emulsion, appearing clear, until it is enigmatically recreated or "reconstructed" by light. The brightness, depth, sharpness, color, and even presence of subject matter depend on the display light type, angle of light-incidence and viewing angle. Ultimately, the fundamental mood of the artwork is controlled by the exhibition parameters.

It is important to understand that holograms are a youthful scientific discovery that only took shape in the 1960s and 1970s. Therefore, the diverse visual characteristics and numerous mechanisms of deterioration have not been thoroughly researched in the field of art conservation. To understand the Hirshhorn object's place within the complex family-tree of holographic processes, a resource list that draws from the disparate realms of physical science, commercial mass-production, and hobbyist internet forums was compiled. This deep dive into material data informed the creation of a simplified visual aid for process identification and helped in confirming the Hirshhorn's object as a white-light illuminated reflection type hologram composed of silver gelatin emulsion on a glass support adhered to a black mount.

To understand how the different qualities of light sources produced different holographic display phenomena, spectral measurements of several common light sources were captured. Variations on light intensity, location, and color were documented in display trials. These trials could be particularly useful for museums venturing to display their white-light illuminated holograms.

The analysis included X-Ray Fluorescence (XRF) of the glass supports and the use of Fourier-Transform Infrared spectroscopy (FTIR) to confirm the adhesive that binds the supports. Many conservators may find, as in this case, that the image material is "sandwiched" or inaccessible for examination, therefore, the confidence in composition is all the more dependent on strong material data research. The concern over glass alteration exacerbated by the use of Tyvek in a poorly constructed housing is also discussed.

Above all, this talk is a call to action for meticulous documentation and continued research into the unmined vein of holographic materials. As contemporary artists are taking a renewed interest in holography, conservators must work diligently with living artists to document the desired re-exposure of their work and consider the implications and complexities of exhibiting extant holograms in their collections.

### An Investigation of Additives In Resin Coated Papers

Tess Bronwyn Hamilton

During a 2023 characterization study of Robert Mapplethorpe prints at the Solomon R. Guggenheim Museum, NY, four gelatin silver prints on resin coated (RC) paper from the 1970s were found to have small blue and magenta colorants scattered throughout the resin layer of the recto. When observed under ultraviolet radiation, all four prints had significant transfer of optical brightening agents (OBAs) to the Phototex folders used in housing despite being stored under optimal environmental conditions. It was further found that OBAs readily transferred from the verso when lightly brushed with a dry cotton swab.

While the modes of deterioration for RC prints have been well documented in conservation literature, unique aspects of their structure and manufacturing have not. In addition, the materials used in mass produced photographic papers from the late 20th century are often difficult to research due to lack of publicly available information from manufacturers. To further investigate the phenomena observed in the Mapplethorpe prints, 63 samples of RC paper from the 1960s to the 2010s were examined to look for the presence of colorants in the resin layer and dry OBA transfer. Samples were chosen from the collection of gelatin silver and chromogenic papers collected by Paul Messier and currently held by the Lens Media Lab at Yale University's Institute for the Preservation of Cultural Heritage. Only Kodak papers from between the 1970s and 1980s had both blue and magenta colorants. About two thirds of the paper samples exhibited dry transfer of OBAs to non-optically brightened surfaces.

The observation of colored additives as well as the issue of OBA transfer is supported through research into manufacturers' patent histories. Patents provide a rich source of information on materials and manufacturing techniques and reveal an intricate network of challenges and developments in the production of RC papers throughout the 20th and 21st centuries. In addition, these patents speak to the structural and material complexity of photographic papers that cannot always be adequately investigated with nondestructive analytical techniques or imaging.

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This talk will explore the varied manufacturing techniques and additives used in the production of RC paper and their implications for preservation, identification, and dating. This talk will also explore the potential of patent research in investigating the development of late 20th century photographic materials, and how manufactured photographic papers can often belie binary material categorizations.

# Polaroid 20×24: Characterization and Investigation of Treatments and Preservation Methods

Sylvie Pénichon, Paulina Miasik

Polaroid 20 by 24 inches materials are commonly found in fine arts museums' collections but remain relatively unfamiliar to conservators. This presentation will share the results of a current research project that seeks to gain a better understanding of these supports and their different properties.

The idea of the large format was born after Dr Edwin Land presented the 8x10 peel-apart Polaroid in 1973. Following the commercial success of the new product, Land wanted to create a large camera that would showcase the high quality of the material. Between 1977 and 1978, the company built five cameras that became available to artists in the US and abroad. Over the years, the Polaroid Corporation produced different 20x24 supports for the big cameras, which also had their smaller equivalents in commercially available formats, including Polacolor2, Polacolor ER, Polacolor Pro, and Polapan. The research focused on investigating and analyzing those supports through visual and microscopic observation, color and thickness measurements, surface gloss and texture characterization. Artworks from the collection of the Art Institute of Chicago and the Museum of Fine Arts Boston, were selected to collect data. Measurements were compared with those taken from identified samples in the Conservation Study Collection. Scientists from the Art Institute performed advanced scientific analysis to identify support components and further characterize the materials. Additional research was conducted in the Polaroid Corporation Records held at the Baker Library, Harvard Business School, and through interviews with former and retired scientists who worked for the Polaroid Corporation. The collected information will be compiled to create identification guidelines.

In addition to the characterization of the Polaroid 20x24 supports, different conservation methods, including dry and solvent surface cleaning, consolidation treatments, and tear reinforcement were investigated to determine the best practices and provide recommendations. The treated surfaces were photographed before and after treatment under different lighting conditions to show the impact of each procedure on the treated surface. The final part of this presentation will also include recommendations for storage materials.

### When the Pellicular Burlesque Turns into the Pellicular Nightmare

Speakers: Marie-lou Beauchamp

Doug Munson's colorful presentation and article, "The Pellicular Burlesque" first shared at the AIC PMG 1997 described the procedure performed on a cellulose acetate negative to lift the emulsion from the degrading plastic support. In the fall of 2022, I performed that well-known procedure, which unexpectedly became a nightmare as it irreparably damaged the negative I was attempting to treat.

This presentation is a post-mortem, reviewing the steps taken before, during, and after the procedure was carried out. Some hypotheses on why this treatment was unsuccessful in this case will be discussed, as well as reflections on the need for a more open dialogue about failures in the field.

There is currently no definitive conclusion as to why the emulsion was not entirely lifted from the support. However, I hope this presentation will be an opportunity to encourage fellow photo conservators to share their knowledge and experiences to complete and add to the body of knowledge on this specific topic and material.

#### **Tip Session**

Learn from your peers in this Lighting Round Session

Zulema Paz. Library Thing as a simple solution for cataloging the conservation library.

Sarah Casto. Microsoft Forms and Google Sheets for Collections Assessment.

Zach Long. A brief overview of a treatment technique used to remove polyethylene adhered to the emulsions of fiber-based gelatin silver prints.

Barbara Lemmen. Flattening Gelatin Silver Photographs with a Dry Mounting Press: Refining a Protocol for Fiber-based Developed-out Paper Prints.

### The Complex Light and Dark Storage Stability Behaviors of Different Dye-Sublimation Inksets Printed on Chromaluxe Standard ("Indoor") and Ext ("Outdoor") Coated Aluminum Panels (often referred to as "Metal Prints")

Speakers: Henry Wilhelm

Within the past ten years, dye-sublimation prints made with ChromaLuxe specially-coated aluminum panels have become increasingly used by photographers and artists for a number of compelling reasons:

The highly abrasion-resistant surfaces of ChromaLuxe prints allows the prints to be safely displayed in gallery and museum settings without the need for framing with glass or acrylic sheets.

The glossy and semigloss versions of ChromaLuxe prints provide the highest d-max (resulting in rich, deep colors and blacks) of any current color print process, providing a "brilliance" that is unmatched by most other processes. Many photographers find this to be very appealing – reminiscent of ferrotyped high-gloss fiber-base silver-gelatin prints of the past, and also of unframed Cibachrome silver dye-bleach prints made with high-gloss polyester base material (as opposed to Cibachrome RC materials).

ChromaLuxe prints are available in sizes up to  $48 \times 96$  inches (122 x 244 cm), and the lightweight aluminum prints are easy to hang and do not require traditional mounting or framing for display.

Because of the investment and space required for the large heat press and CNC router (to smoothly cut ChromaLuxe aluminum panels to size) that are required in order to make large prints, in almost every case photographers work with printmaking studios to produce their ChromaLuxe prints.

For these reasons, many photographers have come to feel that ChromaLuxe prints provide a more affordable, visually more stunning and, longer lasting alternative to making large, chromogenic prints of much lower light-stability that have been face-mounted to acrylic sheet using silicone or pressure-sensitive adhesives.

ChromaLuxe is based in Louisville, Kentucky and its manufacturing facilities are located there. https://www.chromaluxe.com

The company does not produce dye-sublimation inks; instead, the inks used to make ChromaLuxe prints are supplied by others. The choice of inks can result in significant variability in the light stability and dark-storage permanence of the resulting prints.

A number of different dye-sublimation inksets have used to produce ChromaLuxe prints. Suppliers include Epson, Sawgrass, Mutoh, Mimaki, Kilan Digital, Sensient, and others (including "hybrid" inksets put together by certain printmaking studios which are composed of combinations of inks from different suppliers). Most are 4-color CMYK inksets, but some are 6-color or even 8-color (with dilute CM and gray inks) to provide smoother tonal transitions and freedom from "noise" in the darker transition tones when viewed at close range.

It should be noted that fabric printing (clothing, sports apparel, upholstery, commercial "soft signage" printed on fabrics for backlits, etc.) is by far the most important market segment for dye-sublimation printing, and this has been the

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focus of sublimation ink research and development – and not for hard surface printing applications such as ChromaLuxe.

Among the fine-art photographers currently using the ChromaLuxe process are Cindy Sherman, beginning with her contributions to the five-woman Group Exhibition at the Spruth Magers Gallery in Berlin which opened on September 16, 2015; Nan Goldin, who is well-known for her earlier Cibachrome prints; Sarah VanDerBeek; Robert Farber; and many other photographers. The ChromaLuxe process is especially popular among commercial, landscape, portrait, and wedding photographers.

ChromaLuxe dye-sublimation prints are made using a two-step process, with the image first being printed with a large-format inkjet printer on "transfer paper" (from a number of different suppliers) and then placed in contact with a ChromaLuxe panel in a heat press for three or four minutes, usually at a temperature between 350°F and 400°F (177°C and 205°C). The sublimation dyes go through a vapor phase during their transfer to a ChromaLuxe panel. After removal from the heat press, the transfer paper is peeled off, and at that point the print is finished.

ChromaLuxe is a true dye-sublimation print process, and as such is fundamentally different from the small-format dye-thermal-dye-transfer (D2T2) process used by Kodak, Sony, DNP, and other suppliers which have been commonly, and incorrectly, referred to as "Dye-Sub" prints.

This presentation explores both the light-stability and complex dark storage behavior of sublimation-inks printed on different types of ChromaLuxe panels. Results from a previously unpublished series of test conducted by Wilhelm Imaging Research in a self-funded research project over a four-year period at 40°C (104°F) and 50°C (122°F) and 50% RH will be described. Test results at higher temperatures will also be shown, and application of the multi-temperature predictive Arrhenius fading and yellowing methodology will be discussed.

The complex dark-storage behavior of ChromaLuxe prints has not been observed by Wilhelm Imaging Research with any prior color photographic process tested during the past 52 years:

"The Wilhelm Analog and Digital Color Print Materials Reference Collection – 1971-2023" http://www.wilhelm-research.com/WIR\_Reference\_Collection/The\_Wilhelm\_Analog\_and\_Digital\_Color\_Print\_Materials\_Reference\_Collection\_1971\_to\_2023\_(2023-06-12\_v23).pdf

Although Wilhelm Imaging Research has published light stability for ChromaLuxe prints made with two different dye-sublimation inksets, to date WIR has refrained from publishing any dark-storage predictions for ChromaLuxe prints.

### Seeing The Invisible: on Multispectral Imaging of Photographs

Anna Seweryn, Tomasz Łojewski

Old photographs, thanks to their realistic way of showing the world in the past, are one of the most interesting groups of archival materials. At the same time, they are very unstable objects, sensitive to external factors, sometimes improperly produced, which has a significant negative impact on their state of preservation, the legibility of the content and the viability of the media. One of the methods of preserving photographic images for future generations, in addition to proper storage and natural for conservators to take care of preserving the original matter of historical objects, is digitization, currently understood as the production of digital copies from archival materials using cameras and scanners. This raises the question of how much a change in the imaging method could be helpful in reading damaged data, and whether the classic digitization process, especially for extremely valuable or damaged objects, should not be extended to the production of MSI files. The experiments discussed in this presentation can help assess how useful multispectral imaging is in studying and documenting archival photographic collections, and whether the imaging process should be built into the process of creating digital backups of these archival materials.

The set used for research allows the recording of monochromatic (black and white) images in 12 wavelengths, ranging from 365 to 940 nm. The silicon matrix allows to capture images in this spectral range. In addition to these 12

component images, fluorescence images are also recorded - the objects were illuminated with e.g. UV light and recorded at a wavelength of 450 nm (blue), 520 nm (green), etc. From the resulting set, 15-20 photographs, you can then create colorful images by selecting three spectral channels for the RGB channels that best visualize the information we are looking for.

The research was carried out on the photographic resource of the National Archives in Krakow. The study involved photographic materials produced using various technologies, e.g. albumen prints, collodion prints, gelatin-silver prints, as well as photographs taken using the unique magic photography technology. The examined objects include faded, chemically unstable, permanently dirty, microbiologically infected or fire-damaged photographs. Each time, mutispectral imaging made it possible to read and extract invisible content. MSI is also a helpful tool when identifying the technology of taking photographs, especially multi-layered ones, made using unique techniques, where it allows the range of technological layers, retouching or varnishes to be legible.

# Identifying Material Similarities Between The Photographs of Lola Álvarez Bravo and Tina Modotti

Katherine Mintie, Cynthia Yue, Bryanna Knotts

In collaboration with the Center for Creative Photography at the University of Arizona (CCP) and the Lens Media Lab at Yale University's Institute for the Preservation of Cultural Heritage, this research focuses on characterizing the prints of Lola Álvarez Bravo and her contemporaries to identify trends and influences shared between photographers. The project also highlights the breadth and diversity of the collection at the CCP and underscores the impact of interpersonal relationships on an artist's oeuvre.

Born Dolores Martínez in Lagos de Moreno, Jalisco, Mexico, Lola Álvarez Bravo captured ordinary, quotidian details that exemplified Mexican life and culture in the mid-20th century through her photographs and photomontages. Spending most of her career in Mexico City, Álvarez Bravo associated with some of the most influential photographers working in Mexico at the time including Tina Modotti, Edward Weston, and Manuel Álvarez Bravo.

The CCP acquired Álvarez Bravo's archive in 1996; it consists of almost 200 gelatin silver photographs. In a comprehensive study of this group of prints, gloss, color, thickness, and texture measurements were taken at the CCP and subsequently analyzed and contextualized by colleagues at the Lens Media Lab. Following the characterization of Álvarez Bravo's works, the parameters of the research project were expanded to include the photographs of Tina Modotti and will eventually include a selection of prints by Edward Weston.

The relationships between artists known to have practiced together for a period of time are explored through the physical characterization of photographs by Álvarez Bravo, Modotti, and Weston. Beyond the stylistic and aesthetic trends that can be identified through visual comparison, the gloss, color, thickness, and texture measurements have the potential to reveal further, data-driven similarities and patterns of material use.

### Searching For Treasures: Unidentified Early Color Photographs in Slovakia

Janka Blaško Križanová ArtD., Kitti Barathova

The primary purpose of my research is to introduce different 20th-century color analog positive processes on transparent support found in central Europe - with emphasis on Slovakia, where the main part of the research was carried out. The focus is on additive and subtractive color photographic techniques on various bases, such as glass, cellulose film sheets or film roll. The first real full-color photographs in history were made on transparent supports using the physical principle of merging the colored components of light and additive color screens. The urgency of this topic lies mainly in the fact that Slovak museum collections and institutions do not have identified or correctly categorised these valuable pieces in their depositories, and as a result, these may suddenly deteriorate in inappropriate storage conditions. Extensive research on this topic is constantly carried out in the world but publications of international literature are mostly in

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English and only limited information is accessible in Slovakia, which is not widely available for all. The lack of Slovak professional literature and higher education of museum staff are few of the problems we are facing. As a conservator I realised that revision of the collections is necessary, because proper identification is the first step of preventive care. The research focusing on early color photography is the foundation for understanding the nature of color photographs. The recognition of the various processes from a physical and technological point of view also provides a starting point for their conservation. These materials may suffer from two main forms of possible deterioration: firstly, the transparent support itself is either made of breakable glass or highly flammable plastics such as cellulose nitrate or acetate films, which can suffer from vinegar syndrome. Secondly, the color image can degrade very quickly, not only when exposed to light but also in the dark. Since even the slightest damage can have severe consequences that fully devalue the work, we generally emphasise protection over repair when conserving photographs. Proper identification should always be the first step of conservation, preventive care of these rare color positives is extremely important for their future preservation. Creating suitable storage conditions and collaboration with national and local museums in Slovakia is a challenging task. The state of collections in museum storage sites is far from ideal. The institutions struggle with financial problems and lack of trained professionals. How can a conservator help to manage the conditions of the archives and create an acceptable environment for the color photograph collection?

### **PMG Wiki Meeting**

Led by Photographic Material Group (PMG) Wiki Committee Members, this brief, pre-lunch session will inform attendees about the PMG Wiki, engage colleagues in feedback on steps to broaden content creation and use, and encourage the formation of new editing groups. New wiki pages will be introduced as well as areas for which we are seeking content and submissions. Attendees will be invited to provide input to shape the development of the wiki. Instructions for becoming contributors and editors will be provided to those who are interested. All colleagues are invited to attend this session and partake in the discussion that will add to the continued effort to build this collaborative and accessible knowledge base.

### Achievements and Reflections on a Three-Year Collaborative Project In Photograph Conservation

Clara von Waldthausen

The SBMK Project Photography was launched in October 2020 and finished in December 2023. Within the project a knowledge infrastructure was built to assist Netherlands cultural institutions with the preservation of their modern and contemporary photograph collections. Within this project workshops supported by a sample set made with the collaboration of printers internationally, were organized. Dutch terminology was standardized and the acquisition process within institutions was examined and streamlined.

Together, knowledge gaps were surveyed and research in preservation and conservation was initiated in collaboration with students, researchers and the community, to find practical answers to challenges that collections struggle with. These activities provide key insight into process, materials and techniques and help institutions and private collections understand what modern and photography is, it's value and its individuality. With this knowledge clear decisions can be made surrounding modern and contemporary holdings and institutions not having specialist knowledge in house can build a foundation to assist in giving proper care to collections.

The information gathered within the 3-year period is available online in Dutch and in English and will be added to in the future. This paper provides a summary of achievements and reflects on the lessons learned when establishing a project. What worked? What could have we done differently? What are the ingredients needed to interest funding organizations for a project? What failed and why? Finally, number of knowledge gaps that have yet to be addressed will be discussed. By discussion our achievements and reflecting on the past 3 years, the author hopes to provide behind the scenes insight to assist others in combining their strengths and organizing projects that will aid the preservation of photographs for the future

#### **Photography: A Great Change of Meaning**

Lénia Oliveira Fernandes, Pablo Ruiz

The aim of this presentation is to describe the working methods used and conclusions reached at the symposium "Re-defining photography within the context of cultural heritage" that was held last September 23, 2023, immediately following the 20th Triennial Conference of ICOM-CC.

It was hosted by the Institut Valencià d'Art Modern and organized by ICOM-CC Photographic Materials Working Group in collaboration with GE-IIC Photographic Heritage Conservation Group. More than 30 professionals related to conservation of photography came together to debate a new definition of photography and a photograph and the relationship of these concepts with the cultural heritage conservation field.

The symposium main purpose was to contrast different point of view and sensitivities. Thus, the structure was intended to move from more general ideas to concrete points.

Morning activities were organized to establish the main ideas:

1. Introduction:

Al was used in a short introduction to show different definitions and remark commonalities and gaps.

#### 2. Conferences:

Four lectures given by Rachel Tabel, Rosina Herrera Garrido, Felice Robles and Marta García Celma illustrated, from the conservators' point of view, the wide range of interpretations related to photographic heritage in cultural institutions.

Interesting ideas were shared in the lectures, such as, the scope of our specialty, the complexity of photography, its inclusive nature, and constant evolution.

#### 3. Roundtable:

A roundtable between the speakers was opened to establish some common points and explored the ideas of ambiguity, technology, post-photography, visual language, materiality, photosensitivity, evolution, etc.

4. Roundtable open to the attendees:

The complexity to find a new definition, where all the photographic scenario could fit, was expressed. The audience pointed out that the definition should include ideas associated with, interaction between surface and energy, technique, image, but also, human perception, memory, communication...

Afternoon was organized to summarize the main points.

5. Open debate with all attendees:

Six groups working groups were organized to explore different sensitivities and opinions. Each group was led by a coordinator. The groups were asked general questions:

Why is it important to change the definition of photography?

What makes photography different from other visual arts?

Can photography be defined as a visual language in itself?

How do technologies affect the definition of a photograph?

Does a photograph need to have a physical shape?

6. Group debate in plenary session:

Each group coordinator shared a summary of their findings and conclusions. These contributions were very illustrative of the broadness of the concept of photography and the difficulty of finding a common approach.

Conclusion session for achieving a new definition.Once such diverse ideas were expressed, it was not easy to reach common points. However, opening the debate to contrasting views allowed us to better understand the nature of the term photography.

Finally, all these reflections show that defining photography is as complex as its history and use. And, in any case, the term "photographic" can be used to include everything related to photography, even when it is created outside the context of "pure" photography.

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### A Legacy of Stars: Preservation of The Williamina Fleming Astronomical Glass Plates From Harvard College Observatory

Elena Bulat, Debora Mayer, Arthur McClelland, Thom Burns, Amanda Maloney, Georgina Rayner, Samara Ayvazian-Hancock, Tess Bronwyn Hamilton

The Williamina Fleming Collection at John G. Wolbach Library comprises 679 astronomical glass plate photographs which represent the discoveries, research, and working process of the Women Computers and Astronomers at Harvard College Observatory (HCO) from 1885 to 1992. The plates in the collection were individually selected from over 550,000 photographs due to their historical and scientific significance as the plates document discoveries of galaxies, nebulae, and celestial bodies, and lay the groundwork for our current understanding of the size of the universe and distances between stars. The photographs are unique within the larger collection as they retain the annotations done by the Women Computers on both the jackets and the plates which were erased from the rest of the collection during a digitization campaign from 2004 to 2020. These markings document the process that led to the historic discoveries and represent one of the few historical records of the otherwise invisible labor of the women who facilitated them.

During the Covid-19 pandemic, HCO shifted priorities to embrace a more holistic preservation of the photographs. This began a multi-year collaboration between HCO, Wolbach Library, Weissman Preservation Center, and the Center for Nanoscale Systems to address the preservation needs of the Williamina Fleming Collection.

In the course of this project, we conducted a detailed survey of the inks, historic repairs, condition of each plate, and relevant annotations taken on the plate jackets. This was followed by rehousing of the plates in custom boxes. The boxes were designed to maximize airflow while keeping the storage space and weight at a minimum to allow the collection to be accessible and to fit seamlessly with existing workflows for accessing and handling the over half a million plates in the collection. In addition, housings had to allow for the original jackets to be stored along with the plate to retain the scientific and historical metadata written on them. This project revealed surprising new information about the history and use of one of the most important collections of astronomical photography in the world, and was instrumental in the continued championing of these historically overlooked women scientists.

This talk will explore the history, survey, rehousing, treatment, and development of exhibition quidelines for the glass plates.

### **Preventive Care**

### Underground Conservation: How the Geosciences and Humanities Can Preserve Historic Cemeteries

Amy Van de Riet, Ben Terwilliger, Grace Awbrey, Blair Schneider

Conservation under the ground is just as important as preservation above the ground. Graves and cemeteries hold answers to many questions we have about the past which are difficult to uncover without disturbing burials. Geophysical methods allow researchers to see beneath the surface in a non-invasive manner. Two of these methods, electrical conductivity (EC) and ground-penetrating Radar (GPR), are being used to identify potential burials in a cemetery with a long history but few markers at the Southwest City Cemetery (sometimes referred to as "Southwest Cemetery") in Eudora, Kansas.

Geophysics can be useful in cemeteries as a non-invasive tool for conservation. EC and GPR provide valuable data that aids in preservation planning and can inform conservation and risk assessment efforts without any unnecessary disturbance. Additionally, geophysical methods can aid heritage researchers through the identification of unknown burials. In Eudora, Kansas, geoscience is

working in conjunction with conservation methods to help preserve generational memory and conserve Southwest Cemetery, an African American cemetery. By providing a non-invasive and efficient way to map and assess subsurface structures and features, geophysics can help to improve our understanding of these important historical and cultural resources, and ensure that they are preserved for future generations (Beven, 1991; Kaulb, 2019). It is postulated that, through a combination of electrical conductivity, ground-penetrating radar, and conservation efforts, an under-represented community in a small Kansas town can come back to life through death.

Southwest City Cemetery was founded in the 1850's and was the first cemetery in Eudora. As the first cemetery in Eudora, it was used by most of the township for around ten years until white citizens decided to segregate burials. It is unknown exactly what happened, but beginning in the 1860's Southwest Cemetery became a primarily African American cemetery. Individual accounts have even suggested that white families disinterred their dead and moved them to the new cemetery, ultimately leaving the old cemetery for people of color (Beckman, 2019). The last burial known to take place was in the 1980s, based on visible headstone dates (Beckman, 2019).

Despite over 120 years of use, there are very few grave markings remaining making it difficult for drive-by traffic to know what the plot of land represents. The cemetery was once on the edge of town, but is now at the center of a popular neighborhood. The people interred at Southwest deserve to have their history preserved. Eudora has had a long history of African American occupation, and the goal of this project will be to remember the forgotten and connect them back to the community they rest within. This presentation will provide 1) an overview of the history and background of Southwest Cemetery; 2) results of the geophysical survey and historical research analysis of the site; and 3) recommendations for future preservation opportunities to recognize and remember an important community in Eudora's history.

# Rediscovering Princess Carolina: Preventive Conservation as a Catalyst for Reengaging with an Archaeological Collection

Elsa Sangouard, William Hoffman

Princess Carolina was a South Carolina built, transatlantic trading vessel, launched in 1718. The ship was damaged in a storm in 1729, which resulted in its use as fill material for land expansion efforts in lower Manhattan, New York in the mid-eighteenth century. The remains of the ship were discovered under 175 Water Street in 1982 and were partially excavated. Recovered materials include nearly 400 timbers from the ship's bow structure along with 14,000 artifacts found within the hull used as landfill of both organic and inorganic materials. All artifacts were sent to Groton, Massachusetts for conservation while a permanent home was identified. In 1985, the collection was donated to The Mariners' Museum and Park in Newport News, Virginia for use in a proposed gallery expansion with conservation efforts continuing for an additional three years. Exhibition of the bow and associated materials never came to fruition, and like many archaeological collections, the assemblage disappeared into storage.

In 2018, conservation personnel began a major project to address the preventive conservation needs of the ship's timbers which had been housed in non-climate-controlled storage for over 33 years. Following a condition assessment of the timbers, interest in the archaeological materials began to grow as staff across the institution started learning the story of the merchant ship, its artifacts, and why they were so significant. This renewed awareness set the stage for the development of a major rehousing initiative as well as scientific research focused on the effects of sulfur on formerly waterlogged wood, and revealed the incredible variety of objects contained within the fill collection.

However, reviving a project of this scale would take time, financial resources, and required gaining buy-in from Museum leadership, external and internal supporters, and donors. As a result, the rehousing of Princes Carolina's timbers to appropriate storage was not completed until the summer of 2023. The task necessitated the use of lifting and rigging equipment, multiple personnel, a large mobile freezer, a triage-like artifact documentation and cleaning area, and the reorganization of space within the museum to properly house and provide access to the collection.

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This paper will discuss the challenges of reengaging with a dormant archaeological collection and highlight that preventive conservation can be a mechanism to do so using the rehousing of Princess Carolina's bow timbers as a case study. In addition, the paper will describe the building of project momentum (including fundraising through grants and donors) as well as the development of a multi-year stage-based and flexible conservation work plan.

### Preventive Conservation of Archaeological Metals At The Japanese Institute of Anatolian Archaeology In Turkey

Alice Boccia Paterakis, Ian MacLeod

The JIAA is testing and developing means with which to predict the risk of metal corrosion and ways to both prevent and mitigate corrosion that will lead to practical solutions. The goal is to replace interventive conservation treatments involving costly and toxic materials with non-invasive treatments using green and sustainable products, or simply by controlling the environment on the micro scale when climate control is not available. Our annual minimum and maximum readings in our storerooms range from approximately 32% to 90% RH and 2°C to 40°C. We have developed a protocol that involves testing the voltage, pH, and chloride content of the bronze objects and of their associated soil that provides indications of susceptibility to corrosion. This work was published in the JAIC this year entitled "Integration of Laboratory and Field Measurements on Soil and Bronze Artifacts: Facilitating Conservation Treatment and Management of Archaeological Collections". We found that the bronzes measuring below a certain pH were most susceptible to corrosion. Burial depth has been found to be an important indicator of the porosity and degree of susceptibility of bronzes to corrosion in storage. Different corrosion processes were identified above and below the dripline in the soil profiles of archaeological sites. Recent tests that monitor oxygen depletion of bronze objects in Escal bags have shown the effectiveness of first drying bronze objects with ethanol and the overall effectiveness of this method for predicting corrosion activity. In some cases, desiccants and oxygen absorbers may not be required for the protection of bronze artifacts. Our recent tests involving microclimates show heat-sealed Escal bags can hold their seal for up to 10 years (and perhaps longer) and that silica gel will remain dry in the bags for this length of time. For these reasons the JIAA is switching from the more costly RP-A oxygen scavengers to color-indicating silica gel (to avoid including rather costly RH strips or dataloggers in the bags). Recent JIAA tests comparing cysteine, AMT, and BTA show cysteine as a much more effective corrosion inhibitor and that this inhibition may be lost through handling or by wetting the object. Corrosion inhibitors may be reserved for those objects destined for display in the museum when climate control is inadequate or non-existent. We have begun testing iron objects to determine if similar means of risk detection and prevention may be applicable. Our student interns have been testing green corrosion inhibitors such as garlic, black pepper, and ginger on copper and mild steel. We have had good results to varying degrees with all green inhibitors tested to date. The corrosion inhibitors were initially tested on new metal test coupons and recently we started testing some of them on archaeological bronzes. Five possible options are presented for the preventive conservation of archaeological bronzes: 1)applying chemical corrosion inhibitors, 2)drying bronze objects in ethanol by immersion before placing them in Escal storage bags, 3)storing bronze objects in Escal with a desiccant such as color-indicating silica gel, 4) storing bronze objects in Escal with an oxygen scavenger such as RP-A, and 5) no protective microclimate or treatments necessary based on the determination of low risk for corrosion.

### Are We There Yet? Facilitation Is Our Preventive Conservation Future

Rebecca Fifield

Preventive conservation is growing: it features in project planning, there are increasing numbers of preventive conservator jobs, and there is greater availability of preventive conservation graduate training opportunities. But is the sign of preventive conservation success the proliferation of preventive conservator positions? Or is it embracing the diversity of perspectives that a range of practitioners bring and a focus on growing practice and engagement?

Could the best way to advance preventive conservation be through recognition and development of a range of skill sets to address preventive conservation in different settings?

Preventive conservation may become stronger through growing practice centered on facilitation. To tightly define preventive conservator roles may be to risk the same pitfalls of tightly defining the conservator: to perpetuate transactional conservation relationships and inadvertently create barriers to conservation involvement in greater institutional planning, so critical for preventive conservation success.

Instead of identifying success through anointing practitioners with preventive conservator titles, should we instead build and strengthen collaborative training cohorts, coach future leaders, and work to establish institutional frameworks so critical to the recognition, deployment, and success of preventive conservation approaches? In supporting a range of professionals focusing on preventive conservation, do we instead create professional development benchmarks, providing accessible professional development opportunities for the preventive conservation technician to the director-level operational strategist? Given preventive conservation's interconnectedness at an institutional level with facilities management, sustainable energy use efforts, storage design, health & safety, climate resilience planning, and other roles, facilitation-forward preventive conservation recognizes the many voices that collaborate in forwarding the field and opens doors.

As I wrote in my blog "How Do We Enhance Collaboration: Do feelings of professional exclusion lead us to seek answers from those most like ourselves?" as part of Dr. Joelle Wickens's project What is Conservation?, I challenge us to think about the bigger tent of conservation. We need to consider how to develop aptitudes and skills within a range of preventive conservation practitioners that connect outward, toward the finance, operations, capital planning, legal, and government relations areas of our organizations. Growing preventive conservation may focus on multiple stewardship models to staffing preventive care, each with their own strengths.

### Purple Tea, Firebrats, and Vibrations: Activating an 18th Century Gilded Salon in a 21st Century Arts & Design School Housed in a 19th Century Building

Mary Coughlin

The Salon Doré, a gilded salon commissioned by a Count to convey a perpetual wedding celebration in 1770 Paris now finds itself in an Arts & Design School in Washington, DC. The Salon came from Paris to DC via a stop in the Fifth Avenue Gilded Age mansion of "Copper King" William Andrews Clark, a one-term Senator from Montana. It may be tempting to think that surviving the French Revolution, shipment across the Atlantic in the early 1900s, then transport down the mid-Atlantic roads of 1925, means that the greatest threats to the Salon's preservation are over, however, a malfunctioning HVAC and benign neglect from University Facilities have resulted in notable damage to the gilding. The quest to get preservation attention for the room has taken years but by the time of the meeting, the Salon will have been incorporated into a larger HVAC overhaul, new UV film added to the windows, and conservation of the flaking gilding will have taken place.

What makes this case study more dynamic, however, is the effort undertaken to open the Salon to wider use by the School community. The Salon Doré is housed within the 1897 Beaux-Arts building that was built for the Corcoran Gallery of Art and the Corcoran College of Art + Design that closed in 2014 and was transferred to the George Washington University. The Salon has been in a bit of limbo since 2014, being both literally and figuratively locked off from the School Community. There were exceptions for access but this was usually in the form of Art History symposia or musical performances in-line with the period of the room's creation. But in response to the tumultuous events of the recent past, this mindset of use began to feel more and more elitist. Why can't the Salon be used for a traditional piano recital as well as for a Hip Hop performance? What happens when Social Practice Master's students want to host a tea and that tea is purple? How to activate the Salon in ways that all will feel welcome – from those who embrace its traditional aesthetic to those who rage against

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it – were explored more fully this academic year. Part of that journey involved a vibration study embarked upon to set decibel levels that led to the discovery of lingering dampness in one wall as well as the creation of User Guidelines that we realized needed to include the line: "Performance art pieces that use bodily liquids and/or additional organic materials or live animals must be approved by the Exhibition & Performance Associate and Corcoran's Conservator, Mary Coughlin." The quest to improve both preservation and access and the hurdles, both anticipated and unforeseen, that have arisen will be addressed.

# Traditional Methods of Caring for Cultural Heritage, Reimagined: A Look at Preventive Care in Rajasthan, India

Elizabeth Salmon

The word traditional implies immutable, unbroken, or even stagnant. However, traditional methods of caring for cultural heritage can instead be culturally conscious, sustainable, and practical. The practice of using naturally insect-repellent plants to preserve cultural material was not developed for the Conservation of museum collections, but rather to care for items of personal value. Plants that naturally kill or repel insects, or botanical pesticides, have been used by communities throughout the world for centuries to protect valued belongings, including cultural items, from insect damage. Time-tested tools for pest management that utilize locally available plants are part of the shared, intergenerational wisdom, or traditional knowledge, of communities. Traditional knowledge is not static, but ever-evolving as new observations are made and stewards respond to changes in the environment, its resources, and adapt their knowledge to suit evolving needs. One recent adaptation of traditional pest management practices is their application in the preventive care of museum collections. Today, staff at museums in India have adapted the traditional practice of storing dried neem leaves with cultural items, primarily textiles, to keep insects that can feed on these materials safely at bay.

This presentation will describe the traditional methods of pest management that are presently used at museums in Rajasthan, a state in Northwest India, with particular focus on neem. The neem tree (Azadirachta indica) is indigenous to the Indian subcontinent, where its pesticidal properties have been understood and utilized for centuries. All parts of the neem tree contain the active ingredient Azadirachtin, a limonoid or antifeedant and insect growth regulator. Unlike other botanical pesticides that are used in pest management, neem leaves are collected from abundant local trees and prepared on-site to be stored with collections, a process that requires no purchasing, packaging, transportation, or energy-consumptive preparation, making it a sustainable and resource-efficient pest management tool. Conversations with staff at museums in India in January and February 2023 informed further research about the effectiveness of neem on museum pests and the effects of neem on collections, including experiments to assess how exposure to neem affects the eating habits of Varied Carpet Beetles, Oddy Testing, and artificial aging experiments.

