

# 51<sup>ST</sup> ANNUAL MEETING



## PROGRAM & ABSTRACTS

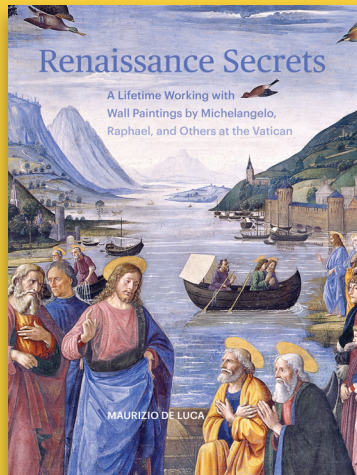
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Conservation in the Age of  
Environmental, Social, and  
Economic Climate Change

# 2023



## NEW & FORTHCOMING



**Renaissance Secrets**  
A Lifetime Working with  
Wall Paintings by  
Michelangelo, Raphael,  
and Others at the Vatican

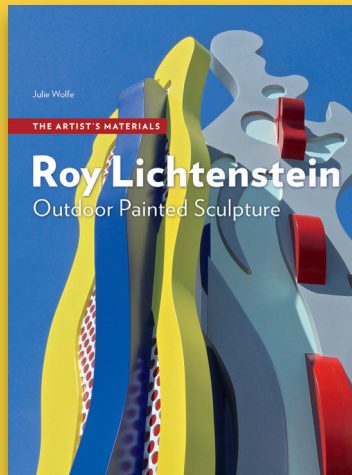
*Maurizio De Luca,  
translated by Jason Cardone*

This engaging book offers an intimate perspective on some of the greatest wall paintings of the Renaissance.

**Conserving Canvas**

*Edited by Cynthia Schwarz,  
Ian McClure, and Jim Coddington*

This authoritative publication presents important global perspectives on the history, current state, and future needs of the field of conserving paintings on canvas.



**Roy Lichtenstein**  
Outdoor Painted Sculpture

*Julie Wolfe, with contributions by  
Clare Bell and technical analysis by  
Alan Phenix and Rachel Rivenc*

Based on extensive archival research of Lichtenstein's studio materials, interviews, and technical analyses, this book is an essential resource for conservators, curators, and others interested in the iconic artist.

**Properties of Plastics**  
A Guide for Conservators

*Thea B. van Oosten*

A practical, comprehensive resource on the complex behaviors of plastics written expressly for conservation and cultural heritage professionals.



**René Magritte**  
The Artist's Materials

*Catherine Defeyt and Francisca  
Vandepitte, with contributions  
by David Strivay, Elodie Herens,  
and Joy Mazurek*

A copiously illustrated material study that sheds new light on the artistic practice of one of the most famous Surrealists of the twentieth century.

**Guidelines for the  
Technical Examination  
of Bronze Sculpture**

*Edited by David Bourgarit, Jane Bassett,  
Francesca Bewer, Arlen Heginbotham,  
Andrew Lacey, and Peta Motture*

An invaluable resource for professionals, this volume creates a new framework for advancing the understanding of bronze sculpture.

# LAND ACKNOWLEDGEMENT

“Historically, the land we refer to as Jacksonville today occupies the traditional homelands of the Timucua, as well as other historical Indigenous groups. The state of Florida is home to the Seminole, Miccosukee, Muscogee, and Choctaw, and to individuals of many other Native groups.”

We encourage you to read the following article about the history of this city, and about former and present stewards of the land in and around Jacksonville, Florida, penned by AIC Annual Meeting keynote speaker and author Ennis Davis, AICP:

[www.thejaxsonmag.com/article/jacksonvilles-multicultural-history/](http://www.thejaxsonmag.com/article/jacksonvilles-multicultural-history/)

## NEED TO KNOW

**Meeting Location:** Events will take place at the **Hyatt Regency Jacksonville Riverfront** unless otherwise noted.

**Code of Conduct:** See page 4 or read online at <https://2023-annual-meeting.events.culturalheritage.org/events/refundPolicy>.

**Registration Desk:** Registration will be located in the **Grand Ballroom Foyer**. We only accept credit/debit cards (Visa, MasterCard, AmEx, Discover) in US dollars - no cash or check.

Monday, May 15	3:00pm – 6:00pm
Tuesday, May 16	7:45am – 6:00pm
Wednesday, May 17	7:45am – 6:00pm
Thursday, May 18	7:45am – 4:30pm
Friday, May 19	7:45am – 4:30pm
Saturday, May 20	7:45am – 4:30pm

**Tickets can be purchased at [www.culturalheritage.org/tickets](http://www.culturalheritage.org/tickets) 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 [AIC's 2023 Annual Meeting Community](#) for updates to the program and notes from attendees.

<b>Speaker Ready Room:</b>	<b>City Terrace 12</b>
<b>Lactation Room:</b>	<b>City Terrace 6</b>
<b>Quiet Room:</b>	<b>City Terrace 5</b>

**Masks:** Masks are welcomed for personal safety and comfort.

**Buses:** All buses for offsite events will depart from and return to the **Hyatt Regency's door by the gift shop on S. Market St.** Staff will check badges and direct attendees.

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

Thursday, May 18, 10:00–10:30am & 3:30–4:00pm
Friday, May 19, 10:00–10:30am & 3:30–4:00pm
Saturday, May 20, 8:30am (breakfast)

**Member Business Meeting will be held online June 1, 1:00pm ET.**

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# PEOPLE

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Poster Session: **Lynn Brostoff, Sue Ann Chui, Mary Gridley, Stephanie Guidera, Kelly Keegan, Vanessa Muros, Michaela Paulson, Corina Rogge (chair) and Ruth Seyler (Meetings & Advocacy Director)**  
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The AIC Annual Meeting is hosted by the American Institute for Conservation; 727 15th St NW, Suite 500, Washington, DC 20005; [www.culturalheritage.org](http://www.culturalheritage.org); [info@culturalheritage.org](mailto:info@culturalheritage.org)



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## WELCOME TO JACKSONVILLE!

**WELCOME TO AIC'S 2023 ANNUAL MEETING! WE HAVE** a rich and dynamic program organized around this year's conference theme, "Conservation in the Age of Environmental, Social, and Economic Climate Change." In the menu of talks, panels, and workshops, you'll see themes of environmental sustainability, preventive conservation, accessibility, history, and social justice. And as always, there are hundreds of talks about fascinating treatment projects, research findings, objects, sites, and collections.

Whether you're a die-hard attendee or joining us for the very first time, you should find many things to be inspired by, learn from, and enjoy. If you're attending for the first time, I invite you to check out our tips for first time attendees. And if you're joining us in person, I encourage you to use our local guide, especially if you'd like to support LGBTQ+ and BIPOC owned businesses. 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!

In closing, I'd like to highlight our meeting's location. Since 1973, AIC has met in the Southeast only four times, including this one, and I am glad to be back. I'm delighted to welcome you to AIC's 51st annual meeting, and my colleague Ennis Davis joins me to welcome you to our host city—Jacksonville, Florida.

—Suzanne Davis, AIC President

**I LOOK FORWARD TO SEEING YOU HERE IN MY** home state of Florida and my hometown of Jacksonville. As an urban planner, preservationist and civic activist dedicated to improving communities, I am eager for you to see the great conservation and preservation work that my colleagues at the Florida Chapter of the American Planning Association, the Florida Trust for Historic Preservation and Groundwork Jacksonville, and more importantly, the actual community continue to champion.

Jacksonville is rich with distinct and diverse cultural heritage that continues to need preservation and protection no matter the various political dynamics in play outside of our local community. I am excited for colleagues here in Florida to be able to meet with our national colleagues in per-son—to be supported and to discuss topics that are important to our field and community. As a Jacksonville resident, I am honored to welcome you to the river city.

—Ennis Davis, AICP  
Principal | Community Planning Collaborative



# Conservation in the Age of Environmental, Social, and Economic Climate Change

## 2023 MEETING THEME

Rising global temperatures, international conflicts, political shifts that threaten to erase hard won rights, and a fragile and unbalanced economy. These are some of the issues our organization, our field, and we as individuals are facing right now, and they may seem overwhelming, but as the activist and historian Rebecca Solnit said, “Hope locates itself in the premises that we don’t know what will happen and that in the spaciousness of uncertainty is room to act.” Conservation is an inherently hopeful pursuit. We hope through our actions to preserve the legacy of humanity for future generations. We hope through our research and collaborative efforts with source communities to tell richer, more nuanced stories of individuals and cultures. Conservation is also an active pursuit involving treatment, surveys, monitoring, research, development of site use plans, outreach, advocacy, education, and a myriad of other activities.

What actions are we or should we be taking to deal with the many crises facing us: How do we make our field more sustainable and lessen our negative impact on the earth and our environment? How do we protect sites and collections in times of climate crises? How do we need to adapt treatments to changing climatic conditions? How can our field and organization support the transformative movements working to address racism, homophobia, and other forms of discrimination? How do we adapt to a fluctuating economy and ongoing supply chain issues? These questions do not have single right answers, and instead give us space to experiment, to try, to perhaps stumble or fail, and to succeed. We hope that by sharing our ideas and approaches and possible solutions to these problems, we will be energized and inspired to continue our efforts on behalf of humanity.

## CODE OF CONDUCT

We are dedicated to providing a positive meeting experience for everyone, regardless of race, religion, gender, sexual orientation, gender identity and expression, disability, and physical appearance. We expect meeting attendees 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, venue staff, or anyone connected to the meeting 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 (where you will be taken to a private space to discuss your complaint) or by emailing [rseyler@culturalheritage.org](mailto: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 the entire meeting with no refund.

## SPECIAL THANKS TO OUR FUNDERS & SPONSORS

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# HIGHLIGHTS: RECEPTIONS & PROGRAMS



The Cummer Museum of Art & Gardens

## Wednesday, May 17

After from our many tours, workshops, and seminars on Wednesday, make sure to end your day with these events!

### 3:00 – 4:15pm: AIC AWARDS PRESENTATIONS

Celebrate your colleagues and their many achievements in our awards ceremony. Stay for cake afterwards!

### 4:30 – 6:15pm: KEYNOTE PROGRAM

Join Dr. Nicole Robinson, Founder and CEO, Cultural Connections by Design, Ben Garcia, Executive Director, The American LGBTQ+ Museum, and Ennis Davis, Senior Planner, Alfred Benesch & Company, for a wide-ranging discussion as our keynote event.

### 6:30 – 8:30pm: PREVIEW RECEPTION IN THE EXHIBIT HALL

Enjoy a relaxed evening in our 2023 Exhibit Hall. See the latest products and services for the conservation field while enjoying light bites and cash bars.

## Thursday, May 18

OPENING RECEPTION

SPONSORED BY BANK OF AMERICA

### 6:00 – 9:00pm: RECEPTION AT CUMMER ART MUSEUM & JACKSONVILLE GARDEN CLUB

Join us for a magical night of art and sunsets as we gather outdoors for our Opening Reception at the Cummer Art Museum and Jacksonville Garden Club. Enjoy gallery access, a light dinner buffet, and amazing garden views. This event is included in your base registration, so don't miss out. Buses will shuttle from the hotel to the art museum all evening, starting at 5:30pm.

## Friday, May 19

### SPECIALTY GROUP RECEPTIONS

View the Program and Schedule to learn more about your group's reception. Enjoy re-connecting with colleagues. Buy tickets before the events (until 4:00pm day of the event) via [www.culturalheritage.org/tickets](http://www.culturalheritage.org/tickets). Stop by the Registration Desk so staff members can add the ticket to your badge. For most receptions, students have a discounted rate of \$25.

Note most of these receptions are walkable if you prefer to enjoy an evening stroll! However, there will be buses provided for attendees heading to MOCA and the Library.

### 6:00pm – 9:00pm: ARCHITECTURE SPECIALTY GROUP & ARCHAEOLOGICAL HERITAGE NETWORK RECEPTION

Hyatt Regency River Terrace

### 6:00pm – 9:00pm: WOODEN ARTIFACTS GROUP RECEPTION

Ruby Beach Brewery, 228 E Forsyth St, Jacksonville, FL 32202

### 6:00pm – 10:00pm: RESEARCH & TECHNICAL STUDIES GROUP RECEPTION

Norman Studios and InCahoots Nightclub: Board the bus at 5:45pm - side door by the gift shop

### 6:30pm – 9:00pm: BOOK & PAPER GROUP RECEPTION

Jacksonville Public Library Historic Main Branch, 303 N Laura St, Jacksonville, FL 32202

### 6:30pm – 9:00pm: PAINTINGS, OBJECTS, & CAN! RECEPTION

Museum of Contemporary Art Jacksonville (MOCA), 333 N Laura St, Jacksonville, FL 32202

### 6:30pm – 9:30pm: TEXTILES SPECIALTY GROUP RECEPTION

Jacksonville Public Library Historic Main Branch, 303 N Laura St, Jacksonville, FL 32202

## Saturday, May 20

### FAIC ANNIVERSARY & CLOSING SESSIONS

### 8:30 – 10:30am: FAIC ANNIVERSARY SESSION

### 4:30pm – 6:00pm: 6TH ANNUAL MISTAKES

Join us Saturday morning for the FAIC 50th Anniversary Celebration and Held in Trust Update and enjoy a light breakfast! The afternoon features the 6th Annual Mistakes session, complete with light appetizers, to close the meeting in a fun yet informative way.



Visit Booth #224 at AIC's 51<sup>st</sup> Annual Meeting



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# HIGHLIGHTS: WELLNESS & SPECIAL MEETINGS



Enjoy a walk or run along the Riverwalk!

## Wellness Events

We're so glad you're joining us in Jacksonville at the Annual Meeting! The meeting is always an exciting time to share ideas, get inspired, and connect with colleagues, but we know that it's a lot of activity in a short amount of time. We encourage you to be mindful about your physical and mental wellness and take whatever steps needed to care for yourself. This might include taking a talk off to give yourself a break, going for fresh air or a walk on the nearby Riverwalk, spending some time in the quiet room, or heading back to your hotel room to close your eyes for a bit. We know there can be a lot of pressure to "make the most" of your meeting, but that doesn't mean at the expense of yourself!

We are also offering some group movement activities in case that is part of how you'd like to incorporate wellness into your meeting experience. Each morning at 6:45-7:30am, we are organizing an opportunity to move your body with a run on Thursday, yoga on Friday, and Zumba on Saturday. There will also be the chance to use 30 minutes of your lunch break on Saturday to gently stretch and recenter with some mindfulness exercises. Click on the links to learn more if you're interested!

— Sarah Saetren, FAIC Education Manager

## Wellness Meet-ups

Thursday, 6:45am	<b>Run &amp; Stretch</b> - Meet in Hotel Lobby
Friday, 6:45am	<b>Yoga</b> - City Terrace 7
Saturday, 6:45am	<b>Zumba</b> - City Terrace 7
Saturday, 12:00pm	<b>Mindfulness Break</b> - City Terrace 7

## Take a Break and Recenter

These rooms are open throughout the meeting.

<b>Quiet Room</b> for contemplation	City Terrace 5
<b>Breath of Fresh Air</b> for sustainability	City Terrace 10
<b>ECPN Club House</b> to chat with ECPs	City Terrace 8
<b>Lactation / Parent Room</b>	City Terrace 6

## Special Meetings

Some groups are having small meetings aside from our luncheons and sessions. Most are invitation-only.

<b>MAY 16</b>	
Latin American & Caribbean Scholars Meeting	5:00pm
<b>MAY 17</b>	
Getty/UCLA Reunion	7:30pm
ECPN Happy Hour <b>*Open to all</b>	7:30pm
CiPP Happy Hour	7:30pm
<b>MAY 18</b>	
Preventive Care Network Officers Meeting	7:30am
JAIC Editorial Board Meeting	12:00pm
<b>MAY 19</b>	
APOYOnline Meeting	12:00pm
<b>MAY 20</b>	
Latin American & Caribbean Scholars Breakfast	7:15am
Archaeology Heritage Network Meeting	1:00pm

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# HIGHLIGHTS: AWARDS

## Congratulations to AIC's 2023 Award Recipients!

Join us for our Awards Presentation, Wednesday, May 17, 3:00pm, Ballroom 4-5.

### David Magoon-University Products Conservation Advocacy Award

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**David Goist**, Conservator of Paintings and Painted Surfaces, Goist Art Services LLC, will receive the David Magoon-University Products Conservation Advocacy Award as a conservation professional who has advanced the field of conservation and furthered the cause of conservation through substantial efforts in outreach and advocacy. This award comes with a generous stipend, provided by University Products in honor of David Magoon.

David will be presented with this award on Friday, May 19, at 2:00pm before the Emergency Response Concurrent Session track begins.

### Emerging Leader Award

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**Héctor Berdecía-Hernández**, Director-General, Centro de Conservación y Restauración de Puerto Rico and **Sally Gunhee Kim**, Andrew W. Mellon Fellow in the Objects Conservation, National Museum of the American Indian, will receive the Emerging Leader Award for their outstanding service to AIC and the conservation discipline. This award is specifically to honor members for service in the early stages of their careers.

### Robert L. Feller Lifetime Achievement Award

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**Susan Buck**, Conservator and Paint Analyst in private practice, and **Sarah Wagner**, Head Photograph Conservation, National Gallery of Art will receive the Robert L. Feller Lifetime Achievement Award for their exceptional contributions to the conservation profession over the course of their careers.

### Rutherford John Gettens Merit Award

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**Jane Klinger**, Special Advisor and Senior Research Conservator, United States Holocaust Memorial Museum, will receive the Rutherford John Gettens Merit Award for her outstanding service to the association.

### Honorary Membership

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**Shannon Zachary**, Head, Preservation and Conservation, University of Michigan Library, and **Nancy Odegaard**, Conservator/Professor Emerita, Arizona State Museum, will receive Honorary Membership for their outstanding contributions to the conservation profession over the course of their careers.

### Sheldon & Caroline Keck Award

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**Jiuan Jiuan Chen**, Associate Professor, Patricia H. and Richard E. Garman Art Conservation Department, State University of New York College at Buffalo, and **Catherine McLean**, Textile Conservator (Retired), Los Angeles County Museum of Art, will both receive the Sheldon & Caroline Keck Award for excellence in the education and training of conservation professionals.

### President's Award

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**Sally Gunhee Kim**, Andrew W. Mellon Fellow in the Objects Conservation, National Museum of the American Indian, **Ronel Namde**, Associate Conservator of Photographs, J. Paul Getty Museum, and **Jennifer Hain Teper**, Head of Preservation Services, University of Illinois at Urbana-Champaign Library will receive the President's Award for exceptional work in examining and improving accessibility for AIC members.

### Publications Award

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The book *The Conservation of Medieval Polychrome Wood Sculpture: History, Theory, Practice* by **Michele Marincola** and **Lucretia Kargere** will be recognized with the Publication Award. The authors will accept the award for excellence in authoring a book centered on conservation.

We encourage you to think about colleagues yet to be recognized for their stellar achievements and nominate them for 2024! The deadline is February 1. The form and award descriptions are on our website at [www.culturalheritage.org/awards](http://www.culturalheritage.org/awards).

# THURSDAY PRESENTATIONS

Start time	Opening General Session - Grand Ballroom
8:30am	Welcome and Opening Remarks
8:45am	(Opening Session: Sustaining our Profession) Conservation as Change Agent: Towards a Sustainable Future; Glenn Wharton
9:00am	(Opening Session: Sustaining our Profession) Building Diversity in Conservation through University Training Initiatives; Nina Owczarek
9:15am	(Opening Session: Sustaining our Profession) Gender Equity in Conservation: Understanding the Data and Exploring Ways to Improve; Suzanne Davis
9:30am	(Opening Session: Sustaining our Profession) Living Histories: Building a Conservation Leadership Program for Social Change; Sarah E. Kleiner
9:45am	Group Discussion and Q&A
10:00am	<b>Break in the Exhibit Hall &amp; View Posters in Foyer</b>
10:30am	(Opening Session: Sustaining the Climate) A Passionate Path: FAIC's National Heritage Responder's Work in Protection and Recovery of Cultural Heritage; Holly Herro, Ann V. Frellsen, Vicki L. Lee, Susan Duhl
10:50am	(Opening Session : Sustaining the Climate) Virginia's Tangier Island History Museum: Rising Waters; Heather Parks
11:05am	(Opening Session: Sustaining the Climate) Water and Memory in the Lowcountry: Launching the Lowcountry Alliance for Response; Patricia Smith, Kimberly Roche, Cashion Drolet, Georgette Mayo
11:20am	(Opening Session : Sustaining the Climate) Climate Smart Planning for Cultural Heritage: Building Resilience in a Changing World; Tatiana Ausema
11:35am	(Opening General Session: Sustaining the Climate) Open Discussion and Q&A
12:00pm	<b>Luncheons or lunch on your own</b>

	Ballroom 1-2	Ballroom 4	Ballroom 5	River Terrace 2	River Terrace 1	Ballroom 3
2:00pm	(Architecture) Camouflaged Concrete: Study of the History, Technology, and Deterioration of the Painted Concrete Sound Mirror, Il-Widna, in Malta; Naomi A. Ruiz	(Book and Paper) Conserving and Exhibiting NYPL's 1799 Copy of Albrecht Dürer's Triumphant Arch; Denise Stockman	(Joint Objects-Paintings) Restoring Color to Faded Feathers and Fur; Lisa K. Elkin, Fran E. Ritchie, Michaela Paulson, Julia Sybalsky	(Preventive Care) Building the Capacity of Utah Field Services: Training Stewards in Preventive Conservation; Marie D. Desrochers	(Research & Technical Studies) Scientific Characterization of Alternatives to Cyclododecane: A Technical Study of Volatile Binding Media for Temporary Consolidation of Cultural Heritage; Hamada Sadek Kotb	(Textiles) Measure Twice, Cut Once: Reusable Efficient Fosshape Torso Mounts; Sara Luduena, Jacquelyn Peterson-Grace, Gretchen Guidess
2:30pm	(Architecture) Cleaning Woes - Challenges of Climate Change; Tania Alam	(Book and Paper) Finding the Forest Amongst the Trees: Unlocking the Hidden Layers of a Kashmiri Birch Bark Codex; Mary French, Rebecca "Bexx" Caswell-Olson	(Joint Objects-Paintings) Tokens of Affection: Examination, Preservation and Conservation of Portrait Miniatures; Richard R. Hark, Aniko Bezur, Theresa Fairbanks	(Preventive Care) We Are Family: The Cooperation of Collection Conservation and Management within the League of Literary Museums in Taiwan; Hsuan-Yu Chen	(Research & Technical Studies) Evaluation the Efficacy of Dibarium Discharge Plasma (DBD) In Decontamination Bio Deteriorated Cultural Heritage Objects; Akmal A. Sakr Sr.	(Textiles) Residual Concern: Shedding of Nylon Fibres from Vellux during Mechanical Cleaning of Historical Textiles; Sarah Bernardo Souza Almeida



# THURSDAY PRESENTATIONS

	Ballroom 1-2	Ballroom 4	Ballroom 5	River Terrace 2	River Terrace 1	Ballroom 3
3:00pm		<i>(Book and Paper)</i> Ammonium Citrate as a Washing Additive for Paper; Ute Henniges, Irene Brückle, Crystal Maitland, Antje Potthast, Theresa J. Smith, Philine Venus	<i>(Joint Objects-Paintings)</i> Seeing through the Infinity Net: A Collaborative and Interdisciplinary Investigation into Yayoi Kusama Self-Obliteration; Jennifer L. Mass, Ph.D, Adam Finnefrock, Dr. Rebecca Ploeger, Lynn Lee, Wenting Chen, Alessandra Guarascio, Marc Walton	<i>(Preventive Care)</i> Cognito Forms: A Comprehensive Solution for Collection Surveys and Condition Reports; Silvia Manrique Tamayo, Clara Huisman	<i>(Research &amp; Technical Studies)</i> A New Horizon for Atomic Oxygen in Sustainable Heritage Conservation: Green Technology for Contactless Cleaning of the Works of Art; Nina M. Olsson, Anton Nikiforov, Tomas Markevicius	<i>(Textiles)</i> Three Flags, the Same Identity; Patricia C. Lissa, Ivana Rigacci
3:30pm	<b>Break in the Exhibit Hall</b>					
4:00pm	<i>(Architecture)</i> From Sacred to Secular: Adaptive Re-Use of Religious Structures; Stephanie M. Hoagland	<i>(Book and Paper)</i> The Frederick Douglass Collection at Northwestern Libraries: Stewardship, Research, and Treatment; Roger S. Williams Jr.	<i>(Joint Objects-Paintings)</i> Rawhide and Cardboard and Paint, Oh My!: Surveying and Conserving the Yale University Art Gallery's Indonesian Shadow Theatre Puppet Collection; Amreet Kular	<i>(Preventive Care)</i> Doing More with Less: Tips and Tricks for Building a Conservation Imaging Program; Bethann Rea, Jacquleen J. Quinn, Catherine Orochena	<i>(Research &amp; Technical Studies)</i> Access and Accessibility: Challenging How We Are Using "Accessibility"; Sally G. Kim, Ashley Grady, E. Keats Webb	<i>(Textiles)</i> A New Approach for Display Forms Has Been Improving Display Appearances!; Sunae P. Evans
4:30pm	<i>(Architecture)</i> The Conservation of Lockwood House and the Revision of Inadequate Project Specifications; Katey Corda, Hannah B. Leighner	<i>(Book and Paper)</i> Controlled Anarchy: Technical Study and Treatment of Lygia Pape's Tecelares; María C. Rivera Ramos	<i>(Joint Objects-Paintings)</i> The Cleaning of Six Painted Monumental Carvings from the Northwest Coast at the American Museum of Natural History; Samantha Alderson	<i>(Preventive Care)</i> Environments of Change: Digitization of Historic Sites and Artifacts for Heritage Repositories, Educational Video Games, and Virtual Reality Tourism Apps; Andrew Moore, Caroline Longo	<i>(Research &amp; Technical Studies)</i> Bridging the Gap: Redirecting the Heritage Science Curriculum Towards Accessibility and Globalization; Kyna Biggs, Alison Murray	<i>(Textiles)</i> Stabilizing Silk Ribbons and Ribbonwork at the National Museum of the American Indian; Rebecca Summerour, Heather Ahtone, Kathleen Martin, Susan C. Heald, Lauren Osmond, Welana "Osage/Muscogee Creek/Cherokee" Queton
5:00pm		<i>(Book and Paper)</i> American Art/Italian Paper: The Partnership between the Japan Paper Import Company of New York City and the Historic Paper Mills of Fabriano, Italy; Sylvia R. Albro, PAIC			<i>(Research &amp; Technical Studies)</i> Increasing Student Engagement in Sustainability Initiatives at the Queen's University Art Conservation Program; Caroline Longo	<i>(Textiles)</i> Tips Session
6:00pm	<b>Opening Reception</b>					