This research is a direct response to the need for increased accessibility and sustainable practice in Conservation that can be met by promoting preventive care and giving due consideration to traditional methods of caring for cultural heritage. Looking to traditional knowledge for pest management strategies that are locally available and culturally relevant meets the needs of stewards and contributes to a shift in the field of Conservation toward more inclusive and sustainable practice.

# Street v. Art: A Case Study of Mold Remediation and Community Participation at the George Floyd Global Memorial

Nylah Byrd

How does the community setting impact the conservation process? Thanks to funding for a research project during my 1-year National Endowment for the Arts Fellowship in the Book Department at the Conservation Center for Art and Historic Artifacts I was able to spend a week on site at George Floyd Global Memorial where I remediated mold on over 100 offerings, attended and spoke at the Rise and Remember Conference, and participated in other events for

the Rise and Remember Celebration. This work presents the mold remediation process used and summarizes the creation of a quick reference guide for mold remediation for works similar to protest art. Next, the poster explores how the conservation process is adapted to the community setting by considering factors like limited access to resources, work space availability, and the necessity of relationship building. Finally, the poster begins to define the term "street conservation" and discuss its similarities and differences from "art conservation".

### Differential Durability: Could Deterioration Be Hidden Within Your Wall Assembly?

Cameron Moon

In the last fifty years, awareness of preventive conservation as a holistic approach to heritage buildings has heightened. However, its actual implementation has remained slow to catch on, due in part to deferred maintenance and lack of funding facing many organizations and property owners. Additionally, thinking preventively runs counter to the reactivity of the building industry. We are usually called to respond to deterioration that has progressed to the point where it is visible. We typically perform a condition assessment, which leads to testing and treatment recommendations, and implementation of an intervention. But what do we do if there is no evidence of damage on the surface? Could we consider potential deterioration hidden within a wall assembly? Instead of reacting to what we see on the surface, could we shift our thinking to prevent deterioration before it becomes apparent?

One deterioration factor inherent in many heritage buildings is the differential durability of materials within wall assemblies. Differential durability is how the useful service life of building materials differs between components within an assembly. By considering the different durabilities and vulnerabilities of materials, we can act preemptively to anticipate potential deterioration between interior and exterior surfaces. Methods to predict the service life and durability of modern buildings are well established and have been increasingly applied to heritage buildings in the last decade. However, the results have been extremely variable and highly subjective. It is worth changing the approach to durability and service life from quantification to a comparison of relative durabilities, to understand which material is the weakest link in an assembly.

I demonstrate a methodology for qualitatively evaluating comparative durability and vulnerability in heritage buildings using two buildings as case studies. I present a decision diagram that identifies each material and its position in an assembly, assesses comparative durability of materials, identifies causal factors of deterioration and vulnerability of protective layers, and proposes interventions. While I have developed the methodology for relatively simple building envelopes, it can be applied to modern buildings or be used when designing interventions.

I focus on buildings constructed in the first half of the twentieth century when building technology and materials proliferated and designers and builders experimented with new assemblies. With the Industrial Revolution and the advent of new building materials in the late nineteenth and early twentieth centuries, exterior wall assemblies became more complicated. Architects and builders experimented with new materials, including reinforced concrete, Portland cement, and architectural terra cotta, to build multi-component walls. These walls introduced the issue of differential durability to building envelopes. Each material that comprised them had a different service life, increasing potential aging and failure points. The construction industry experimented with fabrication and installation, responding to failures by introducing new materials, changing their composition, or assembling them in different sequences. We see this same experimentation today as new materials come onto the market and buildings are designed to be increasingly weathertight. As more modern buildings become historic, the issue of differential durability will become an urgent conservation issue.

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### Revealing Hidden Threats: Monitoring Ambient Air Quality to Preserve Silver Treasures in the 15th-Century Mehrangarh Fort Museum, Jodhpur, India

Vikram Singh Rathore, Vandana Singh, Sunayana Rathore

The preservation of art objects and valuable collections within historical buildings poses a unique challenge, primarily because these structures were not originally designed to protect such items sustainably. One notable example is the 15th-century Mehrangarh Fort Museum in Jodhpur, India, which houses an irreplaceable collection. This fort, stretching over 500 yards in length, ranks among India's largest forts. The museum houses an extensive and invaluable collection of silver artifacts, ranging from pure silver to electroplated variations, each representing various forms and types of silver objects. Recognizing the significance of preserving this remarkable collection, an educative program on conservation and preservation of silver artifacts was designed incorporating air quality risk assessment. The collaborative endeavour was part of the in-house training program hosted by the Mehrangarh Art Conservation Centre, Mehrangarh fort, Jodhpur in October 2022 under the Tata Trusts- Art Conservation Initiative Project. This assessment sought to quantify the concentrations of pollutants employing non-invasive, on-site pollutant sampling devices. The collected samples underwent laboratory analysis, utilizing Gas Chromatography for gaseous pollutants and Atomic Absorption Spectrometry to detect elements. The air monitoring survey had a specific emphasis on safeguarding the historic silver collection while assessing indoor microclimate, air pollution, and suspended particulate matter deposition.

Measurements were made in following locations inside the museum complex:

- · Open courtyard
- Open Howdahkhana gallery displays finest example silver elephant seats from 17th-19th century in well-defined spaces with proper natural light and ventilation.
- Two closed showcases from the Daulat Khana Gallery. One of the cases displays Solid Silver Idol of Goddess Gauri (Case I) that is being worshipped by her Highness and another case displays seven decorative silver objects (Case II).
- · Storage room for reserved silver collection

The analysis of air quality revealed unexpected and critical findings. Firstly, the outdoor environment displayed a minimal concentration of H2S, nearly at the detection limit, posing no immediate concerns. Secondly, monitoring in the open Howdah gallery indicated lower H2S levels due to natural ventilation. Thirdly, and the most striking findings was the alarmingly high levels of H2S in the closed showcases in Daulat Kahana Gallery. Surprisingly, despite the high H2S concentration in Case I, corrosion of silver was at its lowest. This was attributed to factors such as low humidity and pH levels due to its location, as well as textile barriers. Additionally, the formation of Cu2S suggested the presence of copper, possibly in jewellery or the idol itself, indicating a possible Ag-Cu alloy. In contrast, Case II showed higher corrosion levels, including sulfide and oxides of silver, indicating elevated humidity, alkalinity or the presence of strong oxidizing agents. Objects of both the cases underwent further analysis for their elemental composition using handheld XRF. Finally, in stark contrast, the storage room exhibited the worst conditions, marked by high concentrations of H2S, ozone, ammonia, and particulate matter (PM 2.5 and PM 10). The survey showed that adverse conditions arose from the incorporation of modern materials into the traditional structure, high RH, elevated alkalinity, pollutant accumulation etc.

In conclusion, the assessment of air quality within the Mehrangarh Fort Museum has revealed unexpected findings, particularly concerning the alarmingly high indoor levels of H2S and other pollutants, posing a significant risk to the precious silver artifacts. Furthermore, this study underscores the significance of collaborative projects and emphasizes the necessity of capacity-building training programs, highlighting the delicate balance required between scientific conservation efforts and the constantly evolving external environment.

### When The Art's In The Way: The Complex Nature of Moving Large-Scale Artefacts and Public Art

Kelly Caldwell

Conservators often wear many hats: advocate, scientist, artist, curator, designer, mount maker; project manager but what about engineer or rigger? on projects where objects are imbedded within historic buildings or public spaces, removals and relocation are a frequent requirement. With increasing adaptive reuse of spaces and code upgrades to infrastructure, a conservator is needed to consult or advocate in the safe handling, removal, relocation, and treatment of large-scale integrated artworks.

When buildings and public spaces undergo large-scale rehabilitation, embedded historic elements or public art add layers of complexity to the planning and practical needs for the spaces, but also the artworks themselves. Examples include the rebuilding of a public plaza where site specific public art must be temporarily relocated; or when historic interiors must be selectively removed and reinstalled for HVAC and sprinkler upgrades. This is also the case when museums upgrade and artworks that are built into the base building are deconstructed.

Artwork relocation projects are complex, necessitating different trades and skill sets working together to define a solution. Sequencing the removals and reinstallation is a key component for schedules and budgets to stay on track. Involving a conservator early in the design process can help to facilitate a more streamlined process with minimal interruptions and surprises. This presentation will discuss how the combination of technical input provided by a conservator supports or conflict with design and structural engineering requirements as well as, how the role of the conservator often expands into different fields to navigate and direct the required interventions for a successful large-scale move.

#### Preventive Care Idea Fair

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Back by popular demand, the Preventive Care Idea Fair is an innovative and informative session on all things related to presentative conservation. Stop by to speak with experts who will be stationed at tables. Enjoy coffee and cookies, and enter our raffle to win a free registration for next year's conference.

### Art and Heritage in Transport: Perception and Statistics

William Wei

The need to transport a valuable work of art or cultural heritage object continues to strike fear into the hearts of many conservators. This fear is often fanned by the one or other anecdote about a "major disaster" which occurred during a museum loan. The lack of experimental data on what objects can take in terms of vibration and/or shock, and the lack of a proper background in mechanical properties of materials and mechanics in the conservation profession are also major contributors to this fear, a fear of the unknown as it were.

While such testing is lacking, there is actually a large source of data which can place the fear of transport in context or even allay that fear, and can also be used to assist in providing guidelines for transport decision-making. This source of data is all of the loan transport documentation stored in the registration systems of museums and other institutions themselves.

The Cultural Heritage Agency of the Netherlands (RCE) therefore conducted a two-year project to investigate the statistics of loan transport, in particular, how often damage occurred. Fourteen museums on four continents were found which were willing to participate anonymously in the study. The author spent approximately one week at each of the museums going through their transport documentation starting from the most recent completed loan, and then going back chronologically until he ran out of time. The study thus covered a period between roughly 2015 and 2022. The author looked for the following information,

#### SPECIALTY SESSIONS: PREVENTIVE CARE

- · type of objects loaned
- · where they went
- · how they were transported
- · how they were packaged
- · whether there were "changes" based on courier reports.

The information was carefully documented for analysis. Any "changes" noted in the courier reports were color-coded based on how serious the changes were considered to be, and then discussed with the museum staff (conservators and registrars) at the end of the week. All of the information was then anonymized so that no one could even indirectly know which museums participated in the study.

At the time of the writing of this abstract, the data from over 500 loans and 3600 objects had already been analyzed. Changes were reported for 177 of the 3600 objects, which actually is over 7200 movements to and from the loaning museum with some objects having multiple destinations. of those changes, 136 occurred during transport and the rest during exhibition. Only 14 (fourteen) of the changes during transport were considered to be serious Most of the reported changes, whether serious or not, were ultimately caused by poor handling and human error, and not by vibrations or shock transport vibrations and shock in and of themselves.

The results of this statistical study show the number of "serious" changes to objects in transport is quite low compared to the number of object movements. As is well known, statistical studies can be interpreted in a number of ways, valid or not. However, studies such as this containing a large amount of data provide a solid basis and food for thought when considering the future of loan transport.

One can consider the following thoughts:

- The statistics show that the probability that something "serious" will happen
  to an object under current ways of transporting objects is low. This should
  allay fears caused by "what-aboutism", the citation of a single "disaster" as
  the reason for limiting loan transports, and/or trying to develop expensive
  high-tech solutions for vibration and shock mitigation. The exception is not
  the rule.
- on the other hand, the statistics do not necessarily give museum administrators carte blanche to consider cost-saving measures such as the increased use of virtual couriers. While vibrations and shock per se are not the main cause of changes in object condition, the human factor appears to be the cause of most changes reported during loan transport.
- In the past, this author has suggested the development of a "vibration-do-simeter" to determine how often an object is exposed to a vibration (and/or shock) environment. In fact, the transport documentation which museums have is, in fact, a form of dosimeter. If one goes all the way back through the records, one can determine which objects have been loaned more frequently and whether they incurred changes in the past. By looking at their own records, conservators and museum staff therefore do not have to work in the dark when dealing with transport loans.
- and as a final afterthought, this study also begs the question as to whether museums should even be organizing so many special (blockbuster) exhibitions with the concomitant number of loans.

### Novel Flexible Mounting Systems for Fragile Objects: Making the Impossible Possible

Angela Chang, Tony Sigel

Changing ideas about community engagement in museums and promoting access to collections can lead to unexpected and unconventional exhibition environments, that many conservators would consider dangerous to fragile objects. When a curator chooses to mount a daring exhibition that breaks with precedent and shakes things up, how can conservators and mount makers rise to the challenge to support that effort and make sure it is just precedent that is broken, and not the precious objects themselves?

Such was the case recently in the Harvard Art Museums, when an exhibition of porcelain sculpture by the contemporary artist Arlene Shechet was combined

with the museum's collection of 18th century Meissen porcelain. The artist and curator imagined an exhibition without vitrines on pedestals and wall cases, or barriers around clusters of porcelain suspended from the ceiling. The proposal was unexpected—and even shocking. The works would be densely packed into a relatively small gallery, all within easy handling distance of museumgoers. Conservators and mount makers exercised both creativity and diplomatic advocacy to protect the objects under their care, while "making it work".

The conservator's primary concern was that with conventional metal mounts, the porcelain sculpture, figurines, cups, and saucers would be damaged by the mount itself if objects were grabbed, lifted, or twisted. Therefore, we would have to design mounting systems with built-in flexibility— in effect planning from the start that the objects might be handled by the public.

Thinking outside the box, an entirely novel flexible mounting system was devised to hold a variety of porcelain object types, relying primarily on adhesives, barrier tapes and coatings to allow reversible attachment of the objects to mounts and pedestals. These mounts incorporated flexible rubber elements to allow the plates, cups, figurines, and sculpture to move resiliently when being handled. This was particularly important for the dozens of plates, cups and saucers suspended from the ceiling in constellations within easy reach of the public.

While the conservators and mount makers worked to test and refine the flexible mount designs and materials, they also worked with the exhibition designer, engaging the artist and curator to modify the original plan so that more of the museum's Meissen collection were placed under vitrines. Objects left exposed to public handling were fastened invisibly using temporary adhesives. Security measures in the gallery were increased, and the numbers of museumgoers in the small gallery at any one time were limited.

The presentation will document the development of the flexible mounting systems from rough proof-of-concept prototypes and mock-ups through to final fabrication and installation, including mistakes made along the way. Novel mounting materials included silicone RTV adhesives, tape barrier systems, flexible elastomer interface pads, as well as bulked B-72 adhesives. Observations and advice will be offered on how to provide constructive feedback to artists and curators on exhibition design, conditions of loan, and other aspects of exhibition planning.

### Navigating CITES as an Arts Institution: Challenges Encountered with Loans and Acquisitions of Organic Materials at the Met

Netanya Schiff, Alice Fornari

The Metropolitan Museum of Art (The Met) is a globally recognized cultural institution, with an encyclopedic collection of over 2 million artworks and artifacts spanning 5,000 years of human history. In 2021 the museum launched a new venture, taking advantage of the renovations of Michael C. Rockefeller Wing to organize an international tour of artworks from The Met's Oceanic a collection. Artwork and artifacts from Oceania are almost exclusively organics, and many of the raw materials used these works contain parts or derivatives of species which are listed on the Convention of International Trade in Endangered Species of Wild Flora and Fauna (CITES), the Lacey Act, and the Endangered Species Act (ESA) of 1973.

In preparation for the tour, a dedicated conservator spent approximately 9 months systematically working through the tour pieces in partnership with registrars, curators, onsite scientists and outside experts to correctly identify and document all CITES materials. During this process it became clear that The Met was in need of better training, more resources, and development of an institution wide approach to CITES materials going forward. The challenges facing cultural heritage institutions in identifying material to a species-specific level in compliance with these regulations are different from those faced by natural history collections. Art objects generally incorporate processed derivatives of species, often without associated literature on material sources, making this endeavor particularly challenging and conservators, while trained extensively in material identification, may not be equipped with the expertise needed to correctly identify and name species in all instances. In addition, registrars, curators, and legal counsel all need to understand the process of permit applications fully, as well as developing a knowledge of certain intrinsic limitations,

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as well various permitting paths and requirements.

Through a deep understanding of the laws, conservators and other stakeholders can ensure that they are meeting international legal standard and requirements in support of these important regulations, while also being able to share cultural materials with the public. To address this knowledge gap at The Met and set a standard for the institution, we have created a working guide for dealing with applicable art objects, in addition the development of a reference library and applicable training. This project was born due to a lack of clear information and protocols relating to the required research and permitting for objects that fall under these laws, forcing many staff, both at The Met and at similar cultural institutions to struggle to produce correct, consistent work, and remain current with evolving rules and regulations. Our quick guide and step by step guide will provide a solution to allow museum professionals to confidently and effectively report their art objects that fall under these laws.

# Assessment of Air Quality within a Historic House Museum: Particulate Matter and Gas Phase Risks to Collections

Rosie Grayburn, Liora Mael, Gianna Puzzo

As a result of climate change and land management practices, the United States has seen an increase in the number of severe wildfires, negatively impacting air quality. Cultural heritage spaces have long been invested in preserving their collections, but the increase in hazardous air quality events has prompted additional need for monitoring to protect collections as well as human health. In an effort to assess climate risks to a historic house museum collection, a sampling path and schedule with NOx, total volatile organic compounds (TVOC) and PM1 (particulate matter), PM2.5, and ozone measurements was implemented. Deployment of this instrumentation throughout the collection has helped assess climate control strategies and implement air quality benchmarks for access to these spaces.

### **Preventive Conservation**

### Differential Durability: Could Deterioration Be Hidden Within Your Wall Assembly?

Cameron Moon

In the last fifty years, awareness of preventive conservation as a holistic approach to heritage buildings has heightened. However, its actual implementation has remained slow to catch on, due in part to deferred maintenance and lack of funding facing many organizations and property owners. Additionally, thinking preventively runs counter to the reactivity of the building industry. We are usually called to respond to deterioration that has progressed to the point where it is visible. We typically perform a condition assessment, which leads to testing and treatment recommendations, and implementation of an intervention. But what do we do if there is no evidence of damage on the surface? Could we consider potential deterioration hidden within a wall assembly? Instead of reacting to what we see on the surface, could we shift our thinking to prevent deterioration before it becomes apparent?

One deterioration factor inherent in many heritage buildings is the differential durability of materials within wall assemblies. Differential durability is how the useful service life of building materials differs between components within an assembly. By considering the different durabilities and vulnerabilities of materials, we can act preemptively to anticipate potential deterioration between interior and exterior surfaces. Methods to predict the service life and durability of modern buildings are well established and have been increasingly applied to heritage buildings in the last decade. However, the results have been extremely variable and highly subjective. It is worth changing the approach to durability and service life from quantification to a comparison of relative durabilities, to understand which material is the weakest link in an assembly.

I demonstrate a methodology for qualitatively evaluating comparative durability

and vulnerability in heritage buildings using two buildings as case studies. I present a decision diagram that identifies each material and its position in an assembly, assesses comparative durability of materials, identifies causal factors of deterioration and vulnerability of protective layers, and proposes interventions. While I have developed the methodology for relatively simple building envelopes, it can be applied to modern buildings or be used when designing interventions.

I focus on buildings constructed in the first half of the twentieth century when building technology and materials proliferated and designers and builders experimented with new assemblies. With the Industrial Revolution and the advent of new building materials in the late nineteenth and early twentieth centuries, exterior wall assemblies became more complicated. Architects and builders experimented with new materials, including reinforced concrete, Portland cement, and architectural terra cotta, to build multi-component walls. These walls introduced the issue of differential durability to building envelopes. Each material that comprised them had a different service life, increasing potential aging and failure points. The construction industry experimented with fabrication and installation, responding to failures by introducing new materials, changing their composition, or assembling them in different sequences. We see this same experimentation today as new materials come onto the market and buildings are designed to be increasingly weathertight. As more modern buildings become historic, the issue of differential durability will become an urgent conservation issue.

### Revealing Hidden Threats: Monitoring Ambient Air Quality to Preserve Silver Treasures in the 15th-Century Mehrangarh Fort Museum, Jodhpur, India

Vikram Singh Rathore, Vandana Singh, Sunayana Rathore

The preservation of art objects and valuable collections within historical buildings poses a unique challenge, primarily because these structures were not originally designed to protect such items sustainably. One notable example is the 15th-century Mehrangarh Fort Museum in Jodhpur, India, which houses an irreplaceable collection. This fort, stretching over 500 yards in length, ranks among India's largest forts. The museum houses an extensive and invaluable collection of silver artifacts, ranging from pure silver to electroplated variations, each representing various forms and types of silver objects. Recognizing the significance of preserving this remarkable collection, an educative program on conservation and preservation of silver artifacts was designed incorporating air quality risk assessment. The collaborative endeavour was part of the in-house training program hosted by the Mehrangarh Art Conservation Centre, Mehrangarh fort, Jodhpur in October 2022 under the Tata Trusts- Art Conservation Initiative Project. This assessment sought to quantify the concentrations of pollutants employing non-invasive, on-site pollutant sampling devices. The collected samples underwent laboratory analysis, utilizing Gas Chromatography for gaseous pollutants and Atomic Absorption Spectrometry to detect elements. The air monitoring survey had a specific emphasis on safequarding the historic silver collection while assessing indoor microclimate, air pollution, and suspended particulate matter deposition.

Measurements were made in following locations inside the museum complex:

- · Open courtyard
- Open Howdahkhana gallery displays finest example silver elephant seats from 17th-19th century in well-defined spaces with proper natural light and ventilation.
- Two closed showcases from the Daulat Khana Gallery. One of the cases displays Solid Silver Idol of Goddess Gauri (Case I) that is being worshipped by her Highness and another case displays seven decorative silver objects (Case II).
- · Storage room for reserved silver collection

The analysis of air quality revealed unexpected and critical findings. Firstly, the outdoor environment displayed a minimal concentration of H2S, nearly at the detection limit, posing no immediate concerns. Secondly, monitoring in the open Howdah gallery indicated lower H2S levels due to natural ventilation.

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Conservators often wear many hats: advocate, scientist, artist, curator, designer, mount maker; project manager but what about engineer or rigger? on projects where objects are imbedded within historic buildings or public spaces, removals and relocation are a frequent requirement. With increasing adaptive reuse of spaces and code upgrades to infrastructure, a conservator is needed to consult or advocate in the safe handling, removal, relocation, and treatment of large-scale integrated artworks.

When buildings and public spaces undergo large-scale rehabilitation, embedded historic elements or public art add layers of complexity to the planning and practical needs for the spaces, but also the artworks themselves. Examples include the rebuilding of a public plaza where site specific public art must be temporarily relocated; or when historic interiors must be selectively removed and reinstalled for HVAC and sprinkler upgrades. This is also the case when museums upgrade and artworks that are built into the base building are deconstructed.

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### **Private Practice**

### Close and Continuous Collaboration: Stewardship in the Conservation of the New York Empire State Plaza Collection

Alfred Lippincott, Abigail Mack, Ellen Rand, Sarah Montonchaikul

Monumenta Art Conservation and Finishing LLC holds the contract with the New York State Office of General Services to care for and maintain the sculptures in

the Nelson A. Rockefeller Empire State Plaza Art Collection (ESPAC). of particular historical and artistic significance is the monumental outdoor sculpture collection that has occupied the plaza for more than half a century which includes works by George Sugarman, Louise Nevelson, Ellsworth Kelly, Claes Oldenburg, and Clement Meadmore. The contract, representing the largest financial commitment to art conservation in the history of the collection, includes treatment of 15 large-scale and monumental sculptures that require major structural and surface remediation. These generational treatments are enormous undertakings led by Monumenta conservators and fabrication staff, who have the unique opportunity to collaborate with the original fabricator of many of the sculptures: Lippincott's LLC.

ESPAC is certainly unique among fine art collections generally, but more importantly it was meant to be distinct from other municipal art collections from its inception. Formed as part of Rockefeller's vision of New York's capital city, the collection was an ambitious mid-century architectural urbanscape, built to act as the central work-force location for state employees of New York State. The plaza environment was the State's large-scale "blank canvas," designed to be activated by monumental sculptures. Lippincott Inc. was at the forefront of the Abstract Expressionist interest in ever-larger sculpture as the fabricator of choice for many artists represented in ESPAC's holdings.

ESPAC's collection, rooted in a municipal mindset, differs in condition from that of outdoor sculpture of the same period held in private or museum settings. Competition for State funding, shifting priorities of elected officials, and poorly documented interventions by State-employed tradesmen have directly affected the current state of preservation of these works. The conservation decision-making process is further complicated by many years of insufficient traditional curatorial and registration oversight, which has resulted in the loss of critical information about artist intent for the sculptures' appearance and display. In some cases, even the most fundamental aesthetic questions (such as identification of original paint color) cannot be answered by traditional art historical investigation in the collection records. Now, in the midst of major conservation treatments, the inclusion of Lippincott in the conservation process has been instrumental in informing the path for treatment.

Of the eleven outdoor sculptures treated to date, five works were originally fabricated by Lippincott's. Their treatments were directly informed by Lippincott's firsthand experience with their fabrication. From advising on the construction and disassembly of sculptures to helping to triangulate the appearance of original painted surfaces, Lippincott's has provided key archival information as well as a working knowledge of fabrication during Monumenta-led conservation treatments. Lippincott's involvement has brought greater understanding of the artist's intent to both conservators and curators.

### Private Practice, Public Impact: A Collaboration in Preserving Michael Richards' Legacy

Eugenie Milroy, Melissa Levin, Anne L. King, Alex Fialho

A.M. Art Conservation, established in 2009, has had the privilege of working with a diverse clientele, including private collectors, artist estates, museums, and galleries. While we offer our expertise for individual projects, our most gratifying experiences stem from cultivating enduring relationships with our clients and making a lasting impact on the preservation of their collections. In this paper, we aim to spotlight one particularly significant collaboration: a seven-year ongoing endeavor focused on the research, exhibition, and guardianship of the artistic legacy of Michael Richards (1963-2001). This collaborative initiative brought together A.M. Art Conservation, curators Melissa Levin and Alex Fialho, alongside other art professionals, and the estate of the artist.

Michael Richards, an artist of Jamaican and Costa Rican heritage, left a mark on the art world with his nationally and internationally exhibited works. His portfolio encompassed multi-part indoor and outdoor sculptures, time-based media, installations, and drawings. He garnered recognition in museum collections, earned prestigious awards, and participated in numerous residency programs. Tragically, his life was cut short on September 11, 2001, after working overnight in his World Trade Center studio.

In 2016, during the curation of a survey exhibition marking 15 years since Richards' passing, Levin and Fialho contacted Dawn Dale, Richards' cousin, who had

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become the custodian of his work. Despite Richards' meticulous packing and Dale's dedication to his legacy, the artwork had endured the ravages of a storage facility fire, multiple relocations, and suboptimal conditions. The resurfacing of numerous prescient and impactful sculptural artworks, along with fragments, molds, studies, drawings, photos, slides, and ephemera from his life, led to a sustained commitment to and advocacy for Richards' art and legacy.

A.M. Art Conservation's involvement tracked a conventional path of stabilizing and preparing the works for display, carefully managing both time and budget constraints. We approached the holistic body of work in a triage format, prioritizing actions to benefit the most vulnerable pieces within the allocated time frame. Over time, fresh insights into the work emerged through archival photos, discussions, and recollections from Richards' friends and colleagues.

As the collaboration progressed, additional artworks surfaced, and with the curators preparing for a traveling retrospective, we assumed a leadership role in establishing comprehensive museum practices and engaged fellow professionals to address the collection's requirements. Working with the curators we proposed treatments and budgets, and they ultimately secured a generous grant from the Mellon Foundation. The funding facilitated continued treatment, improved storage conditions, enhanced packing and transportation protocols, and the design of a collection management database. This paper will discuss the challenges and successes of managing an ongoing collaboration in a private practice context.

Since 2016, Michael Richards' work has been exhibited at five national venues including The Bronx Museum of the Arts and the Museum of Contemporary Art North Miami. Through our collaborative efforts, we have reduced the collection's risk and empowered the estate to better preserve the work while increasing the artwork's exposure to wider audiences.

# Wade Guyton's Inkjet Paintings: Artist's Materials, Technique, and Conservation Challenges

Giuliana Moretto

Since 2004 the American artist Wade Guyton (b. 1972) has used Epson inkjet printers as one of his main artistic tools to create both small and large-scale abstract and figurative paintings. Guyton's process involves the feeding of a primed linen canvas through an inkjet printer, allowing 'mistakes' such as low toner, misalignments, creases, and ink pooling to generate the final image.

The use of a primed canvas rather than a substrate created specifically to receive inkjet ink (e.g. coated inkjet paper or PET) creates on one hand the artist's recognizable and loved style; on the other hand, it presents a variety of unique preservation and conservation challenges. For example, due to the pigment ink droplets not being absorbed into the material but sitting on top of the oil-based primer, the surfaces are not only water soluble but also extremely sensitive to the touch: any pressure causes irreversible change to the surface, making handling and packing of these works very challenging. Consequently, most surface changes are irreversible and treatment options are limited.

As the machine-made surface gives the illusion that we are faced with a durable and stable artwork, understanding that this inkjet-printed canvas is highly sensitive and prone to damages is an essential to the process of caring for these paintings.

I have worked closely with the artist's studio since 2010, and throughout my career in private practice, I have had the opportunity to examine or treat more than 80 inkjet paintings. This long-lasting relationship with the artist has given me the possibility to collaborate with him, to observe his creative process and to conduct interviews specifically pertaining to conservation. Because the materials and the printing technique Guyton employs straddle a broad range of material specializations; discussions, and collaborations with professionals from other conservation specialties and disciplines have been crucial to my current treatment approach.

This presentation will illustrate the artist's process and many of the treatment challenges specific to this manipulated material, as well as reflect on a theoretical framework of how to approach works composed of subverted materials.

### The '80s Fascination with Tech Art and Their Conservation Challenges

**Emmanuelle Perron** 

The concept of "expecting the unexpected" is essential to the art conservator. We must carefully test and be prepared to adjust our treatments in accordance. However, we are also required to give cost and time estimates to the client before even touching an artwork. This leads to challenging situations particularly for complex, aged, technological artworks from the 1980s.

Sometimes, we find ourselves asking simple questions like "have they tried turning it on again?", or "can we SAFELY turn it on again?", or "what is it even supposed to do?". Oftentimes records are scarce, so you gather what little information you can from residents or employees that have been around the longest. Once a treatment proposal has been established, there is always the issue of finding spare parts that are often not produced anymore. These challenges must be overcome since these artworks are truly starting to show their age and desperately require restauration [conservation].

Olga Zeldakova created "L'horloge" in 1983. It consists of painted steel pillars with an aluminum cube structure standing 30 feet high above an air vent. The cube contains four quadrants with light bulbs arranged in circular patterns. The artwork is part of the "one-percent initiative" and is located outside in a very busy area of Montreal. There were no videos available of the clock functioning, but the general information is that the clock would indicate time with red lights and chimes. However, the noise apparently bothered the residents, so it was turned off decades ago. The cube containing the electrical parts of the clock is only accessible through a trap door and carefully built scaffolding. We were called to propose a treatment without knowing the current condition of the artwork. Obviously, this led to a lot of surprises, such as the extent of the corrosion beneath the layers of paint, the reality of just how busy the area around it is and the actual functional state of the clock itself.

André Mongeau created the "Horloge solaire" in 1983 to be integrated into a building. This artwork, also part of the "one-percent initiative", is composed of glass fiber optical cables running through the wall of the building that capture the light outside and shine through a plexiglass disk located in a now abandoned staircase. An additional element to the artwork is a laser canon located inside the building across the street that was intended to shine a red laser beam into the glass exterior captor, which allegedly turned the light specks red at night. Again, no videos of this artwork in action were available. Accounts from the artist say the laser beam never worked properly. Examination of the artwork after deinstallation revealed the fiber optics were fractured and had shrunk. In addition to this, the laser canon had caught fire. Now the challenges we faced were "where can we find glass fiber optic cables?", "can we reinstall a new safer laser canon?" and "will it work?".

### A Framework for Sustainable Courier Practices: Developing a Bookend Courier Workshop and Network

Lauren Fly, Samantha Springer

Couriers are a vital part of the cultural heritage ecosystem, ensuring the safe movement and installation of artworks across multiple locations. The additional skills and experience conservators bring to the courier role tangibly benefit the lender, borrower, and cultural heritage object. From a business perspective, adding this service offering provides the conservator with an additional income stream and can be a valuable tool for expanding their network. The Bookend Courier Model, a form of contract or third-party courier, is particularly relevant in the light of the global climate crisis as it significantly reduces the environmental impact of loans.

Recent research suggests that lenders are reluctant to use contract couriers because it is difficult to find trusted people to fill the role. In seeking a way to overcome this issue, the authors have identified three primary barriers to finding a suitable bookend courier: a scarcity of training opportunities for private practice conservators, a lack of recognition that private practice conservators can serve as independent couriers, and the unreliability of personal networks in a desired geographic region.

This talk will focus on addressing training opportunities and highlighting this service offering by private practices. The authors will discuss a workshop they have developed based on internationally accepted registrarial standards to train independent conservators to successfully act as contract couriers and integrate this service into their business model. Concurrently, the authors have been raising awareness of the Bookend Courier Model through presentations to allied professionals. To further support both conservators who would like to offer this service and those looking for trusted professionals to serve in that role, the authors are working on the development of a Collections Courier Network (discussed during the Toward Art in Transit 2.0 symposium). The network will address the need for a database of collections care professionals who can serve as independent couriers.

# Expect the Unexpected: Navigating the Complexities of Government Bureaucracy in Conservation

Angela Campbell

The National Park Service (NPS) is responsible for the conservation, maintenance, and preservation of over 50 million artifacts, 36 million of which reside in the 82 Parks and Historic Sites that are part of the Northeast Region. The region's area extends from Virginia to Maine and includes historic structures and collections that represent countless facets of American history. While conservation as a field is highly specialized, navigating the many rules and regulations surrounding government work and government contracting also requires a specialized skill set. This talk seeks to demystify some of the complexity surrounding federal work and to ensure that independent conservators are able to navigate the solicitation process.

The Historic Architecture, Conservation, and Engineering Center, based in Lowell, MA, is home to the regional conservation lab where conservators with a variety of specialties work on materials ranging from 15th century works on paper to 21st century bronze monuments. Even with a robust group of conservators carrying out both bench work and administrative work, the needs of the NPS collections easily outnumber the capacity for in-house work. As such, NPS often requires outside conservation assistance, most commonly when an unexpected or detrimental event occurs.

Working for and with the federal government to ensure that our nation's cultural resources are "preserved unimpaired... for the enjoyment, education, and inspiration of this and future generations" in accordance with the NPS mission statement, is both a great challenge and a great responsibility, but can also be lucrative and professionally rewarding. Understanding the expectations of and requirements for government contracting enables both NPS and independent conservators to successfully work together to ensure that our nation's historic artifacts are preserved and protected for generations to come

### **Research & Technical Studies**

### "There Is No Such Thing as a Green Solvent:" Updates from Sustainability in Conservation's Greener Solvents Project

Rosie Grayburn, Gwendoline Fife, Lisa Clifford, Lucile Pourett, Naomi Toyama

The aim of the Greener Solvents Project, [https://www.siconserve.org/greener-solvents/] conceived by Sustainability in Conservation (SiC), is to create accessible resources for promoting and disseminating greener solvent research, and support conservators in their safe and appropriate implementation of greener solvent approaches. Whilst 'green' is a widely popular and often arbitrarily-used term, in accurate accordance with its origins in Green Chemistry, there is no such thing as a green solvent. Recognising the need for a clearer definition, our research and resources have aimed to highlight the comparative nature of solvent 'greenness', and the requirement to incorporate

human health, environmental and professional considerations for solvent selections in conservation practice. Thus rooted in sustainability, with approaches based on hazard and life cycle assessment methods, we have worked to develop and disseminate a clearer definition and perspective of greener solvents in conservation, with a focus on application specificity, and correct, yet simplified procedures for solvent selection by conservators.

Since the project was launched in 2020 we have been actively creating such open access resources for the conservation field. Our handbook, titled "Greener Solvents in Conservation: An Introductory Guide," edited by G. R. Fife and published by Archetype Publications in 2021, is freely accessible on SiC's website. This provides valuable information on identifying the most harmful solvents, practical methods for identifying alternative solutions readily available in studios, and a step-by-step guide to implementing greener solvent practices immediately.

Privileged to be joined by an expert scientific review committee and receive sponsorship for the handbook publication, we have been continually honored by the inputs and support we have sought and received from institutional partners and individuals for their collaboration.

Acknowledging that solvent use in conservation must be changed to benefit the health and safety of the conservator and environment, a key further action point identified has been the need to survey the field to understand the current practices and solvent use within conservation. We are currently developing the survey with partners at the University of Delaware, with plans for its launch in early 2024.

We have also developed a solvent database in collaboration with the University of Delaware. This database offers conservators a comprehensive view of potential greener solvent alternatives based on the specific substrate and their environmental impact. The database includes twenty-four data inputs, categorized into four main sections: identification, solvent properties, health and safety information, and details on the solvent's application in conservation. Developing this database requires us to actively research greener solvent alternatives, which we are doing in partnership with industrial and academic research partners in the US and EU. Consistent with an aim from the beginning of the project - enable conservators to stop using their most harmful solvents - our current research focuses on substitute solvents for replacing toluene/ xylene in varnish applications on paintings and coatings on metal using a variety of modeling tools.

### Safer Solvent Selection for the Removal and Application of Synthetic Resins

Melinda H. Keefe, Rosie Grayburn, Alan Phenix, Gwendoline Fife, Bethany Karl, Robert Wright, Vikram Prasad

Cultural heritage conservation commonly uses solvents for the application and removal of polymeric resins in object disciplines from wall paintings and stone to easel paintings, ceramics and glass, ethnographic objects, and others. Polymeric resins carried in solvent are applied in a variety of object treatment schema. The most common of which are: 1) consolidants, fixatives; 2) coatings, lacquers or varnishes; 3) adhesives; 4) binding media of paints and fillers used for restoration, and 5.) barrier layers on porous surfaces.

Conservators prefer solvents that minimally impact health and the environment, typically those with low/no odor. Thus, identification and selection of safer solvents with the required solvation and final film properties for resins of interest are of great importance to the field. This work is developing a repository of solvents that both meet specific GHS-defined safety criteria and readily solvate the specific resins of interest. Two bespoke computer assisted systems from Dow were used in the solvent identification and selection process: CHEMCOMP™ Service and a custom CAS Sci-FinderN portal. (CHEMCOMP Service is a series of computerized solvent modeling programs: Evaporation Rate Program, Solvent Blend Program, VOC Program, Flash Point Estimator, and Hansen Solubility Parameter Sphere Estimator.) This CHEMCOMP™ Service is built upon an internally developed database of solvents and polymeric resins supplemented with a few additional materials commonly used in cultural heritage conservation. The CHEMCOMP™ solvent database was analyzed using the CAS Sci-FinderN tool that identified those solvents that met physical, health and environmental

GHS Hazard Phrase requirements outlined by the team. The Hansen Solubility Parameter Sphere Estimator functionality within CHEMCOMP Service then provided computational predictions for which safer solvents solvate the resins included in this pilot study. The solubility predictions of interest have and continue to be validated at the bench and in silico. Physical and mechanical properties of the resulting polymeric resin films cast from a sub-set of the safer solvents & solvent blends will be reviewed to provide an initial assessment of the functional performance of the polymers in use. The full solubility data will be disseminated once thoroughly developed and vetted by those appropriately skilled and qualified in art conservation practices.

### Barriers To Embedding Sustainability In Conservation Education and Practice

Ellen Pearlstein, Justine Wuebold, Glenn Wharton, Chedeya Brown

The development and evaluation of pedagogy that is responsive to our changing environmental and social context is essential to providing the next generation of conservators with the skills and insights to preserve tangible and intangible cultural heritage for an uncertain future. The UCLA/Getty Interdepartmental Program in the Conservation of Cultural Heritage is engaged in multi-phased research to develop methods for embedding sustainability in conservation education. In the first phase of our research, we learned that barriers exist to integrating sustainability not only in teaching curricula, but in all forms of conservation practice. Although in hindsight this finding could have been anticipated, it came up so often in our interviews that we decided to add a second phase to more clearly understand the barriers that conservators face in practice and in educational settings. In this presentation we present the results of our research on these barriers as well as the measures people in the field take to address them. We reviewed the literature in conservation and adjacent disciplines, conducted a survey of the field, interviewed key educators and practitioners on the barriers they encounter in their work, and met with two focus groups comprised of geographically dispersed professionals at different stages of their careers and working in different types and sizes of institutions, including private practice. We also worked with a sustainability coach, educational evaluators, peer reviewers, and other advisors who assisted with our research to better understand these barriers and how to mitigate them. During this research we identified and formulated responses to root causes, including resistance, time constraints, and financial barriers to sustainable practices. We will present strategies for breaking down these barriers in both practice and teaching that prevent our sector from fully embracing a more thoughtful, balanced, safe, and ultimately carbon-neutral approach to conserving cultural heritage collections. In the next phase of our research, we will build on this understanding of barriers to integrating sustainable strategies in practice and education. Our ultimate aim is to develop and disseminate pedagogical models representing activities that embed environmental, social,

cultural, and economic sustainability in all its forms. These pedagogical models will be presented at a later date. The development and evaluation of pedagogy that is responsive to our changing environmental and social context is essential to providing the next generation of conservators with the skills and insights to preserve tangible and intangible cultural heritage for an uncertain future. The UCLA/Getty Interdepartmental Program in the Conservation of Cultural Heritage is engaged in multi-phased research to develop methods for embedding sustainability in conservation education. In the first phase of our research, we learned that barriers exist to integrating sustainability not only in teaching curricula, but in all forms of conservation practice. Although in hindsight this finding could have been anticipated, it came up so often in our interviews that we decided to add a second phase to more clearly understand the barriers that conservators face in practice and in educational settings. In this presentation we present the results of our research on these barriers as well as the measures people in the field take to address them. We reviewed the literature in conservation and adjacent disciplines, conducted a survey of the field, interviewed key educators and practitioners on the barriers they encounter in their work, and met with two focus groups comprised of geographically dispersed professionals at different stages of their careers and working in different types and sizes of institutions, including private practice. We also worked with a sustainability coach, educational evaluators, peer reviewers, and other advisors

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# A Hairy Situation: Revisiting the Species Attributions of Meret Oppenheim's Fur-Lined Teacup at the Museum of Modern Art

Dan Kirby, Kyna Biggs, Caitlin Gozo Richeson, Nathan H. Lents, Selin Ates

Created in 1936, Meret Oppenheim's Object is perhaps the best known artwork from the artist's oeuvre. The spectacle and absurdity of the fur-lined porcelain teacup, saucer, and metal spoon provoked immediate fascination, derision, and notoriety. Almost instantly, Object, became synonymous with the Surrealist movement and part of the art historical canon, entering the collection of the Museum of Modern Art (MoMA) shortly after its creation. Over time, the fascination with the artwork never waned, yet the exact nature of the materials used to create Object have not been fully understood for almost a century. Originally described by the artist as being made with the "pelt of a Chinese gazelle", conflicting historical records, purposeful obfuscation by the artist, and a lack of concrete analysis have put this attribution into question in recent years. Accurate species attribution for objects that contain animal fur provides invaluable insight into the making and significance of the piece, the understanding of inherent degradation patterns, and conservation treatments. Beyond this, it dictates crucial implications for travelling and loans.

This investigation, undertaken by the David Booth Conservation Department at MoMA, revisits the species identification of the fur used to create Object by combining archival research with scientific analysis. The most common method for species identification in the field is polarized light microscopy. However, this technique relies heavily on accessible, robust data sets that outline the morphological and optical characteristics of hairs from different species so that accurate comparisons can be made. Restricted by a severe lack of comparative resources, especially for non-North American mammals, polarized light microscopy only identified the likely order of which the animal was classified. Upholding the longstanding tradition of borrowing from other fields, a collaboration with the Department of Science at John Jay College of Criminal Justice and Dr. Dan Kirby, conservation scientist, offered access to techniques not commonly used in conservation.

DNA analysis offered a more accurate method for identification by sequencing the genetic information from samples that can then be compared to libraries for identification. However, the age of the sample, prior treatments, and contamination from handling over its lifetime affected the efficacy of this technique. To mitigate these contamination factors, the less common technique of mitochondrial genetic sequencing was undertaken. Comparatively, MALDI-TOF peptide mass fingerprinting (PMF) was also conducted on hide samples taken from Object with the goal of obtaining species information through collagen analysis. PMF analyzes the specific mass of peptides from collagen samples, which are then compared to a database containing known protein sequences to achieve species identification. This technique has the benefit of being highly sensitive and the potential for overcoming contamination issues. However, it is again highly reliant on robust databases for comparison.

This presentation explores the advantages of combining these techniques, as well as their individual disadvantages, and argues for the benefit of using complementary analytical methods. Furthermore, this research demonstrates how the combination of traditional and modern analytical techniques with conservation and art historical practices can add a greater overall understanding of art objects.

### Novel Non-Invasive Method for Extracting Proteinaceous Binders from Panel Paintings

Jin Dong, Zhanyun Zhu

A new method for non-invasive extraction of protein binders in plate paintings using high acyl (HA) gellan gum is proposed, which solves the limitations of previous non-invasive extraction methods that mainly target the shallow surface of cultural relics and are susceptible to environmental pollution. The extraction effects of different gums on protein binders in simulated panel paintings were compared and characterized in terms of extracted protein concentration, macroscopic and microscopic appearance, color difference, pH and contact angle. Then, Fourier transform infrared spectroscopy was performed to analyze the extraction mechanism. on this basis, the non-invasive extraction of plate paintings containing different types and concentrations of protein binders using HA gellan gum was explored. The results showed that neither HA nor LA gellan gum significantly affected the surface color, pH value, contact angle and visual appearance of the paint layer. The concentration of the protein solution extracted by HA gellan gum is 2.4 times higher than that of LA gellan gum, and the possibility of gel residue is less. In addition, HA gellan gum showed good extraction effects on different types and concentrations of protein binders. Therefore, it is expected to become an effective method for non-invasive extraction of proteins from painted cultural relics. HA gellan gum shows good extraction effects on different types and concentrations of protein binders. Therefore, it is expected to become an effective method for non-invasive extraction of proteins from painted cultural relics. HA gellan gum shows good extraction effects on different types and concentrations of protein binders. Therefore, it is expected to become an effective method for non-invasive extraction of proteins from painted cultural relics.

### Developing Genomic Tools to Determine the Maker of a Modern Gofun Paint Preparation

Jennifer Perry, Christopher Mason, Julie Arslanoglu, Ann-Marie Abunyewa

Genomics can offer unique perspectives into the creation and history of cultural heritage objects. The possibility of learning more about the makers of objects through genomics is tantalizing: there are examples where an artisan's intimate contact with the manufacturing of art materials suggest that genetic information may survive. Gofun, a calcium carbonate pigment commonly found in traditional Japanese paintings, is one of these examples, and this abstract describes our attempts to isolate the genetic information of the maker from a modern preparation. The paint is prepared from gofun powder, which is made by an intensive pulverization of air-dried oyster shells and kneaded by the artist or their assistant with an animal binding glue. A small amount of water is added before application to a textile or paper support. The paste is kneaded by hand for at least an hour, thus increasing the opportunity for cell-free DNA from the artisan's hands, including the artisan's own DNA, to become incorporated into the paint. This phenomenon sparks intriguing questions about what information genomic tools can provide about the history of a painting such as: Who prepared the paint? Could that correlate to the attribution? Does attribution require a combination of human and microorganism genetic information? What microorganisms and organic materials were the painting exposed to, and how might that impact conservation treatment?

This project, representing a novel collaboration between the Metropolitan Museum of Art and the Mason Laboratory of Weill Cornell Medicine, explores the extent to which these questions can be answered using the smallest paint sample possible. As sample size is the limiting factor for most art analysis, especially Asian art, which typically is painted in very thin layers, the following work describes what might be possible on milligram sample sizes with the hope that miniaturization could be achieved. A modern gofun paint mockup, prepared by a Met conservator, served as our paint source. A protocol optimized for highly-fragmented DNA from calcium-based sources was implemented on four samples, ranging between 0.5 - 2 mg of paint. We selected a protocol that was sensitive to small fragments of DNA as the paint source was exposed over time to light, water, and enzymes that digest DNA, all of which drive DNA degradation reactions. Moreover, calcium ions from the gofun interfere with

extraction by tightly binding to DNA, so a protocol that sequesters calcium was essential for DNA recovery. As the extraction yield was too low for detection, we amplified the extracted DNA to reach the minimum concentration required for sequencing. Fluorometry and automated electrophoresis following amplification support the presence of DNA in the paint samples. Moreover, software tools for organism identification reveal the presence of human, bovine, and mollusk DNA, among other species, suggesting the power of genomic tools for material verification. Genomic isolation and analysis from smaller-sized samples of gofun may be possible; however, challenges remain. Repetitive amplification of the sample can create byproducts that interact with other samples run on the same instrument, leading to crosstalk between samples. This can result in the false identification of unexpected species found in other samples. Future studies will probe into better addressing these issues.

# Art Bio Matters: A conversation and collaboration space for conservators, scientists and cultural historians interested in the biological materials of cultural heritage

Julie Arslanoglu

Art Bio Matters (ABM) stands as a dynamic alliance of enthusiastic and curious curators/cultural historians, scientists, and conservators. Together, we combine diverse research methodologies, unique perspectives, and ambitious objectives in our pursuit of unraveling the mysteries within biological materials found in cultural heritage collections.

Your perspective is invaluable to us, whether your aspirations align with advancing preservation techniques, conducting in-depth analyses, or contributing to the nuanced interpretation of cultural artifacts. At the heart of ABM are the core values of inclusive participation, curiosity, respect, candid debate, and collaboration between the core disciplines of science, curatorial/cultural history, and conservation, working seamlessly to safeguard our cultural heritage.

By supporting ABM, you not only endorse innovative research but also embrace a collaborative ethos. We extend a warm welcome to all participants in cultural heritage studies, recognizing that it is through collective efforts that we can make a lasting impact on the preservation and understanding of our shared cultural legacy. Join us in shaping a future where knowledge and appreciation of our cultural heritage flourish, thanks to your vital contribution.

# Advancing Conservation Techniques Through Deep Learning of Optical Coherence Tomography Images For Classifying KozoFibered Papers

Yi Yang, Sarah Reidell, Ayush Kale, Yuwei Liu, Xuan Liu

In this presentation, we will share a novel method of acquiring the cross-sectional images of 35 sample papers using optical coherence tomography (OCT) and feeding the images through Deep Convolutional Neural Networks (AlexNet) to achieve highly accurate and non-destructive classification. Paper identification and analysis of morphological characteristics related to plant cultivation and craft tradition have long relied on interpretive observation and/or destructive fiber sampling techniques [1-3]. Optical coherence tomography (OCT) is a non-invasive technique used for medical imaging that has been applied to art conservation to capture both the surface and subsurface structure information of cultural heritage objects [4]. Thirty-five paper samples were sourced from a conservation vendor specializing in Japanese handmade papers. These were selected based on their known fiber content and production methods as well as use in book and paper conservation treatments for hinging, tear repairs, and loss compensations. Cross-sectional images of the samples produced by OCT reveal how light scatters in the paper substrate. The patterns of scattering light seem arbitrary to the human eye, however, AlexNet, first introduced in 2012 as a convolution neural network (CNN) for image classifications [5], can be used for deep learning to classify these papers. A total of 35,840 OCT cross-section images were generated, of which 3,500 images (~10% of the dataset) were used for training, 8,960 images (25% of the dataset) were used for validation,

and 23,380 images (~65% of the dataset) were used for testing. The AlexNet achieved a test accuracy of 98.99%, with 23 out of 35 paper samples achieving 100% accuracy in the tests. This presentation will share information on this testing methodology and equipment, as well as a summary of the results which demonstrate that combining OCT with AlexNet can provide conservators with a highly accurate tool for classifying papers used in treatment repairs.

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# Wood Identification in Historic Furniture: Optimization of Machine Learning Approaches for Processing LIBS and Py-GC/MS Data

Richard R. Hark, Randy Wilkinson, John Stuart Gordon, Patricia Kane, Chandra Throckmorton

This study focuses on the challenging task of identifying various species of mahogany, a prized wood sourced from the Caribbean in the 18th and early 19th centuries. Distinguishing between 'true mahogany' species and other tropical hardwoods, as well as North American woods mimicking mahogany, poses a significant challenge. Accurate wood identification is crucial for understanding the origins of raw materials, craftsmanship choices, and for effective conservation. Traditional methods involve microscopic examination by a wood anatomist, but obtaining suitable samples may not always be feasible or desirable. An alternative approach utilizes chemotaxonomy, leveraging variations in organic and inorganic chemical composition for wood differentiation.

In collaboration with Yale University Art Gallery, our ongoing project employs handheld laser-induced breakdown spectroscopy (LIBS) and pyrolysis gas chromatography-mass spectrometry (Py-GC/MS), complemented by machine learning (ML). Our goals are to distinguish mahogany from similar-looking woods and, ultimately, to differentiate between the three Swietenia mahogany species. Promising outcomes have emerged from the analysis of numerous samples, including those extracted from furniture. This presentation will highlight recent efforts to optimize data preprocessing steps, effectively deploy machine learning tools, and develop more robust classifiers. A collection of over 400 wood reference samples were studied with the two techniques, prior to examining approximately 200 areas on historic pieces of furniture employing the same approach.

Py-GC/MS is well-known among conservators for its efficacy in characterizing heritage materials. This method utilizes small samples of wood, either as tiny fragments or powdered material obtained with a hand drill. It takes about one hour to analyze a single sample in the laboratory. The resulting pyrograms show the presence of materials associated with cellulose, hemicellulose, and lignan, which are polymeric components common to all types of wood, as well as extractives, the non-structural, low molecular weight organic molecules that are the principal source of chemotaxonomic discrimination.

LIBS is a form of optical emission spectroscopy capable of simultaneously detecting all elements within a single laser pulse. Consequently, a broadband

LIBS spectrum can be likened to a diagnostic fingerprint. With a commercially available handheld instrument, it is possible to analyze objects in situ in a matter of seconds. Notably, LIBS enables the detection of light elements, including both organic (e.g., C, H, O) and inorganic components (e.g., Li, Na, Mg, Al, Si, K, Ca, Ti, Fe, Zn, Sr).

Before applying machine learning tools, a preprocessing protocol was developed for the LIBS and Py-GC/MS data. This included baseline correction, alignment to ensure that the wavelength or retention time values were standardized across all data collections and were therefore directly comparable, and, in the case of LIBS, the removal of data with low signal-to-noise ratios (SNR) based on a spectral similarity analysis. Principal Component Analysis (PCA) and Partial Least Squares Discriminant Analysis (PLSDA) was then applied to build classifiers. Iterative refinement of ML algorithms and preprocessing steps resulted in models with a high level of classification success. Software was then developed to allow chemometric processing of LIBS data to be carried out in real-time in a gallery space.

# Plastics Bingo!: Identifying Plastics in the Collections of Cooper Hewitt, Smithsonian Design Museum

Sarah Barack, James Hughes, Jessica Walthew

This poster summarizes the results of a short internship in 2023 focused on plastics identification at Cooper Hewitt, Smithsonian Design Museum in New York City. The goal of this research was to more accurately identify a selection of plastics in collections objects and deepen my understanding of the types of polymers typically found in design museum collections.

This project follows up on a year-long survey begun in 2012. In this survey, ca. 1,500 collections objects were assessed for condition, storage recommendations were made and implemented, and a handful of objects were analyzed using portable Raman and Fourier-transfer infrared (FTIR) spectroscopy by conservation scientists. My project focused on a small subset of the objects included in the earlier survey. Over four weeks, 37 collections objects and 58 reference samples were analyzed using Attenuated Total Reflection (ATR)-FTIR spectroscopy.

Cooper Hewitt's remit is to collect and care for important and impactful design. As indelible materials of the 20th century design narrative, its Product Design and Decorative Arts curatorial department is filled with examples of natural (horn, tortoiseshell) and early plastics such as those made of cellulose derivatives and formaldehyde-based resins (i.e., Bakelite). Modern plastics like polyvinyl chloride (PVC) and polyurethane foams have consistently made their way into the collection over time. As today the museum collects a wide variety of objects, from one-of-a-kind works of art to disposable commodity items, an impressive range of plastics in varying conditions are present both on display and in museum storage.

It's no secret that art and design museums face unique challenges when it comes to understanding plastics in their collections. Plastics are made from varying proportions and mixtures of polymers and additives and can be nearly impossible to distinguish from one another, even if their degradation phenomena and aesthetic qualities appear nearly identical. The complex composition of these objects challenges both identification and appropriate treatment and/or storage options. Complicating matters is the fact that many design objects exist as multiples or editions, calling into question long-held conventions in our field regarding authenticity, authorship, and ownership.

While many objects in our survey were identified with confidence, matches using FTIR were not always straightforward. Plasticizers and other additives can obscure spectra, rendering confident identification nearly impossible. Compounding the complexity of the task is the fact that many objects are made of composite materials. While ATR-FTIR is a very useful technique for bulk polymer identification, not all collections objects are suitable for this technique due to their size, shape, and/or condition, among other factors. It thus became vital to use a three-pronged approach: considering historical context along with sensory information and the use of scientific analysis to accurately determine polymers. The short but ambitious project provided the institution – and me – with a wealth of information about the complex plastics materials increasingly

encountered by cultural heritage professionals, especially those working in modern and contemporary design collections.

### Investigating Hydrogel Desalination of Egyptian Limestone Objects Using NMR-Mouse Spectroscopy

Garrett Hill, Margaret MacDonald, Mollie Crossman, Riley Cox, Maggie Wang

Egyptian limestone objects are known to be sensitive to unstable conditions in storage. Exposure to fluctuating humidity can cause the soluble salts inherent in these objects to dissolve, migrate, and recrystallize leading to delamination, flaking, and general loss of structural stability. The Walters Art Museum found three such objects in their collection in need of stabilization through desalination. These Egyptian limestone works were determined to be too fragile to be treated through the traditional desalination approach of submersion in a water bath. The conservators sought an alternative approach to desalination with agarose hydrogel poultice, which desalinates the stone through the formation of a concentration gradient. Prior to treatment, the surface will be secured with B-72 consolidant to preserve its structural integrity.

This research explores the effect of consolidation on the rate of desalination and the efficacy of the treatment using an NMR-MOUSE spectrometer, a non-invasive analytical technique that measures the transverse relaxation time (T2) of the protons in limestone-bound water. As such, T2\* rates measured over the course of the treatment allows direct observation of the salt changes in the stone. Preliminary data suggests that the non-consolidated stone reached full desalination after 5 days compared to the consolidated stone which took 11 days. The data suggests that use of an agarose hydrogel treatment is feasible even after the application of the B-72 consolidant.

In addition to NMR relaxometry measurements, ICP-MS, SEM-EDX, and a series of microchemical tests were employed to analyze the salt composition of powder which had delaminated from the three Egyptian limestone objects found in the Walters Art Museum's collection. Quantitative evidence of Na+, K+, and Mg2+ cations were found in each sample in addition to the likely presence of phosphates, sulfates, and chlorides. This project advances the understanding of the use of agarose hydrogel for the desalination efforts of fragile objects. The NMR-MOUSE and other laboratory instruments can be applied to the cultural heritage field to better understand the treatment approaches already in use and to assist the development of new processes. This collaborative effort between the scientific research and art conservation fields exemplifies the knowledge that can be gained through interdisciplinary work.

This research was performed as part of the Baltimore SCIART Program, which is supported by the Andrew W. Mellon Foundation under Award 41500634.

### Evaluating the Light-Stability of Roasted Arsenic Sulfide Pigments

Katherine Eremin, Celia Chari, Anjali Jain, Jinah Kim, Shao-Liang Zheng

Arsenic sulfide pigments, broadly ranging in color from red to yellow, have been used since prehistoric times in their natural, mineral form.1 The most widely known of these arsenic sulfides are orpiment (As2S3), realgar (α-As4S4), and the light-induced alteration product of realgar known as pararealgar (y-As4S4). The poisonous quality and reactivity of such pigments has been known for centuries, with Cennino Cennini warning that "there is no keeping company with [the arsenic sulfides]" and to "look out for yourself" when working with them. Although arsenic sulfides lost popularity and became commonly replaced by less-toxic yellow colorants over time, they are heavily used in works of art dated prior to the 19th century. Much research has been carried out on understanding the alteration of realgar into pararealgar, both from an atomic-level perspective2 and from a museum perspective.3 Nevertheless, there are many other mineralogical arsenic-bearing phases that have scarcely been identified in works of art, including dimorphite (As4S3), bonazziite (β-As4S4, which is the high-temperature counterpart of α-As4S4), and alacranite (As8S9).4 As a result, the light-stability of these pigments has not been fully assessed from a conservation viewpoint. Recently, as part of Harvard University's Mapping Color in History project, an arsenic sulfide pigment identified as β-As4S4 was collected from the workshop of the traditional Indian painter, Mr. Babulal Marotia, based in Jaipur, Rajasthan. It is known that  $\beta$ -As4S4 can be obtained from realgar by heat-treating the mineral at temperatures approximating 250 °C.5 Considering that naturally occurring bonazziite is particularly rare, the identification of this arsenic sulfide phase suggests that the pigment was procured by roasting natural realgar. In the current study, the lightfastness of the Indian pigment will be evaluated and compared to paint outs of natural realgar, orpiment, pararealgar, and artificial realgar from the Forbes Pigment Collection housed at the Harvard Art Museums. The limitations of using a microfading tester on realgar-type pigments will be explained and compared to results from fading experiments carried out in natural lighting conditions. The light-induced alteration of the Indian pigment will be further assessed in-situ using a combination of Raman spectroscopy and photocrystallography. Insights on the photochemical reactions taking place will be evaluated against the natural light fading colorimetry measurements, providing a thorough review on the light-induced degradation pathways of the roasted pigment, and its implications for art conservation.

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# Using Projection Mapping to Reduce Damage to Light-Sensitive Paintings Room 355 EF (Salt Palace)

Alp Durmus

#### Relevance and background

Preserving the integrity of historical artifacts remains a paramount concern for cultural heritage. However, stewards of heritage grapple with the material degradation over time catalyzed by environmental conditions, such as air quality, humidity, and light. Light can cause photochemical damage when directed onto light-sensitive artwork like textiles, paper-based works, or oil paintings, resulting in color fading, varnish yellowing, or undesirable color shifts.

While light is an imperative medium for human visual perception, the dichotomy it presents—between enhancing visibility and inducing damage—is at the crux of conservation endeavors, exerting a critical influence on art display within museums. The "visibility-damage dilemma" shapes the lifetime of artworks, governed by the antagonistic relationship between prolonged exposure and longevity. While prevailing museum lighting guidelines underscore the importance of curbing light exposure, it is important to acknowledge that stringent light reduction measures, while mitigating damage, may not uniformly cater to human visual perception. Under dim lighting (often 50 lux or lower), paintings may lose their inherent vibrancy, owing to the decreased sensitivity of the human visual system. Such conditions can render objects visually muted, prompting the re-evaluation of universally adopting reduced light levels as a catch-all solution for both conservation and visual appeal.

#### Purpose and hypothesis

A promising novel application is the optimization of light using projection mapping techniques, which can improve the viewing experience while simultaneously reducing degradation caused by light. Previous studies show that light source spectra can be spectrally optimized to reduce light absorbed by materials, only emitting light that is reflected off of surfaces. We hypothesize that light projection systems can be used to go beyond visual enhancement, embracing the mitigation of photodegradation-induced color desaturation or compensating for low light levels.

#### Methods and outcomes

Our research started with computational simulations aimed at quantifying reduced damages. Linear optimization methods gauged the appearance of 15 color samples under different illuminants, yielding energy savings up to 71% without perceptible color shifts. Extending this exploration into heritage conservation, we used a seven-channel LED system targeting the preservation of monochromatic oil paintings, demonstrating the feasibility of halving damage and energy consumption without inducing discernible color shifts. In a follow up study, an absorption-reducing light projection prototype was tailored for Joaquín Sorolla's painting "Walk on the beach". This RGB projector-based system utilized point-by-point light projection to curtail damage by up to 49% compared to daylight, and up to 67% compared to incandescent illumination, all the while preserving color fidelity. Finally, we conducted a vision experiment to test the appearance of artwork under light projection to test user acceptance.

These advancements herald the path toward spatially and spectrally precise light optimization, culminating in prototypes attuned to the spatial complexities of multi-colored artworks. This comprehensive exploration not only underscores the intricate interplay between light, preservation, and visual aesthetics but also supports evidence for the potential of light projection systems as transformative tools within the realms of conservation.

### Application of PECVD in the Conservation of Metallic Cultural Heritage

Yasmin Sayed Ahmed, Mohamed Soliman Ali Khedr

Siloxane has been used for the protection of metal artefacts from corrosion in the form of transparent barrier coating films because of their good adhesion to the metal substrate. The effect of oxygen plasma pre-treatment on the adhesion properties of the siloxane thin film on the silver-copper alloy substrate was investigated. Radiofrequency plasma-enhanced chemical vapour deposition (RF-PECVD) was used for the deposition process. Surface identification and characterization of the deposited films were carried out using Scanning Electron Microscopy coupled with energy dispersive X-ray (SEM-EDX) and Fourier-transform infrared spectroscopy (FT-IR). Surface topography and roughness were investigated by atomic force microscopy (AFM). The hydrophobic characteristic was measured by water contact angle measurement (WCA). The film thickness was evaluated using a spectroscopic ellipsometer (SE). Colorimetric measurement (CM) was used to evaluate changes in the appearance of the surface following the PECVD deposition of the SiO2 protective layer. The corrosion protection ability of siloxane films for metal substrates as a function of RF power and gas feed composition was examined by the electrochemical impedance spectroscopy (EIS) technique. It was found that the deposited film improved the protective efficiency for samples from 55.29% to 92.93%. Besides, after the oxygen plasma pretreatment step, the film showed better corrosion resistance of the tested samples.

### Alteration of Materials and of Meaning in an Early 16th C. Upper Rhenish Devotional Manuscript Room 355 EF (Salt Palace)

Cindy Connelly Ryan, Meghan Hill, Marianna Stell

Non-invasive micro-scale analysis are bringing a revolution to the scholarly understanding of the texts and images of medieval manuscripts, unlocking new information about their current condition, original making, and meaning. A dramatic example of this was recently found in a diminutive devotional miscellany

manuscript written circa. 1518 in the Upper Rhine region, currently part of the Library of Congress's Lessing J. Rosenwald Collection.

Rosenwald Ms 13, Betrachtungen des Leidens Christi und Gebete für Klosterfrauen (Contemplations of the Passion of Christ and prayers for nuns) is a particularly interesting example of a manuscript crafted for devotional purposes, used and re-used over several centuries within the context of a female religious community in Germany. The hand-written text is decorated with red initials and highlights throughout, and small hand-colored woodcuts pasted into the book. These vary considerably in style, format, and palette, suggesting that they derive from multiple sources and may have been purchased already painted. One image stands out as exceptional: the Holy Face on folio 58v, which presents the face of Christ in shades of dark gray and black.

Technical study of the woodblock was conducted to learn whether the present appearance of the Holy Face is intentionally black due to deliberate material choices, or due to deterioration of the materials used. Synergistic application of x-ray fluorescence spectroscopy, reflectance spectroscopy, and multispectral imaging revealed that the present appearance is a combination of alterations and intent. Quite unexpectedly, the small painted image includes uncommon and novel material uses to render the unexpected palette. Identifying its present appearance as (largely) intentional fundamentally alters the meaning of the image, linking it not just to private devotional practice centered in the text on the page, but to the practices of pilgrimage, spiritual pilgrimage, and exchanges of relics and devotional images in the intellectual, social and spiritual lives of cloistered women of the era.

### Mechanisms of Decay: Rapid Weathering of Outdoor Basalt Sculptures

Jane C. Gillies, Bavan Rajan, Gelu Costin, Kirsten Siebach

Three basalt sculptures by the South Korean Artist Byong Hoon Choi called "Scholar's Way" were installed in a pool of water, outside the new Kinder building for Modern and Contemporary art, at the Museum of Fine Arts, Houston in 2020. The sculptures are carved from naturally occurring columns of basalt sourced from Indonesia, with most of the surface being highly polished to a black mirror-like finish. Parts of the sculptures around the bases and at projecting elbows of the abstract forms retain a weathering crust. Before the installation, conservation had concerns about what effect the surrounding environment and the addition of chemicals, to control the water quality, would have on the sculptures. In a short time, the polished surface had dulled and granules of the crust were falling off. Although the artist has worked with this material for 40 years, only a few of his sculptures are installed outside in water. Despite his assurance about the material durability we obviously had a problem whose mechanisms needed to be more fully understood. Conservation collaborated with students and faculty at Rice University to determine the geochemistry of the basalt and weathering crust, as well as to analyze the water quality and its chemical composition. Surface measurements of the columns with near infra-red, energy dispersive spectroscopy (EDS) and electron probe microanalysis (EPMA) showed that the base rock that was used was already in a highly altered condition before installation. The degree of alteration on the surface was accelerated by weathering in humid conditions. The weathering crust is largely made up of clay and some remnant basaltic igneous minerals. The EPMA showed that the basalt contains orthopyroxene, Ti-augite, plagioclase, and Ti-magnetite and is thus an iron-titanium basalt. Secondary minerals are widespread and make up more than 90% of the crust. These minerals are mainly clays such as ferripyrophyllite, ferrisepiolite, and kaolinite. The presence of these minerals proves that the rock was altered by hydrothermal processes prior to human intervention. The effect of weathering in humid conditions affects the surface of the rock. The porous clay aggregate readily absorbs water and the other remnant minerals are somewhat soluble in the chemically treated water. The civil ordinance governing water features which had been used to justify the use of harsh chloride containing bleach and acid in the water was deemed inapplicable to this non-interactive feature. The clay minerals occur over the entire surface of the sculpture including previously polished portions, consistent with recent weathering in addition to the original weathering crust. This study is ongoing. A protective wax has been applied to the polished areas. We have not decided on whether a consolidation treatment can be applied to the weathering crust as this may cause greater damage. We

are removing the additive acid/alkali mix from the water and are investigating replacement with a copper salt to prevent algae growth.

### Not All That's White Is Salt: Encountering Lead Corrosion on Glazed Ceramics

Klaus Achterhold, Markus Roos, Thomas Schindler, Isabel Wagner

The revenues from the salt trade were of great significance to the Bavarian electors until the late 18th century. The 'white gold' was transported by waterway from Hallein and Berchtesgaden to Stadtamhof near Regensburg, with so-called 'salt ship trains' being used on the Danube. These were convoys of ships specially designed for transporting salt, which were pulled upstream with the help of horses, a process known as 'towing'. The only known sculptural representation of a Palatinate salt ship convoy is housed in the Bavarian National Museum (BNM) in Munich. The group of objects has so far been dated to the second half of the 18th century. As an object, it is culturally a piece of regional historical significance.

This representation of a salt ship convoy is made of glazed ceramics, leather, metal, and wood. Initial investigations revealed a notable pattern of damage on all figures and ships: sporadically growing "needles" from the surface. Initially, it seemed likely that these could be salt efflorescences, but a closer examination held a surprise. The white material always had its origin in a metallic core. Knowledge of the exhibition conditions during recent years led to the assumption that the white material is indeed lead corrosion, which was confirmed by SEM-EDX and X-ray diffraction. The lead had reacted with formic and acetic acid emissions from display cases to form lead hydroxycarbonate (lead white) and lead formate. The question of the origin of the lead accumulations was investigated through CT scans. It became evident that the lead did not originate from impurities in the body but was formed from the lead glaze during firing.

The restoration of the salt ship convoy involved dealing with various options for treating active lead corrosion and discussing their applicability to an object made of mixed materials. The decision was made to mechanically remove the lead corrosion products and apply a protective coating to the lead accumulations. Aspects of preventive conservation were also considered because the new display case is made again of wooden materials that can lead to an accumulation of acetic acid. Therefore, options for retrofitting an existing display case to reduce emissions are also being discussed.

### A Study of the Use of Acacia Nilotica Seed Pods to Produce a Distinctive, Black Paint for Bwa and Mossi Polychrome Wood Masks in Burkina Faso

Richard Newman, Stephanie Hornbeck

Encounters with an unusual black paint during treatment of Bwa masks in 2000 and 2022 inspired this black paint investigation focusing on Bwa and Mossi masks. This heavy-bodied black paint is used for raised linear designs on tri-color (red, black and white) wood masks depicting hybrid creatures or animals made by multiple cultural groups in the region of Burkina Faso. Several masks in our study were collected directly by the eminent University of Iowa scholar and art history professor Christopher Roy (1947-2019), who worked in Burkina Faso over four decades. In 25 years of treating African objects, one author has encountered various black substances, yet none to-date has resembled the unusual Bwa paint she first noted in 2000 at the Smithsonian's National Museum of African Art. In personal correspondence with Roy about this and in his publications, Roy explained that laborious processing of Acacia nilotica seed pods produced the paint. Later object treatments undertaken in 2022 for the inauguration of the UI Stanley Museum of Art's (SMA) new building afforded access to the Burkinabè masks collected by Roy and an increased exposure to his scholarship. The distinctive appearance and Roy's intriguing description of the paint's derivation led to our collaborative effort to corroborate Roy's field observations with scientific analysis.

Following Roy's descriptions, the processing of Acacia nilotica seed pods was recreated in the lab, and the newly created samples compared with paint from the objects. Multiple analytical techniques, including FTIR, py GC-MS, and

SEM-EDS, were applied to elucidate the nature and composition of the paint samples and reference material to confirm Roy's field description. While an array of substances is used to produce the important color black throughout the African continent, the use of Acacia nilotica seed pods for black paint appears to be localized to the Burkinabè. The study of the compelling biographies and materiality of the masks sheds light on a long cultural tradition in Africa's Western Sudan region.