# FRIDAY PRESENTATIONS

	Ballroom 1-2	Ballroom 3	Ballroom 4	Ballroom 5	River Terrace 2	River Terrace 1	
8:30am			<i>(Book and Paper)</i> Art on Paper Discussion Group Sessions	<i>(Joint Objects-Paintings)</i> Unfolding a Revolution: The Trans-Cultural Synthesis of Two Biombos, or Mexican Folding Screens; Corina E. Rogge, Trevor Boyd	<i>(Preventive Care)</i> Identification and Hazard Mitigation of Polychlorinated Biphenyls (PCBs) During a Large-Scale Collections Move; Jacqueline Riddle, Skye Marshall		
9:00am		<i>(Joint Objects-Paintings)</i> Angels Rising from the Ashes: Conserving the Fire Damaged Reredos and Sculptures at Mission San Gabriel; Sonia Tatiana J. Fraj		<i>(Preventive Care)</i> Duck, Duck, Grey Duck: A Study of Pesticides in Three Northwoods Taxidermy Collections; Nicole Grabow, Melissa Amundsen			
9:30am		<i>(Electronic Media)</i> Digital Preservation of Cuban Music: Case Study of the Collection of the EGREM Center for Information and Conservation of Musical Archives (CICAM); Gretter Arias Garcia		<i>(Joint Objects-Paintings)</i> Early American Graining: A Technical Survey; Kirsten T. Moffitt	<i>(Preventive Care)</i> Museums Poisons Test Kit: Analytical Testing for All Museums; Paulette Reading, Brandy L. Howard, Charlie "Chuck" Koch		
10:00am	<b>Break in the Exhibit Hall</b>						
10:30am	<i>(Architecture)</i> Panel: Heritage Disaster Response - Lessons Learned and Paths Forward, with ASG and APT; Brooke Young Russell, Rachel C. Palisin	<i>(Contemporary Art)</i> The Technical Study and Conservation of "The Kiss II," a Multiplex Hologram; Patrick Ravines, Emily Hamilton, Lindsay Cross	<i>(Research &amp; Technical Studies / Preventive Care / Book &amp; Paper)</i> Poison Books: Is That Green Book Going to Kill Me? Bibliotoxicology Working Group Discussion Panel; Timothy N. Greening, Susan Russick, Rosie Grayburn, Melissa Tedone, Kimberly Harmon, Becky Fifield	<i>(Objects)</i> Hands, Hair Plugs, and Hardtack: Conserving Organic Objects from Gettysburg National Military Park; Fran E. Ritchie	<b>River Terrace 3</b>	<i>(Paintings)</i> An Approach to Treating the Ill Effects of an Early Wax-Resin Infusion: Franz Kline's Nijinsky, 1950; Sara Kornhauser	
11:00am		<i>(Contemporary Art)</i> Fluid Dynamics: Adapting the Installation of Michael Stevenson's The Fountain of Prosperity; Lynda A. Zycherman, Andy Wolf		<i>(Objects)</i> The Beads' Needs: Preserving a Large Collection of Native North American Beadwork with Glass Deterioration; Cassandra Gero, Kaitlin "Katie" Linder, Anthony Sigel		<i>(Wooden Artifacts)</i> Panel Discussion: Imagining a Sustainable Career for Wooden Artifact and Furniture Conservators; Stephanie Hulman, Gregory Landrey, Catherine Silverman, Antoine (Ton) Wilmering	<i>(Paintings)</i> Guidance on the Safe Use of Magnets in Conservation and Display of Works of Art: Occupational and General Public Exposure to Static and Varying Magnetic Fields; Zuzanna Szozda, Stan Zurek
11:30am		<i>(Contemporary Art)</i> Artist Interviews and Artist Books: Two Case Studies of the Impact of Artist Interviews on the Outcome of Book Treatments; Jessica L. Pace, Lou Di Gennaro		<i>(Objects)</i> Beyond Conservation: The Interpretive Restoration of a Frankenthal Porcelain Group; Anthony Sigel		<i>(Paintings)</i> Treatment of a Severely Distorted Canvas Painting in a Humidity Chamber Using a Saturated Salt Solution; Kelsey Wingel	
12:00	<b>Luncheons</b>						

*(Sustainability Session and Breath of Fresh Air Room)* Friday May 19th, 10:30am-12:00pm @ City Terrace 10 Room. Join the AIC Sustainability Committee in the Breath of Fresh Air Room where you can have a coffee, chat with likeminded colleagues, and process your feelings about the climate crisis.



# FRIDAY PRESENTATIONS

	Ballroom 1-2	Ballroom 3	Ballroom 4	Ballroom 5	River Terrace 1
2:00pm	<i>(Concurrent General Session: Beyond Neutrality: Conversations around Collection Care and Sustainability)</i> The Time For Talking Is Over: Stop Talking and Start Doing; Lorraine Finch	<i>(Concurrent General Session: Physical Properties of Materials)</i> Mammalian and Fish Gelatines at Fluctuating Relative Humidity; Karolina Soppa	<i>(Concurrent General Session: Emergency Response)</i> Disaster Response in a Rural Sacrifice Zone (Lord Willing and the Creek Don't Rise); Alex R. Brooks	<i>(Concurrent General Session: Objects at Risk)</i> Challenges of Sculptures Conservation in Outdoor: The Manguinhos Historical Architectural Nucleus; Sarah C. M. de Sequeira	<i>(Concurrent General Session: Conservation Imaging in the Age of Change)</i> Beyond RGB for Documentation: A Spectral Image Processing Software for Color Accurate Object Documentation and Spectra Reflectance Estimation; Leah Humenuck
2:30pm	<i>(Concurrent General Session: Beyond Neutrality: Conversations around Collection Care and Sustainability)</i> Convincing the Right Audience; Christopher Cameron	<i>(Concurrent General Session: Physical Properties of Materials)</i> A Heated Situation: In Situ Monitoring and Humidification of a Wooden Altarpiece; Julia Brandt	<i>(Concurrent General Session: Emergency Response)</i> Performing Arts Readiness: Bringing Good Disaster Preparedness Practices to the Arts Community; Tom Claeson	<i>(Concurrent General Session: Objects at Risk/ Mapping)</i> CRSurveyor: Expanding Access to Digital Survey and Photodocumentation Tools for Cultural Heritage at Risk; Taylor A. Pearlstein	<i>(Concurrent General Session: Conservation Imaging in the Age of Change)</i> The Politics of Digital Repatriation and its Relationship to 3D Imaging Sovereignty; Brinker Ferguson
3:00pm	<i>(Concurrent General Session: Beyond Neutrality: Conversations around Collection Care and Sustainability)</i> Neutrality is a Delusion: Museums Have to Face the Realities of the 21st Century; Anna Krez	<i>(Concurrent General Session: Physical Properties of Materials)</i> A Case Study: Safely Transitioning Wooden Objects from a Tropical Region to a Controlled Museum Environment; Catherine Silverman	<i>(Concurrent General Session: Emergency Response)</i> The case of 100,000 visual memories: A collection casualty is turned into a mass digital initiative; Karin Neander, Sara Ellenius	<i>(Concurrent General Session: Mapping)</i> Protecting Public Art: The Future of Remote Risk Assessment and Mapping; Nicole Grabow, Janae Huber, Madeline Cooper	<i>(Concurrent General Session: Conservation Imaging in the Age of Change)</i> Modifying a Smartphone for All-in-One Multispectral Imaging; Sean Billups
3:30pm	<b>Break in the Exhibit Hall</b>				
4:00pm	<i>(Concurrent General Session: Preserving the Legacy of Humanity: What Is It That We Want to Preserve?)</i> The Cause Lies in the Future; Stephanie de Roemer	<i>(Concurrent General Session: Educating The Future)</i> T/D/S/IP-C: The Continued Evolution of an Introduction to Practical Conservation for HBCU Students and Recent Graduates; Nina Owczarek, Joyce H. Stoner	<i>(Concurrent General Session: Reduce, Reuse, Recycle)</i> A Conservator's Place in the Repair Revolution; Shane Orion Wiechnik	<i>(Concurrent General Session: Mapping)</i> A Blueprint For Developing a National Projection of Climate Change Impacts on Cultural Property; Charles Vörösmartyk	<i>(Concurrent General Session: Conservation Imaging in the Age of Change)</i> Under the Hood: Accessible Multispectral Image Processing Software for Historical Document Discovery; Juilee Decker, David W. Messinger
4:30pm	<i>(Concurrent General Session: Preserving the Legacy of Humanity: What Is It That We Want to Preserve?)</i> Climate Change and Cultural Landscapes: Resource Management in the South Carolina Lowcountry; Patricia Ploehn	<i>(Concurrent General Session: Educating The Future)</i> Dynamic Resources and Building a Community for Changing Times: The AIC Imaging Wiki and IWG Community; Wendy Rose, Leah Humenuck, Adam Neese	<i>(Concurrent General Session: Reduce, Reuse, Recycle)</i> Sustainability Tools in Cultural Heritage: Lessons Learned for Forward Thinking; Sarah Nunberg	<i>(Concurrent General Session: Objects at Risk)</i> Increasing HCC' sustainability: The overarching theme for the new research strategy at the Heritage Conservation Centre in Singapore; Christel C. Pesme	<i>(Concurrent General Session: Conservation Imaging in the Age of Change)</i> Accessible, Adaptable Imaging for Ancient Color Research: An Online, Open-Access Toolkit; Caroline I. Roberts, Suzanne Davis
5:00pm	<i>Concurrent General Session: Preserving the Legacy of Humanity: What Is It That We Want to Preserve?)</i> Rescuing "The Life Scrolls" & Remembering Florida's Fallen from WWI; Ann I Seibert	<i>(Concurrent General Session: Educating The Future)</i> What Do You Need to Know? Re-Evaluating the Senior Capstone Course in the University of Delaware's Undergraduate Program and Thinking Towards the Future; Madeline Hagerman	<i>(Concurrent General Session: Reduce, Reuse, Recycle)</i> Future, in Flux: Conserving the Carnegie International (1896 to Present); Mary P. Wilcop		<i>(Concurrent General Session: Conservation Imaging in the Age of Change)</i> Standardization of Multiband illumination for Conservation Documentation; Scott Geffert