### When One's Upbringing Guides Scholarly Research: The Technical Examination of a (Purported) Mexican Religious Painting

Dr. Jocelyn Alcantara Garcia, M. Fernanda Delgado Cornelio, Elsa Arroyo-Lemus, Catherine Matsen

Historical objects are key to understanding the context that led to their creation – cultural, social, and technological. The growing interest in studying overlooked collections has aided in shedding light on certain periods and places, such as the transition from New Spain to (independent) Mexico. This is the case of a painting donated in 2022 to the Winterthur Museum, Garden & Library, an institution known for their American decorative arts collection. Originally referred to as a "Mexican Retablo", the object depicts 10 figures commonly associated to the Catholic religion. This term was used despite lacking provenance, bibliographic information, or a thorough description.

Our interest in this work is multifaceted, both professionally, and personally. The objectives were (1) giving a more informed attribution and significance; and (2) adding technical information on Mexican artists, outside those once endorsed by the Spanish Monarchy. Being Spanish the native language of most authors, who in addition were raised into Catholic traditions in a predominantly Catholic country played a central role in this study. For example, it was possible to rapidly identify most of the religious figures portrayed, later confirmed through iconographic cross-referencing. As well, we realized that it was incorrectly described as a "retablo" but instead it was a "devocionario". Devocionarios are painted collections of Catholic icons that emulate retablos, which are comprised of both sculptures and paintings. In addition, as Spanish speakers, we could access primary sources, catalogs, and existing published studies in this language. Instrumental analyses included X-ray fluorescence (XRF), Raman, and fiber optic reflectance (FORS) spectroscopies; cross-section polarized light (PLM) and scanning electron microscopy (SEM) with elemental mapping (energy dispersive X-ray spectroscopy, EDS). This technical examination revealed the work's relative simplicity (e.g., no preparatory drawing), and limited pigment palette (e.g., white lead, ochres, etc.). of particular interest was the presence of arsenic and sulfur suggesting orpiment, a pigment traditionally used in Mexico. This study contributes to the limited knowledge of painting traditions in present-day Latin America, as it evolved from being of European influence to finding its own identity by incorporating local materials and practices and owning its iconographic style.

# Eh, Voilà! Encountering the Unexpected in the Treatment of Gustave Caillebotte's 'Young Man at His Window'

Joy Mazurek, Karen Trentelman, Douglas MacLennan, Devi Ormond

Sometimes things are not what they appear to be. A thorough investigation of 'Young Man at His Window' by Gustave Caillebotte using broadband UV, visible light, infrared, and X-ray imaging showed that the painting had multiple varnish layers applied over significant losses to the original paint and ground which had been extensively overpainted. However, the unexpected happened during what was anticipated to be a relatively straightforward treatment: newspaper print and gauze were discovered along one of the edges of the painting when a small window was opened in the paper tape. Was this evidence of a transfer? A closer visual examination supported by a full technical investigation into the composition of the previously applied conservation materials using scanning macro X-ray fluorescence spectroscopy (MA-XRF), scanning electron microscopy with energy dispersive spectroscopy (SEM-EDS), Fourier transform infrared

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(FTIR) spectroscopy and gas chromatography- mass spectrometry (GC-MS) confirmed that the painting was, in fact, a transfer!

Painted in 1876 on a finely woven canvas, the work likely suffered significant damage from shrinking after exposure to water. Presumably, the damage to the original canvas was sufficiently great to warrant transferring the painted image to a new support. The materials used in the ensuing structural treatments, as well as their sequence of application, were deduced from the material evidence still present on the painting. First, the damaged painting was faced using newspaper and stiff cardboard. The original canvas was then removed from the paint and ground layers. A new priming layer - composed of barium sulfate, zinc white, and gypsum bound in linseed oil - was then applied to the exposed ground. Next, gauze was laid over the dried priming layer. The newly transferred painting was then lined, using starch and animal glue to affix it to an auxiliary canvas support, and re-stretched. The final step in the transfer process would have been to remove the temporary facing. Small islands of paint affixed upside down and rotated with respect to the surrounding weave suggest that additional damage occurred during this step, necessitating further conservation treatment. Large areas of the painting were covered using a chalk-based filler and overpainted using pigments bound in modern resins. Multiple varnish layers containing pine resin, dammar, bleached shellac, drying oil, and a UV-absorber were identified on the surface of the painting.

The results were contextualized through archival research and studying textual sources [1]. The materials associated with the transfer and lining coupled with their order of application are a close match with published Parisian recipes and documented workshop practices. In this case study, the materials used in the previous treatments functioned to hide the complete extent of damages, rendering many losses invisible using standard broadband imaging techniques. This treatment and scientific examination serve as a reminder that we should expect the unexpected in every work of art.

Bibliography

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# What's on The Bag? Technical Analysis of The Colorants and Printing Techniques Utilized In Frank Stella's 1984 Tyler Graphics Bag

Devon Lee, Caroline Carlsmith

In 1991, the Nevada Museum of Art presented an exhibition of shopping bags belonging to the private collection of J. Scott Patnode. The exhibition, titled It's On The Bag, aimed to bridge the gap between "functional" and "fine" art by celebrating the shopping bag as a ubiquitous and accessible reflection of consumerism and pop culture at the close of the 20th century, and many of the bags on display were commercially printed with reproduced or commissioned imagery made by popular artists. One such artist represented in the exhibition was the American painter, printmaker, and sculptor Frank Stella. Commissioned by the now-closed chain of Dayton's department stores to promote the 1984 expansion of the Walker Art Center in Minneapolis, MN, Stella's bag was titled Tyler Graphics Bag for the purposes of the exhibition.

Tyler Graphics Bag is named for the Tyler Graphics Studio, where the bag was produced. Under master printer Kenneth Tyler, the studio collaborated with numerous other artistic luminaries of the 1970s and 1980s, including David Hockney, Helen Frankenthaler, Ellsworth Kelly, and Roy Lichenstein, and was actively exploring new technologies for digital printing. Stella's Tyler Graphics Bag is printed on all five sides, with compositions by Stella on the two largest panels and promotional information about the Walker Art Center's new galleries written on the smaller side panels. Prints from the same edition are described inconsistently in the market and in institutional collections, contributing to lack of clarity around the media of the original design and the methods of production.

Two of the Dayton's Stella bags are in the collection of The Conservation Center of the Institute of Fine Arts, New York University, where, in partnership with the Museum of Modern Art, technical analysis of the bags was carried out to characterize the colorants and printing techniques employed in their manufacture. The bags were analyzed using multiband imaging, portable Raman spectroscopy,

and reflectance Fourier-transform infrared spectroscopy (rFTIR) to characterize the media and colorants used in their production. Microfading testing (MFT) was also used to classify the light sensitivity of the identified colorants to establish possible display recommendations. The manufacturing processes were explored through microscopic examination, which revealed evidence that the images on the shopping bags were created using offset printmaking techniques to mimic diagnostic characteristics of other printing methods; there is a faux woodgrain in the background of the printed composition, while the overlapping marks in the center suggest stone lithography and screenprinting techniques, all of which are ersatz, produced instead with halftones of combined gray spot color and CMYK color separation. This research sheds new light on printing techniques during a transitional period in printing and digital technology, and on collaborations between one of the foremost American artists and printing studios of the 1980s.

### Sustainability

#### **A Toolbox for Spurring Climate Action**

Amy Crist, Roxane Sperber

We are experiencing the onset of a long-predicted climate crisis. While certain effects are far from unexpected, how exactly climate change will continue to impact our profession is impossible to predict. This talk will present a toolbox to help encourage professionals in the field of preservation to take action. We will highlight resources and fellow professionals that are innovating in this arena to help make it possible to safely care for cultural heritage without unduly impacting the planet. While this crisis feels daunting, we hope to inspire you and help you to feel part of the community that forms when we approach this problem together.

Roxy is the Clowes Conservator of Paintings at the Indianapolis Museum of Art (IMA) at Newfields. She has served on the AIC Sustainability Committee since 2019, and was chair from 2020-2023. Roxy enjoys sharing a vision for a more sustainable future with her professional colleagues and inspiring everyone to find community in this work.

Amy is the Harry A. and Margaret D. Towsley Foundation Book and Paper Conservator at the University of Michigan Library. She has served on the AIC Sustainability Committee since 2020, and is the current co-chair. Amy tempers her climate anxiety by doing things, big and small, to lessen her impact on this beautiful planet.

### Building a Climate of Hope: Developing Climate Exhibits for Shared Engagement and Learning

Lisa Thompson, Dr. Lynne Zummo

Engaging learners around climate change in ways that do not antagonize or dishearten is no simple task—one that museums have just begun to tackle. While many have argued that museums can and should be important sites of climate learning (e.g., Anderson & Williams, 2013; Cameron, 2012; Newell et al., 2016), empirical research is still comparatively nascent. Extant work has tended to focus on museum educators (e.g., Geiger et al., 2017), producing valuable knowledge on how to engage learners in productive conversations. Yet, research on exhibits is still quite emergent, at a time when it is critical to consider what specific exhibit elements lead to desired outcomes and what could inhibit such outcomes.

The Natural History Museum of Utah (NHMU) aims to advance the field by investigating visitor learning at an innovative climate change exhibit, A Climate of Hope, which opened in November 2023 after an intensive, research-based development process. By studying learning at A Climate of Hope—which offers a counternarrative to educational experiences that scare, polarize, and/or exclude—we work towards dismantling the current "spiral of silence" around climate change. Analyzing learners' discourse and engagement with the exhibit, we seek to understand how design features, message framing, and interactivity of exhibit elements can shape visitors' learning.

This session will provide an overview of the frames utilized in A Climate of Hope; how they differ from frames used in past exhibits about climate change; how

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we communicated the frames through interactives, images, and text; as well as what NHMU's NSF-funded research is revealing about supporting productive learning about climate change among diverse learners in museum settings.

#### AIC and FAIC's Commitment to Sustainability

In June 2023, FAIC published Held in Trust: Transforming Cultural Heritage Conservation for a More Resilient Future. Growing out of a four-year collaboration between FAIC and NEH, the report articulates a vision of a vibrant and resilient future for conservation grounded in social justice, equity, and environmental action. Early in the research process, one topic area repeatedly arose as an issue of critical importance: climate change. It was clear that without addressing the effects of climate change on cultural heritage, the other findings and recommendations from the HIT project became irrelevant.

In strategic planning efforts launched in 2023, both organizations focused on Sustainability and Climate Impact as one of four core values underlying all of our work. We are putting this into action with the 2024 launch of Climate Resilience Resources for Cultural Heritage, expansion of Sustainability Tools in Cultural Heritage (STiCH), sustainability training, consideration of climate impact in the current review of the AIC Code of Ethics and Guidelines for Practice, and more.

### **Life Cycle Assessment Panel Discussion**

Dr. Matthew Eckleman, Sarah Nunberg, Cassandra Thiel

Life Cycle Assessment (LCA) is a powerful research tool for evaluating the environmental impact of human activity. The Sustainability Tools in Cultural Heritage (STiCH) project has been a leader in the use of LCA research to analyze conservation-related materials and processes. This panel discussion will feature Dr. Matthew Ecklemann and Sarah Nunberg, two of the principal investigators on the STiCH project, along with Dr. Cassandra Thiel, who uses LCA techniques to analyze various environmental impacts of the medical field. We will discuss some of the basic principles of LCA research, how it has been used in the conservation and medical fields, and its future potential for lowering the environmental impact of our professional activities.

### **Textiles**

### Nizhónígo Hadadít'eh: Mounting Diné Textiles For Exhibition Room 255 A (Salt Palace)

Anna Rose Keefe, Jessica Urick, Shándíín Brown

Diné (Navajo) apparel design is constantly evolving, often in response to historical events. After Spanish colonists introduced Churro sheep to what is now the Southwest United States in the late 1500s, Diné developed a Navajo-Churro breed that produced wool ideal for weaving. By the 1800s, Diné women were creating wool blankets, mantas, and other forms of apparel. After the 1868 Treaty of Bosque Redondo subjected Diné to US federal government rule, forced assimilation, and American capitalism, Diné apparel transitioned from woven wool textiles to sewn commercial fabrics. As non-Natives began collecting Diné textiles, Diné weavers also created designs for hanging on walls. The patterns woven by Diné women in the 1800s reflect Diné aesthetics and beliefs.

This case study looks at the exhibition "Diné Textiles: Nizhónígo Hadadít'eh," on view at the RISD Museum from September 2, 2023 - September 29, 2024. The featured blankets and mantas have been displayed flat in previous exhibitions, a method of mounting that distances the garments from their intended use. Seeing these blankets on mannequins communicates the humanity of their original wearers and draws attention to the skill and precision of the weaver. Custom display forms were created or adapted for this show to facilitate the safe, three-dimensional display of blankets. This process was a collaboration between curator and conservators, involving archival research and insight from scholars, weavers, and stakeholders.

Pre-exhibition XRF analysis also provided insight into dyes, which may help assign dates to Diné textiles, and pesticides, which may be found on blankets in

many Museum collections. This presentation will discuss the concerns inherent in mounting heavy, woven textiles and the steps taken to prevent damage and mitigate risks. Seeing the garments embodied radically changes the viewer's experience, and the symmetry of the mounted blankets communicates a core concept of Diné culture, hózhó (pronounced HOZH-oh), that encompasses balance, beauty, and harmony.

Despite hardship, Diné resilience drives creativity forward. These remarkable weavings were and continue to be sources of design inspiration and objects of cultural appropriation. Nizhónígo Hadadít'eh means "they are beautifully dressed," and mounting Diné garments on forms creates a more profound opportunity for appreciation and understanding. We honor and appreciate the generations of Diné weavers who, through hózhó, have designed beautiful garments for beautiful people.

### Preserving a Confederate Spy Balloon: Adhesive Treatment of Coated Silk

Kayla Silvia

Stabilizing a rare, coated silk fragment from a Confederate spy balloon called the Gazelle presented intricate and unexpected conservation hurdles. The Gazelle was deployed by the Confederate Army during the American Civil War (1861-1865) to spy on Union battle positions. Damaged and captured during a conflict in 1862, it was transformed into a souvenir by a Union balloonist, and a fragment was eventually donated to the Smithsonian National Air and Space Museum (NASM). NASM's Gazelle fabric represents the largest intact example among the scarce remaining fragments of this air balloon.

The case study of the Gazelle fabric explores the complexities of treating a coated and shattered silk textile. The Gazelle fabric is constructed from ladies' dress silk that was coated with a polymeric material on both sides to achieve flightworthy characteristics. However, conflicting accounts of the historic coating's composition raised questions about possible post-capture alterations. When the fabric was donated to NASM, it was mounted on a painted plywood panel using nickel-sized spots of hide glue around the perimeter. The fabric exhibited creases, folds, and losses in the silk. Additionally, the uniformly applied coating stiffened the silk, making it more susceptible to breaking, especially given its age and fragility. This coating's incompatibility with traditional stitching methods prompted the adaptation of lining techniques from other conservation specialties.

While conventional practice involves stabilizing delicate silk with a complete adhesive lining, the presence of the coating raised questions about the appropriateness of this method. Concerns regarding the coating's potential interference with adhesive bonding, coupled with limited access to the fabric's reverse side, posed challenges in providing adequate support without obscuring the striped and floral patterns.

Analysis of the coating was carried out to compare its composition with historical manufacturing records and to inform the curatorial record. Characterization included microscopy, weave count, solubility, temperature response, ATR-FTIR, and Py-GC-MS. Various treatment methods were considered and tested, including experimentation with enzymes to remove hide glue, backing removal, adhesive testing, and full adhesive lining. Challenges encountered with the original support removal, solvent and heat sensitivity of the coating are discussed along with their solutions. A comprehensive understanding of the balloon's history, condition, materials, and the proposed storage and display environment informed the final treatment methodology.

### Measuring Deformation of Tapestries: Focusing on Mechanical Stress During Vertical Display

Kisook Suh, Alejandro Schrott

It is a challenging task to install tapestries or textiles of any large dimensions on the gallery wall with hanging devices. The installation often involves Velcro attachments on a slat or a frame in open display. This display method leaves tapestries exposed to constant mechanical stress that causes dimensional changes of tapestries over time: a cumulative force by gravity in combination

with varying forces caused by tapestries reaction to the environmental changes. Although the mechanical impact of gravity is far much larger than the one caused by environmental condition, little is known to measure the stress caused by tapestries own weights for a duration of time.

A team of a textile conservator and an engineer/physicist developed an optical method to measure the deformation of textiles during hanging with a mockup tapestry. The method involves easily accessible tools, a digital camera and a computational program available in a common programing platform. Some preliminary results may explain and predict certain mechanical behaviors of tapestries during display as hanging. Based on the theoretical understanding with the mockup sample, the same method was applied to the tapestries hanging in the museum galleries. A case study will be presented to share the possible use of this method for monitoring dimensional changes of tapestries hanging in the galleries over time.

### Inexpensive Methods for Small-Scale Digital Textile Printing

Jacquelyn Peterson-Grace

Convincing reproduction fabrics are often required for the treatment and interpretation of textile-based cultural heritage, from garments to historic house furnishings. The fabrication of such reproductions can require expertise and a significant investment of time and monetary resources. The recent opening of a gallery dedicated to historic dress at The Colonial Williamsburg Foundation (CWF) required the creation of a reproduction stomacher for a child's gown, presenting the opportunity to explore low-cost and easily accessible methods for creating digitally printed reproduction textiles. Two avenues for digital printing were explored; yardage was custom printed by Spoonflower, an online printon-demand company that permits custom designs to be uploaded for printing, and paper-backed cotton poplin marketed for use with home ink jet printers. Digital images of the gown's damask textile were obtained by photographing a section of the skirt flat. The color-corrected images were uploaded to the Spoonflower website and printed yardage on two fabric types, cotton poplin and petal signature cotton, were ordered. Several options in a range of tones and saturations were printed on the paper-backed print-at-home cotton poplin fabric by CWF's staff photographer. All three types of printed fabrics were evaluated for print quality, color match, ease and rate of acquisition, and overall cost. Oddy testing determined that all the digitally printed textiles were approved for permanent use with collections. The at-home printing option produced a higher quality printed textile with a finer resolution than the Spoonflower prints and working with in-house photography staff allowed for a quick turnaround time, rather than waiting for additional proofs to be printed and shipped by an out-of-state company. The material cost was roughly the same, though the print-at-home option provided greater flexibility for experimentation and color matching. Washing the at-home digitally printed textile according to the manufacturer's instructions produced a slight shift in color, while the Spoonflower textiles had the same appearance before and after washing. The lightweight quality of the cotton substrates allowed the overall color of the digitally printed textiles to be manipulated by adding dyed cotton underlays to better match the original textile's color. The print-at-home textile was successfully used to create a stomacher for short-term display with the gown.

This small case study provided valuable insight into options for low-cost digital printing of textile yardage. Both methods of printing produced textiles that do not produce harmful pollutants, making them acceptable for use near cultural heritage objects. The Spoonflower textiles had a more pixilated appearance than the print-at-home option and color matching was more challenging due to limitations of the Spoonflower photo manipulation software. One major limitation of the print-at-home option is the size of the cotton poplin substrate available for printing; commercially available sheets are limited to 8 ½" by 11", sized to be used with at-home printers. The printed fabrics may be seamed, but this is not acceptable for all uses. Future avenues for experimentation may include Spoonflower printing on lighter weight fabrics that can be manipulated with underlays or other surface embellishments like textile paints.

### No Time to Dye: Simulating Dye Recipes with the "Test Tube Method"

Abigail Lenhard

Custom-dyeing support fabrics to match textiles in need of treatment is standard practice for conservators, however the process can be time-consuming and resource-intensive, requiring multiple rounds of trial and error. The "Test Tube Method," an approach developed at The Met's Costume Institute, streamlines dye formulation by reducing the number of dye sessions needed to determine the right recipe.

Before dyeing, recipes are approximated in test tubes using ten drops of up to three PRO Sabraset dyes diluted with water to simulate different depths of shade. The tubes are visually compared against the target textile and plotted on a dye triangle to narrow the range of potential recipes. Adjustments are made accordingly. Subsequently, swatches are dyed using the refined recipes and assessed for accuracy against both the target textile and their corresponding test tubes.

Despite some limitations such as the less accurate representation of especially deep colors and the unpredictability of different dyes' exhaustion rates, the method provides a systematic and sustainable way to achieve accurate colors quickly without an extensive library of dye recipes. It drastically reduces the need for additional chemicals, fabric, and DI water associated with conventional dye processes, aligning with the growing demand for eco-friendly conservation practices in addition to cutting costs. Recorded test tube efforts also create a valuable resource for future projects, further promoting efficiency and sustainability.

### Tradition and Innovation: Evaluating Conservation Treatments for a Buddhist Embroidery Mounted as a Hanging Scroll

Sara Ribbans

This talk will focus on extensive testing undertaken to find a way to stabilize significant damage while maintaining the traditional hanging scroll format of a rare example of Japanese Buddhist embroidery in the Cleveland Museum of Art (CMA). Shūbutsu, or Japanese Buddhist embroideries, are a very important form of religious expression popular in the Kamakura (1185-1333) and Muromachi (1392–1573) periods. Even within Japan, embroidered Buddhist icons are relatively rare (around 150) and there are very few examples in North America. Their rarity and their classification as a "craft" has resulted in very little research being published until recently and most of it written in Japanese.

The CMA has one example of shūbutsu, Embroidered Welcoming Descent of the Amida Triad (1966.513), from the Muromachi period (1400's) that is in very fragile condition. Composed of two layers of silk, silk embroidery floss, and human hair, the piece is mounted in a traditional hanging scroll format. Due to the nature of silk, embroidery, and the action of rolling and unrolling the scroll the silk substrate and the embroidery have become fractured, leading to significant silk delamination and frayed silk embroidery floss with numerous losses. While these conditions necessitated treatment to stabilize the embroidery, it was important to the Curator that every attempt be made to maintain the hanging scroll format.

Because of the lack of published research and treatment experience outside of Japan it was decided to test possible treatment methods first. Six embroidery samples were created and artificially aged to mimic the characteristics of the Welcoming Descent of Amida Triad embroidery. Each sample was treated with a different method, varying from the traditional approach used in Japan similar to remounting a painting on silk to a conservative textile conservation approach using a crepeline overlay, with combinations of traditional and textile approaches in between. While none of these treatment tests were ultimately successful, they did reveal issues and flaws with certain methods while the semi-successful treatment methods offered some promise and guidance for further testing in the future. It is our hope that sharing these tests will promote discussion and solicit feedback on ways to move forward.

### Treatment in Reality: The Conservation of an 18th Century Painted Silk Gown from the Collection of Asian Civilisations Museum, Singapore

Chuance Chen

An 18th century painted silk gown was selected as part of the fashion gallery rotation in Asian Civilisations Museum, Singapore, in 2022. The sack-back gown made of imported Chinese hand-painted silk is a significant object to the museum's collection as it reflects how luxurious Chinese exported textiles were acquired by Europe. The painted silk gown featured back pleats stitched down to just above the waist and gradually flared out to a modest train. It has a closed-front bodice, with double-sleeves ruffles; concealed on the inside sleeves are roundels which probably function as weights to keep the structure of the sleeve stable when worn. The dress was structurally fragile and showed the characteristic damage of splitting silk ground in areas painted with the motifs of green leaves. Most conventionally encountered three-dimensional textile from the national collection did not exhibit such condition so therefore it is important to find out the pigments used and how the materials will react in formulating the conservation approach. Object documentation, and literature review including the history of the object were done to further understand its condition. Scientific analysis was carried out to find out the compositions of the painted surface, and to identify the material of the roundels. Results of the analysis was used to establish the treatment method as well as be informed of the precautionary health & safety measures required for handling.

Case studies of paper support successfully used in textiles treatment showed that the material would provide the necessary strength and firmness required. The treatment of this gown was, hence, an opportunity to evaluate Tengujo support casted with Klucel®G that has been researched suitable in conserving silk. Tengujo, a very thin Japanese tissue paper made from Japanese mulberry tree, has been evaluated suitable to stabilise structural damages on silk materials. The choice of adhesive- Klucel®G provided the required working properties for textile and allows treatment repeatability. While research showed the choice of paper and adhesive used in textile support treatment, the concentration of adhesive to the applied number of coatings was undefined, a less documented aspect in material preparation. It was of interest to establish their correlation for refinement of the technique. Various combinations of different weights Tengujo and adhesive concentrations were prepared and tested. Tactile attributes for thickness, stiffness, and homogeneity, of the samples were assessed by a panel of textile conservators through sensory evaluation. Sensory evaluation assesses sensory properties of fabrics through manipulation of the material to assess its handle. It makes use of human perception to measure the tactile attributes of fabrics. Findings from sensory evaluation have allowed objective data to be quantified and compared. The result revealed that the light and medium weight Tengujo samples had better adhesion, on the other hand, the heavier weight Tengujo samples were more rigid, and had less adhesion. Much can be drawn from sensory evaluation especially when working with less used conservation materials in textile conservation. Through the test and analysis carried out, tactile attributes and working properties of the non-woven adhesive support had been elicited to reduce uncertainty in conservation decision making.

# From Dust to Display: Collaborative Re-Assembly of an Object Received With Damage

Haddon Dine, Megan Creamer, Andrew Talley

The Language of Beauty in African Art, was a large, loan heavy, traveling exhibition organized by the Art Institute of Chicago. Encompassing nearly 200 loaned objects from 50 private lenders, in addition to over 100 loaned objects from 15 institutional lenders, the scope of the show was a massive, all-encompassing, tightly scheduled undertaking by the entire museum. With a staff of six objects conservators, two textiles conservators, and one mountmaker, the need for highly orchestrated communication, full transparency of our own strengths and weaknesses, as well as trust in our colleagues was required to reach a successful installation at the Art Institute.

The rapid flow and strict timeline of work was put to an extreme challenge with the incredible beauty and material fragility of a 19th Century Chokwe Mana Pwo mask. After reviewing the lender's documentation, conservators expected to open the crate and be met with a serene and elegant woman's face: delicately carved in wood crowned with a distinct woven, braided and twisted hairstyle of natural fibers with earthen decorations, and accentuated with glass beads. As incoming condition reporting started, one of the worst surprises for any conservator occurred. Uncrating revealed an unrecognizable, jarring sight: a bare mount, surrounded by an indiscernible pile of dust, fragments, and debris.

This paper will intertwine logistics of working across disciplines, building camaraderie through good communication in high stress working conditions between three specialists who had never worked together before, and managing expectations of treatment goals and results with private owners of artworks. These issues are explored through the lens of a treatment that required limiting handling, an integrated mount and structural support, considerable consolidation as well as sensitivity to the mixed media of the object. The Chana Pwo mask regained her structural integrity and graceful pose hours before install, as one of the last works to take its place before opening events began. Months later, while all involved waited with apprehension, the mask was shipped back to the lender, and was confirmed as arriving safely in one piece, with her head held high and secure on her mount.

### **Surprising Sophistication: The Colorful Textiles of Karanis, Egypt**

Suzanne Davis, Caroline Roberts, Laurel Fricker

This paper presents initial findings from a study of dyes in textile fragments found at the ancient town of Karanis—a small, rural, farming village in Egypt's Fayoum Oasis. University of Michigan (U-M) excavations in the 1920s and 30s uncovered thousands of textiles at the site, and today approximately 3,500 of these are housed at U-M's Kelsey Museum of Archaeology. Although dates for the textiles are imprecise (Karanis was occupied from the 3rd c BCE to the 5th c CE), the collection is important because of its age, size, secure provenance, and character as a collection of textiles from domestic versus funerary contexts. Scholars have written about various aspects of the collection: contexts of its discovery, decorative techniques represented in it, and evidence of domestic cloth production at the site. Our study adds new information by investigating dyes in the collection. Although most of the fragments are small, worn, and constructed using simple techniques, they are highly colorful. To date, more than 50--including fragments of garments, furnishing fabrics, and baskets-have been examined with three relatively simple and affordable techniques: multispectral imaging (MSI), optical microscopy, and X-ray fluorescence (XRF). Results indicate the use of indigo for blues and greens, tannins for browns, and madder for reds and oranges, while yarns spun with indigo- and madder-dyed fibers produce pinks and purples. No evidence of insect or mollusk based dyes has been found. Dyed fibers include wool, linen, raffia palm, and goat hair. While these results are not necessarily unexpected for the time period, the range of decorative techniques and highly skillful color modulation is surprising; it suggests a sophisticated level of production and a widespread desire for colorful, patterned items—not just for special occasions (like one's funeral shroud), and not just for elite individuals, but also for every day wear and use in the lives and homes of residents in a rustic agricultural town. While MSI and optical microscopy have been most useful for investigating dyes, fibers, and production techniques, XRF has allowed us to look at evidence of pesticide use in the collection. As part of this paper, we also briefly discuss the treatment and research history of the textiles, from the field to the present day.

# Eco-Friendly Nano Magnetic Sponge Agent and A Multi-Analytical Approach To Assessment The Use of Cross-Linked Polymer Used In Removing Rust Stains From Natural Dyed Protein-Based Textiles Samples.

Heba saad, Wael Mohamed

Removing stains from dyed textiles is a big challenge in conservation treatments

as it can cause bleeding of the dyes and tidelines especially when use uncontrolled media like solvents and detergents.

This research presents synthesis of a Nano magnetic sponge loaded with oil in water (O/W) microemulsions for removing rust stains from natural dyed protein-based textiles Samples.

Magnetic nanoparticles of CoFe2O4 were incorporated into a copolymer based on cross-linked polymer to obtain Nano magnetic sponge. It was loaded with two (O/W) microemulsions: the first one is based on poly (HEMA): Poly (methyl methacrylate/2hydroxyethyl 1 methacrylate); and, the second is based on SDS (sodium dodecyl sulphate).

A practical study was done in order to characterize changes in dyes of treated wool fabrics before and after thermal ageing and evaluate the composition of the cleaning. Different type of analysis methods such (SEM-EDX) unit, FTIR, the colors are given in Commission internationale de l'éclairage (CIE L\*a\*b\*) coordinates and mechanical properties.

This article presents interesting results concerning the effect of cross linked polymers Loaded with the prepared emulsions used for removing rust stains and study its effect on natural dyed textile before and after ageing.

### Novel Synthesis of Nanoparticles-Based Back Coating Flame-Retardant Materials for Historic Textile Fabrics Conservation

Dina Abd ElGawad, Harby ezz ElDen

Textile materials constitute the majority of various market products due to their unique properties. However, the high combustibility of the material used in textile fabrics and fibers made them highly flammable and thermally less stable. This defect will threaten the human life of textile consumers and reduce the lifetime display of historical textiles. Therefore, flame-retardant materials should be added to textile fabrics to reduce their flammability properties. Treatment of textile fabrics with these materials can be through different ways such as impregnation, back coating and layer by layer self-assembly. Various materials have been used as flame-retardant to textile fabrics. Recently, various nanomaterials have been used as flame retardants for textile materials. TiO2 and ZnO nanoparticles have been used extensively in flame-retardant treatment of textile fabrics. on the other hand, the historical importance of archaeological textiles in museums force the scientists to find a solution to various challenges, such as high combustibility, ease of ignition, light, relative humidity and temperature effects.

Novel flame-retardant back coating layer for historic textile fabrics was developed. Silica nanoparticles originated from agriculture waste rice husk were prepared through one pot thermal method. Rice husk is considered as agricultural waste products. The abundance, low price and high yield of silica in rice husk encourage the scientists to produce cost-effective silica particles from rice husk for various applications. In this study, we report for the first time the use of silica nanoparticles prepared rice husk (RH-SNP) along with organic borate in flame-retardant back coating formulations. Then the obtained composite used as back coating flame retardant layer to linen fabrics which used as an inner layer and support to the historical textiles. The morphological and structure properties of nanoparticles were studied. The silica nanoparticles were further impregnated with organic borate producing flame-retardant composite. The obtained composite incorporated with the binder by mechanical mixing providing flame-retardant coating paste. The coating paste spread on the back surface of textile fabrics. Varied compositions of nanoparticles, binder and organic borate were studied in the back coating layer. The flammability, thermal stability and mechanical properties of the blank and treated samples of linen fabrics as an inner support to the historical textiles were investigated. Flame retardancy of the back-coated linen samples has improved achieved high class of flame-retardant textile fabrics of zero rate of burning compared to 80.3mm/min for blank. The synergistic effect of flame retardancy between nanoparticles and organic borate was investigated. The tensile strength of the flame retardant fabrics was enhanced by 27% and elongation was improved. The effect of industrial aging on the flame retardancy and mechanical properties of flame-retardant back coating textiles was studied.

# Innovative Conservation Method of Egyptian Historical Textiles By Using Covalently Immobilized Enzymes on Nanoparticles

Mohamed Elzoghby, Mohamed Hassan, Ahmed Elsepaey, Mahmoud Andaho, Mohamed Elbehery, Harby Ahmed, Sawsan Darwish

Historic textiles in museums and also in the burial environment are exposed to many different manifestations of damage, which may cause damage and loss of rare textile pieces. One of the most important manifestations of damage is dirt and stains, which are abundant on historical textiles. These stains and dirt cause physical deformation of the surface of historical textiles, damage and chemical decomposition, change in pH, attraction to insects and fungi, and also be a catalyst for irreversible damage. Traditional methods of getting rid of stains and dirt are sometimes ineffective and harmful to historical textiles. This study presents the use of a new effective and safe method by using bio-cleaning process (using pure enzymes) to get rid of stains in historical textiles. An experimental study prepared in the laboratory to study the efficiency, degree of safety, and application conditions of the new method.

Because of the high price of commercial carriers that are used in enzyme immobilization, there is a persistent need to find cheap ones. Alginate and carrageenan are two polymers that are found naturally and are also cheap. Moreover, they can be used in many industries, such as food, pharmacy, textiles, and nutrition. Hence, the interaction between alginate and carrageenan polymers can improve the stability and activity of newly formed gel beads. Aiming at their biotechnological and industrial applications, amylase and lipase should be stable enough and can be used several times, reducing the final product cost. This can be done by immobilization technologies that improve stability and catalytic properties, leading to higher catalyst efficiency. Covalent immobilization has a great advantage in that it prevents enzyme leakage because of the strong bond that forms between the support and enzyme. So that immobilization via covalent bond is widely preferred in industry as it reduces product cost by using immobilized enzyme many times.

Alginate/carrageenan complexes were used for covalent immobilization of  $\alpha$ -amylase and lipase and in the cleaning and restoration of historical textiles. Lipase and  $\alpha$ -amylase were immobilized on nanoparticles of the alginate/-carrageenan complex and used in historical textile cleaning. The preparation of nanoparticles, activation, and enzyme immobilization were characterized. Optimization of loading times and units of the two enzymes was done. It was found that the optimum time and units of immobilized amylase enzyme were 4 hours and 25 U, respectively. While the optimum time and units of immobilized lipase enzyme were 3 hours and 15 U, respectively, this method does not cause any staining or colour damage to the antique cloak. This method preserves the tissue from continuous disintegration. Close examination by using FT-IR, SEM, and TGA instrument.... Etc. was done in order to study and evaluate of nanoparticle preparation, activation, and enzyme immobilization.

Finally, the treatment was applied to a historical scarf (dating back to 750 years ago), the scarf is made of cotton, and there is an opening in the front along the scarf. The historical scarf is located in a private room attached to Al-Sayyid Al-Badawi Mosque in Tanta, Egypt.

### Laser Cleaning in the Treatment of a Vandalized Unprimed Canvas

Amber L. Kerr, Bartosz Dajnowski, Keara Teeter

Sponsors: Otego

In 1989, a masterwork of Washington Color School painter Morris Louis (1912–1962) was discovered vandalized with pencil marks during a routine gallery check. The painting, Beta Upsilon, was completed in 1960 by Louis a short time before his death by cancer. The artwork is the second largest in his unfurled series, which are recognized by the undulating rivulets of color that progress inward from the outside edges of the painting, with an expansive area of unprimed (raw) canvas exposed in the middle of the composition. The vandal had emulated the undulating colors by drawing two mimicking pencil lines,

one along each side of the painting, and each one measuring over 32 inches in length.

Initial testing of the surface at the time of the event showed that removal of the pencil mark was not going to be easy. All conventional methods of treatment at that time were causing the mark to smudge or recede further into the textile, and due to the mechanical nature of the treatments, the woven fibers would become disrupted permanently. The expansiveness of the canvas was also a factor, as any localized cleaning of the areas affected would necessitate the overall cleaning of the expansive surface.

Thus began a research and testing project that would span over thirty years. This involved three generations of conservators at the Smithsonian American Art Museum, a multitude of consultations with experts in the field, and the diligence of conservators to wait for science to aide in finding the ethical solution for the removal of the pencil marks.

This presentation will discuss the ethical challenges of advocating for a delayed treatment of an iconic work in a collection, along with an overview of the research and collaborative work that led to the creation of a new laser for use in the treatment of unprimed canvases. It will also highlight the challenges overcome during the treatment of this oversized canvas; which included the design of a custom-built worktable, innovative methods for tracking the progress of the laser application during treatment, monitoring the progress of cleaning with micro-cameras and digital tools that aided in the documentation and spot-checking of the canvas at all stages of the project.

### Henri Matisse's Silkscreen on Linen, Edition of 60, Oceanie, Le Ciel and La Mer, 1946-49: More Examples, Some Discoveries, Remaining Quandaries

Mary Kaldany, Rebecca T. Johnson-Dibb, Patsy Orlofsky

Sponsors: Otego

Ongoing research at the Textile Conservation Workshop for the treatment of a suite of Henri Matisse textile artworks builds on work initially published in JAIC 2014, Vol. 53, No. 4. New treatment of 8 additional panels has increased our knowledge of the peculiar sensitivities of the materials and their wide-ranging conditions. The Océanie series, an edition of 60 oversized silk-screened linen wall panels arose from a collaboration between the artist Henri Matisse and textile designer Zika Ascher in 1946-1949. From 1940, until his death in 1954, Matisse was occupied with cutting shapes from paper that he arranged on surfaces to form the exuberant compositions of his last years. Two groups of Tahitian inspired cut-outs, pinned to the walls of his studio, were used as templates for the Océanie textile panels, le Ciel and la Mer. Thirty signed and numbered copies of each design were produced and are now dispersed throughout museums and private collections all over the world.

This artwork presents challenges that require the dual expertise of the painted textiles conservation sub-specialty that this joint session addresses. Unpublished historical records, and analytical and empirical testing yielded information about the improvisational nature of their manufacture, origins of the linen cloth, the dye-stuff, the preparation layer, the printing ink, the division of the edition between Ascher and Matisse, and the signing protocols.

Each panel consists of a dyed beige linen substrate with floral and faunal motifs silk-screened with oil-based, white printing ink. Although Ascher and Matisse had aimed for a decorative textile in which the ink fully permeated the linen, they were unable to achieve the design without a viscous, oil-based ink that sat atop the linen, barely penetrating the substrate. Fabricated in a war-time work-room, plagued by shortages, each formulation fell short of standardization. The resulting artworks consist of thick islands of paint-like motifs on a 13-foot expanse of unrestricted, light-weight, plain-woven linen cloth.

Since the 2014 JAIC article we have been fortunate to examine and treat 8 additional examples revealing a fuller scope of condition, affording a broader understanding of the original materials and how they have responded to specific environmental factors. Seventy-five years have elapsed since fabrication, spawning a surprisingly wide range of condition problems making each panel

unique. Condition issues across the edition consist of inherent light-aging susceptibility, a strong tendency to crease, and the propensity of the sized linen to blemish because of its hypersensitivity to even the slightest hint of moisture. Printing ink conditions range from pristine to water-damaged, abraded, skinned, badly flaking and poorly over-painted. Augmented by research into artist's intent, methods of fabrication, and materials analysis, a wider-range of treatment practices have necessarily evolved.

Conclusions include current solutions for stain mitigation, humidification/ flattening on the suction table, printing ink consolidation with the ultrasonic nebulizer, and retouching. Persistent thorny questions, such as an unusual motif-ghosting phenomenon, puzzling fabrication techniques, identification of dye-stuff, stain reduction methods, ethics of retouching ink, and keeping up a current roster of the 60 panels are presented for discussion.

### **Conserving Canvas: Cotton Duck**

Laura Mina, Michael Duffy, Matthew Skopek, Ellen Davis

Sponsors: Otego

In July 2023, The Harvard Art Museums, in partnership with the Museum of Modern Art and the Whitney Museum of American Art, hosted Conserving Canvas: Cotton Duck. The workshop was funded through the Getty Foundation's Conserving Canvas initiative and was the first structured, collaborative training opportunity to offer a comprehensive overview of the material characteristics of cotton duck and holistic approaches to its conservation. Workshop sessions, led by expert instructors from diverse backgrounds and specializations, covered the history of manufacture, supply, and use of cotton duck, aqueous light bleaching procedures and the effect of liquid water on cotton duck, alternatives to washing for local and overall treatment, and structural repairs including tear mending and suturing. The international participant cohort also brought valuable new perspectives to the workshop program, and by contributing their unique experiences and ideas, deepened and enriched the established discourse on the conservation of paintings on cotton fabric. A synthesis of the workshop's inherently interdisciplinary and interconnected lessons will be presented here for the first time. The design, administration, and outcome of Conserving Canvas: Cotton Duck centered around the professional exchange between textiles and paintings disciplines. This type of contribution will hopefully foster increased interdisciplinary collaboration, while guiding fresh approaches to the preservation of modern and contemporary art.

# Unravelling Mysteries: The Discoveries and Challenges of Remounting an Oversized Thangka Painting

Sun-hsin Hung

Sponsors: Otego

Taiwan's National Palace Museum (NPM) houses seven huge densely-colored silk thangkas 'Amitayus Buddha' from the Qing dynasty, painted during Emperor Qianlong's reign (1736–1795). Originally a set of nine, the other two thangkas are currently within Taiwan's National Museum of History collection. The thangkas' format, dimensions, subject and materials are consistent throughout: each painting depicts one large Amitayus Buddha surrounded by 11 smaller ones, bringing the overall total to 108, a significant number in Buddhism representing wholeness and the abolishment of all troubles. How this set of paintings ended up in separate museums is another story in the WWII saga.

This thangka embodies the typical Tibetan Buddhism tradition of using Chinese prepared silk. At the same time, the high-quality blue, yellow and red kinran (gold brocade) used as its mounting fabric suggests the Japanese Buddhist paintings' mounting format. Yet, the scroll's lower border is longer than the upper border, which aligns with the traditional Tibetan thangka style. While uda paper was used as its lining papers, the ornate hanging rings were of an uncommon material and form, posing challenges in their temporary removal and reinstallation following treatment. The opening direction of the scroll differs from the Chinese tradition, and while the bottom roller is a circular rod

of the Chinese tradition, the unique knob design follows neither Chinese nor Japanese tradition.

Was this thangka mounted in the Chinese, Japanese, or Tibetan tradition? An investigation into its mysterious provenance and materials proved necessary.

This thangka suffered extensive water damage, resulting in delamination (damage) of lining papers, mold damage, cracks in the stave, creases on the painting, pigment loss, and severe embrittlement of the yellow and red kinran that made it necessary to reproduce the brocade in the original design for the remounting of the painting. During the mounting delamination (treatment process) it became apparent that this was not the painting's first conservation attempt. It could be deduced from the remaining backing paper and subsequent lining papers that parts of the mounting format had been modified. The original wooden stave and roller remained intact, however, together with hidden paper amulets written in cinnabar ink. Vibrant and saturated colors that had been applied as primers onto the back of the painting revealed a characteristic technique of densely-colored paintings while increasing the difficulty of detaching the backing paper.

Due to its oversized dimensions, a wooden support structure was made for the delamination process. Facing was done for media consolidation, which also kept the dimensional changes of the paper and mounting fabric under control without tearing. Every step of the treatment process was a challenge in itself, such as the reinstallation of the stave, roller, and paper amulets in their respective original positions. Over the course of four years, this thangka was restored to a smooth and supple state, and its conservation concluded with satisfactory results.

Google [https://drive.google.com/drive/u/0/folders/1nN-WQFq1SK0R42dlqleNKbmBIE3co8QZ]

### Embracing Mist-Lining: The Structural Treatment of Two Canvas Paintings by Edwin Austin Abbey at the Yale University Art Gallery

Nikita Shah, Cynthia Schwarz, Tirza Harris

Sponsors: Otego

In recent years, with the focus on structural conservation spearheaded by the Getty-funded "Conserving Canvas" Project, there has been increased awareness of the Mist-lining technique developed at Stichting Restauratie Atelier Limburg (SRAL) in the 1990s. However, published case studies for Mist-Lining outside of SRAL have been scarce. In this presentation, the authors will describe two recent Mist-Linings undertaken at Yale University Art Gallery with special attention to why this technique was chosen, and highlight the adaptability as well as the versatility of the technique in treating painting with a range of condition concerns both expected and unexpected.

The main principle of the Mist-Lining Technique is, to have a minimal adhesive layer that is as open as possible on the lining fabric, to achieve a reversible napbond. The adhesive is sprayed mist onto a roughened lining fabric. The water content in the adhesive is allowed to evaporate. It is then aligned with the original canvas prior to bond formation. The adhesive is regenerated in a low-pressure envelope using solvent vapor. Once the adhesive becomes tacky, low-pressure is used for bond formation between the lining and the original canvases.

This presentation focuses on the structural treatment, specifically Mist-Lining, of two paintings by Edwin Austin Abbey. The two paintings, Unknown Figure (c. 1890's) and Apotheosis (c. 1902-1911) are studies by Abbey for his mural paintings and have been made in different ways. The treatment of these paintings in preparation for an upcoming exhibition on Abbey in the fall of 2024, provided an opportunity to study Abbey's techniques shedding new light on his use of unique materials as well as their response to conservation treatments. Differing condition concerns on each painting led them to be Mist-Lined in preparation for the exhibition.

Unknown Figure is modest in size (37 x 32 inches) with a gilded background that was prepared using gold leaf with a kneeling figure painted on the gilded background. It came to the Art Gallery unstretched and with its upper tacking edge cut off. The gilded background is on a soft, temperature-sensitive mordant layer and the gilding is coated in a toning layer. This structure led to a surface that is very sensitive to heat, pressure, and many solvents. In weighing treatment options, an edge-lining was considered in order to stretch the painting.

However, most edge-lining adhesives would require heat and/or pressure to activate. Mist-Lining provided a gentle alternative using only low pressure that conformed to the gilded surface without causing textural changes.

The other painting, Apotheosis is a sizable painting (68 x 68 inches) with an extremely brittle canvas. The canvas has split along the foldover edges and in many areas along the tacking margins. A previous treatment has left the canvas partially saturated in wax-resin where large patches reinforced areas of weakness. In this case, local tear mending was considered. However, the extent of embrittlement of the canvas, exacerbated by uneven wax-resin saturation, also led to Mist-Lining as a reversible and gentle reinforcement of the canvas.

### Invisible Suspension: A Tailored Hanging System For Darrel Ellis's Shaped Canvas Artwork 'Untitled (Bedroom Scene)'

Jen Munch

Sponsors: Otego

This talk presents a custom display innovation crafted specifically for Darrel Ellis's ca. 1987 acrylic on canvas painting, Untitled (Bedroom Scene). This painting portrays a woman in a bedroom, its scene stretching to the uniquely-shaped canvas's edges—approximately trapezoidal in form. Having never been displayed before, the challenge arose to safely exhibit it within the 2022-2023 "Darrel Ellis: Regeneration" exhibition, jointly organized by The Baltimore Museum of Art and The Bronx Museum. Collaborating with the curator and the artist's estate representative, a decision emerged to design a hanging mechanism that would elegantly 'float' the artwork on the gallery wall.

Darrel Ellis' art blends painting, printmaking, photography and drawing, often centering on identity and memory as expressed through portraiture. Untitled (Bedroom Scene) is part of a large series based on photographs Ellis took at his mother's apartment, with its canvas's trapezoidal shape possibly echoing the photo projection process.

The devised hanging system involves an aluminum rod inserted into a sewn canvas sleeve. The sleeve is securely attached to the upper edge using BEVA 371 adhesive. The two ends of the rod are supported by Z-clip hardware installed on the wall. The canvas sleeve is precisely sewn to hold the hanging rod snugly, maintaining necessary tension and preventing any top-edge sagging. Additionally, four rare earth magnets concealed within canvas pockets, combined with self-adhesive steel discs affixed to the wall, serve to align the lower edges against the wall, preventing the lower edges from flaring forward.

The design and implementation of this system were carried out in 2021-2022 by Jen Munch of Jen Munch Art Conservation, a New York City-based private practice. The use of a hanging rod in a tensioned canvas sleeve is believed to be a unique display solution for a work on canvas. Magnetic mounting systems are also uncommon for paintings on primed canvas, and this may be the first recorded instance of their use. Magnetic display systems are now common for textile and paper works. This is due in large part to the work of Gwen Spicer, the author of the 2019 book "Magnetic Mounting Systems for Museums and Cultural Institutions."

This system prioritizes the use of economical and durable materials. It can also be removed if needed in the future. Additionally, the aluminum hanging rod can be substituted with a steel rod to make it compatible with the commercially available SmallCorp Magnet Slat system designed by Gwen Spicer for textile display. It is an adaptable solution for evolving needs.

### A Thoughtful Approach to the Structural Treatment of Colonial Latin American Paintings

Laura Eva Hartman, Luciana Andrea Feld, María Elisabet Carnero

Sponsors: Otego

This paper details the use of thread by thread tear mending technique utilized in the treatment of a series of colonial Latin American paintings, belonging to the Museo Histórico Provincial Dr. Julio Marc in the city of Rosario, Argentina.

### SPECIALTY SESSIONS: TEXTILES | WOODEN ARTIFACTS

Finding suitable techniques for the intervention of this particular type of painting is essential as their materiality corresponds directly to their historical context. Colonial Latin American paintings are complex in their materiality, often exhibiting features unique to their creation. Original repairs to the canvas support including sewing and paper repairs are examples of this rich material information. The textile and its preparation in particular serve as important material documents, begging to be preserved for future research and interpretation.

During this project the works were treated following a series of meetings and study days with experts in various specialties. The treatments were designed to preserve every aspect of the textile support, including original repairs and preparations. This paper will detail the treatment approach reached following these meetings, and discuss the importance of networking, spreading of techniques and materials among colleagues, and training of emerging conservators.

### **Wooden Artifacts**

# Unwrapped: Four Hundred Years of European Picture Frame History Finally Revealed at The Ago

Julia Campbell-Such

In the mid 1990's, the Art Gallery of Ontario (AGO) in Toronto, Canada, accepted a large donation of historic European picture frames from an anonymous collector. Over 1,500 frames, dating from the 16th to the early 20th century, arrived at the gallery in two batches, in 1994 and 1997. While some frames were unwrapped, catalogued and even briefly displayed in a special exhibition (Framing History: European Frames 15th - 19th century, 1995), the vast majority remained stored, concealed in their original shipping material until now.

The AGO's conservation and curatorial departments had tried, with mixed success, to deal with the collection since its acquisition. In 2022, the AGO Frame Project was launched as an institutional initiative to develop a program to care for and use the frames in accordance with current standards of museum practice. The AGO hired Senior Frame Conservator Hubert Baija, recently retired from the Rijksmuseum, on a one year contract, as well as a frame conservation fellow, two dedicated art handlers, and a dedicated photographer. They worked with the AGO Senior Framer, curators, and registrars to finally unwrap, examine and document the collection.

Now in its second year, the AGO Frame Project aims to foster a supportive environment in which to understand and care for this vast collection, which represents over four hundred years of European frame history. Education and knowledge sharing has been a crucial part of this initiative, increasing appreciation and respect for the collection not only in the conservation department but also among curators, framers, collections experts, and other departments. A symposium on the history and conservation of frames in May, 2024, hosted at the AGO, will introduce this collection to the frame community and, we hope, open even more opportunities for exchange and collaboration.

Ultimately, the goal of the AGO Frame Project is to make this important collection more accessible for study and for lending. As custodians of this collection, the AGO is committed to the idea that pairing historic frames with appropriate artworks is an important aspect of their conservation, as it preserves their function. It is our hope that a digital database will lead to pairings of these frames with works of art at other galleries and museums as well as our own.

This paper describes the AGO Frame Project's collaborative process, the surprises and opportunities we have encountered along the way, and what was revealed when we finally unwrapped the frames.

# Everything's Shrine: Removing Difficult Coatings on a Carved Jain House Shrine and Advocating for Realistic Treatment Timelines

Kelly Marie Rectenwald

Domestic Jain house shrines, ghar derāsars, exist in a handful of collections around the world, and only a few retain their polychrome and gilded surfaces. The elaborately carved, detailed surfaces are exquisite examples of Gujarati architecture but are largely understudied with few dedicated publications. The Jain shrine in the Cincinnati Art Museum is an important example of a domestic Jain shrine. Acquired in 1962, it's thought to date to the 17th century and retains its metal overlay and polychrome. An architectural piece, comprised of over forty-four intricately carved parts, it stands over 7ft tall. The shrine had been in storage for a decade and was in poor condition when a donation was made to renovate a gallery to display it. The timeline for construction gave only eight months for the treatment of this unique object.

The project presented several challenging and complex components. The most concerning condition issue was a very thick/blackened coating completely obscuring the delicate gilt and painted details. The three-dimensional surface meant it would be difficult to remove the coating evenly. The large size and multiple disassembled parts made it difficult to devise a cohesive treatment suitable for all parts. The short time frame added further complexity to planning and executing the treatment.

The main treatment priority was to remove the coating to reveal the painted details. Removing the thick coating with solvents alone was ineffective. Solvent gels were tested as a typical method for removing coatings on carved surfaces, however the abrasion caused when removing the gel made this option too risky for the paint and gilt layers. Evolon® CR has been a successful option for applying solvents to flat surfaces to remove varnishes and coatings with minimal abrasion. Although not typically used for high relief surfaces, Evolon® CR was tested as an available non-abrasive option. It proved successful in removing the coating without risking the paint and gilt beneath, however it proved challenging to work with on the carved surfaces. Purpose made weights and unconventional clamps overcame this challenge, demonstrating that Evolon® CR can be used just as effectively on carved surfaces, providing an excellent low abrasion alternative to solvent gels. Though this treatment method was effective, it could not be completed on such a large object within the given timeframe. As rushed treatments often lead to negative outcomes, extending the timeframe was essential to the success of this project. Through early collaboration with curatorial and marketing departments the timeframe was successfully extended. Using social media updates of treatment and creation of an informative treatment video, we were able to balance the interests of the museum, donor, and conservation, while also generating public excitement for the eventual installation.

The presentation of this treatment will demonstrate an effective method for coating removal on decorative wood with carved high relief surfaces using Evolon® CR. It will also discuss the challenges and decision-making process in treating a complex object under a tight deadline, and how to advocate and negotiate for support to allow for effective treatments.

### A Preliminary Look At Surface Finishes on 19th-Century Tibetan Furniture

Laura Maccarelli, Jessica Chasen

This poster aims to take a closer look at the materials and techniques used in the creation of Tibetan furniture. This understudied area of East Asian furniture production has been the focus of only one English-language conservation publication despite pieces being held in many collections throughout the United States. The Los Angeles County Museum of Art's group of Tibetan furniture forms includes approximately 30 pieces of furniture in large part drawn from the Hayward Family Collection. The Hayward Family seeded significant works throughout other major collecting institutions.

As part of the EU Horizon 2020 GREENART project (https://www.greenart-project.eu/), several pieces of furniture were selected for technical study, with a

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particular focus on their original paint stratigraphies and later-applied coatings. The poster will share preliminary findings from these pieces with an emphasis on the elaborately painted and gilded surfaces. The primary case study presented will be Altar Table with Dragons and Auspicious Symbols (https://collections.lacma.org/node/214797) which includes several colorants, metallic flakes and leaf, and raised grounds. Samples were collected from this group of objects. Several analytical techniques (e.g. SEM/EDS, FTIR, XRF and Raman) were used to help characterization of the pigments and organic binders.

Many of the objects in the LACMA collection exhibit tacky, darkened coatings which both obscure original surfaces and make storage difficult. It is hoped that this poster can serve as a jumping-off point for conversation around Tibetan furniture with the end goal of promoting greater understanding between both conservators and those with traditional source community knowledge. This study will provide a foundation for the eventual design and implementation of sympathetic, nuanced conservation interventions.

### The Use of Fiber Optics Spectroscopy for the Identification of Wood Room 255 D (Salt Palace)

#### Aaron Shugar, Elly Stewart Davis

The identification of wood with the use of visibly induced ultraviolet fluorescence has been used mostly for the timber industry and has only briefly been explored in the field of Art Conservation. Making use primarily of relatively large core samples dispersed in solvent, the need for a more reliable, faster, and less invasive technique for wood identification is of pressing importance. Thanks to the recent advancement in Fiber Optics Spectroscopy (FOS) the possibility of creating repeatable fluorescent responses from wooden art objects has become more of a possibility. This poster explores the potential application of Fiber Optic Spectroscopy (FOS) in the ultraviolet (UV) range for the minimally invasive identification of wood species, in the context of art conservation and cultural heritage.

The study focuses on the identification of various wood species commonly found in cultural heritage institutions, including Mahogany, White Oak, Walnut, Poplar, and Ebony, through UV-induced fluorescence spectra and compares the results to known fluorescing species such as Staghorn Sumac. Notably, many of these woods are not known to visibly fluoresce under UV light with the results revealing that FOS in the UV range can produce identifiable spectra for wood samples, even in cases where visible fluorescence is absent. The emission and absorption bands for each wood species are analyzed, providing characteristic spectral fingerprints.

The poster concludes by highlighting the potential of FOS in UV fluorescence as a minimally invasive tool for wood identification, particularly in art conservation, offering a new potential approach to addressing this aspect of the field. The need for further research is emphasized, including the expansion of the sample size to encompass a broader range of wood species, investigation of how growing environments affect spectral responses, and the creation of a comprehensive spectral database for future comparative analysis.

### Time May Change Me: A 17th Century Kas

#### Emily McClain, Kathy Gillis

This paper will detail the technical examination, digital planning, and physical reconstruction of missing pieces of a 17th century kas, or Dutch cupboard, in the H.F. Dupont Winterthur Collection (object number 1952.0049). Review of the kas before its inclusion in an exhibition of New York furniture at the Winterthur Museum revealed stylistic inconsistencies with other 17th century New York kasten as well as evidence of obvious compositional changes with regards to the design over time prompting the question: does the current appearance of the kas reflect its early 17th century appearance?

The kas was subjected to thorough visual examination and instrumental analysis to answer this question. Documentation in varying light sources (visible, ultraviolet, x-radiation) allowed for identification of clear areas of intervention on the exterior. Surface coatings were analyzed through pyrolysis gas chromatography mass-spectroscopy (PyGCMS), x-ray fluorescence spectroscopy

(XRF), and optical microscopy, to identify and compare coating histories across the object. Wood identification of select decorations provided information about materials' provenance. Findings of the combined analysis supported the hypothesis that the kas had been significantly altered since its creation and no longer reflected its original appearance. Given the Winterthur Museum's designation as a research collection and the curatorial goals to return the kas to display as an example of 17th century American furniture at the museum, the kas was reversibly altered to reflect a more likely original appearance. Digital alterations of the kas based off of gathered evidence and historical cognates were drafted and shared for peer review. The agreed upon missing or altered pieces of the kas were then constructed from congruous materials and attached in a reversible manner which preserved evidence of original construction and past treatment to the kas to allow future study.

# The Dahshur Boat of Senwosret III: An Analytical Study of a 4,000-Year-Old Wooden Boat Room 255 D (Salt Palace)

Gretchen Anderson, Lisa Haney, Mostafa Sherif

The Dahshur Boat at Carnegie Museum of Natural History in Pittsburgh, PA is one of only four preserved in museum collections today. These boats were built from cedar wood and originally constructed for use in association with the pyramid complex of the 12th Dynasty pharaoh Senwosret III. The boat measures some 9.2 meters in length and is comprised of a total of 27 hull planks and 46 deck planks. It was originally excavated by French archaeologist Jacques De Morgan in 1894 and purchased for the museum in 1901. The boat was housed off site for five years while construction on the museum was completed. It was installed in 1905 and remained on view until 1976, when it was disassembled and put into storage. In the late 1980s the boat was studied and prepared once again for exhibition, where it remained until 2022.

In 2022 after a major leak in the museum's roof, the boat was deinstalled for its own protection. It suffered water damage, with some of the hull and deck planks warping, cracking, and staining. Previous deterioration includes brown rot (microbial attack) and soluble and insoluble salts which covered most of wooden surface. Most concerning is the surface abrasion and graffiti dating to the 20 years (1956-1976) when the boat was on open display. During that time, the wood was treated with an unknown wood preservation product called "Wife's Pride," which has caused staining on the surface of the wood and increased the fragility of the wood fibers.

This paper details the work of the museum's conservation team to analyze the impact of the leak and the previous wear and tear sustained from years of display. It includes an overview of the current treatment plan and an evaluation of preliminary research conducted in 2022 prior to and just after the deinstallation of the boat. The proposed treatment plan includes photography, architectural documentation, assessment survey, and scientific analysis using XRD, XRF, FTIR, and SEM. In addition, multispectral imaging will help to expand the results of the 1989 and 2017 searches for pigment remains. The goal of this paper is to present the team's initial findings and obtain feedback on the proposed treatment plan.

### Cutting Corners: Reframing 3D Technology in the Conservation of a 19th C. Gilded Frame

Elly Stewart Davis

The utilization of 3D scanning and printing technology for loss compensation has been used in conservation for some years. However, it has largely been confined to larger institutions with substantial budgets, rendering it beyond the reach of the average conservation laboratory. Recent advancements in 3D scanning technology, driven by developments in the medical and gaming sectors, have resulted in more accessible and cost-effective solutions. This has opened up new possibilities for smaller conservation labs to harness the advantages of this time-saving technique.

This paper discusses the acquisition and evaluation of consumer-level handheld 3D scanners and a smartphone application in comparison to the conventional photogrammetry technique. The objective is to investigate the feasibility of

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incorporating these budget-friendly options into the toolkit of a conservation lab. Key parameters considered during the testing phase encompass cost-effectiveness, ease of operation, post-processing capabilities, and the accuracy of the resultant 3D scans.

To assess the practicality of these scanners, a 19th-century gilded compo dealer's frame from the Madison County Historical Society in Oneida, New York, was selected for treatment. The frame was in a state of disrepair, exhibiting substantial losses, particularly in the form of missing decorative compo elements, including all four corners. The selected 3D scanners were employed to capture the existing corners, and subsequently, these scans were amalgamated into a single, comprehensive model. This consolidated model served as the basis for 3D printing and molding processes, enabling the creation of compo fills to restore the frame to a whole state.

This research seeks to contribute valuable insights into the applicability of consumer-level 3D scanning technology in the realm of art conservation, particularly for conservators operating within constrained budgets. By focusing on the case of the gilded compo dealer's frame, this study examines the practicality, affordability, and effectiveness of these emerging technologies in facilitating the restoration and preservation of cultural heritage artifacts. The findings will inform conservation practices and potentially expand access to 3D scanning and printing resources within the broader community of conservation labs.

### Conserving Please Be Seated: Five Decades of Studio Furniture in Public Use

#### Christine Storti

Since the mid-1970s, the Museum of Fine Arts, Boston has acquired artisan furniture for gallery seating. For 48 years, the seating served simultaneously as visitor seating and accessioned art. 75 seats and growing, this collection portrays the diverse work of American studio furniture makers, from new interpretations of historic designs to futuristic creations in aluminum and steel.

This paper reviews the conservation practices for Please Be Seated, in light of their continued use in the museum's galleries.

### A Macro-Miniature: Conservation of a Large Paul Rudolph Architectural Model

#### Elizabeth Peirce

Paul Rudolph (1918-1997) was an American architect and former dean of the school of architecture at Yale. After his passing in 1997, the Library of Congress acquired a significant amount of the Rudolph's archive, including several architectural models. The models were made across a range of dates and from a wide variety of materials, including foamcore, blotter, plywood, acrylic sheeting, thick veneer, coated wire, cast aluminum, dried moss, and basswood. Several pieces have been stored in their original shipping crates in off-site storage, and not accessed for some time.

Four of the models were selected for loan as part of a retrospective on Rudolph's work slated to open in September of 2024. Two of the large models were in poor condition, and had been on open display in the archive before coming to the Library. They had accumulated a significant amount of dust and grime on their surfaces, some of which had become concreted after a water event prior to acquisition. The wet wooden elements had severely curled, loosening some of the joins. Insufficient support during shipping also caused significant damage, particularly on the model of the Colonnade. The Colonnade is made of four floating modules which slide over a central tower. Each module is supported by two metal pins which are not fixed in place. Jostling during shipment caused some of these pins to shake loose, which led to the partial collapse of the modules. Because of its extensive damage, the Colonnade tower model was selected for this talk. It had sustained both water and physical damage, requiring cleaning, humidification, consolidation, and recreation of both plastic and wooden elements. Treatment of the tower, standing at 68 inches when fully assembled, was a collaborative effort between the lead conservator and several technicians, and included training on wet- and dry-cleaning methods, stain reduction using gels, cleaning and reattaching plastic elements, and recreation of missing pieces.

#### Considerations of a D. Tanning Sculpture

Caitlin Sofield

Rainy Day Canapé is one of a small subset of three-dimensional work in the catalog of the artist, Dorothea Tanning. She had a long and varied career as an American artist whose work spanned seven decades and crossed media boundaries. While Tanning is best known for her Surrealist paintings, her collective works include commercial illustrations, painting, drawing, printmaking, sculpture, set design, costume design, fiction, and poetry. Between 1965 and 1982, Tanning created 15 individual sculptures and one room installation that included an additional 6 sculptures. The sculptures are all cloth covered; she used found objects and stuffing to achieve her intended forms.Rainy Day Canapé is one such object and has been in the collection of the Philadelphia Museum of Art (PMA) since 2002 (accession number 2002-86-1).

The PMA's sculpture was made in 1970 and features intertwined body parts emerging from the upholstery of a loveseat. The sculpture's materials are listed in the PMA records as upholstered wood sofa with wool, polyester, and rayon plainweave cover, wool batting, cardboard, and ping-pong balls. However, in 2018, a small area of degraded polyurethane foam was discovered in the form of powder emerging from a gap in the seam of the tweed cover near the bust of the reclining figure. This was an interesting and unexpected find as Tanning was not known to have used polyurethane in her work. However, due to the nature of the sculpture's construction, identifying the internal materials and their various conditions would be difficult and invasive. Furthermore, Tanning has been quoted saying that she felt these cloth sculptures should have the lifespan of an ill person. How does the conservator/curator/institution tasked with preserving such works for future generations navigate the ethical challenge of such a specific artist's wish, especially when faced with the knowledge that the work features a rapidly degrading material that has the potential to fundamentally change the form of the sculpture?

It became clear that this work required focused attention to plan for its future. Rainy Day Canapé has been requested for loan many times since it was acquired by the museum in 2002, and the 2019 retrospective of Tanning's work held at two popular museums in Europe will only increase her visibility and interest in her sculpture. By conducting extensive object examination and multiple forms of documentation, literature review, personal interviews, and archives research a more in depth understanding of the complex nature of this work and the artist was gained. Is there a way to honor the artist's wishes/expectations while also making the sculpture available to both present and future audiences? This presentation will discuss Tanning, Rainy Day Canapé, and the actions and recommendations necessary to manage these seemingly conflicting goals.

### Cellulose Nitrate Film on the Big Screen: Treating an Eames FSW (Folding Screen Wood) )

Olav Bjornerud

The husband-and-wife duo Charles and Ray Eames are some of the most influential designers of the 20th century. The Eames' designs, organic and inspired, softened industrial materials, bringing them into the homes of a wide consumer base. While they experimented and worked with a range of materials, they are particularly known for their pioneering use of molded plywood. Released in 1946, the FSW (folding screen in wood) exemplifies the Eames' design philosophy.

The FSW in The Metropolitan Museum of Art's modern and contemporary collection is composed of six molded plywood segments joined in sequence with woven hinges. The plywood segments are veneered with mahogany and have a bell curve-shaped profile. Fully extended, the screen measures 58  $\frac{1}{2}$  in long and 68 in tall.

Pieces of furniture are enmeshed in the events of daily life that occur around them, capturing records of those activities in the form of wear from regular use, or scratches made by young children and stains from a spilled drink. The Eames FSW is a particularly dynamic object, meant to be moved, opened and closed, and repositioned in endless configurations. The Met's screen bears the markings of an actively used domestic object, including home repairs likely made with materials the original owner had on hand.

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In a museum context, the purpose of The Met's FSW has changed. It is no longer a specific screen in the home of a specific family—it has become an archetypal example of a design object. Evidence of the screen's previous life now distracts from its most important attributes, chiefly form and materiality. The surfaces of the Met's FSW exhibited deep scratches in the finish as well as fourteen patches of overpaint that starkly contrasted with their surroundings. Two sections of one of the woven hinges had detached from their housings.

This paper will detail the treatment of The Met's FSW, completed as part of the author's 3rd year graduate internship. Rather than focus on specific outcomes, it will describe the decision-making process that guided the treatment. This process was complicated by the screen's finish, which was identified as containing cellulose nitrate using the diphenylamine spot test. Working within the limitations imposed by the sensitive finish, retouching using Maimeri Ketonic Resin Colours with ShellSol D38 was ultimately decided to be the best course of action for addressing the overpainted patches. The scratches in the finish were re-saturated with 20% Plexigum PQ611 in Shellsol D38 and the woven hinge resecured with Lascaux 498 HV. With this paper I hope to illustrate the challenging decisions involved in treating a consumer object that has undergone changes both intentional and incidental.

### **Posters**

# Mapping Values and Brazilian Users' Expectations for the Lifetime of Modern and Contemporary Textile Heritage Objects: A Step Towards Modeling Change

Thiago Sevilhano Puglieri, Teresa Paula, Laís Sidou

The management of textile collections poses a series of challenges to cultural heritage professionals: (i) specific materials' properties that affect objects' degradation processes and may cause unpredictable change; (ii) small numbers of specialists in Brazil experienced with treating textile materials; (iii) limited storage space and resources to process and safeguard objects, and (iv) a perception of lower value than other object types such as paintings and sculptures. These challenges affect decision-making in all collection management activities, including accessioning and disposal, preservation, use, and object documentation. Consequently, it is essential to develop and improve tools to aid heritage professionals in decision-making processes.

Over the last two decades, there have been several developments towards statistical modeling of risks, change and damage that affect cultural heritage objects and their collections. These models consider environmental data and object-specific information such as material composition, condition, significance, and values, as well as the ways they are or may be used in heritage. Recently, models have also sought to include users' expectations for the duration and care of these objects. Models can provide useful information for planning resource allocation, developing preventive conservation strategies, and informing accessioning and disposal decisions. Additionally, they serve as a tool to assess and predict the impact of change and damage on objects' values and the ways users access and relate to them.

Our work discusses results from a survey carried out with Brazilian museum professionals, heritage researchers, and exhibition visitors, who were questioned about objects' values and condition, ways of use, and expected future duration. Responses were analyzed using multiple correspondence analysis (MCA) to map out correlations and patterns among respondent groups. These initial results are foundational for the ongoing development of a decision-making model that is informed by and centers around users' views and expectations about modern and contemporary textile heritage objects. Following steps involve analyzing users' attitudes towards different change scenarios and conducting degradation tests with mock-up materials.

The MCA variables cloud shows great congruence between the expectations of museum professionals and visitors regarding the future availability of objects and their collections: both would like objects and collections to be available forever for virtual exhibitions, research, educational activities, and as inspiration for making replicas or other objects. Additionally, both groups expect that collections - but not objects individually - should be available forever for in-person exhibitions. In our analysis, these prospects appear on the same axis as value categories associated with more traditional views of cultural heritage: historical, associative, age, rarity, and educational values. Alternatively, researchers both in cultural heritage and other areas expect objects and collections to be available for between 200 to 500 years for most use scenarios. Considering that it is not possible for objects to be available forever for research, in-person exhibitions, and educational activities, our model intends to provide more realistic timeframes as a planning horizon for collection managers. Professionals can then use this information to better communicate expected change and duration to other users.

## O2 Overview of the Work of the Leather Discussion Group, a Cross-Institutional Collaboration

Kristi Wright, Katharine Wagner, William Minter, Holly Herro

Collaborative projects have the potential to uncover new perspectives and the ongoing exploration of leather by the Leather Discussion Group (LDG) is no exception. The group, established in 2016 to discuss the effects of leather dyes on leather, has evolved into a much larger project with many facets. What started as a discussion among a small group of book conservators now includes conservators in multiple disciplines as well as leather researchers, suppliers, and leatherworkers in both the US and Europe. The group has learned a great deal about the ways in which people view leather, the philosophies behind its use, and how variations in training and region affect outlooks.

Recent broad-scale explorations of health and safety concerns, sustainability, and the environmental impact of leather production have led to a reduction in leather use due to a need to perform more research in some of these areas. This, combined with a need for further research on the long-term effects of recent leather treatments and the relative longevity of modern skins compared to traditional (stable) and industrial (highly unstable) skins has tabled leather use in many cases where this is of paramount importance. Meanwhile, explorations of non-traditional leathers and leather substitutes have added new aspects to the practice that also need further study in order to establish their relatively stability, or lack thereof, in comparison to traditional leather. The project has led to many surprising discoveries and unearthed copious avenues for future study. From explorations of the potential effect of animal husbandry on skin quality to historic leather testing methods, research into various aspects of leather longevity is nothing new.

Shifting institutional and client priorities play a large role in the place leather has in any given setting. Where it was once ubiquitous as a bookbinding material, changes in the tanning process, ostensible longevity issues, training, and the availability of alternative materials have created a divide between typical institutional and private client trends. Institutional focus on rehousing or minimal treatment is economical yet often fails to return a book to its fully functioning potential. Meanwhile, individual clients often opt for more leather use with future handling in mind.