# SATURDAY PRESENTATIONS

	Ballroom 4	Ballroom 3	Ballroom 5	River Terrace 1	Ballroom 1-2	River Terrace 2
8:30am	<i>(General Session)</i> FAIC 50th Anniversary Celebration and Held in Trust Update					
10:30am	<i>(Book and Paper)</i> Heroes Behind the Chinese Albums: Two Cases of Qing Dynasty Functional Brocade Boxes; Jia-Yu Hu, Hsin-Kuan Liao		<i>(Objects)</i> A Confluence of Passions: A Classical Guitarist's Approach to the Conservation of an Oud, a Stringed Musical Instrument from Ottoman Syria; Adrienne Gendron	<i>(Paintings)</i> Straight Out-of-the-Tube: Analysis and Conservation of George Mathieu's <i>Pour une aliénation définitive du logos</i> ; Christy H. Gradini	<i>(Research &amp; Technical Studies)</i> The Mysterious Glass Pectoral of the Lady Nfrw Found in Saqqara Necropolis: Theories of Glass in Ancient Egypt - Is There a Scientific Explanation?; Ahmed T. Ibrahim	
11:00am	<i>(Book and Paper)</i> Mark Rothko Paintings on Paper, Mounted on Honeycomb Panels with Added Side Tacking Borders; Yoshi Nishio, Pei-Ching Liu		<i>(Objects)</i> Adhesives for Deteriorated Cellulose Nitrate: Navigating an Intervention; Emily Brzezinski	<i>(Paintings)</i> Artist, Collector, Conservator: The Legacy of Morton C. Bradley Jr. at Indiana University; Julie Ribits	<i>(Research &amp; Technical Studies)</i> Investigating the Materials and Techniques Used in Traditional Miniature Paintings of Rajasthan; Celia S. Chari Ph.D.	
11:30am	<i>(Book and Paper)</i> Plastic Findings in Book Bindings: Surveys of Materials, Structures, and Condition for the Care of Changing Collections in Australia; Cancy Chu		<i>(Objects)</i> Don't Just Wing It! The Impact of Cleaning on Feather Preservation; Michaela Paulson, Julia Sybalsky	<i>(Paintings)</i> The Use of Photometric Stereo for Documenting Restoration Treatments: Case Study of a Copy of Guilio Romano's <i>Milvian Bridge</i> (Oil on Canvas, ca. 1700); Lieve Watteeuw	<i>(Research &amp; Technical Studies)</i> (Don't) Spare the Horses: A Technical Analysis of Acee Blue Eagle's <i>Tempera Painting, Warriors on Horses</i> ; Sydney E. Schaffer	
12:00pm	<b>Luncheons or lunch on your own</b>		<b>River Terrace 3</b>			
2:00pm	<i>(Book and Paper)</i> Application of a Large-Scale Working Rack for an Oversized Silk Painting Conservation during the Pandemic; Yi-Chiung Lin, Tingfu Fan 范定甫	<i>(Joint Archaeological Heritage &amp; Architecture)</i> Let the Objects Speak!; Evelyn Thompson	<i>(Wooden Artifacts)</i> How Many Layers to Make a King's Bed? The Collaborative Treatment of a French-style Bedstead in the Collection of the Philadelphia Museum of Art; Caitlin Sofield, Behrooz Salimnejad	<i>(Paintings)</i> "Careful Studies from Nature": Grafton Tyler Brown and His Yellowstone Series; Ellen Nigro	<i>(Research &amp; Technical Studies)</i> Characterization of Mark Tobey's Paint Materials Using Mass Spectrometry Methods; Nicholas Dorman, Vanessa Johnson	2:00pm – 2:20pm ( <i>Preventive Care</i> ) Evolved SHS: An Efficient and Sustainable Housing System for Tintypes; Clara M. Prieto
2:30pm	<i>(Book and Paper)</i> Preserving Memories: Should We Interfere?; Lisa Conte, Kerith Koss Schragger, Samantha Tepper	<i>(Joint AHN &amp; Architecture)</i> Strategies for Handling Archaeological Architectural Fragments; Julia Commander	<i>(Wooden Artifacts)</i> Intentional Framing at the Harvard Art Museums: Albert Moore's "Study for "Blossoms"; Allison Jackson	<i>(Paintings)</i> Interdisciplinarity and Inter-Institutionality: A Partnership between the São Paulo Museum of Art and the Frans Hals Museum in the Study and Treatment of Three Frans Hals Paintings; Aline A. Oliveira	<i>(Research &amp; Technical Studies)</i> The Pecking Order: Using Digital Capture and Multi-Criteria Decision Analysis to Rank Cleaning Techniques for Feathers; Julia Sybalsky	2:20pm – 2:40pm ( <i>Preventive Care</i> ) Thinking Inside the Box: Computerized Mat Cutting for Collection Housing; Anna Maupin, Chloe Gise, Brie Warren
3:00pm	<i>(Book and Paper)</i> Nanocellulose Fills and their Application in Photograph Conservation; Marissa Maynard	<i>(Joint AHN &amp; Architecture)</i> Arresting Time: Stabilizing the Mill Ruins at Thomas Jefferson's Shadwell; Lucy W. Midelfort	<i>(Wooden Artifacts)</i> Exchanging Knowledge: Lessons from a Conservation Journeyman; Shane O. Wiechnik	<i>(Paintings)</i> The Chromatic Reintegration with Wax Sticks; Romina Gatti	<i>(Research &amp; Technical Studies)</i> Pilot Study on Silicon Carbide Sandpaper DRIFT Analysis for in Situ Characterization of Plastic Materials in Storage Collections; Kate Duffy, Kasey Hamilton	2:40pm – 3:00pm, ( <i>Preventive Care</i> ) Adapting Preservation Work in Automated Storage and Retrieval Facilities; Christopher Saccolo
3:30pm	<i>(Book &amp; Paper)</i> Paper, Metal, and Liquid: Bronzing Degradation in a Nineteenth-Century Lithograph; Meredith French	<i>(Joint AHN &amp; Architecture)</i> Conservation and Reconstruction of Dye House, Ekhsheid Period, Islamic Period, Egypt; Yousry Taha Abdelsameea	<i>(Wooden Artifacts)</i> Chemical-Analytical Characterization of the Materials Applied on the Coffered Ceiling of the Lonshan Temple (Lukang, Taiwan); Yu Lee	<i>(Paintings)</i> Prior to Contemporary Art Conservation: The Practice of Primary Conservation through Georges Rouault's Technique; Guillemette Caupin	<i>(Research &amp; Technical Studies)</i> Modifications in the Design and Operation of the Thomas Open Source Retro-reflective Micro-Fading Tester: Optical Considerations, and Operational and Analytical Issues; J.P. Brown, Grace Kim	3:00pm – 3:20pm, ( <i>Preventive Care</i> ) Boxing with Leopold von Ranke; David J. Stokoe
						3:20pm – 3:40pm ( <i>Preventive Care</i> ) Early to Mid-19th Century Leather Saddles; Michela Kuykendall and Hillary Sullivan



## Sustainability Session and Breath of Fresh Air Room (City Terrace 10)

Are you worried about the climate crisis? Do you feel anxious about the future for yourself or your children? Do you wonder how cultural heritage specialists will adapt to a world with more devastating disasters? Come join the AIC Sustainability Committee in the Breath of Fresh Air Room where you can have a coffee, chat with likeminded colleagues, and process your feelings about the uncertain future. There will be an activity to interact anonymously with others as well as an art-making experience to help us imagine a better future. Remember there are things we can do to avoid the worst outcomes of a warming planet if we act now and act together.

Remember you can drop by the Breath of Fresh Air Room in City Terrace 10 at any time during the conference to read your colleagues' thoughts, contribute to the activities, or take a moment of quiet.



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

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- Concerned about chemicals or safety equipment in your studio? *Come talk to us!*

## TUESDAY, MAY 16

### WORKSHOPS & SEMINARS - MUST BE PRE-REGISTERED

9:00am – 5:00pm	Polarized Light Microscopy Refresher Speaker(s): Kirsten T. Moffitt	Orlando
2:00pm – 6:00pm	Mechanical Properties and Testing of Materials for Art Conservation	St. Johns

### TOURS (\$ - Tickets at registration desk)

**NOTE: Tours depart from the hotel lobby near the gift shop. Arrive 15 minutes before the start time; transportation leaves at the time stated.**

1:00pm – 3:00pm	Downtown Jacksonville Historical Walking Tour
1:15pm – 3:15pm	Downtown Jacksonville History & Architecture Tour via Tuk Tuk
1:15pm – 3:45pm	Jacksonville Public Art Tour via Tuk Tuk
3:00pm – 9:00pm	Amelia Island and Fernandina Experience Tour – Explore the Area’s Diverse History
3:30pm – 5:30pm	Jacksonville Art and Architecture Walking Tour
4:45pm – 7:30pm	Jacksonville Craft Cocktail Tour
4:45pm – 7:30pm	Urban Core Brewery & More Tour
6:15pm – 8:30pm	Jacksonville Sunset River Cruise

## WEDNESDAY, MAY 17

### TOURS (\$ - Tickets at registration desk)

**NOTE: Tours depart from the hotel lobby near the gift shop. Arrive 15 minutes before the start time; transportation leaves at the time stated.**

7:45am – 4:30pm	St. Augustine – Nation’s Oldest City Tour with Fort Mose
10:00am – 12:00pm	Jacksonville Art and Architecture Walking Tour
10:00am – 12:00pm	Jacksonville Public Art Tour via Tuk Tuk
12:15pm – 2:00pm	African American Heritage Walking Tour
1:15pm – 3:45pm	Downtown Jacksonville History & Architecture Tour via Tuk Tuk

### WORKSHOPS & SEMINARS - MUST BE PRE-REGISTERED

9:00am – 4:00pm	Mechanical Properties and Testing of Materials for Art Conservation	St. Johns Room
9:00am – 5:00pm	Applying Sustainability Principles Cross-departmentally at Collecting Institutions Speaker(s): Patricia Ploehn, Sarah Nunberg, Kelly McCauley Krish	Clearwater Room
9:00am – 5:00pm	Modular Cleaning Program Software and Testing Skills Speaker(s): Nina Roth-Wells, Chris Stavroudis	Daytona Room
9:00am – 5:00pm	Scene-Referred (ISO 19264) Imaging for Conservation Documentation Speaker(s): Scott Geffert, Chris Heins	River Terrace 2
10:00am – 12:00pm	Matrix of Intersectionality® Speaker(s): Dr. Nicole Robinson	River Terrace 1
11:00am – 2:30pm	Prevention Through Design: Reducing Risk and Improving Safety (sponsored by AIC Health & Safety Network) - In-person/Virtual	River Terrace 3





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## PRE-SESSIONS AND RECEPTIONS (INLCUED WITH YOUR REGISTRATION)

1:00pm – 2:00pm	Scholarly Writing for Conservation	City Terrace 7
2:00pm – 3:00pm	Leadership YOU! Equity-Centered Leadership	River Terrace 1
3:00pm – 4:15pm	AIC Awards Session	Grand Ballroom 4-5
4:30pm – 6:30pm	Keynote Program	Grand Ballroom 4-5
6:30pm – 8:30pm	Exhibit Hall Reception	Grand Ballroom 6-8
7:30pm – 9:00pm	Conservators in Private Practice Happy Hour	Mathews
7:30pm – 9:30pm	ECPN Happy Hour	River Terrace 2 and River Deck
7:30pm – 9:30pm	Getty UCLA Reunion	City Terrace 7

## THURSDAY, MAY 18

### Events of Note

6:45am – 8:00am	Early Morning Run & Stretch	Meet at Hotel Entrance
10:00am – 5:30pm	Exhibit Hall Open	Grand Ballroom 6-8
10:00am – 5:30pm	Respirator Fit Test Appointments	City Terrace 4
10:00am – 5:30pm	Poster Session Open	Grand Ballroom Foyer
12:00pm – 2:00pm	JAIC Editorial Board Business Meeting & Lunch	City Terrace 9
6:00pm – 9:00pm	Opening Reception	Cummer Art Museum & Jacksonville Garden Club

### General Sessions

#### OPENING GENERAL SESSION

#### Grand Ballroom 4-5

8:30am – 8:45am	<b>Welcome and Opening Remarks</b>
8:45am – 9:00am	<b>Sustaining our Profession – Conservation as Change Agent: Towards a Sustainable Future;</b> Speaker(s): Glenn Wharton
9:00am – 9:15am	<b>(Sustaining our Profession – Building Diversity in Conservation through University Training Initiatives;</b> Speaker(s): Nina Owczarek
9:15am – 9:30am	<b>Sustaining our Profession – Gender Equity in Conservation: Understanding the Data and Exploring Ways to Improve;</b> Speaker(s): Suzanne Davis
9:30am – 9:45am	<b>Sustaining our Profession – Living Histories: Building a Conservation Leadership Program for Social;</b> Speaker(s): Sarah E. Kleiner
10:00am – 10:30am	<b>Break in the Exhibit Hall</b>
10:30am – 10:50am	<b>Sustaining the Climate – A Passionate Path: FAIC’s National Heritage Responder’s Work in Protection and Recovery of Cultural Heritage;</b> Speaker(s): Holly Herro, Ann V. Frellsen, Vicki L. Lee, Susan Duhl
10:50am – 11:05am	<b>Sustaining the Climate – Virginia’s Tangier Island History Museum: Rising Waters;</b> Speaker(s): Heather Parks
11:05am – 11:20am	<b>Sustaining the Climate – Water and Memory in the Lowcountry: Launching the Lowcountry Alliance for Response Network;</b> Speaker(s): Kimberly Roche, Cashion Drolet, Georgette Mayo, Patricia Smith
11:20am – 11:35am	<b>Sustaining the Climate - Climate Smart Planning for Cultural Heritage: Building Resilience in a Changing World;</b> Speaker(s): Tatiana Ausema
11:35am – 12:00pm	<b>Sustaining the Climate - Open Discussion and Q&amp;A</b>



# CONSERVING AMERICA'S TREASURES

*Featured project: The Mineral Hall in the Allison and Roberto Mignone Halls of Gems and Minerals at the American Museum of Natural History  
Photo courtesy of D. Finnin|©AMNH*



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## LUNCHEON PROGRAMING (\$31 Regular, \$21 Student - Tickets at registration desk)

12:00pm – 2:00pm	Out of the Box Session	Daytona
12:00pm – 2:00pm	The HBCU Library Alliance Preservation Internship Program as a Model for Diversity, Equity, Accessibility, and Inclusion in Conservation Education	St. Johns

## Specialty Sessions

### ARCHITECTURE

#### Grand Ballroom 1-2

2:00pm – 2:30pm	<b>Camouflaged Concrete: Study of the History, Technology, and Deterioration of the Painted Concrete Sound Mirror, Il-Widna, in Malta;</b> Speaker(s): Naomi A. Ruiz
2:30pm – 3:00pm	<b>Cleaning Woes - Challenges of Climate Change;</b> Speaker(s): Tania Alam
4:00pm – 4:30pm	<b>From Sacred to Secular: Adaptive Re-Use of Religious Structures;</b> Speaker(s): Stephanie M. Hoagland
4:30pm – 5:00pm	<b>The Conservation of Lockwood House and the Revision of Inadequate Project Specifications;</b> Speaker(s): Katey Corda, Hannah B. Leighner