Dive deep into the folds of leather with us with this poster, which will summarize the current and previous topics addressed by the leather discussion group. They include a survey of historic leather research projects, an exploration of changes in the tanning process, an overview of tests used to assess leather quality, philosophical and practical approaches to leather as a material, an exploration of leather chemistry, and the creation of a digital repository for leather related research.

# 103 Introducing a Georeferenced Leather Database: Building a Collaborative Global Repository for Leather Research, Techniques, and Trends

Kristi Wright, Katharine Wagner, William Minter, Holly Herro

Collaborative projects have the potential to uncover new perspectives and the ongoing exploration of leather by the Leather Discussion Group (LDG) is no exception. The group, established in 2016 to discuss the effects of leather dyes on leather, has evolved into a much larger project with many facets. What started as a discussion among a small group of book conservators now includes conservators in multiple disciplines as well as leather researchers, suppliers, and leatherworkers in both the US and Europe. The group has learned a great deal about the ways in which people view leather, the philosophies behind its use, and how variations in training and region affect outlooks.

Today, shifting institutional and client priorities play a large role in the place leather has in any given setting. Where it was once ubiquitous as a bookbinding material, changes in the tanning process, ostensible longevity issues, training, and the availability of alternative materials have created a divide between typical institutional and private client trends. Institutional focus on rehousing or minimal treatment is economical yet often fails to return a book to its fully functioning potential. Meanwhile, individual clients often opt for more leather use with future handling in mind.

There is a need to perform more research into many leather topics such as health and safety concerns, sustainability, the environmental impact of leather production, the long-term effects of recent leather treatments and the relative longevity of modern skins compared to traditional (stable) and industrial (highly unstable) skins. However, research into various aspects of

leather longevity is nothing new, and investigations into the properties of bookbinding leather go back centuries.

Assessing the potential drivers behind the decision making surrounding this very traditional material, as well as evaluating the relative permanence of modern leather in comparison to historic leather, may be accomplished best if the data is coalesced into one place. In this talk we will introduce a newly launched georeferenced leather database, which is intended to serve as a cross-referenced repository for leather research. The database will allow for input from bookbinders, leather researchers, tanners, and other leather workers worldwide and data within it can be accessed and analyzed freely. It is the LDG's goal that this repository and the associated knowledge-sharing will shed new light on both historic and modern leather as a material and serve as a basis for guiding future treatment.

### **Q4** Step by Step: The Reconstruction of Waterlogged Leather Shoes

Johanna Rivera, Melissa Allen

When the H.L. Hunley submarine (1864) was rediscovered in Charleston Harbor and raised from submersion in 2000 it presented a great opportunity for underwater archeology and conservation efforts. The Warren Lasch Conservation Center (WLCC) was established to address the 3000 artifacts that were recovered from the submarine as well as the vessel itself. Included in the collection are the leather shoes of all eight crew members. The waterlogged shoes were first excavated, documented, and partially conserved from 2002 to 2004. In some instances, the artifacts were found completely encapsulated in concretion and required different mechanical and chemical techniques to free them. The majority of them exhibited iron staining due to thier proximity to the iron hull. They were treated to reduce the staining and with bulking agents to freeze-dry the leather.

After freeze-drying, the shoes were then left in storage for an extended period before the final phases of treatment involving reconstruction and the development of a plan for the storage and display of the shoes was revisited in 2022. The case of one particular pair of shoes, those belonging to crew member Wicks, presented a unique challenge for reconstruction as well as the opportunity to showcase conservation methods to future viewers. They were identified as brogan style half-boots, a common Civil War footwear for soldiers, although these were of a higher than standard quality with metal eyelets. A relatively large fragment of the upper of Wicks' right shoe was never removed from the hard concretion in which it was discovered. The leather, metal eyelets and fragments of shoelace and textile were deemed too fragile to safely remove. This presented the opportunity to create a replica of that fragment to be either attached or presented with the rest of the artifact. The dimensions of the embedded fragment were carefully traced onto Mylar and then tests were performed to establish which materials would be most appropriate to replicate the various components of the fragment. The interior of the shoes were carefully measured in order to create custom supports that would allow them to be stored and displayed safely and effectively. It was then decided how best to associate the replicated fragment of Wicks' right shoe with the original main portion given that there was no point of contact between the remaining leather on the shoe and the separate fragment. At the end of their reconstruction these shoes will be ready for display alongside many of the other artifacts from the Hunley submarine thereby contributing both to a better understanding of the historic vessel and the conservation efforts involved in presenting it to the public.

### Just Put One Foot in Front of the Other: The Twenty-Year Conservation Journey of Sixteen Archaeological Leather Shoes

Johanna Rivera, Melissa Allen, Nicholas DeLong

The Warren Lasch Conservation Center (WLCC) in Charleston, South Carolina serves as the repository for the collection of the H.L. Hunley submarine (1864) project currently undergoing conservation and documentation. Raised from submersion in 2000 and largely excavated by 2006, this submarine is historically significant as the first to successfully sink an enemy ship in battle.

Over 3000 objects have been recovered from the submarine, including personal artifacts of the crew and submarine components in various states of degradation. Included in the collection are the leather shoes of all eight crew members. The waterlogged shoes were first excavated, documented, and partially conserved from 2002 to 2004. The excavation of the shoes presented a complex scenario for the team. They were part of an assemblage of composite materials that included leather, foot bones, textiles, metal, and soft tissue from the skeletal remains of the crewmembers. The excavation revealed that foot bones were still contained within the shoes, some of them still articulated. Additionally, soft tissue and remnants of wool socks were also present. The shoes provided archaeological information on many levels, including the site formation process, as the shoes were filled with sediment, osteological data, as well as archaeological evidence related to the shoes themselves.

Once excavated, the leather shoes were found to be in different degrees of deterioration with the majority of them exhibiting iron staining that related to their proximity to the iron hull. In some instances, the shoes were found to be completely encapsulated in concretion and required different mechanical and chemical techniques to free them. Several studies were performed to remove the iron staining from the shoes as well as to find adequate bulking agents to freeze-dry the leather.

The shoes were then impacted by a challenging period in the WLCC's history where the storage of artifacts in a stable environment was not possible and the resulting fluctuations in temperature and relative humidity lead to a darkening of the preserved leather. This shift in the coloration between the time they were initially treated and their current appearance was noted when the shoes were re-examined so that they could be studied to be included on the report required by the US Navy as custodians of the submarine. The final phases of treatment involving reconstruction and the development of a plan for the storage and display of the shoes was revisited in 2022. In collaboration with archaeologists at the WLCC, stylistic options for the shoes were considered as conservators developed a new conservation plan. Material challenges relating to the extremely fragile condition of the previously waterloaged leather, and ethical considerations concerning the level of intervention called for, are being addressed in treatment solutions. These shoes present the opportunity to consider the changes in conservation decision making that have been developed over the past twenty years as well as the results of a changing environment. At the end of their reconstruction the shoes will be ready for display alongside many of the other artifacts from this historic vessel.

# Repairing Modern First Edition Dust Jackets Without Fills or Inpainting: A Conservative Approach

Christopher Sokolowski

The modern first edition dust jacket—so often discarded in its day—has become the part of a book that holds the most historical and commercial value. Despite this increase in their artifactual status, I have observed extensive cosmetic restorations to valuable dust jackets over the years that don't suit their rarity and importance. This talk will demonstrate nearly invisible repairs to damaged modern first edition dust jackets using a lightweight kozo tissue precoated with Klucel G (hydroxypropylcellulose) adhesive and leaving losses to be filled visually by a toned or printed secondary jacket placed underneath the original. The advantage of this approach is that the dust jacket retains its authentic condition while appearing complete when viewed from a short distance on exhibit. A dust jacket in poor condition can easily be made to look better or its poor condition can be emphasized, depending on the needs of curatorial interpretation.

These subtle and easily reversible strategies for loss compensation were developed to satisfy a curatorial brief at the Houghton Library of Harvard University in early 2023 to return a once disassociated and broken dust jacket for E.E. Cummings's The Enormous Room (1922) to usable condition for display and then storage on its book thereafter. The goal was to make the jacket appear as though it did not have losses from a distance in the exhibition while avoiding invasive and time-consuming fills in order to leave the jacket as original as possible.

The core of this talk will be an illustrated and stepwise review of The Enormous Room dust cover treatment along with my rationale for avoiding any aqueous techniques with this type of material. Additional examples of this treatment approach will be shown where greater compensation for design and text was required of the secondary jacket. Information on sourcing, scaling, and color-correcting digital files to match the original jacket will be provided. Finally, It is hoped that the visibility of the post-print of this presentation in the Book and Paper Group Annual will show that there is a conservative yet aesthetically satisfying alternative to the in-painting and fills common in current dust jacket restoration.

# **07** Soft Clouds: Material Analysis of Historical Paste Papers from the Rosamond B. Loring Collection of Decorated Papers

Debora Mayer, Mitchel Gundrum, Kelli Piotrowski

Paste paper is a style of decorated paper which was first in popular use in Germany and nearby countries as book papers, wall coverings, and furniture linings from around 1600 to the 1830s. Though culturally and technically distinct from more popularly recognized marbled papers, ambiguous terminology and a lack of academic literature have led to confusion and ignorance among both public and specialized audiences. While pigment analysis is a proven provenancing technique for paintings and illuminated manuscripts, this research is the first to address its potential for paste-decorated papers. A bibliographic survey was conducted to catalog color, pattern, and publication/production data for 255 paste paper objects from Harvard University's Rosamond B. Loring Collection and several private collections. 16 of these were selected for an analytical survey involving stereomicroscopy, x-ray fluorescence spectroscopy, and multi-spectral imaging techniques including IR reflectography and false-color imaging. The results mark the first known analytical investigation of historical paste paper colorants, revealing trends in the use of indigo and Prussian blue pigments and additives including alum, chalk, and orpiment. These insights, especially as a supplement to pattern statistics from dated objects, demonstrate the potential for improved characterization of paste papers through material analysis.

# A New Technique for Strengthening of Naturally Degraded Acidic Paper with Cellulose Fibers Coating

Naoko Sonoda, Takayuki Okayama, Ryota Kose, Masazumi Seki, Yuki Tanaka

From the mid-19th century until about 1990, acidic paper-based materials were produced in large quantities throughout the world. Unfortunately, the use of acidic paper reduced the paper's strength due to chemical reactions during long-term storage. Although efforts have been made to mitigate this degradation through deacidification such as the Bookkeeper (BK) method, it remains difficult to restore the strength of degraded paper. The authors have developed an innovative coating method using fine cellulose fibers (FCF) as a strength-enhancing treatment after deacidification of degraded paper. FCF are defined as nano or submicron fibers prepared from cellulose fibers by miniaturization, and are characterized by high optical transparency and chemical affinity with the cellulose. This method was patented and registered as a Japanese patent in February 2022.

Prior to FCF coating, the BK method was conducted on naturally degraded wood-free paper, after which the paper was wetted and excess of water was removed on a vacuum suction table. Until now, FCF coating process has been done manually using a coating bar. In this study, we developed a compact coating machine that enables continuous coating on both sides of degraded paper by passing through two rolls in sequence. As optimized conditions, a coating speed of 4 m/min and a gap of 1500  $\mu m$  between the rolls were selected for the coating of commercial FCF. Freeze drying, thermal drying, and vacuum drying were attempted as drying conditions for the paper after coating, with vacuum drying being the most appropriate. In this

experiment, vacuum drying was performed at  $40^{\circ}$ C. Under this condition, the coating amount was approximately 1.2 g/m2.

While BK treatment of degraded paper did not change the tearing strength of the paper, FCF coating treatment increased the tear strength of BK-treated paper by 1.2 times. Comparing the tear strength of papers after accelerated aging showed that BK-treated paper was 1.2 times stronger than the untreated paper, indicating that degradation was inhibited. Furthermore, BK-treated paper coated with FCF was 1.4 times stronger than untreated degraded paper. This indicates that the combination of BK treatment and FCF coating treatment can achieve both degradation suppression and strength improvement. The legibility of the original paper remained unchanged after the FCF coating treatment, and the increase in thickness due to FCF coating was about 1% of the original thickness.

Good experimental results were also obtained in the possibility of lowering the drying temperature from 40°C to 30°C and in the preparation from raw materials (Hardwood bleached karft pulp) of FCF suitable for the coating.

# Analysis and Assessment of the Degradative Properties of Strawboard as a Secondary Support

Rebecca Ploeger, Theresa J. Smith, Aaron Shugar, Jenni Krchak

Backing boards are commonly used as secondary supports for artwork but often degrade over time and subsequently adversely affect the primary support. As a fiber furnish, straw was used relatively briefly in paper and board production during the mid-to-late 19th century. Two strawboard samples, one with facing papers, one without, were analyzed to determine their degradative properties and whether they are safe materials to be in contact with artwork. PLM and fiber staining along with SEM identified the fiber furnish as a type of pure straw; ATR-FTIR identified the presence of proteinaceous material and an oil or resin in the facing paper, possibly from an adhesive layer, but lack of such materials within the board; material suitability testing identified one sample as permanent (copper coupon) / temporary (lead and silver coupons); pH testing determined the relative alkalinity of the board samples. While the alkaline pH of the board material suggests a potential benefit to the artwork by slowing degradation, the strawboard material is inherently structurally unstable on its

### 10 The Production and Deformation of Drying Boards

Yi-Chiung Lin, Ting-Fu Fan

Drying boards are one of the most frequently used equipment in Eastern painting and calligraphy conservation and mounting studios, aiming to dry and flatten artworks. Traditional drying boards are made of wooden boards, or a combination of wooden boards and paper, or wood strips with paper such as the classic Japanese-style Karibari.

High-quality wood strips and craftsmanship can be costly, limiting the options available to some studios and conservators and reducing the likelihood of use.

In this article, I will share how to use aluminum extrusion brackets instead of wooden strips and combine them with paper to create drying boards with the same functionality. This method allows for easy production of drying boards in any desired size, offering lightweight, high structural strength, and resistance to deformation. Moreover, connecting drying boards of the same size can also provide a convenient option for occasional conserving or mounting of larger artworks.

# Blinking Outside The Box: The Treatment of Sol Lewitt's Wall Structure In Nine Parts, Each Containing a Work of Art by Other Artists, 1963

Elisse Brautigam, Kaela Nurmi, Nicholas Ecker

Speakers: Kaela Nurmi

Electronic media works often pose challenges with preservation and display, but when the electrical components are 60 years old, even more complicated decisions must be considered. With the 1963 mixed media artwork Wall Structure in Nine Parts, Each Containing a Work of Art by Other Artists by American artist Sol LeWitt (1928-2007), there was concern about exhibiting the work with the aged thermal flasher relays and electrical wiring, as well as accurately representing the original Artist intent.

The artwork consists of nine boxes joined together in a 3x3 orientation, each containing an artwork by a different artist that is revealed by lights flashing on and off. The corner boxes are each illuminated by a 10-watt lightbulb, and the remaining boxes are illuminated by a single 75-watt lightbulb in the center box. The lights are wired on two different thermal flasher relays: one for the four corner bulbs and one for the central bulb. The relays turn their corresponding lights on and off. Switching at slightly different rates, the corner bulbs and central bulb oscillate over time between switching in unison and switching oppositely.

In 2022, a full condition assessment was carried out, and while the sculpture could still be turned on, the original electrical components were in various states of degradation. The relays were causing the lights to turn on and off sporadically and inconsistently. Glenstone's conservation team and electrician were concerned about the possibility of electrical arcing or an electrical fire when the relays ultimately fail, as the mechanics of thermal flasher relays leave them prone to gradual degradation over time. There was also some concern about yellowed wires and splices held together with degrading electrical tape.

Conversations with the Artist's Estate, the LeWitt Collection, and a conservation colleague who had treated a similar LeWitt sculpture were influential in developing the most sympathetic and authentic treatment approach for Wall Structure in Nine Parts, Each Containing a Work of Art by Other Artists. These discussions lead to a consensus about how to best preserve the electrical functionality in the long term.

The Estate-approved treatment was carried out in collaboration with Glenstone's licensed electrician to properly address the aged electrical components. The project involved rewiring the entire work without altering the original appearance of the piece. New relays were programmed to best approximate the existing timing. Lightbulbs were replaced with modern equivalents to ensure they do not burn out during the duration of an exhibition. Additionally, a stockpile of lightbulbs was acquired to ensure the artwork can be displayed in the future. The original electrical components removed from the Artwork were accessioned in the museum's Artist Material Archive for safe storage and future reference. The poster showcases a successful collaborative treatment of an aging electronic media artwork that allows the piece to be safely displayed as the Artist intended, while ensuring the possibility of any necessary future modifications.

# Plastilina, Plastiline, Plasticine: A Study of the First Industrial Modeling Pastes Invented at the End of the 19th Century

Sonia Tatiana J. Fraj

With the second industrial revolution (1870-1914), materials typically used in the making of art underwent a substantial transformation in order to meet new expectations that would fulfill the needs of the artist. In sculpture, traditional processes were used until the very end of the 19th century. Traditionally, softer materials such as wax or clay would be used for producing the original sculpture models by the artist, that would then be transferred into a more durable material.

The sculpture models made in clay were inconvenient in that once the clay would dry the artist could not make modifications to the model. Using wax also proved problematic, as it does not resist high temperatures very well and also lacks ductility. By the mid 19th century there are records of recipes that were being developed to modify waxes in order to impart more ductile proprieties. These hand-mixed, homemade formulas came to be known as modern modeling materials. However, it is not until the end of the 19th century that modeling pastes were being developed in a more industrial manner.

The materials used to form these original positive models were often recycled and repurposed for other sculptures after being cast in plaster or transferred directly to another more durable material. Therefore, it is very rare that they would have been preserved. However, some do survive, such as the collection at the Rodin Museum in Paris. These extant original positive models are so important because they are often the only pieces produced that were made directly by the artist's hands. They often still have the artist's fingerprints and can give clues into the artist's creative process. After being modeled, these models were often taken by others to be transferred into plaster, stone, metal, etc., with some possible final intervention of the artist. In these instances, one can note the changes from these original models to the final sculpture. Even rarer, some works only exist as these original positive models.

This paper will affirm that there are three (3) different modeling pastes with similar characteristics but different formulations that were invented during the period of 1879 and 1897. These new modeling pastes were dry to the touch, permanently malleable, and resistant to heat. It is known that artists like August Rodin, Edgar Degas, and Ismael Smith had used these new formulated modern modeling materials to produce their original models.

The goal of this research was to better understand the origins of these modeling pastes and their chemical characteristics which could then be used to positively identify them at various artwork original models. In addition to identifying these materials, the research also involved observing the main issues of the aging material and how they interact with other materials over time, as well as providing tools to fellow conservators in order to help them with the conservation process of these rare artwork models made with early modeling pastes.

## 13 Developing Genomic Tools to Determine the Maker of a Modern Gofun Paint Preparation

Jennifer Perry, Christopher Mason, Julie Arslanoglu, Ann-Marie Abunyewa

Genomics can offer unique perspectives into the creation and history of cultural heritage objects. The possibility of learning more about the makers of objects through genomics is tantalizing: there are examples where an artisan's intimate contact with the manufacturing of art materials suggest that genetic information may survive. Gofun, a calcium carbonate pigment commonly found in traditional Japanese paintings, is one of these examples, and this abstract describes our attempts to isolate the genetic information of the maker from a modern preparation. The paint is prepared from gofun powder, which is made by an intensive pulverization of air-dried oyster shells and kneaded by the artist or their assistant with an animal binding glue. A small amount of water is added before application to a textile or paper support. The paste is kneaded by hand for at least an hour, thus increasing the opportunity for cell-free DNA from the artisan's hands, including the artisan's own DNA, to become incorporated into the paint. This phenomenon sparks intriguing questions about what information genomic tools can provide about the history of a painting such as: Who prepared the paint? Could that correlate to the attribution? Does attribution require a combination of human and microorganism genetic information? What microorganisms and organic materials were the painting exposed to, and how might that impact conservation treatment?

This project, representing a novel collaboration between the Metropolitan Museum of Art and the Mason Laboratory of Weill Cornell Medicine, explores the extent to which these questions can be answered using the smallest paint sample possible. As sample size is the limiting factor for most art analysis, especially Asian art, which typically is painted in very thin layers, the following work describes what might be possible on milligram sample sizes with the hope

that miniaturization could be achieved. A modern gofun paint mockup, prepared by a Met conservator, served as our paint source. A protocol optimized for highly-fragmented DNA from calcium-based sources was implemented on four samples, ranging between 0.5 - 2 mg of paint. We selected a protocol that was sensitive to small fragments of DNA as the paint source was exposed over time to light, water, and enzymes that digest DNA, all of which drive DNA degradation reactions. Moreover, calcium ions from the gofun interfere with extraction by tightly binding to DNA, so a protocol that sequesters calcium was essential for DNA recovery. As the extraction yield was too low for detection, we amplified the extracted DNA to reach the minimum concentration required for sequencing. Fluorometry and automated electrophoresis following amplification support the presence of DNA in the paint samples. Moreover, software tools for organism identification reveal the presence of human, bovine, and mollusk DNA, among other species, suggesting the power of genomic tools for material verification. Genomic isolation and analysis from smaller-sized samples of gofun may be possible; however, challenges remain. Repetitive amplification of the sample can create byproducts that interact with other samples run on the same instrument, leading to crosstalk between samples. This can result in the false identification of unexpected species found in other samples. Future studies will probe into better addressing these issues.

# Plastics Bingo!: Identifying Plastics in the Collections of Cooper Hewitt, Smithsonian Design Museum

Sarah Barack, James Hughes, Jessica Walthew

This poster summarizes the results of a short internship in 2023 focused on plastics identification at Cooper Hewitt, Smithsonian Design Museum in New York City. The goal of this research was to more accurately identify a selection of plastics in collections objects and deepen my understanding of the types of polymers typically found in design museum collections.

This project follows up on a year-long survey begun in 2012. In this survey, ca. 1,500 collections objects were assessed for condition, storage recommendations were made and implemented, and a handful of objects were analyzed using portable Raman and Fourier-transfer infrared (FTIR) spectroscopy by conservation scientists. My project focused on a small subset of the objects included in the earlier survey. Over four weeks, 37 collections objects and 58 reference samples were analyzed using Attenuated Total Reflection (ATR)-FTIR spectroscopy.

Cooper Hewitt's remit is to collect and care for important and impactful design. As indelible materials of the 20th century design narrative, its Product Design and Decorative Arts curatorial department is filled with examples of natural (horn, tortoiseshell) and early plastics such as those made of cellulose derivatives and formaldehyde-based resins (i.e., Bakelite). Modern plastics like polyvinyl chloride (PVC) and polyurethane foams have consistently made their way into the collection over time. As today the museum collects a wide variety of objects, from one-of-a-kind works of art to disposable commodity items, an impressive range of plastics in varying conditions are present both on display and in museum storage.

It's no secret that art and design museums face unique challenges when it comes to understanding plastics in their collections. Plastics are made from varying proportions and mixtures of polymers and additives and can be nearly impossible to distinguish from one another, even if their degradation phenomena and aesthetic qualities appear nearly identical. The complex composition of these objects challenges both identification and appropriate treatment and/or storage options. Complicating matters is the fact that many design objects exist as multiples or editions, calling into question long-held conventions in our field regarding authenticity, authorship, and ownership.

While many objects in our survey were identified with confidence, matches using FTIR were not always straightforward. Plasticizers and other additives can obscure spectra, rendering confident identification nearly impossible. Compounding the complexity of the task is the fact that many objects are made of composite materials. While ATR-FTIR is a very useful technique for bulk polymer identification, not all collections objects are suitable for this technique due to their size, shape, and/or condition, among other factors. It thus became vital to use a three-pronged approach: considering historical

context along with sensory information and the use of scientific analysis to accurately determine polymers. The short but ambitious project provided the institution – and me – with a wealth of information about the complex plastics materials increasingly encountered by cultural heritage professionals, especially those working in modern and contemporary design collections.

### No Time to Dye: Simulating Dye Recipes with the "Test Tube Method"

Abigail Lenhard

Custom-dyeing support fabrics to match textiles in need of treatment is standard practice for conservators, however the process can be time-consuming and resource-intensive, requiring multiple rounds of trial and error. The "Test Tube Method," an approach developed at The Met's Costume Institute, streamlines dye formulation by reducing the number of dye sessions needed to determine the right recipe.

Before dyeing, recipes are approximated in test tubes using ten drops of up to three PRO Sabraset dyes diluted with water to simulate different depths of shade. The tubes are visually compared against the target textile and plotted on a dye triangle to narrow the range of potential recipes. Adjustments are made accordingly. Subsequently, swatches are dyed using the refined recipes and assessed for accuracy against both the target textile and their corresponding test tubes.

Despite some limitations such as the less accurate representation of especially deep colors and the unpredictability of different dyes' exhaustion rates, the method provides a systematic and sustainable way to achieve accurate colors quickly without an extensive library of dye recipes. It drastically reduces the need for additional chemicals, fabric, and DI water associated with conventional dye processes, aligning with the growing demand for eco-friendly conservation practices in addition to cutting costs. Recorded test tube efforts also create a valuable resource for future projects, further promoting efficiency and sustainability.

## 16 Dyeing, Curling, and Conservation Hairspray: Reproduction of Pink Ostrich Feathers on an Ann Lowe Gown

Katherine Sahmel, Andrea Goldstein

Textile conservators are often faced with borrowing techniques and materials that originate from other industries. In this case study, knowledge from the theater costume, millinery, and couture fashion communities was utilized in developing a treatment for restoring the original design intent of a pink faille dress designed by African American designer Ann Lowe in the mid 1960s. Prior to display in Ann Lowe: American Couturier at Winterthur in 2023, conversations with the individual lender led to the decision to replace the original twenty-two pink ostrich feathers attached to the dress with modern feathers. The original feathers had become very fragile and flattened over time, therefore new feathers would honor the original artistic liveliness and intent of Ann Lowe's design. White ostrich feathers were purchased from a specialized feather supplier in New York City and with advice from feather-related sources, the feathers were cut, washed, dyed, and curled to match an archival photo of the dress during its runway premier. In collaboration with Winterthur's objects conservators, the feathers were curled using steam, a hair curler, and a diluted Aquazol-based "conservation hairspray" to keep the curls in place, an adhesive not commonly used in textile conservation. Storage systems were developed for the new and old feathers as well. This project was atypical for textile conservation treatment, however fashion objects frequently present new challenges and materials that require learning in action.

### **17** The Use of Fiber Optics Spectroscopy for the Identification of Wood

Aaron Shugar, Elly Stewart Davis

The identification of wood with the use of visibly induced ultraviolet fluorescence has been used mostly for the timber industry and has only briefly been

explored in the field of Art Conservation. Making use primarily of relatively large core samples dispersed in solvent, the need for a more reliable, faster, and less invasive technique for wood identification is of pressing importance. Thanks to the recent advancement in Fiber Optics Spectroscopy (FOS) the possibility of creating repeatable fluorescent responses from wooden art objects has become more of a possibility. This poster explores the potential application of Fiber Optic Spectroscopy (FOS) in the ultraviolet (UV) range for the minimally invasive identification of wood species, in the context of art conservation and cultural heritage.

The study focuses on the identification of various wood species commonly found in cultural heritage institutions, including Mahogany, White Oak, Walnut, Poplar, and Ebony, through UV-induced fluorescence spectra and compares the results to known fluorescing species such as Staghorn Sumac. Notably, many of these woods are not known to visibly fluoresce under UV light with the results revealing that FOS in the UV range can produce identifiable spectra for wood samples, even in cases where visible fluorescence is absent. The emission and absorption bands for each wood species are analyzed, providing characteristic spectral fingerprints.

The poster concludes by highlighting the potential of FOS in UV fluorescence as a minimally invasive tool for wood identification, particularly in art conservation, offering a new potential approach to addressing this aspect of the field. The need for further research is emphasized, including the expansion of the sample size to encompass a broader range of wood species, investigation of how growing environments affect spectral responses, and the creation of a comprehensive spectral database for future comparative analysis.

### The Conservation of Tutankhamun's Gilded Wooden Bed

Abeer Thabet, Hadeel Khalil, Safwat Mohamed Sayed Aly, Dr. Hussein Kamal

This poster discusses the conservation of one of Tutankhamun's beds which dated back to the new kingdom. This bed is consisted of a gilded wooden frame and the middle of the bed was made of braided Halfa plant covered with gesso layer. The four legs of the bed were formed in the shape of lion paws. The ancient Egyptians depicted the paws of the lion in this bed perfectly to the extent carving lion's sharp nails precisely. Unfortunately, the middle part of the bed had separated partly due to dryness and weakness of the edges of the braided Halfa plant. Also, the bed suffered from previous conservation materials such as paraffin wax which covered many parts of the bed and was desperately in need for removal. For these reasons, the condition of the bed demanded a guick intervention with conservation procedures to reach a sustainable condition and restore its original shape. The surprise was finding that the nails of the lion paws in the four legs of the bed are made of silver according to the test applied by portable XRF analysis. Although, the legs of the bed were documented previously as made of wood only. This twist in information caused changes in the applied conservation plan of the bed.

### **19** Galleries With Windows: Strategies for Collecting and Processing Light Data

Alayna Bone, Eric Breitung

Good management of lighting in museums and galleries requires balancing the visibility needs of viewers, the curatorial and artistic vision for an exhibition, the possible loan requirements, and the conservation concerns for the art displayed. External windows that introduce varying amounts of sunlight depending on the time of day, season, and geographic location contribute to a fundamental uncertainty in environmental conditions. Their presence further complicates decisions regarding adjustments to artificial lighting, window treatments, and exhibition length. Galleries are rarely static – artworks with photosensitive elements are frequently considered for display, and without sufficient light monitoring data, windowed galleries present a worrisome unknown. However, data loggers typically afforded in museum budgets only capture information for a single localized area. Consequently, conservators must take into account the unique geometry and architecture of the space when determining what defines sufficient data to summarize lighting conditions. Restrictions on the amount of time and location of data sampling similarly

impede the conservator's ability to accurately capture and evaluate current conditions. The dynamic nature of sunlight within the museum environment and the inherent limitations of monitoring technology necessitate efficient and low-cost methods for studying and reporting typical light levels within a space. This poster presents two case studies demonstrating novel and accessible solutions for reliably evaluating lighting conditions in windowed galleries.

Two lighting surveys of the Lehman Wing and Arms and Armor galleries at the Metropolitan Museum of Art provide light monitoring strategies for these types of dynamic and architecturally-complex galleries. We developed methods outlining suitable monitoring equipment, monitor placement, data collection, geographical considerations, data processing, and interpretation. Both surveys primarily used commonly available Onset HOBO monitoring tools, Microsoft Office Excel templates, and inexpensive mobile applications. In one survey, deadlines for gallery designs limited available monitoring time, requiring light level predictions informed by local weather patterns and gallery geometry. In the other, we supplemented a twelve-month data collection period with visuals from time-lapse cameras to better document the impact that a combination of skylights, architectural columns, and shades had on the way sunlight travels around the gallery. In both cases, light level reports were organized as a composite of multiple data sources and broken down to demonstrate daily, monthly, and location-dependent trends to help visualize changing conditions. The shared and ultimately successful goal of these surveys was to find ways to effectively communicate current lighting conditions in the galleries to colleagues regardless of their familiarity with typical conservation lighting and monitoring practices. By developing comprehensive data collection and reporting strategies for these galleries, museum staff have additional tools for managing uncertainty associated with windows and rotating art collections.

# **20** Examination and Analysis of Burnt Stucco Window in the Stores of the Museum of Islamic Art, Cairo, Egypt

Amal Mohammed Lotfy, Nagah Abuseif, Mona Fouad Ali, Hala Mahmoud Afifi

Speakers: Nagah Abuseif, Amal Mohammed Lotfy

The stucco windows in museum stores are exposed to neglect. The stucco window in this study is preserved in the stores of the Museum of Islamic Art, Cairo, Egypt. Is not registered in the museum records, and this window has been subjected to many aspects of neglect, the most important of which is the fire that broke out in the museum in 2006. The firefighters used water to extinguish the fire, which affected the components of the window and caused many manifestations of damage to it, as proven by the necessary investigation and analysis that was conducted for each component of the window separately (stucco-glass – wood). A comprehensive investigation into Stucco window dating to the Ottoman period has been undertaken. Optical microscopy, scanning electron microscopy coupled with EDX, X-ray diffraction, and Fourier transform infrared coupled with attenuated total reflectance (FTIR-ATR) were the analytical tools used for the investigation. The analysis revealed that the stucco window was exposed to fire, causing the transformation of some of the gypsum to anhydrite. Furthermore, demonstrate that the stucco decoration was previously treated with a consolidant.

# 21 The raw canvases of Morris Louis and Gene Davis: structural treatments using sailmaking techniques

Amber L. Kerr, Keara Teeter

Washington Color School painters Morris Louis (1912–1962) and Gene Davis (1920–1985) are part of a collective of abstract expressionists whose oeuvre is characterized by large-scale compositions, which feature vibrant paint colors and generous swaths of exposed canvas. Louis is known for his "Unfurled" series, which includes the Smithsonian American Art Museum (SAAM) painting: Beta Upsilon, 1960, Magna on canvas, 102½ x 243½ inches. Davis is known for his "Stripes" series, which includes the SAAM painting: Dr. Peppercorn, 1967, acrylic on canvas, 117 x 224 inches. These two raw/unprimed canvases are

large-scale and posed notable challenges when the rolled paintings in storage had to be re-stretched for museum display.

Raw canvas is especially vulnerable to staining from accumulated surface grime, fabric oxidation, or interventive conservation treatment (wet cleaning, adhesive-based linings, addition of surface coatings, etc). Taking these concerns into account, a non-traditional edge-lining method was sought to provide adequate strength and stability for the tacking margins of Louis's Beta Upsilon and Davis's Dr. Peppercorn. After testing various hand-stitching techniques, it was determined that a customized sequence, based on stitches used in sailmaking, would provide the necessary support. The stitching sequence provides the strength of a zig-zag stitch, a running stitch, and a back stitch; without having to do the individual methods independent of one another. Since these two conservation treatments required a team of people to complete the work, consistency in the stitching was another essential component. Guideline markers were measured and drawn onto the edge-lining fabric to provide guidelines for the stitch height and maintain a straight edge for the stitching.

The hand-stitched edge-lining technique incorporated in the conservation treatment of Beta Upsilon and Dr. Peppercorn is adaptable for other modern and contemporary artworks with unprimed cotton duck canvases. In addition to reviewing this adaptive method for edge-lining, the authors will also provide other relevant planning techniques employed in the projects, including materials and custom-designed worktables to advise others in their logistical planning.

### Non-Drying Soy-Based Ink Prints: Handling and Storage Challenges

Amy E. Hughes, Sarah Purnell

Soy-based ink is an increasingly popular material among contemporary printmakers. These inks are marketed as non-toxic, environmentally safe, and easy to clean using soap and water, making them an appealing alternative to traditional printmaking inks that require organic solvents and ventilation. The National Gallery of Art recently accessioned two large woodcuts on Japanese paper printed with Akua Intaglio® soy-based ink by Catherine Kernan [American, 1948–]. Unlike traditional linseed oil or other vegetable oil drying inks that "dry" via polymerization, soy-based inks dry (for lack of a better word) by absorption into the support or interleaving. Kernan's woodcuts were freshly printed when they were accessioned by the National Gallery, posing storage and handling problems as the inks were offsetting onto their interleaving, had a strong odor, and felt malleable to the touch. Not only is there no existing metric for how long a print made with soy-based ink takes to dry, the manufacturer of Akua states that "if there are any layers of ink that have not been pressed into the fibers of the paper, they will not dry" (Speedball Art Products Company, Frequently Asked Questions, 2023). This poster presentation explores the potential conservation and storage challenges posed by non-drying soy-based printmaking inks, and it outlines our observations derived from testing on two groups of mock-up linocut prints.

Both the mechanism for drying and the mechanical and chemical stability of soy-based inks printed on paper is unclear. Drying time depends on many factors, such as how thickly the ink is laid, how many layers of ink the printmaker applies, how the viscosity of the ink is modified using mediums, and the print substrate. As Kernan's woodcuts continue to dry, we pulled two groups of mock-up linocut prints using Akua Intaglio® inks. One group was printed on Somerset, a thick Western cotton fiber paper, and the other group on Sekishu, a Japanese kozo paper. With consideration to the above factors affecting drying time, we made single-layer and multi-layer prints, single-color and two-color prints, prints with modified ink, and lightly inked ghost prints. Over several months, drawdowns with cotton swabs were performed to assess degrees of smudging occurring throughout the drying process. After almost six months, the mock-up prints had not dried appreciably. This finding led us to pursue scientific analysis of the proprietary ink formulation. With analysis, which will be undertaken by conservation scientists at the National Gallery (additional National Gallery co-authors to be added in the coming months), we intend to better understand the mechanism by which the prints dry and to identify the components that are left on the paper surface during and after drying. Finally, we will make recommendations for storage and handling of Akua Intaglio® ink prints.