### BOOK & PAPER

#### Grand Ballroom 4

2:00pm – 2:30pm	<b>Conserving and Exhibiting NYPL's 1799 Copy of Albrecht Dürer's Triumphal Arch;</b> Speaker(s): Denise Stockman
2:30pm – 3:00pm	<b>Finding the Forest Amongst the Trees: Unlocking the Hidden Layers of a Kashmiri Birch Bark Codex;</b> Speaker(s): Mary French
3:00pm – 3:30pm	<b>Ammonium Citrate as a Washing Additive for Paper;</b> Speaker(s): Ute Henniges
4:00pm – 4:30pm	<b>The Frederick Douglass Collection at Northwestern Libraries: Stewardship, Research, and Treatment;</b> Speaker(s): Roger S. Williams Jr.
4:30pm – 5:00pm	<b>Controlled Anarchy: Technical Study and Treatment of Lygia Pape's Tecelares;</b> Speaker(s): María C. Rivera Ramos
5:00pm – 5:30pm	<b>American Art/Italian Paper: The Partnership between the Japan Paper Import Company of New York City and the Historic Paper Mills of Fabriano, Italy;</b> Speaker(s): Sylvia R. Albro, PAIC

### JOINT OBJECTS-PAINTINGS

#### Grand Ballroom 5

2:00pm – 2:30pm	<b>Restoring Color to Faded Feathers and Fur;</b> Speaker(s): Julia Sybalsky, Lisa K. Elkin, Michaela Paulson, Fran E. Ritchie
2:30pm – 3:00pm	<b>Tokens of Affection: Examination, Preservation and Conservation of Portrait Miniatures;</b> Speaker(s): Richard R. Hark, Aniko Bezur, Theresa Fairbanks-Harris
3:00pm – 3:30pm	<b>Seeing through the Infinity Net: A Collaborative and Interdisciplinary Investigation into Yayoi Kusama Self-Obliteration;</b> Speaker(s): Jennifer L. Mass, Ph.D, Adam Finnefrock, Dr. Rebecca Ploeger, Lynn Lee, Wenting Chen, Alessandra Guarascio, Marc Walton
4:00pm – 4:30pm	<b>Rawhide and Cardboard and Paint, Oh My!: Surveying and Conserving the Yale University Art Gallery's Indonesian Shadow Theatre Puppet Collection;</b> Speaker(s): Amreet Kular
4:30pm – 5:00pm	<b>The Cleaning of Six Painted Monumental Carvings from the Northwest Coast at the American Museum of Natural History;</b> Speaker(s): Samantha Alderson



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## PREVENTIVE CARE

### River Terrace 2

- 2:00pm – 2:30pm **Building the Capacity of Utah Field Services: Training Stewards in Preventive Conservation;** Speaker(s): Marie D. Desrochers
- 2:30pm – 3:00pm **We Are Family: The Cooperation of Collection Conservation and Management within the League of Literary Museums in Taiwan;** Speaker(s): Hsuan-Yu Chen
- 3:00pm – 3:30pm **Cognito Forms: A Comprehensive Solution for Collection Surveys and Condition Reports;** Speaker(s): Silvia Manrique Tamayo, Clara Huisman
- 4:00pm – 4:30pm **Doing More with Less: Tips and Tricks for Building a Conservation Imaging Program;** Speaker(s): Bethann Rea, Catherine Orochena, Jacqueline J. Quinn
- 4:30pm – 5:00pm **Environments of Change: Digitization of Historic Sites and Artifacts for Heritage Repositories, Educational Video Games, and Virtual Reality Tourism Apps;** Speaker(s): Andrew Moore, Caroline Longo

## RESEARCH & TECHNICAL STUDIES

### River Terrace 1

- 2:00pm – 2:30pm **Scientific Characterization of Alternatives to Cyclododecane: A Technical Study of Volatile Binding Media for Temporary Consolidation of Cultural Heritage;** Speaker(s): Hamada Sadek Kotb
- 2:30pm – 3:00pm **Evaluation the Efficacy of Dibarium Discharge Plasma (DBD) In Decontamination Bio Deteriorated Cultural Heritage Objects;** Speaker(s): Akmal A. Sakr Sr.
- 3:00pm – 3:30pm **A New Horizon for Atomic Oxygen in Sustainable Heritage Conservation: Green Technology for Contactless Cleaning of the Works of Art;** Speaker(s): Nina M. Olsson, Anton Nikiforov, Tomas Markevicius
- 4:00pm – 4:30pm **Access and Accessibility: Challenging How We Are Using “Accessibility”;** Speaker(s): Sally G. Kim, Ashley Grady, E. Keats Webb
- 4:30pm – 5:00pm **Bridging the Gap: Redirecting the Heritage Science Curriculum Towards Accessibility and Globalization;** Speaker(s): Kyna Biggs, Alison Murray
- 5:00pm – 5:30pm **Increasing Student Engagement in Sustainability Initiatives at the Queen’s University Art Conservation Program;** Speaker(s): Caroline Longo

## TEXTILES

### Grand Ballroom 3

- 2:00pm – 2:30pm **Measure Twice, Cut Once: Reusable Efficient Fosshape Torso Mounts;** Speaker(s): Sara Luduena, Jacquelyn Peterson-Grace, Gretchen Guidess
- 2:30pm – 3:00pm **Residual Concern: Shedding of Nylon Fibres from Vellux during Mechanical Cleaning of Historical Textiles;** Speaker(s): Sarah Bernardo Souza Almeida
- 3:00pm – 3:30pm **Three Flags, the Same Identity;** Speaker(s): Patricia C. Lissa, Ivana Rigacci
- 4:00pm – 4:30pm **A New Approach for Display Forms Has Been Improving Display Appearances!;** Speaker(s): Sunae P. Evans
- 4:30pm – 5:00pm **Stabilizing Silk Ribbons and Ribbonwork at the National Museum of the American Indian;** Speaker(s): Rebecca Summerour, Heather Ahtone, Kathleen Martin, Susan C. Heald, Lauren Osmond, Welana “Osage/ Muscogee Creek/Cherokee” Queton
- 5:00pm – 5:30pm **Tips Session**





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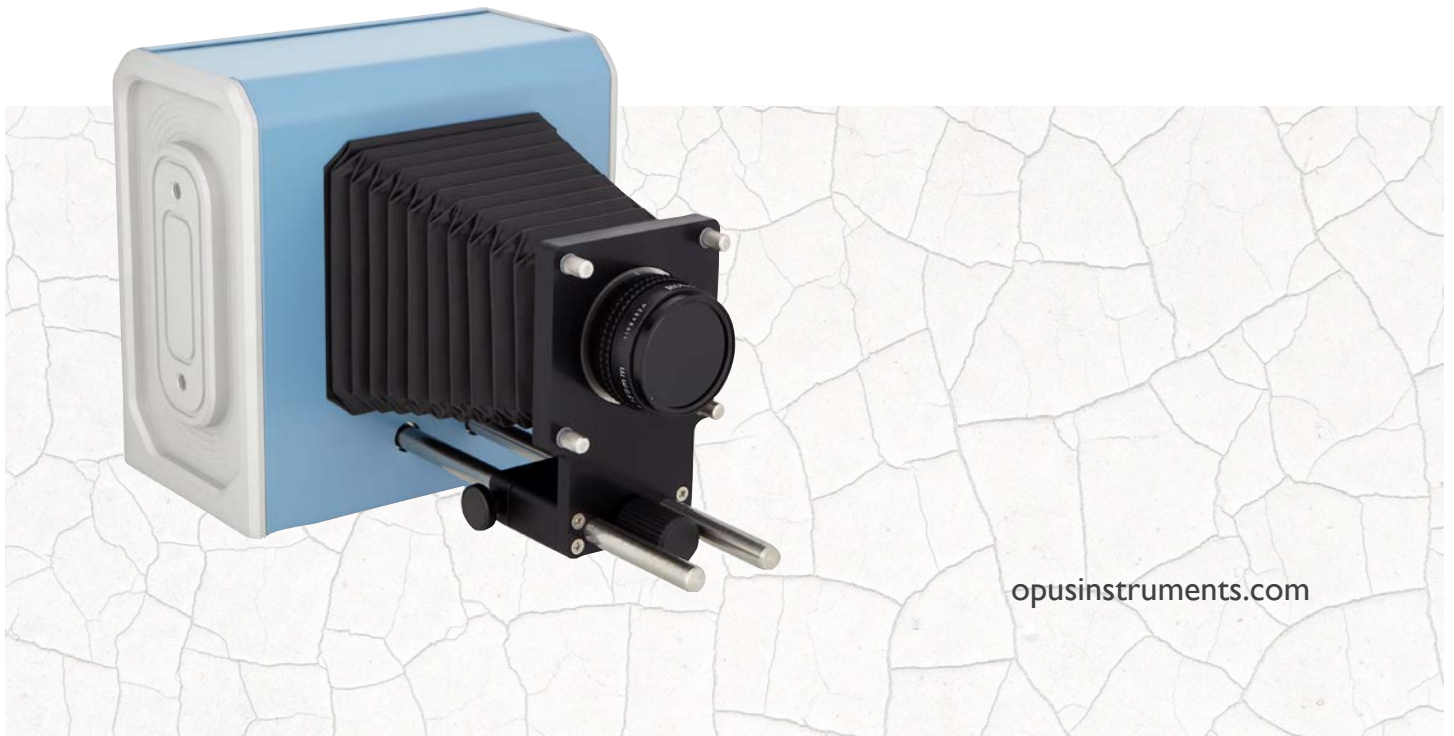
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## FRIDAY, MAY 19

### Events of Note

6:45am – 8:00am	Early Morning Mindfulness	City Terrace 7
10:00am – 5:30pm	Exhibit Hall Open	Grand Ballroom 6-8
10:00am – 5:30pm	Poster Session Open	Ballroom Foyer
8:00am – 5:30pm	Breath of Fresh Air Room Open	City Terrace 10
6:00pm – 9:00pm	Specialty Group and Network Receptions	

### LUNCHEON PROGRAMING (\$31 - TICKETS AT REGISTRATION DESK)

12:00pm – 2:00pm	A Community of Response	Daytona
12:00pm – 2:00pm	APOYOnline Luncheon	Clearwater
12:00pm – 2:00pm	The Preservation and Conservation Issues of 19th Century Varnished Wall Maps, Part 2	St. Johns

## Specialty Sessions (8:30am-12pm)

### ARCHITECTURE

#### Grand Ballroom 1-2

10:30am – 12:00pm	<b>Panel: Heritage Disaster Response – Lessons Learned and Paths Forward, with ASG and APT;</b> Moderators: Brooke Young Russell, Rachel C. Palisin
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### BOOK & PAPER

#### Grand Ballroom 3

8:30am – 10:00am	<b>Art on Paper Discussion Group Sessions</b>
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### CONTEMPORARY ART

#### Grand Ballroom 3

10:30am – 11:00am	<b>The Technical Study and Conservation of “The Kiss II,” a Multiplex Hologram;</b> Speaker(s): Emily Hamilton, Lindsay Cross, Patrick Ravines
11:00am – 11:30am	<b>Fluid Dynamics: Adapting the Installation of Michael Stevenson’s The Fountain of Prosperity;</b> Speaker(s): Andy Wolf, Lynda A. Zycherman
11:30am – 12:00pm	<b>Artist Interviews and Artist Books: Two Case Studies of the Impact of Artist Interviews on the Outcome of Book Treatments;</b> Speaker(s): Jessica L. Pace

### JOINT OBJECTS + PAINTINGS

#### Grand Ballroom 5

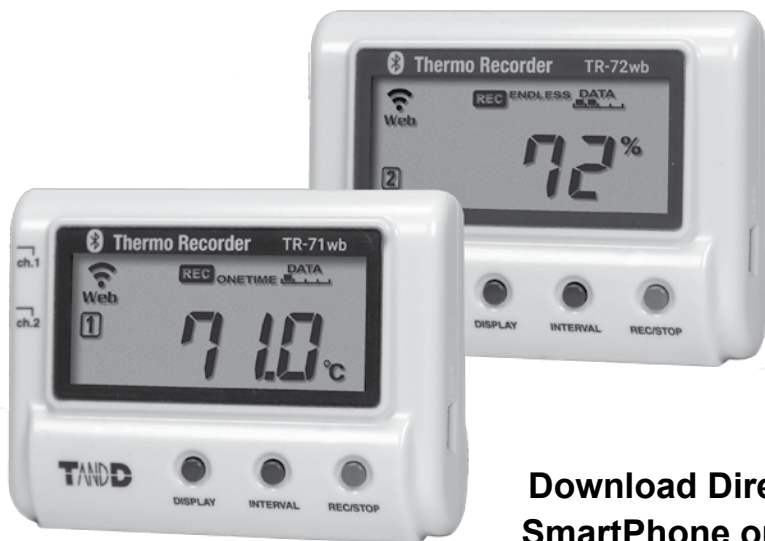
8:30am – 9:00am	<b>Unfolding a Revolution: The Trans-Cultural Synthesis of Two Biombos, or Mexican Folding Screens;</b> Speaker(s): Corina E. Rogge, Trevor Boyd
9:00am – 9:30am	<b>Angels Rising from the Ashes: Conserving the Fire Damaged Reredos and Sculptures at Mission San Gabriel;</b> Speaker(s): Sonia Tatiana J. Fraj
9:30am – 10:00am	<b>Early American Graining: A Technical Survey;</b> Speaker(s): Kirsten T. Moffitt

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## JOINT RESEARCH + PREVENTIVE + BOOKS

## Grand Ballroom 4

10:30am – 12:00pm **Poison Books: Is That Green Book Going to Kill Me? Bibliotoxicology Working Group Discussion Panel;** Speaker(s): Timothy N. Greening, Susan Russick, Rosie Grayburn, Melissa Tedone, Kimberly Harmon, Becky Fifield