### 23 Sharp Thinking: Thorns as Cleaning Tools in a North American Conservation Lab

Arianna Johnston

Thorns are a practical and effective cleaning tool for soft metals like gold and gilt surfaces. Previous literature about their use in conservation either lacks detail on where to source thorns or recommends species that are unavailable in the United States.

The Maryland Archaeological Conservation (MAC) Laboratory sits within the 560 acres of Jefferson Patterson Park and Museum (JPPM) in southern Maryland. The park features grass, wildflower, and agricultural fields, plus wetlands, riverfront beaches, and forested land. With guidance from the park's horticulturist, two types of thorns (black locust and greenbrier) foraged at the park were tested for their use in the conservation lab. Criteria were developed for selecting thorny plants as well as basic procedures for harvesting, processing, and using thorns as handheld cleaning tools.

While this research focuses on plants available in the mid-Atlantic, these species are common (or invasive) across the United States and Canada. Purchasing thorns online may be expensive, result in inconsistent quality, and have questionable (or illegal) sourcing. Finding a local source for thorns, and foraging in a sustainable way, can benefit the environment while also providing free disposable tools for a busy conservation lab.

### 25 Crossing the 'T's: Overcoming Mounting Obstacles at the Architecture Archives Exhibition

Cassandra Tang, Ayaka Ajiki

One of the statutory functions of the National Library Board is "to share information on library and archival collections by any means, including through publications and exhibitions". The Archives Conservation Lab supports exhibitions by working closely with the curators from the planning and ideation stage, condition assessments and installation — all of which often require innovative problem solving and racing against time to manage the curveballs that come together with exhibitions. Every exhibition is different, and conservators increasingly must find a balance that works — without compromising the preservation needs of the items.

The "Architecture Archives Exhibition" running from November 2023 to June 2024 at the Urban Redevelopment Authority Building, Singapore, presents architectural drawings from a special collection of the National Library of Singapore. This exhibition features over 550 multifarious design drawings covering 19 contemporary architectural projects from 1981 to 2015.

The paper-based items included sketches on translucent tracing and butter paper, building plans, watercolour presentations, diazo prints, and printed images on copier paper. Some of the drawings had multiple sheets that were taped together to create greater depth via a unique overlay effect when viewing. Some had a sheet of translucent paper superimposed over an opaque print or paper, while others had varying layers of translucent paper stacked over each other.

On top of this, the design of the exhibition display sought to intentionally contradict the archetypical museum style, instead opting for a more organic 'working studio' aesthetic. This approach presented several obstacles in mounting items for vertical display. The curators proposed displaying vertical items by sandwiching the top edge of the object between plywood bars with magnets. However, as the objects varied in size and material, the magnetic force could be acceptable for some but potentially harmful, causing dents, in others. There was also a risk of tearing the object during the installation or deinstallation process; especially those made from butter paper which were extremely thin and fragile.

Hence the team was tasked with a unique problem – how do we enable the vision of the exhibition while ensuring the safety of the items? To achieve this, the team pioneered a new way of hinging, enabling a balance between curatorial direction and conservation integrity by altering how the objects were secured between the plywood bars. Since the conventional method of framing

or hinging onto a mount board did not fit the design aesthetic of the exhibition, we eliminated direct contact of the plywood bars to the object by including a modified T-hinge. The modified T-hinge uses Japanese tissue and thin folder stock, which were adhered to the object using either wheat starch paste or heat-activated tissue, Filmoplast® R. The choice of adhesive depended on the object's sensitivity to moisture. The object was then attached to the showcase wall using 3M™ 415 double-sided polyester adhesive tape. This method sufficiently supported and safeguarded the object; also remained completely unobtrusive for the viewer.

This new method saved 60% more time than the traditional T hinge method and the team used folder stock off-cuts to make the support T-hinge, making it cost effective too. It was all hands-on deck, with conservators trained in the new hinging method to ensure consistency. 253 items were successfully mounted in this way, paving a new alternative for similar exhibitions in the

This gargantuan effort with numerous consultations with curators and exhibition designers, shows that the role of conservators goes beyond simply providing one-off exhibition support. Through close consultation the curators in the exhibition team were reminded that they too play an equally important role upholding preservation guidelines and initiating conservation efforts as early as possible, regardless of the condition of items. Given the changing nature of exhibition spaces becoming more immersive and interactive, this is only the beginning of more of such unique, informal exhibition designs and there will be more variants of conservators 'crossing the T's' to come.

### Thinking Inside The Box: Housing Solutions For Unconventional Book **Formats**

Clare Manias, Andrijana Sajic

When requesting a book from the Thomas J. Watson Library at the Metropolitan Museum of Art, you can expect to be presented with a rectangular, book-shaped box, or 4-flap. What you might find inside that enclosure could be a shoe, a bottle, a can of soup, sheet of pasta, or a very small book in a much larger enclosure. The Watson Library's holdings of over 1 million books includes an international collection of over 10,000 artists books which relate to the Met's art collection and utilize the book format in some way. A key focus of the Sherman Fairchild Center for Book Conservation is ensuring these materials are accessible to patrons with minimal intervention from staff. Only around 80 items in the collection require handling assistance. The inclusion of greater numbers of artist books and books with non-book-like formats on library shelves requires streamlining the design of special housing for books of unusual size, shape, and materials, while keeping in mind shelf space, upright storage, usability, ease of production, and the sustainability of materials. The poster is focused on easily integrated methods of producing housing for items that must be stored individually on library shelves and will be handled by patrons rather than curators, conservators, or library staff.

We will illustrate in our poster 3 to 5 specific housing solutions, designed for specific objects, that have been integrated into our workflow. For example: an early 3D printed book, "Orihon", by Tom Buronwood (2014), is a fragile, plastic, and sizeable object (13 x 20 x 20 cm). It consists of eight leaves hinged together in an accordion style. The housing used was a clamshell box fitted with padding for shelf stabilization and an easily constructed drawer made of mylar. It includes simple worded instructions for patrons to operate the drawer, remove, and replace the book.

Another one of our examples is a miniature book, Le Nouvel Almanach Sans Titre: Mais Très-galant, et Chantant (1776). This delicate embroidered binding measures 9.5 x 6.5 x 1 cm and is made of white satin and decorated with intertwined silver gilt thread and flowers. Because each of our miniature books are shelved separately, we need an easily constructed custom insert, not made of foam, that securely holds small items in a container that won't damage neighboring books or get lost on the shelf. An insert designed by a prior Library intern and pop book artist, Kyle Olomon, allows us to use standard book size 4-flaps and custom fit them with a simple folded and pasted bristol-board insert to secure the book inside of the enclosure.

In addition to these and other selected solutions, we will have on hand a series of printed images of various housing solutions tailored to the challenges of many other artist books from our collection.

### ♠ Building A Better Clamshell Box: An **LO** Evaluation and Study of Commonly Used and Experimental Adhesives For Traditional Rare **Book Boxes**

Dan Paterson, Eric Monroe, Kelli Stoneburner, Claire Dekle, Kathryn Kenney

The cloth covered box for rare books, commonly referred to as a clamshell or drop spine box, is often considered the gold standard for housing library materials. They are valued by curators for their aesthetic qualities and rigid protection. Learning how to build them is part of the training for many book conservators and technicians. At the Library of Congress (LC), clamshell boxes were introduced in the 1970s. They continue to be made but their production has curtailed recently due to variety of reasons including availability of materials, cost of labor, and cheaper, faster alternatives like custom fitting corrugated boxes. For many curators and specialists, however, clamshell boxes are still seen as the preferred enclosure. As a result, approximately 25 clamshell boxes are made every year for rare and unique items.

The most common adhesive used for clamshell box making at LC has been PVAc (poly-vinyl acetate) and this is generally true in book conservation as a whole. While the working properties of PVAc have made the formulations an obvious choice, concerns about stability and off-gassing have also played a significant role in the reduced number of clamshell boxes made at LC.

In 2011 those concerns led LC conservators and scientists to evaluate PVAc as an adhesive for covering housings in which the adhesive film and covering cloth would be even closer to the enclosed book covers than in a typical clamshell box. All the PVAc films tested performed poorly. In 2017, six years later, the naturally aged PVAc films were evaluated again. Surprisingly, the films still performed poorly, including films that had been diluted in 9:1 wheat starch paste to PVAc ratio. As a result of those tests, LC conservators began to move away from using PVAc as the primary adhesive or avoid it all together in box construction.

The purpose of the most recent research was to advance the evaluation process and collect data on possible replacement adhesives. This goal was accomplished by building multiple clamshell boxes solely for the purpose of testing a formulation of PVAc commonly used by conservators along with a wide variety of other adhesives for comparison. Some of the other adhesives were designed for library and archives conservation and some used in other specializations. Evaluation was broadly separated into two categories: usability as determined by conservators making the sample clamshell boxes and chemical risk to collections as determined by LC Preservation and Research and Testing (PRTD) staff. Usability criteria included evaluating the ease of preparation for each adhesive, flow when applied to the substrate, open time for working, tack, and other features. PRTD analysis included Oddy testing, direct thermal desorption gas chromatography mass spectrometry, and air sampling in order to understand the potential risk the adhesives pose to collections. Results of the usability and risk of components of the project will be discussed as well as future research initiatives.

### 29 Silicone-Dased Control of Pressure Sensitive Tape Silicone-Based Solvents For The Removal

Diane E Knauf, Madalyn Meehan

Conservation treatments often use materials that have a negative impact on the environment during their production, use, and disposal. In 2018, Sustainability in Conservation (SiC) produced an international survey that named solvents as one of the most used materials in conservation and the material most conservators would like to replace. Over the past several years, silicon-based solvents have been suggested as a more sustainable solvent for conservation treatments.

In this study, three silicon-based solvents were tested for use in paper conservation. Within paper conservation, pressure sensitive tape removal often

utilizes excessive amounts of non-sustainable solvents. Decamethylcyclopentasiloxane (D5), hexamethyldisiloxane, and octamethyltrisiloxane were utilized for the removal of a variety of artificially aged pressure sensitive tape samples. The silicone-based solvents were evaluated based on their sustainability, feasibility, and efficiency in the removal of the aged pressure sensitive tape.

### 29 What Do Conservators Think Today about the Protection of the Back of Painting on Canvas?

Daniel Morales-Martín, Alicia Sánchez Ortiz

Reverse protection in painting on canvas has a great application in the field of conservation. In recent decades, its qualities have been analyzed as a simple way to mitigate the negative effect of vibrations, relative humidity and temperature fluctuations, dust accumulation, and the action of polluting gases, light, and certain biological agents, mostly. The list of products that can be used as a backing has evolved according to advances in the matter. Currently, as part of the results of the Sustainability Tools in Cultural Heritage (STiCH) project, the impact of the carbon footprint of the production of materials has become another criterion for selecting backing material.

Intending to contrast the results of the theoretical studies with their application in real practice, we carried out a first field study where we compared bibliographic sources of different types with conservation interventions carried out by different professionals. As a result, we identified certain discrepancies in the use of materials that made us interested in the topic from the perspective of the conservator-restorer himself.

For my doctoral thesis, which we are carrying out with a contract from the Ministry of Universities of Spain (FPU20/00384), we designed an online survey with 19 questions in English and Spanish through Microsoft Forms. The first three were directly related to the criteria that we were subsequently going to use to interpret the data: the sector (public, private or both), the country of work and the years of experience. Next, 16 questions were presented about the concept they have of the backings, the role they played within their usual intervention proposals, the materials they used and the positive or negative experiences they had had with them, among other points of interest.

Since its publication, in March 2022, until its closure in September of the same year, we have obtained a total of 126 responses from 23 different countries. Spain represents 51.9% of the responses, followed by the USA with 12.0% and Canada with 5.26%. 46.8% of the total responses are from the public sector, 45.2% from the private sector and 7.9% come from both areas. Professionals with a career spanning between 20 and 30 years of experience represent 31.0% of the total responses and are followed by those with a career spanning between 5 and 10 years with 24.6%.

In the first place, the general results show the lack of a precise definition of the concept of backing as a treatment to prevent pictorial support. The main difference between the three employment sectors is the reason for their placement. Among the different generations, the use of a wide variety of materials stands out, which decreases with years of experience. The most significant contrasts between countries are the type of backing, the nature of the products used and the way they are placed.

## Comparison of Colorimetric and Photographic Interpretation of A-D Strips®: L\*A\*B\* to RGB

Emilie Duncan, Molly McGath, Lindsey Zachman

In 2022, an assessment focusing on measuring the acidic off-gassing of The Mariners' Museum and Park's motion picture film collection was completed. This assessment employed A-D Strips®, colorimetric and photographic documentation, and creation of a set of reference strip standards exposed to known concentrations of acetic acid. A-D Strips are a proven method of evaluating acetic acid off-gassing from cellulose acetate film. A previous study conducted by the authors sought to standardize the interpretation of the color changes made to the strips by exposure to acetic acid.

Photographic images were collected under both standard studio conditions and working survey conditions in the 2022 investigation. In 2023, RGB values were collected from these images of strips and compared to the L\*a\*b\* colorimetric values. These RGB values and L\*a\*b\* colorimetric measurements are compared in this study with the goal of assessing how differences in photographic conditions impact interpretation of the results. This investigation examines the feasibility of standardizing photographic interpretation of A-D Strips using RGB values of photographs collected under varying lighting conditions. Success of this standardization could possibly circumvent the need for a colorimeter. Finally, a set of standardized RGB values for printing a calibrated scale is proposed.

# Narrating Change: Digital Storytelling as a Tool for Personal Growth in Conservation

Emily Williams, Teti Dragas

Durham University's MA in Conservation of Archaeological and Museum Objects is a two-year program in which students learn to conserve and care for a range of materials commonly found in cultural heritage. During the first year, the students are taught on the Durham campus and the second year they spend on placement in a conservation laboratory at a major museum or cultural heritage institution in the UK or abroad. Over the last three years, we have been exploring the use of Digital Storytelling within the program's curriculum as a tool for facilitating the student's transition onto their placements and helping to develop their identities from "students" to "emerging conservators." This paper will discuss our work and the pedagogical considerations in developing our approach and its placement within the arc of the program. We will discuss the use of digital storytelling as a tool that supports the evolution of a professional identity for developing conservators drawing on data gained from digital stories and reflections on learning by students. More significantly we will reflect on the surprises that we have encountered in this project, the alterations we have needed to make and the lessons that that has taught us about perception, connection, passion, and leadership in the field.

### Conservation Documentation Archive at Duke University Libraries

Erin Hammeke

In 2021, Duke University Libraries Conservation Services Department (CSD) received a Lyrasis Catalyst Fund grant to digitize and preserve their legacy conservation treatment documentation. The records spanned seventeen years and were comprised of paper forms, 35mm color slides, photographic prints and born digital documentation. Grant funds were used to hire a student assistant, intern, and vendors to digitize the slides and paper documents. Conservation staff and students created enhanced descriptive metadata for each conservation treatment, including high-level descriptions of the treatment event; format, material, and cultural descriptions of items treated; as well as specific condition and treatment information. 1400 treatment records were ingested into the Duke Digital Repository for preservation, and the collection became public in the summer of 2023. Each item in the archive is linked to the library catalog record for the item treated, and a local note in the catalog directs researchers to documentation for that item in the archive. The CSD plans to add to the collection on an annual basis.

The metadata in the collection are keyword searchable and a subset of fields allow for faceted browsing. The author will discuss the department's approach to choosing standardized vocabulary for the collection. One of the great offshoots of this project was that it allowed CSD to think more critically about the terms used in their documentation and how previous forms revealed problematic blind spots in staff's knowledge of bookbinding history. The project prompted an audit of treatment forms to make them more inclusive and accurate for collection materials from a diverse array of cultural traditions.

In many ways, this was a pandemic-era project, and there was a need to manage the endeavor through changing work environments (from working in lab spaces to working remotely, and from analog to digital documentation). With very few peer collections available, the resulting Conservation

Documentation Archive (CDA) presents one approach for preserving conservation treatment records and making them available to the public. This model may be useful to consider for institutions planning a similar move from analog to born-digital recordkeeping, and for institutions hoping to shift towards better preservation of their records and increased transparency of their conservation treatment practices. Lessons learned about privacy concerns and other surprises encountered during the project will also be shared.

## 36 Conservation Sparks Change on Waste Management Outlook Conservation of Frescoes in the Shekhawati Region, India

Giovanna Carravieri, Sabine Cotte, Cecile Charpentier, Harpreet Tanday

The Shekhawati Project is an international association created by conservation experts based in Paris, France. In collaboration with an Indian NGO, its goal is the preservation of the architectural and pictorial heritage of the Shekhawati Region of Rajasthan. These exceptional Haveli are covered with frescoes and murals on both interior and exterior walls, creating an extraordinary openair art gallery - a witness to the splendor of an era. This unique heritage is threatened by over half a century of neglect.

The Project is founded in the belief that the conservation of this heritage is an important part of the rehabilitation of the entire region. The pressing issues of waste management and flooding are surprisingly linked to the protection of the frescos. For example, trash builds up and damages the foundations of these historical palaces.

The Project advocates for economic change through development of sustainable tourism, in close cooperation with local entrepreneurs, to preserve traditional skills and promote adapted reuse of the buildings for the local community. Working with regional contacts to lobby local governments to implement protective measures for the monuments. The project aims to include town infrastructure and city services, which could directly improve the condition of the buildings and their frescoes.

The Project organizes interdisciplinary conservation workshops with students and graduates in architecture and conservation, from India, Europe and Australia. Conservation treatments take place on the frescos in the center of the Shekhawati towns, allowing the local citizen to share the ongoing transformation. Integrating different professional backgrounds and approaches, our workshops combine the know-how of local craftsmen with modern conservation techniques.

Since 2017, the Project has been successfully using the workshops to showcase the best practice and act as an incentive for Haveli owners to conserve and rehabilitate their properties. Our program aims to promote international exchange for young and experienced professionals implementing protocols to adapt effective methodologies and up-to-date materials for conservation in a harsh environment with an extreme climate and high pollution.

"Surprising and unexpected" are the terms that perfectly describe this challenge!

# 37 Street v. Art: A Case Study of Mold Remediation and Community Participation at the George Floyd Global Memorial

Nylah Byrd

How does the community setting impact the conservation process? Thanks to funding for a research project during my 1-year National Endowment for the Arts Fellowship in the Book Department at the Conservation Center for Art and Historic Artifacts I was able to spend a week on site at George Floyd Global Memorial where I remediated mold on over 100 offerings, attended and spoke at the Rise and Remember Conference, and participated in other events for the Rise and Remember Celebration. This work presents the mold remediation process used and summarizes the creation of a quick reference guide for mold remediation for works similar to protest art. Next, the poster

explores how the conservation process is adapted to the community setting by considering factors like limited access to resources, work space availability, and the necessity of relationship building. Finally, the poster begins to define the term "street conservation" and discuss its similarities and differences from "art conservation".

# Treatment of a 17th-Century Dutch Military Portrait: Reflecting on an Unexpected Lining Process

Fiona Beckett, Josephine Ren

In 2022, a 17th-century Dutch portrait (44 x 37 1/8 in.) from the Memorial Art Gallery (accession #T334) by an unknown artist was brought to the Garman Art Conservation Department at Buffalo State University for technical study and conservation treatment. The oil on canvas painting depicts a military figure and is an example of late Dutch Golden Age painting. The artwork exhibited a range of condition issues, including structural instabilities and aesthetic disfigurements alongside previous restoration campaigns.

The painting was analyzed with imaging and analytical techniques including multimodal imaging, x-ray fluorescence spectroscopy, Fourier transform infrared spectroscopy, polarized light microscopy, and cross-section microscopy to gain a better understanding of the artist's materials and techniques as well as the prior restoration. The results indicated that the materials, including pigments and preparation techniques, were consistent with 17th c. Dutch painting styles. The previous glue-paste lining and tear repair were also failing. Results of the materials analysis informed the subsequent treatment which included both structural and aesthetic steps. Lining was performed using two layers of BEVA 371a film (commercially available since 2021) with heat and pressure via a hot vacuum table. While initial lining results were satisfactory, it was clear that the changes to the previous formulation impacted the treatment. The film did not have the same adhesive properties, required a higher temperature to adhere BEVA-to-BEVA and BEVA-to-canvas, and reacted readily to solvent exposure. Notably, the solvents used in the first varnish application caused the lining to separate from the original, creating pockets of delamination. As a result, the painting was subjected to additional heat and pressure to fully re-adhere the lining.

The treatment was successful and the painting is once again able to be safely displayed. Nevertheless, the differences in adhesive properties of BEVA 371a are worth discussion. In 2023, a Getty Conserving Canvas workshop addressed the reformulation and similar challenges using reformulated BEVA in treatments were reported in the AIC Global Conservation Forum. Further informal discussions among paintings conservators regarding use of BEVA 371a indicate the impact of the reformulated adhesive in practice; however, the lack of formal publications show a need for continued research and discussion. The unexpected lining process experienced in this case study serves as a starter for such conversations.

### The Fiberglass Tissue Method: A Technique for Lining Fragile Iron Prior to Desalination

Kate McEnroe, Christina Altland

Archaeological iron is well known to be prone to deterioration. Chloride ions accumulated in burial can cause aggressive, cyclical corrosion processes. If left untreated, in environments over 12% relative humidity, these corrosion processes can continue until the artifact is unrecognizable. Desalination methods are used to slow this degradation by drawing chlorides out of the object.

In The Colonial Williamsburg Foundation's Archaeological Conservation Laboratory, a simple desalination method is used. Objects are submerged in a sodium hydroxide solution that is changed at regular intervals until the amount of chlorides measured in the solution decreases to our minimum level of detection. The artifact is then rinsed in deionized water and dried in an oven.

This treatment can be intense for objects, particularly if they are in a fragile state. Over the years, conservators have noticed that artifacts that are small or have areas that are thin and delicate, can unexpectedly fragment during

this process. This deterioration can range from small fractures to full areas of detachment, and is not always predictable.

Staff wanted to find a way to reduce potential fragmentation while still allowing fragile objects to undergo the crucial treatment step of desalination. After several test rounds, conservators have adopted a method of lining susceptible objects prior to desalination. A piece(s) of fiberglass tissue is adhered to one side of the object with Paraloid B-72 to provide support. The lining remains on the object throughout desalination, rinsing, and drying. It can then be removed with acetone brushing and tweezers. For very fragile artifacts, the lining can be replaced and serve as semi-permanent support.

This method was shown to provide adequate support for objects of varying sizes and prevent fragmentation. In cases where fracturing did still occur, the fiberglass tissue retained the original location of the fragments allowing for more accurate reassociation after drying. This poster will fully outline this technique as well as provide examples of successful treatments.

# 42 What Do You Do with a Wasp Nest! Combining Disciplines to Find Appropriate Treatments and Mounting of these Little Researched Objects.

Kayleigh Spring

Whilst working for the Conservation and Museums Advisory Service (CMAS), I carried out stabilisation and mounting of a Wasp Nest for Sherborne Museum, UK. The nest was to be displayed illustrating the interior construction and allow for close inspection of the surface by visitors. Wasp nests are made of wood, which is chewed by the wasps, combined with their saliva, to form a pulp. This pulp is accreted to form thin paper like walls. The nest brought to us was large and extremely fragile with sections of walls actively flaking off the surface. I had no experience of treating this kind of object and found no published articles on the conservation of wasp nests. Research across different disciplines and practical tests were required to produce an appropriate treatment method.

Having reached out to fellow conservators on the American Institute of Conservation's (AIC) Global Conservation Forum, I had three main areas of focus - what consolidant to use, how to apply the consolidant and how to support/mount the object to prevent further deterioration via handling. Fellow conservators responded, having previously treated wasp nests by spraying with 10% Paraloid B72 in acetone, Lascaux MFC applied in a nebuliser and methyl cellulose or Klucel. Due to ethical concerns, I decided not to spray the entirety of the nest with a consolidant but to focus on more localised application techniques more familiar to paper conservators such as pre-coated Japanese tissue, micro-dots and direct application. I also discounted cellulose ethers and BEVA consolidants based on further findings and decided to test Aquazol, Lascaux, Wheat starch combined with Methyl cellulose and Paraloid B72 which were easily accessible in the lab. Small fragments of the nest that had already become detached were used to carry out testing and I found that applying small dots of a 50:50 mix of 10% Methyl cellulose to 3% Wheat starch using a fine brush along the break lines of fragments produced good results the consolidant was strong enough to hold the fragments together and did not create tide marks after curing.

The majority of loss was due to handling, so an appropriate support was a priority. A mount was needed that the object could be transported and displayed in. Although more complex mounts were considered, made from acrylic so more of the object could be visible, static charge lifted surface fragments when the object was placed near plastic, so a more low-tech approach was chosen. Ethafoam blocks were used, covered in a layer of polyester wadding and soft undyed, unbleached linen which provided a more appropriate colour that did not visually distract from the object.

Although I would describe the result of the treatment as a success, I am aware that the object will continue to flake and deteriorate. The consolidation technique only covers areas that are already fragile not any that may become weak in the future, and the application technique is time consuming. Hopefully my project can be a starting point for future research.

# Embracing the Challenges of an Unexpected Environment for Unique Cement Lanterns at the Topaz Museum in Delta, Utah

Kimberleigh Collins-Peynaud

The Topaz Museum in Delta, Utah houses a variety of artifacts that come from the Topaz incarceration site, used from 1942 to 1945. The area consists of one square mile of land now owned by the museum that once was the location of barracks where 8,100 Americans of Japanese descent lived after being forced to leave their homes on the West Coast. Not only does the collection include examples of everyday items family members brought with them from home, it also consists of a surprising variety of artwork and objects that was made on-site by the relocated individuals during the time they lived at Topaz. The harsh conditions of the western Utah desert, with extremely cold winters and hot summers, very little shade or vegetation, loose soil, high winds, and the presence of snow and ice collecting on surfaces for long periods of time present challenges to many pieces conserved outdoors. Some very significant examples made on-site include, but are not limited to, at least three cement lanterns made for a Buddhist temple created by individuals at the camp. One very large, incomplete, three-legged toro lantern, along with two unique lanterns that would have originally lined and illuminated the path to the Buddhist temple, made of cement and local materials, have made their way from the site to the museum, and have passed through the hands and yards of members of the local community. Originally intended to function in the garden surrounding the Buddhist temple, these sculptures have greatly deteriorated over the years, most likely due to a combination of exposure to harsh environmental conditions as well as the composition of available concrete and other materials used to create the objects. Vandalism is also a common problem that many of the artifacts on site face. Conservation treatment for these objects has been challenging to plan and execute considering both the conditions and composition of materials, particularly when faced with the decision to display these pieces outdoors. The organization of the space and planning for an adapted method of limiting the effects of the harsh environmental conditions on the treated objects remains to be determined. Working closely with the museum and other collaborators on possible protective methods for these sculptures destined to remain outdoors has proven to be an interesting and fruitful collaboration to problem-solve for this unique collection. Current methods for protecting outdoor sculptures have been considered, as well as partial coverings designed to limit the possibility of snow and/or ice collecting on the sculptures, but we have not yet found a satisfying solution. Not only does the successful method of preventive conservation need to meet the needs of the cement sculptures but it also needs to consider the way in which the space is organized and the effect it may have on the display of the objects. Long-term conservation of these objects outdoors will require open-mindedness, flexibility, collaboration, careful interpretation, and an effective solution to protect these unique pieces from the harsh environment in which they were created.

# 44 Structural Conservation of Canvas Paintings in Slovak Restoration Practice – The Dilemma Between Tear Mending and Lining.

Lucia Sefcikova

In the context of the still present debate about the stabilization and mending of canvas supports, the main aim of this presentation is to provide an introduction to the problematic, focused on practice in the Slovak Republic. The conducted research has been concentrated on the most preferred methods and procedures in this area, and due to a certain persistent stagnation, it tries to bring new, applicable suggestions.

Despite the enforcement of the minimal intervention approach, there is still a strong inclination towards structural treatments. For a long time, lining was considered as the most effective treatment in cases where the canvas support is too weakened by the presence of numerous perforations. This preference is based on the current condition of objects of art in Slovakia and also ensuring stable environmental conditions is problematic, mainly in the case of paintings in private collections or situated in a living liturgical space, which can lead to

reappearance of surface deformations, especially for large-format paintings. In the decision-making process between lining and alternative stabilization methods, the final decision is often influenced by the increased risk of the necessity to repeat such intervention. The climatic conditions themselves had an impact on the specific lining techniques. There was an obvious difference between the Italian practice and the methodology beyond the Alps, subject to climatic conditions affecting the mechanical properties of the canvas supports. Starch glue adhesive was preferred in dry and warm climate of Italy, while in humid and cold regions beyond the Alps, wax-resin adhesive prevailed. The Slovak Republic is located in Central Europe, in a mild climate zone, which rather enabled the coexistence of both approaches. Currently, mainly under the influence of global development and simplification of the process itself, the use of synthetic adhesives prevails. The introduction of BEVA 371 into the Slovak restoration practice occurred with a considerable delay, however now it is the most popular. In case of tear mending is situation very similar. Most of the restorers lean towards polyamide mending powder. Use of this type of synthetic adhesive is curently reassessed, although in our environment it took a long time even its introduction. Research into the EVA and PVAc synthetic polymer dispersions could bring further diversity due to their availability and ease of processing. Despite the fact that in many cases it is not possible to avoid such an extensive intervention as lining, by improving the alternative treatments (e.g. consolidation, strip lining, loose lining, tear repair, strategies of preventive conservation, etc.) it is possible to maximize the success of such a partial operation and thus extend the life of the work itself without calculating the potential risk of damage.

Understanding certain established models that determine the form of local practice is a necessary step to be able to come up with new and especially realistically usable methods.

### 45 Pulpable Texture: Using Andrea Peterson's ABM Board in Book Conservation

Luke Kelly

When evaluating a book for treatment that has detached boards or other structural problems with board attachment, it is often preferable to conserve the original structure as much as possible by reattaching the boards as a functional part of the binding. However, in some cases where the original boards are badly damaged, lost, or otherwise unable to be reattached, new boards must be incorporated.

Finding or creating new boards has been a challenge for many conservators, especially with early printed books and manuscripts, as commonly available commercially made boards are dense, heavy, and have a smooth surface that can seem incongruous with the idiosyncratic character of the text block. This poster will highlight a relatively new product called ABM Board (first marketed in 2020) that captures the weight and feel of pre-19th century pulp boards, has excellent workability and versatility, and harmoniously incorporates principles of sustainability in its production. Two treatments of books from the University of Notre Dame's Rare Books and Special Collections will be presented that demonstrate how ABM Board was employed effectively to recreate historic binder's board. Information on the development and making of the board gained from interviews I conducted with the three producers of the board will also be included. Likewise, photographs of the making of the boards in Andrea's studio and in-process treatment photographs will be included in the poster.

The University of Notre Dame's Analog Preservation and Conservation department visited local papermaker Andrea Peterson's studio in Laporte, Indiana in November 2022, where I first learned of her handmade ABM Board. Essentially a thick sheet of handmade paper, ABM Board has many of the characteristics of early pulp boards, is composed of sustainable materials (recycled, acid-free off-cuts from an archival products supplier), and is affordably priced. Retailed by Mary Uthuppuru of Colophon Book Arts, Andrea Peterson's ABM board was developed in collaboration with bookbinder and toolmaker Brien Beidler in an effort to recreate the highly textured boards found in pre-industrial book bindings. After visiting Andrea Peterson, I kept an eye out for opportunities to use her ABM Board in upcoming treatments, and I have used it twice this year on books from Notre Dame's collections: the rebinding of a 15th century

manuscript and the rebinding of a large early 19th century gradual. In each instance ABM Board was selected because of the thickness of board required, the ability to manipulate the board through sanding and lamination, its light weight and strength, and the surface quality of the boards transmitted through the books' different covering materials. These treatments serve to show the working properties of ABM Board and its suitability for use in a special collections conservation setting.

## The Use of Paralloid 44 in Completion of Archaeological Glass: Applied Experimental Study

Mohammad Hefny Abd Elkarim, Hamdy Abd Al-Monem Mohamed

Epoxy is one of the most common materials used to complete antique glass, but it is a non-recoverable material, so an attempt is being made to find another recoverable material that can be used for this purpose.

Paraloid is actually used in assembling archaeological glass, but it is difficult to use it for completion due to the many number of air bubbles present in the paraloid mold. The study aims to identify how to produce a paralloid mold without air bubbles and use it to completion glass. Paraloid 44 was chosen because it can withstand high temperatures, as it does not become flexible except at a temperature of 60° degrees.

The main problem lies in the presence of many air bubbles in the paralloid mold, which causes the solvent to volatilize quickly, so the solvent is worked to volatilize gradually. This was done by placing the paraloid in the mold first, then placing it in the refrigerator. After a while, it was taken out of the refrigerator and the lid of the mold was uncovered for a little while and left for a while, then the lid was completely uncovered and left until it hardened well. Thus, molds of the paraloid material were obtained without the many air bubbles.

An experimental study was conducted in which thermal, moisture, and moisture aging were performed, as well as light aging using UV. To evaluate the results before and after aging, ATR analysis was used, and color change was measured using a colorimeter.

Applying the Paralloid 44 to completion of archaeological glass object dating back to the early Islamic period, Which is missing part in a weak place and needs protection.

## 47 Anachronistic or Visonary? Evaluating Giovanni di Paolo's use of Silver Leaf on a Fifteenth-century Sienese Predella

Molly E. Hughes-Hallett

Giovanni di Paolo's unusual use of silver is a material choice unexplored, yet it contributes to defining his aesthetic, as well as contextualizing him within the artistic zeitgeist of his generation. The genesis of this project was the conservation treatment and technical study of Giovanni di Paolo's Saint John the Evangelist, The Assumption of the Virgin, and Saint Ansanus, part of the Kress Collection at the El Paso Art Museum. Treatment and technical analysis revealed that this predella fragment once had a silvered frame and silver leaf ground, prompting a reevaluation of how the work should be displayed, and how its current condition with degraded and tarnished silver affects our reading of the work.

Giovanni di Paolo (c.1402-1482) was a prominent Sienese artist; his style is typified by his surreal compositions and imaginative spirituality. His works express a vivid opulence through a rich use of pigments and geometric patterning, and he doggedly pursued a traditional style while many of his contemporaries had moved on to more realistic imagery. As a result, he is often labeled as eccentric, idiosyncratic, and anachronistic. These labels are predominantly based on his fantastical imagery rather than his choice of materials, yet during the course of this project a review of fifteenth-century Sienese panels revealed that Giovanni di Paolo was seemingly alone in his continual use of silver leaf for backgrounds and framing - a stylistic choice more closely tied to fourteenth-century Sienese practices.

Unfortunately, as a painter of predominantly altarpieces, most of Giovanni di Paolo's works are now in a fragmentary state. This creates a challenge when contextualizing how the predella fit into its original altar format, and whether it is feasible that the artist mixed metal leaves without a clear example as a comparison. A known fragment from the same predella, owned by the Fitzwilliam Museum, Cambridge, was also examined and compared, and provided additional information about the original structure. John Pope-Hennessey had proposed a reconstruction of the altarpiece, yet misunderstood the physical structure of the predella fragment. I evaluate his hypothesis, with the materiality of the object more clearly explored.

Silver is well known to oxidize and tarnish, turning a reflective white metal surface to dull, mottled brown and black. This physical change of silver is often overlooked or misinterpreted in the reading of an object, and silver is particularly vulnerable to aggressive and damaging restorations. Text labels in books are frequently incorrect in identifying silver as gold, and from photographs alone it can be hard to identify the once white metal. Yet, Giovanni di Paolo actively chose to use silver over gold for aesthetic reasons, and this choice, as demonstrated through a reconstruction, changes the tonal color balance of the panel. This highlights the need to truly reflect on materials used within an altarpiece, and stresses the importance of understanding the materiality of an object when reconstructing larger pictorial schematics.

# The Unexpected Challenges: Scientific Preservation and Exhibition of Tutankhamun's Textiles at the Grand Egyptian Museum

Islam Shaheen, Nagmeldeen Hamza, Mohamed Ayad, Mohamed Ragab

King Tutankhamun's tomb (the 18th Dynasty of the New Kingdom) was discovered by Howard Carter in 1922, situated in the Valley of the Kings near modern-day Luxor. Among the finds were textiles, considered an essential component of the burial. These textiles provide valuable insights into the history, craftsmanship, and cultural significance of ancient Egyptian textiles. Tutankhamun's textiles were intricately woven and often adorned with elaborate patterns and motifs, typically featuring religious symbols, mythological creatures, or scenes from ancient Egyptian life. Despite the scarcity of surviving ancient Egyptian textiles, the collection from Tutankhamun's tomb presents a remarkable opportunity to illuminate this aspect of ancient Egyptian identity. Carter recognized the significance of these findings and emphasized the need for meticulous study and careful preservation of the materials found in the tomb

The majority of ancient Egyptian textiles were made of linen, derived from the bast fiber, flax. The vast assortment of fabric discovered in Tutankhamun's tomb includes various items like garments, gloves, shrouds, sashes, cloth covers for statues, loincloths, and headgears. These findings provide valuable insights into fabric usage during the Eighteenth Dynasty. However, the collection arrived in poor condition due to inappropriate storage conditions at the Egyptian Museum since its discovery.

The research aimed to preserve the collection through an interdisciplinary approach. Preventive conservation is emphasized to safeguard the collection for future generations. The focus is on the preventive conservation plan which was applied to prepare and preserve the collection for display at the Grand Egyptian Museum. Given the fragile nature of these artifacts, a comprehensive and multidisciplinary strategy was required, extending beyond physical preservation to consider their historical identity.

This research highlights the challenges and obstacles we faced during our work to preserve and store the collection. Different types of challenges like the diversity of the collection forced us to explore the best methods, technologies, and scientific approaches for conserving the unique collection of ancient Egyptian textiles.

Part of the collection was very fragile and carbonized which led us to focus on preventive conservation techniques to minimize intervention and ensure the long-term preservation of these valuable historical artifacts. Another part

suffered because of the previous intervention, which affected the collection badly. In some cases, the previous intervention changed the characterization and the archaeological context of the object, which posed a high challenge.

Mounting more than 200 pieces was a big challenge because of the diversity we faced and the different obstacles that took us time to manage and deal with in order to achieve the main objective of preserving the textile collection.

This study offers a valuable chance for conservators to learn about the challenging choices made while managing numerous rare and valuable objects as well as the teamwork and planning techniques based on recent scientific approaches.

### **50** Observations in Micro-Air Abrasion: Removing Lead Paint and Corrosion, and Considerations for Recoating a "Life Car"

Nicole Peters

National Park Service Harpers Ferry Center (HFC) recently conserved an historical lifesaving vessel referred to as the "Life Car." This early 20th century galvanized steel marine watercraft belongs to Cape Hatteras National Seashore (CAHA) and is exhibited inside the open-air, historic Chicamacomico Life-Saving Station located approximately 100 yards from the Atlantic Ocean. The Life Car was originally used in oceanic surf rescue where passengers would be loaded inside the enclosed, top-latched vessel from a foundering ship. Rescue crew members from the Life-Saving Station would pulley the vessel between the ship and shore by a line tethered through two arched iron bails welded to the structure, with one end of the line anchored to the shore and the other attached to the ship.

During examination, conservators tested the multiple campaigns of flaking white paint on the exterior of the vessel using a portable X-ray Fluorescence spectrometer (pXRF) and results were positive for the presence of lead (Pb). This required conservators to wear specialized PPE and construct a custom lead remediation room to safely treat the Life Car without contaminating the surrounding lab space. Mechanical and chemical tests were performed for the removal of unstable paint, biological growth, and topical corrosion from the oversized object. Factors such as safety, efficacy, efficiency, and overall success of treatment method were assessed. A form of micro-air abrasion called "sweep blast cleaning" was selected for the surface treatment of the Life Car. This treatment technique is strong enough to clean and profile the metal surface while being gentle enough to prevent excessive removal of the galvanized zinc coating by utilizing a specific PSI and blasting media grit and mesh size.

Other treatment steps included corrosion removal from iron bars and rivets, stabilization of interior wood components, and finally the priming and recoating of the Life Car with a white colored high-performance marine-grade coating. The coating served a dual function of protecting the metal surface in the marine environment while also preserving the original appearance of the vessel, which was traditionally painted white. The final step of the treatment involved the installation of reproduction bumpers along the gunwales of the vessel. This poster will outline the treatment steps performed, PPE selected and the adjustments made to mitigate lead exposure, results of mechanical and chemical testing, and the decision-making process regarding the selection of the final primer and topcoat.

## 51 Selective Permeability Pouches: An Innovative Long-Term Storage Solution For Radioactive Material In Museum Collections

Olav Bjornerud, Lesley Mirling, Katerina Acuna

In the spring of 2023, conservators at The Metropolitan Museum of Art began assessing the condition of objects in the Modern and Contemporary Art collection to prepare to move the collection offsite during the renovation of these galleries. As part of this assessment, several radioactive glass and ceramic objects (including four from the popular Fiestaware brand) were

initially identified using a Geiger counter, then analyzed via pXRF to confirm the presence of uranium. In preparation for packing, Met conservators sought to develop a storage solution that would mitigate health risks to museum professionals working with radioactive objects.

Objects containing uranium emit alpha, beta, and gamma radiation. While alpha and beta radiation have the greatest ability to damage living tissue, gamma radiation is generally considered more concerning for professionals working with uranium-containing ceramics and glass because alpha and beta particles are unable to travel far from their sources and can be blocked by relatively light materials. Studies have found the risks of handling uranium-containing ceramics and glass to be minimal when reasonable precautions are taken. However, in the event of damage to a radioactive object, prolonged close contact with fragments caught in the folds of clothing or a particle inhaled into the lungs could have serious health effects through direct exposure to alpha and beta radiation. In addition to these risks, uranium also generates radon gas as it decays. Radon is carcinogenic and the second leading cause of lung cancer, after smoking.

Institutions concerned with the containment of particles shed by radioactive objects have come to diverging solutions. Sealing objects in polyethylene zip top bags effectively prevents particulate contamination but also traps radon gas generated by the objects, necessitating the opening of the bags in a well-ventilated space. Housing radioactive objects in open boxes or trays prevents radon buildup but may not adequately address the problem of containing particles should the object be damaged.

The authors devised an elegant solution that addresses both problems by creating enclosures using a combination of soft Tyvek® (grade 14-M) and polyethylene zip top bags. Experiments on barrier materials for radon detectors by members of the American Association of Radon Scientists and Technologists have demonstrated that Tyvek® allows nearly 100% radon transmission. As a polyethylene material, Tyvek® is easily joined to components from polyethylene bags using a heat sealer. The custom pouches made from Tyvek® and zip top bags are designed to contain fragments generated by damage to the object inside while still allowing the venting of radon gas. They are resealable and provide a clear window through which the object can be viewed. Beyond radioactive objects, the pouches have the potential to be used in any situation where the creation of a microclimate in a sealed bag is undesirable. This poster will detail the factors considered in developing the pouches and include product samples to share with interested colleagues.

## The Third Devil: Reconstructing Elements of an Altered 18th Century Cuzco School Painting

Patricia Smithen, Jocelyn Hillier

This paper explores the decision-making process behind the reconstruction of a painting of St. Andrew by an unknown Cuzco school artist. The original format of the painting had been dramatically altered at least twice, leaving behind a work of art with several aesthetic inconsistencies. After the original painting was initially cut down, a floral border was added, covering important iconographical features. The painting was cut down a second time, cropping large portions of original paint and the floral border. The alterations at one of these stages may have included some iconoclasmic damage to the devilish figures tormenting St. Andrew. The work was restored by its amateur owner in the 1970s before coming to the paintings' lab at Queen's University.

The most challenging aspect to the treatment occurred at the stage of retouching and reconstruction, as we grappled with ethical and technical challenges associated with various options under consideration. Given the compromised nature of the design layers, various digital images were produced to explore options for reconstructing the missing perimeter. The owner expressed a strong preference for a 'finished' painting with a full recreation of the missing elements and tests were undertaken to determine whether this was technically feasible using canvas inserts and wax-resin fills. The results of the material tests limited the choices available for reconstruction, however the ethical considerations were a greater factor. A minimal reconstruction was proposed to square off the edges of the painting and reconstruct some missing elements to present a complete painting.

In this paper, we will present the critical pathways through the technical and ethical options and the outcomes of the treatment.

# An Applied Study of The Effect of Using Laser on An Archaeological Cartonnage In Egyptian Museum, Cairo

Raghda Mahmoud

The Yag laser is considered to have several advantages. It can be used for restoration purposes due to its relatively low cost, its availability and portability, the immediate control of the device, the flexibility that the device provides in terms of pulses and emits typically in the near infrared region (NIR) at  $\lambda$  = 1064 nm ( $\omega$ ). Recently, this type of laser has been developed to emit radiation at  $\lambda$  = 532 nm (2 $\omega$ ),  $\lambda$  = 355 nm (3 $\omega$ ),  $\lambda$  = 266 nm (4 $\omega$ ), and  $\lambda$  = 213 nm (5 $\omega$ ), Therefore, it was used in the case of a Graeco-Roman Egyptian cartonnage from Egyptian Museum in Cairo (TR: 20.12.25.6-SR: 5/290).

Several methods have been used for documentation, examinations, and analyses, such as:photographic documentation, AutoCAD, visual examination with a optical microscope and a colorimeter device.

Through these tests and analyzes it was found that the face of the cartonage had stains that obliterated its features, and the body of the cartonage also suffered from fungi, so laser was resorted to as one of the solutions to preserve the shape and show it, given that traditional methods did not give results.

In the end, the restoration was carried out in steps that began with the laser, which proved that the wavelength  $1064 \, \text{nm}$  ( $\omega$ ) and  $20 \, \text{frequency}$  is the appropriate solution in removing stains that cover gilding layer from the face.

While its success has not been proven with the fungal damage found on the cartonage's body

Keywords: Yag laser, cartonage, gilding layer, fungal damage, , colormeter

# **55** Becoming and Abiding: Partnering in the Conservation of Two Contemporary Thangkas

Renée Stein, Howard Sutcliffe, Brittany Dolph Dinneen, Ella Andrews, Buchung Nubgya

When two new, commissioned thangka paintings arrived damaged and incomplete, conservators at the Carlos Museum engaged a contemporary artist to accomplish an intervention that combined conservation methods, traditional techniques, and art practices. In 2021 the Carlos Museum commissioned artists at the Norbulingka Institute of Tibetan Culture in Dharamsala, India to paint thangkas depicting the Bhavachakra: Wheel of Becoming and Samatha: Abiding Calm. The images were chosen in consultation with faculty in the Religion Department as well as the Center for Contemplative Science and Compassion-Based Ethics at Emory University. Measuring 41 x 41 inches each, the pair of paintings arrived rolled in a wood crate that broke during shipment. Lacking internal rigid support, the rolled paintings partially crushed against the crate wall. Once unrolled, sharp creases and losses were evident throughout the painted surfaces with areas of flaking and cracked paint. Iconographic elements of the meditation for developing a peaceful mind were noted to be missing from the Abiding Calm painting. The much-anticipated new works were due to be celebrated with lectures and programming during the annual Tibet Week 2022, approximately one month after the damaged crate arrived. Conservators faced both the urgent need for intervention and the ethical limitations that prevented them from repainting or completing the images. Calling upon the expertise of Tibetan scholars and artists, conservators at the Carlos and consulting colleagues developed a multiphase intervention that enabled the paintings to be stable and accessible. Over the course of one year the paintings were first relaxed and temporarily mounted for installation in the galleries and use in teaching. They were then flattened before damaged areas were repainted and missing elements were completed by a thangka painter. Finally, the paintings were mounted and framed for long-term storage and rotation on display. Conservators employed established conservation methods for localized and overall humidification and flattening as well as for

temporarily and permanently mounting the thangkas. Contemporary Tibetan artist Buchung Nubgya, formerly retained by His Holiness the Dali Lama, came to Emory to repaint damaged areas and add missing iconographic elements. He referenced photographic documentation and condition maps prepared by conservators and worked in dialogue with the original painter, Tenzin Norbu. Both artists are attributed in accession records. While the guidelines of ethical practice limited the steps conservators could make to repair and repaint, the artists themselves could carry out this intervention. The artist's visit afforded opportunities to document traditional materials and techniques for creating and restoring thangkas. Further materials analysis of his paints was accomplished in the conservation lab. The visiting artist and the Tibetan scholar, a former Buddhist monk, who served as interpreter also guided decisions about how to mount and display the thangkas, without silk backings or coverings. They both returned to the Carlos Museum during Tibet Week 2023 to participate in a public program about this vital exchange.

# Why Can't We Be Friends? Technical Analysis and the Disputed Authorship of a Sixteenth-Century Italian Altarpiece

Ruth Waddington

The northern Italian city of Brescia had a thriving artistic output in the early Cinquecento despite being the target of multiple attacks during the War of the League of Cambrai (1508-1516). Brescian art was under-appreciated by art historians of the twentieth century who considered Brescian artists inferior, provincial members of the Venetian school since Brescia was part of Venice's terra ferma. Recently, the Brescian school has been recognized in its own right as an innovative group of artists influenced by not only Venice but also Milan and by their own unique sensibilities. Still, there have been very few technical studies of works by Moretto or Romanino, and none published in America. Therefore, the arrival of an early Cinquecento Brescian altarpiece at the NYU Conservation Center in 2022 provided an opportunity to enhance understanding of Brescian artistic practice.

The Samuel H. Kress Collection's "Madonna and Child with Saint James Major and Saint Jerome" (oil on panel, 58 5/8 × 54 1/2 inches) at the High Museum in Atlanta has a long-disputed authorship between the two of the greatest painters of this period, Moretto da Brescia (1498-1554), known as Moretto, and Girolamo Romanino (1484/87-1560), called Romanino. My proposed paper expands on my preliminary findings presented at ANAGPIC this year as I have worked to integrate technical findings with art historical research to make a case for the painting as a collaboration between the two artists. For my technical study, I utilized X-radiography, infrared reflectography, X-ray fluorescence, cross-section microscopy, scanning electron microscopy with energy-dispersive X-ray spectroscopy, and close examination of the painting in its cleaned state to understand the artist's technique. Significant findings include infrared evidence that the artist worked up the Madonna's head several times and that Saint Jerome's pose, which many art historians used in their attribution arguments, was altered between the underdrawing and the final painting. I will further evaluate how our visual appreciation of the painting has changed as a result of changes made over time, both naturally and through human intervention. For example, we calculated a loss of six centimeters from the top of the panel based on the position of the dowel holes, and this seemingly insignificant portion made a significant visual difference in the digital reconstruction I created.

Ultimately, this study intends to deepen our knowledge of the understudied artistic practices of Romanino and Moretto and to encourage further study of Cinquecento Brescia.

### Diagnostic Techniques Used on a Bronze Incense Burner from the Middle Kingdom Period at The Grand Egyptian Museum Conservation Center (GEM-CC) Utah Museum of Fine Arts (410 Campus Center Dr, Salt Lake City, UT 84112)

Shaimaa Hemid, Mamdouh Tahoun

Egyptian incense burner for burning incense in front of a divine shrine. Bronze. Twenty-fifth Dynasty. The third intermediate period. 700 BC

The first recorded use of incense was by the Egyptians during the Fifth Dynasty, 2345-2494 BC. The use of incense in religious ceremonies developed further.

The incense burner is in the shape of an arm. This type of incense burner appeared in the period of the Middle Kingdom. It was topped with a box for storing incense grains, and a dish for burning incense.

The arm-shaped incense burner in the Middle Kingdom was called n sntr and in one case the material used in its manufacture was identified as m HtmaS. This name also appeared in the Greek and Roman eras in the form of the letter n Hr. It was the popular name for the arm-shaped incense burner throughout the Middle and New Kingdoms, and in the Late Period in ancient Egypt.

The ancient Egyptians also used incense in many aspects of their daily lives, in medical prescriptions, personal care, perfuming homes, clothes, and magic, in order to protect them from evil spirits. They also considered incense one of the most important disinfectants in the rituals of the Egyptian religion. The use of incense was of great importance in the daily service of the temple gods, and it was used in almost every ritual conducted within Egyptian temples. In addition, it was used in religious ceremonies. Thanks to its importance, the Egyptian temples included factories for manufacturing perfumes that were burned inside the temples.

Egyptian texts indicate that the ancient Egyptians gave incense burners many names since the era of the Old Egyptian Kingdom. Then the names of the censers varied according to their shapes. KAp was the name of the cup-shaped incense burner with a lid. StAt was a rare name for cup-shaped incense burners as well.

The case of the incense burner was broken into several parts, and was covered with a lot of rust and many layers of mud.

A plan was drawn up to work on it and conduct some analyzes to determine the thickness of the rust. Some analyzes were also conducted to determine rust compounds. The restoration process began with mechanical cleaning using many different brushes and brushes. It was ensured that all layers of rust were removed and the insulation material was prepared.

The separate parts were also assembled using non-reactive or materials (bronze) and were prepared for display in one of the halls of the Grand Egyptian Museum.

Keywords: Techniques, Bronze, Conservation, The Grand Egyptian Museum.

# When Art Meets Science: Establishing Cooperative Conservation and Exhibition with the Antique Machine Collections from Chimei Museum and National Science and Technology Museum

Shu-Han Yeh, Tui-Chen Yen, Cheng-Chung Huang

The Chimei Museum collections become the world's largest musical instruments of historical significance in 2021, in particular violins and other string instruments by famous artisans. During the past 30 years, Chimei Museum is well-known for the loans the antique instruments to distinguished musicians free of charge. For receiving a new normal lifestyle after certain prevention rules in epidemic years, an innovative exhibition project in Chimei Museum has planned the Outside Box special exhibition for 30th anniversary celebration

since 2021. The exhibition named 'When Machine Meets Art' opened in June 3rd, 2023. The values of exhibition impart stories for Chimei founder Mr. Wen-Long Shi's thinking outside the box from antique machines, showcased by eight artists from six different countries who draw inspirations from machines and industrial materials. It illustrated their unconventional ways of creativity with interpretation how art-work used by daily materials.

National Science and Technology Museum is national-level applied science museum located in Kaohsiung, Taiwan. Industrial machinery and tools are common for NSTM collections that include typewriters, sewing machine and lathe. Chimei Museum's antique industrial objects were carefully selected after conjunction with NSTM collections researchers examined objects' condition and evaluated the historical meaning in industry. The purpose of the study will focused on the antique machine collections and a discussion the relation between early machine's conservation and exhibition. In addition, give Outside the Box exhibition insight a summary and interpretation after exploring the connections between industrial innovation, social changes, and artistic creativity.

### **62** A Foray Into Fungal Dyes Steph Guidera, Heather Hodge, Kathleen Martin

Through practice, experienced natural dvers anticipate what can feel like supernatural or shocking results from the dye bath. Colors from bright fuschia to rich brown emerge from a pungent stew, and with minor ingredient variations, a new, unexpected color may emerge, embedded in the fabric. Natural dyes are known to be sourced from a wide array of organic and inorganic substances, from insects to plants to minerals. Fungi, organisms of a separate phylum from plants and animals, and lichens, consisting of a fungus and a photosynthetic partner, have also historically been used for dyeing textiles. These organisms have been briefly explored in dye literature, namely by Dominique Cardon, however the cultural practice, breadth of colors available, and aging properties have been largely unpublished. Some colors can be identified visually, have known chromophores or signatures in specific wavelengths, but many dyes continue to be mysterious. Conservators, curators, and communities alike are often unsure about the sources of dyes on cultural heritage objects. While a number of non-destructive characterization tools are available for certain colorants, the identification often requires a reference set for comparison. For fungi and lichen sources, this data currently does not exist. The International Fungi and Fiber Symposium offers a biennial gathering of fiber and mycology enthusiasts. An array of dyed samples, representing a rainbow of colors from common fungi and lichen foraged in the United States were created at this symposium in 2022. They have been studied and multimodal imaging characterization has been completed. Further, the longevity of the dyes have been examined using spectrophotometry before and after accelerated aging. Future goals include conducting Microfading Testing (MFT) and High Performance Liquid Chromatography (HPLC) to characterize the dyes and create a reference set to be useful for analysis of future cultural heritage objects. Through sharing this initial information, images, and resources, the authors hope to spark connections with others who may be asking similar questions about colors in the collections they care

### Book Odor Removal: A Comparison of Techniques

An unexpected consequence for libraries is to have books returned with an unusual odor, such as cigarette smoke or smoke from a fire or cat urine. Before these books can be offered to another patron, they must be cleaned and deodorized.

Fortunately, universities have research facilities that can analyze odors and help to determine the best approach. In collaboration with the Penn State University Food Science Department, gas chromatography and mass spectrometry were used to compare the results of several common methods of odor removal.

The study compares baking soda, kitty litter, Gonzo (a volcanic absorbent stone), microchamber paper, as well as other techniques. These methods were compared with a chamber connected to a common air scrubber used by many disaster restoration companies.

The final poster will show the results of the collaboration between the local Fire Department, Food Science Department and the University Libraries' Conservation Centre.

#### **Quilted Book Cozy**

William Minter, Catherine Orochena

Every batch of rare items that our lab receives from the Special Collections Library has a surprise. From artist books in odd shapes to miniatures that require specialized support, there's always a new challenge. When we received two 18th century Spanish antiphonals we knew we were in for a challenge. After the conservation treatment was done, we still had the hurdle of housing. We needed an enclosure that would be lightweight, since the books were already large and difficult to handle. We also needed to protect the protruding metal furniture on one of the volumes.

We made two quilted book cozies which are modifications on a design made by Mary Baughman in 1996 at the University of Texas at Austin. In our case, we used a pre-quilted fabric from Test Fabrics, Inc. to speed up construction and inserted custom-cut ethafoam supports for the elaborately decorated covers.

This poster will include details of the construction and changes we made and provide advice for others who want to construct similar housings for oversized

### Structural Treatments of Textile Supports: Tear Repair of A Church Painting In 1889 -- The Use of Low Cost Heated Needle

Wing yi Cheung

The treatment was taken under the guidance and support of Grimwade teaching staff, Dr Paula Dredge John Hook, and Dr Jonathan Kemp, with special credit to Dr Jonathan Kemp, who sourced the tear repair equipment (Pine 64) under the Master's course in Cultural Material Conservation at the University of Melbourne.

The Church Painting 1, possibly painted in 1889 by an unknown artist, is framed with a four-membered wooden frame. Together with Church Painting 2 is the collection of St Columb's Church Hawthorn. The owner sent the painting to the Grimwade Centre of the University of Melbourne as a teaching and research object. The painting was in poor condition, with a major tear of approximately 300mm noted at the top right of the canvas.

Prior to the major tear repair, dry cleaning, pH and conductivity testing, and other treatments were conducted. The torn area was humidified in a controlled approach and then flattened with blotter paper and weights overnight. The tear of the canvas was repaired by bridging the gap with foreign fibre. Natural adhesives pose a threat to insect and microorganism attacks, which might not be suitable for future storage. The heat-activated synthetic adhesive, polyamide welding powder, was used to repair the tear. A mixture of original fibre extracted from the canvas and new linen fibre was chosen as the bridging threads.

As suggested and provided by Dr Jonathan Kemp, lecturer at the Grimwade Centre, the low-cost heating needle, 'Pinecil' of the brand Pine64, is originally a mini portable soldering iron used in repairing electric circuit boards. The set temperature of the solder ranged from 100 °C to 400 °C, which is lower than other soldering irons (usually starting from 250 °C). In order to figure out a suitable operation temperature, the polyamide powder was first applied to the mock-up canvas with the heated needle set at different temperatures. At a set temperature of 120  $^{\circ}\text{C}$ , the polyamide powder started to melt but was too rigid to apply. A set temperature of 140 °C was tested as the minimum temperature for the polyamide powder to melt thoroughly and become flexible to apply. The tip of the apparatus is exchangeable and supported with different sizes and shapes. The high temperature might be a concern to the canvas; however, during the application, the needle should not contact the canvas directly (adhesive in-between), and no observable change in the mock-up canvas was noted after the application.

The molten adhesive first adhered the original canvas and one end of the foreign thread together. Tightened (tensioned) the thread with a micro pointed tweezer and applied the molten adhesive to the other end of the thread. The treated area was then left dried under weight for minutes. The tear was successfully secured in place with fibre and polyamide welding powder.

### Transforming Cultural Heritage Preservation: The Power of 3D Technology, Bridging Past and Present With 3D Technology In Cultural Restoration, Accessibility, and Museum Mount Making.

Chris Hollshwander

In recent years, 3D technology has emerged as a transformational set of tools in the realm of cultural heritage preservation. This poster explores the multifaceted applications of 3D technology, with traditional model making practices in cultural restoration, creation of replicas to enhance museum accessibility, mount making for exhibitions, and artifact storage and transportation. With the ability to capture intricate details, facilitate precise reproduction, and enhance preservation efforts, 3D technology has become an invaluable to the preservation of our rich cultural heritage.

#### **Cultural Restoration:**

One of the most compelling aspects of 3D technology is its role in cultural restoration. This set of case studies will delve into the ways in which 3D scanning, printing, and CNC machining can breathe new life into damaged or deteriorating artifacts. This set of examples will show where 3D technology has been employed to recreate lost or damaged sacred objects that are cultural treasures, in collaboration between the Smithsonian Institution and the native Alaskan Tlingit clans, enabling us to recover and appreciate their heritage in ways never before possible.

#### Creating Replicas for Museum Accessibility:

Museum accessibility is a central concern for institutions worldwide. 3D technology is making cultural heritage more accessible than ever before. Examples will show how 3D scans, 3D CAD modeling and digital sculpting are transformed into tactile replicas, enhanced by traditional model making, enabling visually impaired visitors to engage with artifacts through touch, for the National Museum of American History exhibitions "American Democracy" and "Many Voices, One Nation".

#### Mount Making for Exhibition:

Mounting and displaying artifacts in exhibitions pose unique challenges. Examples showcase how 3D technology can revolutionize mount making by providing custom-fit, aesthetically pleasing, and preservation-friendly solutions. Such as creating 3D printed "stand-ins" during the mount making process, resulting in safer production. Attendees will gain insights into the process of creating tailored mounts using 3D production processes, that are non-invasive and reduce artifact handling.

#### Storage and Transit of Artifacts:

Preserving artifacts during storage and transit is of paramount importance for cultural institutions. Examples will highlight how 3D CAD modeling assisted in the creation of a custom painting mount for exhibition and transportation. The process enabled limited handling of the painting, precise planning with conservation staff, and informing the traditional mount making process, to create a mount that that stabilized the object, and was utilized for exhibition and transportation.

Each of the case studies will site challenges, and successes of incorporating 3D technology into the display, preservation, and restoration efforts. Attendees will gain a comprehensive understanding of the potential and limitations of 3D technology in various aspects of cultural heritage preservation.

The intersection of 3D technology and cultural preservation represents a dynamic frontier where tradition meets innovation. Join us for an exploration of how this technology is shaping the future of cultural heritage conservation, restoration, and accessibility. Whether you are a curator, conservator, researcher, or enthusiast, this poster will inspire you with the possibilities that 3D technology offers in the realm of cultural heritage preservation.

### **POV: An Archives Conservation Lab's** Efforts in Reaching Out and Levelling Up

Ayaka Ajiki, Sanira Beevi, Cassandra Tang

The wheels started turning in a different direction for conservation in the National Archives of Singapore 3 years ago. Tucked away in a picturesque hillside building, the conservation team operated in the shadows, as a backof-house function. Driven by the goal to raise the profile of conservators, stoke an interest in conservation resulting in pride in and respect for the meaningful work conservators do, a progressive route was charted for the team targeting outreach, education, and engagement.

#### Outreach

We were eager to challenge preconceptions of conservation being deadly serious business, with no room for humour. From a dearth of conservation-related posts on our institution's social media 2 years ago, conservation is now front and centre, gracing social media platforms such as Zoom, Instagram, YouTube and most recently TikTok, making archival conservation sexy again!

Notably, Conservation in NAS, a 10-episode TikTok series, threw the spotlight on our conservation team. The series highlights behind-the-scenes conservation processes at NAS. It has garnered 1,465,200 views and climbing (the average view per clip is 146,520). Most hearteningly, the comments section has been ripe with queries on how one can join the profession. It also won the National Library Board's Outstanding Innovation Award in 2023 - a recognition for being the first conservation series from an institution in our local TikTok scene. Ultimately, it has endeavoured to make conservation education accessible, eliciting wonder and reaching new audiences.

#### Education

It is no surprise that conservation practices are varied around the world. With limited educational institutions offering conservation training especially in Asia, such educational opportunities or professional training might be out of reach for many aspiring conservators. To tackle the issue of making conservation training accessible for our team, we created a comprehensive in-house professional training programme that serves a dual purpose of being an induction programme for new conservators and as a progressive training model for conservators to develop their competencies at beginner, intermediate and expert levels.

Taught by veterans in the team who have cultivated a wealth of experience training on the job, this model also serves as a means of sustainable knowledge transfer. Born during the Covid Pandemic when we were sorely missing travel, it was aptly named the "Training Passport", where conservators 'travel' to new experiences and challenges and obtain a stamp when they reach their destinations. While putting together the sessions which targeted skills necessary for a paper conservator, from cooking wheat starch to cutting mat boards to sizing and lining, we also made sure to include training for operating the lab equipment in the lab. This ensured that crucial knowledge and know-how did not solely rest on one or two conservators' shoulders but are now part of the skill set of every member of team. Supplemented by a curated list of external online courses, we have been keeping abreast with the dynamic conservation landscape.

In early 2024, we will be extending an abridged version of this training to a group of conservators in neighboring countries and helping to raise the standard of conservation for in the region.

#### Engagement

Necessitated by internal incidents with hazardous chemical agents and agents of deterioration, the Archives Conservation lab designed a first ever internal records handling programme for our library and archives staff. NLB has a mandate to collect, preserve and manage Singapore's public and private archival records of historical and national significance for their longterm preservation. As recent local and international events demonstrate, it is not enough for conservators alone to be apprised of the potential hazards in collections. Anyone who has exposure to physical records needs to be

alert and informed of the signs of potential risk, and how to respond and protect oneself.

A component of our Collections Disaster Management Plan, it covers agents of deterioration, assessing condition of records, staff health and safety measures, best practices in records handling, how to identify health hazards and mitigating steps to be taken. It has changed the way collection staff approach records, prioritizing their health and safety. Communication is smoother and quicker with clear escalation channels when the unforeseen happens. Staff and users are educated to understand the vulnerability of the materials which they are handling.

Our training which focuses on the special care required to ensure the long-term preservation of records has also been extended to include participants beyond our organisation, with external collection owners, archivists, and conservators from other local GLAM organisations to cover a wider group of users. This strengthens and cements the unifying role we play in preservation-as agents of change, actively engaging an otherwise rather fragmented local conservation community.

This three-pronged approach has transformed the role we play as conservators in our organisation. We are highly encouraged and motivated to do more and to do better – to make conservation accessible to all.

## **68** Evaluation of Starch and Cellulose Based Consolidation Materials on the Mechanical Properties of Papyrus

Rasha Hassanein Ahmed Hassan

In this study, polysaccharides, namely, potato starch, ethyl hydroxyethyl cellulose and cellulose nanocrystals (CNC), were used as consolidation materials for papyrus. The starch solution was applied on papyrus strips by two different methods: by brush and by an ultrasonic humidifier, the latter being a new approach for the application of consolidation materials. The consolidated papyrus was subjected to a thermal ageing study and several measurements were conducted to evaluate the efficiency of the selected consolidation materials and of the two different application methods of starch. The mechanical properties of the consolidated papyrus strips were evaluated by measuring the tensile strength and elongation. FT-IR spectroscopy and scanning electron microscopy of the papyrus strips were performed before and after thermal ageing. The study showed that CNC and ethyl hydroxyethyl cellulose improved the mechanical properties of the tested strips. Applying potato starch using the ultrasonic humidifier improved the mechanical properties of the consolidated strips more significantly than its application by brush

### A Preliminary Look at Surface Finishes on 19th-Century Tibetan Furniture

Laura Maccarelli, Jessica Chasen

This poster aims to take a closer look at the materials and techniques used in the creation of Tibetan furniture. This understudied area of East Asian furniture production has been the focus of only one English-language conservation publication despite pieces being held in many collections throughout the United States. The Los Angeles County Museum of Art's group of Tibetan furniture forms includes approximately 30 pieces of furniture in large part drawn from the Hayward Family Collection. The Hayward Family seeded significant works throughout other major collecting institutions.

As part of the EU Horizon 2020 GREENART project (https://www.greenart-project.eu/), several pieces of furniture were selected for technical study, with a particular focus on their original paint stratigraphies and later-applied coatings. The poster will share preliminary findings from these pieces with an emphasis on the elaborately painted and gilded surfaces. The primary case study presented will be Altar Table with Dragons and Auspicious Symbols (https://collections.lacma.org/node/214797) which includes several colorants, metallic flakes and leaf, and raised grounds. Samples were collected from this group of objects. Several analytical techniques (e.g. SEM/EDS, FTIR, XRF and Raman) were used to help characterization of the pigments and organic binders.

Many of the objects in the LACMA collection exhibit tacky, darkened coatings

which both obscure original surfaces and make storage difficult. It is hoped that this poster can serve as a jumping-off point for conversation around Tibetan furniture with the end goal of promoting greater understanding between both conservators and those with traditional source community knowledge. This study will provide a foundation for the eventual design and implementation of sympathetic, nuanced conservation interventions.

### Cellulose Nitrate Film on the Big Screen: Treating an Eames FSW (Folding Screen Wood)

Olav Bjornerud

The husband-and-wife duo Charles and Ray Eames are some of the most influential designers of the 20th century. The Eames' designs, organic and inspired, softened industrial materials, bringing them into the homes of a wide consumer base. While they experimented and worked with a range of materials, they are particularly known for their pioneering use of molded plywood. Released in 1946, the FSW (folding screen in wood) exemplifies the Eames' design philosophy.

The FSW in The Metropolitan Museum of Art's modern and contemporary collection is composed of six molded plywood segments joined in sequence with woven hinges. The plywood segments are veneered with mahogany and have a bell curve-shaped profile. Fully extended, the screen measures 58  $\frac{1}{2}$  in long and 68 in tall.

Pieces of furniture are enmeshed in the events of daily life that occur around them, capturing records of those activities in the form of wear from regular use, or scratches made by young children and stains from a spilled drink. The Eames FSW is a particularly dynamic object, meant to be moved, opened and closed, and repositioned in endless configurations. The Met's screen bears the markings of an actively used domestic object, including home repairs likely made with materials the original owner had on hand.

In a museum context, the purpose of The Met's FSW has changed. It is no longer a specific screen in the home of a specific family—it has become an archetypal example of a design object. Evidence of the screen's previous life now distracts from its most important attributes, chiefly form and materiality. The surfaces of the Met's FSW exhibited deep scratches in the finish as well as fourteen patches of overpaint that starkly contrasted with their surroundings. Two sections of one of the woven hinges had detached from their housings.

This paper will detail the treatment of The Met's FSW, completed as part of the author's 3rd year graduate internship. Rather than focus on specific outcomes, it will describe the decision-making process that guided the treatment. This process was complicated by the screen's finish, which was identified as containing cellulose nitrate using the diphenylamine spot test. Working within the limitations imposed by the sensitive finish, retouching using Maimeri Ketonic Resin Colours with ShellSol D38 was ultimately decided to be the best course of action for addressing the overpainted patches. The scratches in the finish were re-saturated with 20% Plexigum PQ611 in Shellsol D38 and the woven hinge resecured with Lascaux 498 HV. With this paper I hope to illustrate the challenging decisions involved in treating a consumer object that has undergone changes both intentional and incidental.

# 73 On the Border of Preservation: Where to Start? Establishing a Comprehensive Preservation Program at University of Arizona Libraries Special Collections

Fleur van der Woude

Preventive conservation in its ideal form is an integrated part of every position in a cultural heritage institution, with the preventive conservator as a spider in the web of daily activities throughout the organization.

Established in 1958, University of Arizona Libraries Special Collections holds over eight miles of book, archival, photo, architecture and map collections with a focus on Literature, History of Science, Political Affairs, Performing Arts, the University of Arizona, Arizona and the Southwest, Arizona Queer Archives,

and the US-Mexican Borderlands. I joined this department in 2022, with the intention to start a more comprehensive preservation program for these collections. Starting a new program to preserve these impressive collections, covering a wide variety of materials, provides great challenges, ranging from developing item-level solutions to departmental-wide rethinking of roles and responsibilities.

During the first year, we established a preservation studio where a Preventive Conservator, a Preservation Assistant and two student employees work on minor treatments and enclosures for collection items and exhibition production. We expanded the climate monitoring program, starting monitoring light-levels around the building, and established an IPM program that includes raising awareness among staff of the importance of IPM practice. Together with a library conservation consultant and colleagues across the libraries and campus, we created a report on preservation-focused space planning. This will help Special Collections plan for growth space and an improved preservation environment in the near and further future.

We started a training and outreach program for staff, student employees, and community groups, and are establishing new exhibition production procedures, which are tested in small-scale pop-up displays curated by students throughout

the year. In collaboration with student employees and interns, we conducted a survey and measurement of the extent, materiality and storage conditions of all collections, and started a box-level survey of processed archival materials to identify collection and furniture needs and potential improvements in processing. A digital production lab is soon to open next to the preservation studio, and processes and responsibilities to integrate preservation work in digitization processes are being developed. Some early identified high priorities are in progress, such as the development of an emergency plan in collaboration with other University of Arizona Libraries, and establishing a new exhibition manual in collaboration with Special Collections librarians.

This presentation reviews the efforts that were already in place and how I mapped out priorities starting this position and program, consulting various stakeholders within the libraries and building on a preservation survey executed by a conservation consultant in 2019. I reflect on what we have achieved so far, what our challenges have been, what I would do differently looking back, and where we plan to go from here. Establishing a new program and making preservation a consistent part of everyone's work around the department takes time and requires consistency, patience and flexibility, and the planting and nurturing of many seeds.