## OBJECTS

## Grand Ballroom 5

10:30am – 11:00am **Hands, Hair Plugs, and Hardtack: Conserving Organic Objects from Gettysburg National Military Park;** Speaker(s): Fran E. Ritchie

11:00am – 11:30am **The Beads' Needs: Preserving a Large Collection of Native North American Beadwork with Glass Deterioration;** Speaker(s): Cassandra Gero, Kaitlin "Katie" Linder

11:30am – 12:00pm **Beyond Conservation: The Interpretive Restoration of a Frankenthal Porcelain Group;** Speaker(s): Anthony Sigel

## PAINTINGS

## River Terrace 1

10:30am – 11:00am **An Approach to Treating the Ill Effects of an Early Wax-Resin Infusion: Franz Kline's Nijinsky, 1950;** Speaker(s): Sara Kornhauser

11:00am – 11:30am **Guidance on the Safe Use of Magnets in Conservation and Display of Works of Art: Occupational and General Public Exposure to Static and Varying Magnetic Fields;** Speaker(s): Zuzanna Szozda

11:30am – 12:00pm **Treatment of a Severely Distorted Canvas Painting in a Humidity Chamber Using a Saturated Salt Solution;** Speaker(s): Kelsey Wingel

## PREVENTIVE CARE

## River Terrace 2

8:30am – 9:00am **Identification and Hazard Mitigation of Polychlorinated Biphenyls (PCBs) During a Large-Scale Collections Move;** Speaker(s): Jacqueline Riddle, Skye Marshall

9:00am – 9:30am **Duck, Duck, Grey Duck: A Study of Pesticides in Three Northwoods Taxidermy Collections;** Speaker(s): Nicole Grabow, Melissa Amundsen

9:30am – 10:00am **Museums Poisons Test Kit: Analytical Testing for All Museums;** Speaker(s): Paulette Reading, Brandy L. Howard, Charlie "Chuck" Koch

## SUSTAINABILITY

## City Terrace 10

10:30am - 12:00pm **Sustainability Session in the Breath of Fresh Air Room**

## WOODEN ARTIFACTS

## River Terrace 3

10:30am – 12:00pm **Panel Discussion: Imagining a Sustainable Career for Wooden Artifact and Furniture Conservators;** panelists: Stephanie Hulman, Catherine Silverman, Antoine (Ton) Wilmering

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Funerary papi on display in *The Tomb* exhibition. © of National Museums Scotland.



Edvard Munch, *The Scream*. Tempera and oil on paper, 1910. © Munchmuseet. (Photo: WERNER MURRER RAHMEN)



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



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## Concurrent General Sessions (2:00pm - 5:30pm)

### TRACK A: BEYOND NEUTRALITY: CONVERSATIONS AROUND COLLECTION CARE AND SUSTAINABILITY

#### Grand Ballroom 4

- 2:00pm – 2:30pm **The Time For Talking Is Over: Stop Talking and Start Doing;** Speaker(s): Lorraine Finch
- 2:30pm – 3:00pm **Convincing the Right Audience;** Speaker(s): Christopher Cameron
- 3:00pm – 3:30pm **Neutrality is a Delusion: Museums Have to Face the Realities of the 21st Century;** Speaker(s): Anna Krez

### TRACK A: PRESERVING THE LEGACY OF HUMANITY: WHAT IS IT THAT WE WANT TO PRESERVE?

#### Grand Ballroom 4

- 4:00pm – 4:30pm **The Cause Lies in the Future;** Speaker(s): Stephanie de Roemer
- 4:30pm – 5:00pm **Climate Change and Cultural Landscapes: Resource Management in the South Carolina Lowcountry;** Speaker(s): Patricia Ploehn
- 5:00pm – 5:30pm **Rescuing “The Life Scrolls” & Remembering Florida’s Fallen from WWI;** Speaker(s): Ann I Seibert, Joanelle Mulrain

### TRACK B: EMERGENCY RESPONSE

#### Grand Ballroom 5

- 2:00pm – 2:30pm **Disaster Response in a Rural Sacrifice Zone (Lord Willing and the Creek Don’t Rise);** Speaker(s): Alex R. Brooks
- 2:30pm – 3:00pm **Performing Arts Readiness: Bringing Good Disaster Preparedness Practices to the Arts Community;** Speaker(s): Tom Clareson
- 3:00pm – 3:30pm **The Case of 100,000 Visual Memories: A Collection Casualty Is Turned into a Mass Digital Initiative;** Speaker(s): Karin Neander, Sara Ellenius

### TRACK B: REDUCE, REUSE, RECYCLE

#### Grand Ballroom 5

- 4:00pm – 4:30pm **A Conservator’s Place in the Repair Revolution;** Speaker(s): Shane Orion Wiechnik
- 4:30pm – 5:00pm **Sustainability Tools in Cultural Heritage: Lessons Learned for Forward Thinking;** Speaker(s): Sarah Nunberg
- 5:00pm – 5:30pm **Future, in Flux: Conserving the Carnegie International (1896 to Present);** Speaker(s): Mary P. Wilcop

### TRACK C: PHYSICAL PROPERTIES OF MATERIALS

#### Grand Ballroom 1-2

- 2:00pm – 2:30pm **Mammalian and Fish Gelatines at Fluctuating Relative Humidity;** Speaker(s): Karolina Soppa
- 2:30pm – 3:00pm **A Heated Situation: In Situ Monitoring and Humidification of a Wooden Altarpiece;** Speaker(s): Julia Brandt
- 3:00pm – 3:30pm **A Case Study: Safely Transitioning Wooden Objects from a Tropical Region to a Controlled Museum Environment;** Speaker(s): Catherine Silverman





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## TRACK D: CONSERVATION IMAGING IN THE AGE OF CHANGE

## River Terrace 1

- 2:00pm – 2:30pm **Beyond RGB for Documentation: A Spectral Image Processing Software for Color Accurate Object Documentation and Spectra Reflectance Estimation;** Speaker(s): Leah Humenuck
- 2:30pm – 3:00pm **The Politics of Digital Repatriation and its Relationship to 3D Imaging Sovereignty;** Speaker(s): Brinker Ferguson
- 3:00pm – 3:30pm **Modifying a Smartphone for All-in-One Multispectral Imaging;** Speaker(s): Sean Billups
- 4:00pm – 4:30pm **Under the Hood: Accessible Multispectral Image Processing Software for Historical Document Discovery;** Speaker(s): Juilee Decker, David W. Messinger
- 4:30pm – 5:00pm **Accessible, Adaptable Imaging for Ancient Color Research: An Online, Open-Access Toolkit;** Speaker(s): Caroline I. Roberts, Suzanne Davis
- 5:00pm – 5:30pm **Standardization of Multiband illumination for Conservation Documentation;** Speaker(s): Scott Geffert

## TRACK E: MAPPING &amp; OBJECTS AT RISK

## Grand Ballroom 5

- 2:00pm – 2:30pm **(Objects at Risk) Challenges of Sculptures Conservation in Outdoor: The Manguinhos Historical Architectural Nucleus;** Speaker(s): Sarah C. M. de Sequeira
- 2:30pm – 3:00pm **(Objects at Risk & Mapping) CRSurveyor: Expanding Access to Digital Survey and Photodocumentation Tools for Cultural Heritage at Risk;** Speaker(s): Taylor A. Pearlstein
- 3:00pm – 3:30pm **(Mapping) Protecting Public Art: The Future of Remote Risk Assessment and Mapping;** Speaker(s): Nicole Grabow, Madeline Cooper, Janae Huber
- 4:00pm – 4:30pm **(Mapping) A Blueprint For Developing a National Projection of Climate Change Impacts on Cultural Property;** Speaker(s): Charles Vörösmarty
- 4:30pm – 5:00pm **(Objects at Risk) Increasing HCC' Sustainability: The Overarching Theme for the New Research Strategy at the Heritage Conservation Centre in Singapore;** Speaker(s): Christel C. Pesme

## TRACK F: EDUCATING THE FUTURE

## Grand Ballroom 3

- 4:00pm – 4:30pm **T/D/S/IP-C: The Continued Evolution of an Introduction to Practical Conservation for HBCU Students and Recent Graduates;** Speaker(s): Nina Owczarek
- 4:30pm – 5:00pm **Dynamic Resources and Building a Community for Changing Times: The AIC Imaging Wiki and IWG Community;** Speaker(s): Leah Humenuck, Adam Neese, Wendy Rose
- 5:00pm – 5:30pm **What Do You Need to Know? Re-Evaluating the Senior Capstone Course in the University of Delaware's Undergraduate Program and Thinking Towards the Future;** Speaker(s): Madeline Hagerman





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## SATURDAY, MAY 20

## LUNCHEON PROGRAMING (\$31 - TICKETS AT REGISTRATION DESK)

12:00pm – 2:00pm	A Common Purpose: Collaborations between Conservators & Museum Educators	St. Johns Room
12:00pm – 2:00pm	Socratic Dialogue: What Is Meant by the Phrase “Preserving the Legacy of Humanity for Future Generations”?	Daytona Room
12:00pm – 2:00pm	CIPP Luncheon and Business Tips (free for CIPP members)	Clearwater Room

## MIDDAY MEETINGS

12:00pm – 2:00pm	INCCA/CAN! Speed Mentoring	Orlando Room
1:00pm – 2:00pm	AHN Business Meeting	City Terrace 7
1:00pm – 2:00pm	Perspectives on Organized Labor Activities in Cultural Heritage Institutions - Discussion Session	City Terrace 9
1:00pm – 2:00pm	Preventive Care Network Idea Fair	Grand Ballroom Foyer

## General Sessions

## FAIC SESSION

## Grand Ballroom 6-8

8:30am – 10:30am **FAIC 50th Anniversary Celebration and Held in Trust Update**

## CLOSING SESSION

## Grand Ballroom 5

4:30pm – 6:00pm **6th Annual Mistakes Session;** Speaker(s): Anthony Sigel, Kari Rayner

## Specialty Sessions

## BOOK &amp; PAPER

## Grand Ballroom 4

10:30am – 11:00am	<b>Heroes Behind the Chinese Albums: Two Cases of Qing Dynasty Functional Brocade Boxes;</b> Speaker(s): Jia-Yu Hu, Hsin-Kuan Liao
11:00am – 11:30am	<b>Mark Rothko Paintings on Paper, Mounted on Honeycomb Panels with Added Side Tacking Borders;</b> Speaker(s): Yoshi Nishio, Pei-Ching Liu
11:30am – 12:00pm	<b>Plastic Findings in Book Bindings: Surveys of Materials, Structures, and Condition for the Care of Changing Collections in Australia;</b> Speaker(s): Cancy Chu
2:00pm – 2:30pm	<b>Application of a Large-Scale Working Rack for an Oversized Silk Painting Conservation during the Pandemic;</b> Speaker(s): Ting-Fu “范定甫” Fan, Yi-Chiung Lin
2:30pm – 3:00pm	<b>Preserving Memories: Should We Interfere?;</b> Speaker(s): Samantha Tepper, Lisa Conte, Kerith Koss Schragger
3:00pm – 3:30pm	<b>Nanocellulose Fills and their Application in Photograph Conservation;</b> Speaker(s): Marissa Maynard
3:30pm – 4:00pm	<b>Paper, Metal, and Liquid: Bronzing Degradation in a Nineteenth-Century Lithograph;</b> Speaker(s): Meredith French



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## JOINT - ARCHAEOLOGICAL HERITAGE + ARCHITECTURE

## Grand Ballroom 3

- 2:00pm – 2:30pm **Let the Objects Speak!**; Speaker(s): Evelyn Thompson
- 2:30pm – 3:00pm **Strategies for Handling Archaeological Architectural Fragments;**  
Speaker(s): Julia Commander
- 3:00pm – 3:30pm **Arresting Time: Stabilizing the Mill Ruins at Thomas Jefferson's Shadwell;**  
Speaker(s): Lucy W. Midelfort
- 3:30pm – 4:00pm **Conservation and Reconstruction of Dye House, Ekhshaid Period, Islamic Period, Egypt;**  
Speaker(s): Yousry Taha Abdelsameea

## OBJECTS

## Grand Ballroom 5

- 10:30am – 11:00am **A Confluence of Passions: A Classical Guitarist's Approach to the Conservation of an Oud, a Stringed Musical Instrument from Ottoman Syria;** Speaker(s): Adrienne Gendron
- 11:00am – 11:30am **Adhesives for Deteriorated Cellulose Nitrate: Navigating an Intervention;**  
Speaker(s): Emily Brzezinski
- 11:30am – 12:00pm **Don't Just Wing It! The Impact of Cleaning on Feather Preservation;**  
Speaker(s): Julia Sybalsky, Lisa K. Elkin, Michaela Paulson

## PAINTINGS

## River Terrace 1

- 10:30am – 11:00am **Straight Out-of-the-Tube: Analysis and Conservation of George Mathieu's Pour une aliénation définitive du logos;** Speaker(s): Christy H. Gratini, Fiona Beckett
- 11:00am – 11:30am **Artist, Collector, Conservator: The Legacy of Morton C. Bradley Jr. at Indiana University;**  
Speaker(s): Julie Ribits
- 11:30am – 12:00pm **The Use of Photometric Stereo for Documenting Restoration Treatments: Case Study of a Copy of Giulio Romano's Milvian Bridge (Oil on Canvas, ca. 1700);** Speaker(s): Lieve Watteeuw, Hendrik Hameeuw
- 2:00pm – 2:30pm **"Careful Studies from Nature": Grafton Tyler Brown and His Yellowstone Series;**  
Speaker(s): Ellen Nigro
- 2:30pm – 3:00pm **Interdisciplinarity and Inter-Institutionality: A Partnership between the São Paulo Museum of Art (MASP) and the Frans Hals Museum in the Study and Treatment of Three Frans Hals Paintings;** Speaker(s): Aline A. Oliveira
- 3:00pm – 3:30pm **The Chromatic Reintegration with Wax Sticks;** Speaker(s): Romina Gatti
- 3:30pm – 4:00pm **Prior to Contemporary Art Conservation: The Practice of Primary Conservation through Georges Rouault's Technique;** Speaker(s): Guillemette Caupin

## PREVENTIVE CARE

## River Terrace 2

- 2:00pm – 2:20pm **Evolved SHS: An Efficient and Sustainable Housing System for Tintypes;**  
Speaker(s): Clara M. Prieto
- 2:20pm – 2:40pm **Thinking Inside the Box: Computerized Mat Cutting for Collection Housing;**  
Speaker(s): Brie Warren, Chloe Gise, Anna Maupin
- 2:40pm – 3:00pm **Adapting Preservation Work in Automated Storage and Retrieval Facilities;** Speaker(s): Christopher Saclolo



- 3:00pm – 3:20pm **Boxing with Leopold von Ranke;** Speaker(s): David J. Stokoe
- 3:20pm – 3:40pm **Early to Mid-19th Century Leather Saddles;** Speaker(s): Michela Kuykendall, Hillary Sullivan

## RESEARCH &amp; TECHNICAL STUDIES

## Grand Ballroom 1-2

- 10:30am – 11:00am **The Mysterious Glass Pectoral of the Lady Nfrw Found in Saqqara Necropolis: Theories of Glass in Ancient Egypt -- Is There a Scientific Explanation?;** Speaker(s): Abdelmoniem M. Abdelmoniem, Ahmed T. Ibrahim, Ibrahim A. Mohamed Ali, Eid Mertah, Almoatz-bellah E. Elshahawi, Moamen Othman
- 11:00am – 11:30am **Investigating the Materials and Techniques Used in Traditional Miniature Paintings of Rajasthan;** Speaker(s): Celia S. Chari Ph.D., Anjali Jain, Georgina M. Rayner, Katherine Eremin, Jinah Kim, Narayan Khandekar
- 11:30am – 12:00pm **(Don't) Spare the Horses: A Technical Analysis of Acee Blue Eagle's Tempera Painting, Warriors on Horses;** Speaker(s): Sydney E. Schaffer
- 2:00pm – 2:30pm **Characterization of Mark Tobey's Paint Materials Using Mass Spectrometry Methods;** Speaker(s): Vanessa Johnson, Nicholas Dorman, Christopher E. White, Tami Lasseter-Clare
- 2:30pm – 3:00pm **The Pecking Order: Using Digital Capture and Multi-Criteria Decision Analysis to Rank Cleaning Techniques for Feathers;** Speaker(s): Lisa K. Elkin, Julia Sybalsky, Michaela Paulson, Robert Waller
- 3:00pm – 3:30pm **Modifications in the Design and Operation of the Thomas Open Source Retro-Reflective Pilot Study on Silicon Carbide Sandpaper DRIFT Analysis for in Situ Characterization of Plastic Materials in Storage Collections;** Speaker(s): Kasey Hamilton, Kate Duffy
- 3:30pm – 4:00pm **Micro-Fading Tester: Optical Considerations, and Operational and Analytical Issues;** Speaker(s): J P. Brown, Grace Kim, Jacob L. Thomas

## WOODEN ARTIFACTS

## River Terrace 3

- 2:00pm – 2:30pm **How Many Layers to Make a King's Bed? The Collaborative Treatment of a French-style Bedstead in the Collection of the Philadelphia Museum of Art;** Speaker(s): Caitlin Sofield, Behrooz Salimnejad, Elizabeth Paolini
- 2:30pm – 3:00pm **Intentional Framing at the Harvard Art Museums: Albert Moore's 'Study for "Blossoms";'** Speaker(s): Allison Jackson
- 3:00pm – 3:30pm **Exchanging Knowledge: Lessons from a Conservation Journeyman;** Speaker(s): Shane Orion Wiechnik
- 3:30pm – 4:00pm **Chemical-Analytical Characterization of the Materials Applied on the Coffered Ceiling of the Lonshan Temple (Lukang, Taiwan);** Speaker(s): Yu Lee

**VIRTUAL SESSIONS****JUNE 1 • THURSDAY**

1:00pm – 3:00pm      **AIC Member Business Meeting**

**JUNE 2 • FRIDAY**

2:00pm – 1:30pm      **Paintings Specialty Group Business Meeting**

**JUNE 5 • MONDAY**

11:00am – 1:00pm      **Photographic Materials Business Meeting**

12:00pm – 1:30pm      **Wooden Artifacts Business Meeting**

1:00pm – 3:00pm      **Perspectives on Organized Labor Activities in Cultural Heritage Institutions**

**JUNE 6 • TUESDAY**

1:00pm – 2:00pm      **Contemporary Art Network Business Meeting**

1:00pm – 3:00pm      **Library and Archives Conservation Work Flow Through a DEI Lens: Before, During, and After Treatment**

3:00pm – 4:00pm      **Textile Specialty Group Business Meeting**

**JUNE 7 • WEDNESDAY**

11:00am – 12:00pm      **Architecture Specialty Group Business Meeting**

11:00am – 1:00pm      **Electronic Media Virtual Session 1**

1:00pm – 3:00pm      **Book and Paper Group Business Meeting**

2:00pm – 4:00pm      **Electronic Media Session 2**

3:00pm – 4:00pm      **Research and Technical Studies Group Business Meeting**

**JUNE 8 • THURSDAY**

1:00pm – 2:00pm      **Conservators in Private Practice Group Business Meeting**

1:00pm – 3:00pm      **Book and Paper Wiki Discussion**

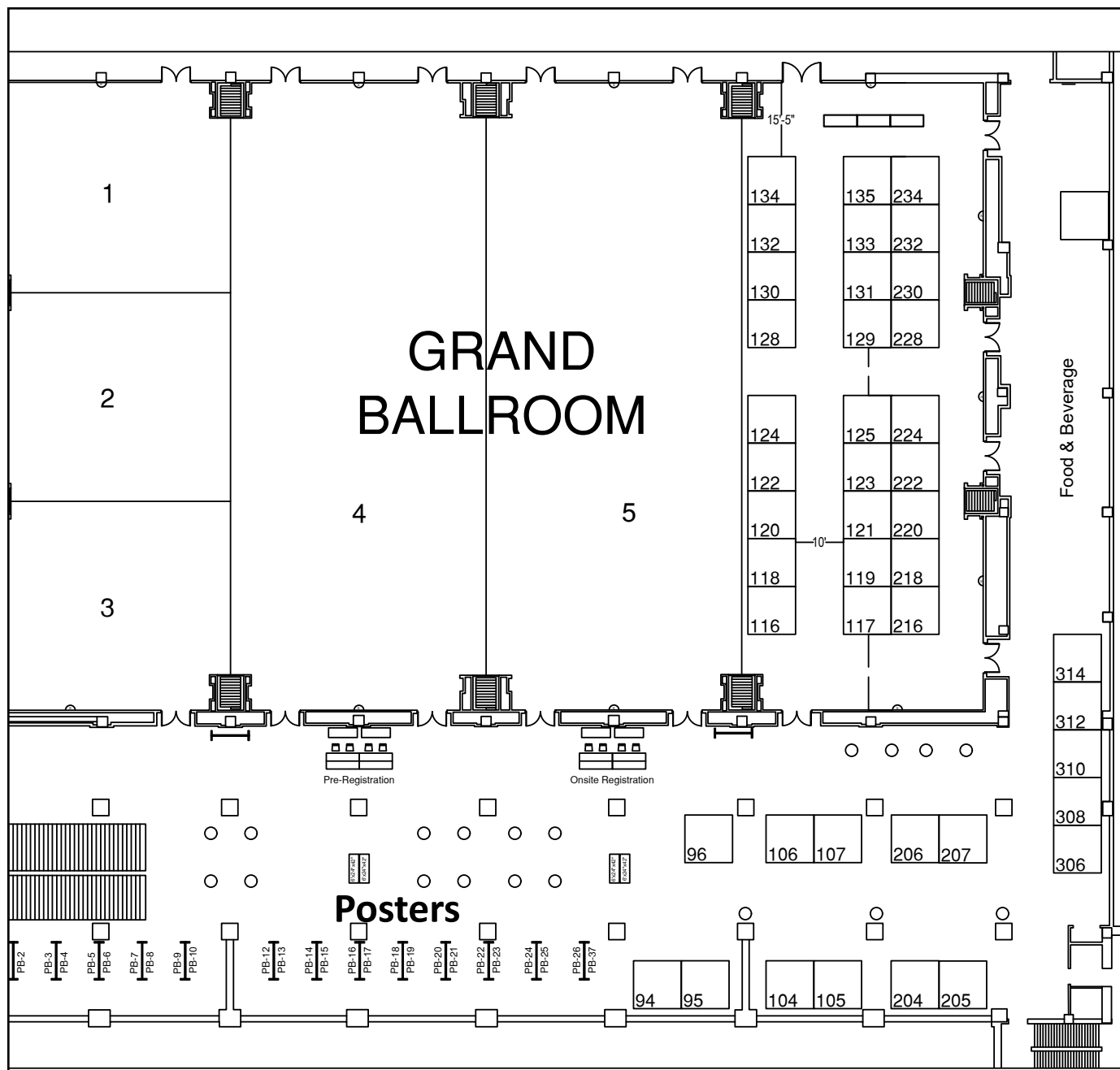
4:00pm – 5:30pm      **Objects Specialty Group Business Meeting**

**JUNE 9 • FRIDAY**

2:00pm – 3:00pm      **Member Meetup (AIC Member Event)**

**RSVP for these virtual sessions online at**  
**<https://learning.culturalheritage.org/members>**

# Exhibitor Map



**AIC's Exhibit Hall will be open Wednesday night through Friday, May 17-19. Join us Wednesday 6:30pm-8:30pm, and Thursday and Friday from 10:00am-5:30pm. The Exhibit Hall is located in the Grand Ballroom, with some booths in the Grand Foyer.**

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

**Join us for a special Welcome Reception in the Exhibit Hall on Wednesday, 6:30 to 8:30pm!**



# Exhibitor Profiles

AIC's Exhibit Hall in the Grand Ballroom

Thursday & Friday, May 18-19, 10:00am-5:30pm

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Zone Display Cases .....	Online

## DIAMOND LEVEL

### GETTY CONSERVATION INSTITUTE

#### Booth # 125

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

Contact: Angela Escobar

Ph: +1 (310) 440-7325

Email: [gciweb@getty.edu](mailto:gciweb@getty.edu)

Website: [www.getty.edu/conservation](http://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 # 96

2001 K St., NW, Ste. 625, Washington, DC 20006 USA

Contact: Casey Wigglesworth

Ph: +1 (202) 429-8590

Email: [casey.wigglesworth@huntingtontblock.com](mailto:casey.wigglesworth@huntingtontblock.com)

Website: [www.huntingtontblock.com](http://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 # 224

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](mailto:jadunphy@universityproducts.com)

Website: [www.universityproducts.com](http://www.universityproducts.com)

University Products is the leading supplier of conservation tools and equipment, as well as the largest manufacturer of archival quality storage products around the world. Stop by our booth to see what's new or just to say hello. *Sponsoring: Opening General Session.*

# Exhibitor Profiles

GOLD

## BRUKER CORPORATION

### Booth # 119 & 121

5465 E. Cheryl Parkway, Madison, WI 53711 USA

Contact: Kodi Morton

Ph: +1 (608) 276-3017 Fx: +1 (608) 276-3006

Email: [kodi.morton@bruker.com](mailto:kodi.morton@bruker.com)

Website: [www.bruker.com](http://www.bruker.com)

Bruker is one of the world's leading analytical instrumentation companies. We cover a broad spectrum of advanced solutions in all fields of research and development. Bruker's innovative methods and non-destructive analytical techniques help to protect and preserve artifacts and historical monuments all over the world. *Sponsoring: Research & Technical Studies (RATS) Sessions.*

## CLICK NETHERFIELD

### Booth # 306

1103 Laurel Oak Rd., Ste. 107, Voorhees, NJ 08043 USA

Contact: Ryan Skorch

Ph: +1 (856) 313-6688

Email: [r.skorch@clicknetherfield.com](mailto:r.skorch@clicknetherfield.com)

Website: [www.clicknetherfield.com](http://www.clicknetherfield.com)

We are Click Netherfield, global museum showcase experts with over 50 years' experience working with institutions and communities, from Royal Families and National Institutions to Independent Galleries & Private Collectors. With roots in Scottish soil, and North American operations based in New Jersey, we are very proud to serve the Conservation Community, especially in our work with the Materials Working Group. Our doors & minds are always open, so if you "Fancy a Chat" please do reach out. *Sponsoring: Objects Specialty Group (OSG) and Paintings Specialty Group (PSG) Sessions.*

## CRYSTALIZATIONS SYSTEMS, INC.

### Booth # 128

1401 Lincoln Ave., Holbrook, NY 11741 USA

Contact: Patricia J. Ellenwood

Ph: +1 (631) 467-0090 Fx: +1 (631) 467-0061

Email: [info@csistorage.com](mailto:info@csistorage.com)

Website: [www.csistorage.com](http://www.csistorage.com)

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## OPUS INSTRUMENTS (ATIK CAMERAS)

### Booth # 134

Unit 8 Lodge Farm Barns, New Rd., Norwich, Norfolk NR9 3LZ UK

Contact: Hannah Conway-Laws

Ph: +44 1603-740397 & +44 07745-526659

Email: [hannah.conway-laws@atik-cameras.com](mailto:hannah.conway-laws@atik-cameras.com)

Website: [www.opusinstruments.com](http://www.opusinstruments.com)

Opus Instruments is the world leading specialist in infrared reflectography, used in the fields of art conservation, restoration and provenance research. IRR is a non-invasive method of studying a painting by looking beneath the visible layers of paint. If you are looking to create detailed, high-quality, high-resolution infrared images, Apollo is the camera for you. Weighing at just 12 kilograms, the Apollo is both portable and accessible, ready to follow wherever the research takes you. *Sponsoring: Concurrent General Session Conservation Imaging in the Age of Change.*

## TANDD US, LLC.

### Booth # 130

534 N. Guadalupe St., Unit 32886, Santa Fe, NM 87501 USA

Contact: Steve Knuth

Ph: +1 (518) 669-9227

Email: [sbknuth@tandd.com](mailto:sbknuth@tandd.com)

Website: [www.tandd.com](http://www.tandd.com)

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## TESTFABRICS, INC.

### Booth: # 120

415 Delaware Ave., W Pittston, PA 18643 USA

Contact: Normandy Klaas

Ph: +1 (570) 603-0432

Email: [mandy@testfabrics.com](mailto:mandy@testfabrics.com)

Website: [www.testfabrics.com](http://www.testfabrics.com)

Testfabrics, Inc. is a worldwide supplier and producer of textile testing materials. While used primarily in quality assurance testing, our fabrics have found their way into countless other applications. We stock an inventory of 'clean' fabrics, free of sizings, dyes, and finishes. Conservators and museum clients have been using Testfabrics as a resource for over forty years and are critical to our continued product development. We now stock Fosshape as well a wide range of conservation friendly textiles and tools. Requests, questions, and feedback are always welcome and help us provide the conservation world the best service possible. *Sponsoring: Textile Specialty Group (TSG) reception.*

# Exhibitor Profiles

## TRU VUE, INC

### Booth # 106

9400 West 55th St., McCook, IL 60525 USA  
Contact: Carolyn Hays  
Ph: +1 (312) 350-0086 Fx: +1 (708) 854-2660  
Email: [fineart@tru-vue.com](mailto:fineart@tru-vue.com)  
Website: [tru-vue.com/museums-collections](http://tru-vue.com/museums-collections)

With over 50 years of proven protection & preservation, Tru Vue fine art acrylic & glass solutions, including Optium® Acrylic Glazing & UltraVue® Laminated Glass, are trusted by conservation & fine art professionals worldwide to protect & display artworks & cultural heritage. We work closely with the museum community to develop products that meet superior aesthetic and conservation standards. For more information or samples visit our website or email us. *Sponsoring: Preventive Care Network Session.*

## SILVER

## HOLLINGER METAL EDGE, INC.

### Booth # 129

9401 Northeast Dr., Fredericksburg, VA 22408 USA  
Contact: Abby A. Shaw  
Ph: +1 (215) 990-5306 Fx: +1 (800) 947-8814  
Email: [abbyashaw@me.com](mailto:abbyashaw@me.com)  
Website: [www.hollingermetaledge.com](http://www.hollingermetaledge.com)

Hollinger Metal Edge, Inc. has been the leading supplier of archival storage products for Conservators, Museums, Government and Institutional Archives, Historical Societies, Libraries, Universities, Galleries and Private Collectors for over 65 years. Famous for The Hollinger Box – the metal edged gray document cases that fill the shelves of thousands of organizations, we offer a wide variety of box styles made with various appropriate materials to store any collectible. We also supply conservation materials, inert polyester, polypropylene and Tyvek products, archival folders, buffered and unbuffered envelopes, Permalife bond papers, and buffered and unbuffered tissue paper. Hollinger Metal Edge manufactures custom orders on a daily basis and is committed to educational support for preservation workshops. Please contact us regarding your workshop, and we will provide free catalogs and samples as required.

## NCPTT | NATIONAL CENTER FOR PRESERVATION TECHNOLOGY & TRAINING

### Booth # 207

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](mailto:jason_church@contractor.nps.gov)  
Website: [www.nps.gov/ncptt](http://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.

## R&D MAGNETO

### Booth # 220

Al. Wyzwolenia 9 lok. 21, 42-224 Czeszochowa, Poland  
Contact: Marian Soinski  
Ph: +48 603 090 330  
Email: [marian.soinski@magneto.pl](mailto:marian.soinski@magneto.pl)  
Website: [www.magneto.pl](http://www.magneto.pl)

R&D Magneto provides professional activity in the field of production of magnetic devices and sensors. It offers technical consulting, with focus on the applications of magnetic materials. Based on our knowledge, experience, and specialization, we have created and developed a department dedicated to protecting, storing and displaying artworks with solutions that use magnets. Our team consists of highly qualified specialists in the field of magnetism, conservation and restoration of works of art.

## SMALLCORP

### Booth # 228

19 Butternut St., Greenfield, MA 01301 USA  
Contact: Michael Dunphy  
Ph: +1 (413) 834-2938 Fx: +1 (413) 773-7386  
Email: [mike@smallcorp.com](mailto:mike@smallcorp.com)  
Website: [www.smallcorp.com](http://www.smallcorp.com)

SmallCorp manufactures products for the display, conservation and storage of works of art, textiles and objects. Our frames and microclimate display cases figure prominently in museum and corporate collections. SmallCorp customers include picture framers, galleries, art conservators, and related institutions and professionals.

## STANDARD

## AIC COMMITTEE: SUSTAINABILITY

### Booth # 205

Contact: Justine Wuebold  
Email: [justine.wuebold@gmail.com](mailto:justine.wuebold@gmail.com); [sustainability@culturalheritage.org](mailto:sustainability@culturalheritage.org)  
Website: [www.culturalheritage.org/sustainability](http://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. They are also charged to define research topics and suggest working groups as needed to explore sustainable conservation practices and new technologies.

## AIC NETWORK: HEALTH & SAFETY

### Booth # 204

Chair: Susan Costello  
Email: [health-safety@culturalheritage.org](mailto:health-safety@culturalheritage.org)  
Website: [www.culturalheritage.org/health](http://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](http://www.culturalheritage.org/health-safety-forum) to ask questions!



# Exhibitor Profiles

## AIC & FAIC STAFF

### Booth # 104

Email: [contact@culturalheritage.org](mailto:contact@culturalheritage.org)

Stop by our booth and get to meet AIC & FAIC staff. Let's discuss how to get the most out of your membership and learn more about programs.

## FAIC CLIMATE RESILIENCE RESOURCES FOR CULTURAL HERITAGE

### Booth # 105

Contact: Stephanie Shapiro

Email: [stephanie@ecprs.org](mailto:stephanie@ecprs.org)

Website: [www.culturalheritage.org/resilience](http://www.culturalheritage.org/resilience)

The Climate Resilience Resources for Cultural Heritage project is a partnership with FAIC, Environment and Culture Partners, and Harvard University Center for Geographic Analysis. This project will allow cultural heritage sites to increase their awareness of climate risk and events. Project representatives Ben Lewis, Harvard University Center for Geographic Analysis, and Stephanie Shapiro, Environment and Culture Partners, will be onsite to discuss the project. This project is made possible by a cooperative agreement between FAIC and the National Endowment for the Humanities (NEH), who is providing support for Climate Resilience Resources as an early outcome of Held in Trust.

## DORFMAN MUSEUM FIGURES, INC.

### Booth # 117

6224 Holabird Ave., Baltimore, MD 21224 USA

Contact: Chad Grob

Ph: +1 (410) 284-3248 Fx: +1 (410) 284-3249

Email: [chad@museumfigures.com](mailto:chad@museumfigures.com)

Website: [www.museumfigures.com](http://www.museumfigures.com)

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## FH CONSERVATION

### Booth # 206

35 Glendora Ave, North York, ON M2N 2V8, Canada

Contact: David Ma

Ph: +1 (416) 432-5211

Email: [maxiaorangm@gmail.com](mailto:maxiaorangm@gmail.com)

Website: [www.zz-fh.com](http://www.zz-fh.com)

FH Conservation is a manufacturer of professional equipment for cultural collection preservation. Our solutions are used by LAMs (libraries, archives, and museums) to create safe air for different kinds of collections at all times. We have served over 600 institutions over the past 20 years. Our featured products include restoration equipment with various functions, microclimate controllers, constant temperature and humidity cabinets, monitoring sensors, and other environmental control tools.

## GAYLORD ARCHIVAL

### Booth # 132

PO Box 4901, Syracuse, NY 13221 USA

Contact: Jody Chastain

Ph: +1 (800) 448-6160 Fx: +1 (800) 272-3412

Email: [customerservice@gaylord.com](mailto:customerservice@gaylord.com)

Website: [www.gaylord.com](http://www.gaylord.com)

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## GETTY PUBLICATIONS

### Booth # 122 & 124

1200 Getty Center Dr., Ste. 500, Los Angeles, CA 90049 USA

Contact: Kimberley Westad

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Email: [kwestad@getty.edu](mailto:kwestad@getty.edu)

Website: [www.getty.edu/publications](http://www.getty.edu/publications)

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## GLASBAU HAHN AMERICA

### Booth # 218

15 Little Brooke Ln., Unit 1, Newburg, NY 12550 USA

Contact: Cathy Lima

Ph: +1 (845) 566-3331

Email: [cathy.lima@glasbau-hahn.com](mailto:cathy.lima@glasbau-hahn.com)

Website: [www.glasbau-hahn.com/en/home](http://www.glasbau-hahn.com/en/home)

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## GUNNAR USA, INC.

### Booth # 314

3810 166th Place N.E., Suite 102, Arlington, WA 98223, USA

Contact: Charles Woods

Ph: +1 (360) 322-0302

Email: [cwoods@gunnar-usa.com](mailto:cwoods@gunnar-usa.com)

Website: [www.gunnar-usa.com](http://www.gunnar-usa.com)

GUNNAR is a leading supplier of innovative computer-controlled single and low ply flatbed cutting systems. It globally offers localized technical and commercial support for both business units picture framing and décor as well as composites and advanced technical materials.

# Exhibitor Profiles

## HIROMI PAPER, INC.

### Booth # 216

9469 Jefferson Blvd., Ste. 117, Culver City, CA 90232 USA

Contact: Yuki Katayama

Ph: +1 (310) 998-0098

Email: [yuki@hiromipaper.com](mailto:yuki@hiromipaper.com)

Website: [www.hiromipaper.com](http://www.hiromipaper.com)

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## MAC GROUP US

### Booth # 116

75 Virginia Rd., White Plains, NY 10603 USA

Contact: Francis Westfield

Ph: +1 (917) 689-0647

Email: [francisw@macgroupus.com](mailto:francisw@macgroupus.com)

Website: [www.macgroupus.com](http://www.macgroupus.com)

This year at AIC, we proudly highlight brands perfectly suited for the Cultural Heritage field, including broncolor, Kaiser, Calibrite & X-Rite. MAC Group is dedicated to supplying photographers, filmmakers, content creators, students and educators with the world's finest image-making tools, content and inspiration. We are fully committed to the ever-growing numbers of working professionals and passionate amateurs who are dedicated to mastering the art and craft of photo, video, audio, and content creation. As well as the resellers and institutions that support them.

## NEDCC | NORTHEAST DOCUMENT CONSERVATION CENTER

### Booth # 118

100 Brickstone Square, Andover, MA 01810 USA

Contact: William P. Veillette

Ph: +1 (978) 470-1010

Email: [info@nedcc.org](mailto:info@nedcc.org)

Website: [www.nedcc.org](http://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: Book and Paper Group Reception.*

## NEH | NATIONAL ENDOWMENT FOR THE HUMANITIES

### Booth # 95

400 7th St. SW, Washington, DC, 20506 USA

Contact: Margaret Walker Clair

Ph: +1 (202) 606-8458

Email: [mclair@neh.gov](mailto:mclair@neh.gov)

Website: [www.neh.gov](http://www.neh.gov)

The National Endowment for the Humanities is an independent federal agency

and one of the largest funders of humanities programs in the United States. Representatives from its Division of Preservation and Access and Office of Challenge Programs will be present to discuss project ideas, funding opportunities, and share news from NEH. We look forward to speaking with you!

## NIGHTSEA

### Booth # 310

1560 Industry Road, Hatfield, PA 19440 USA

Contact: Charles Mazel

Ph: +1 (781) 791-9508

Email: [nightsea@nightsea.com](mailto:nightsea@nightsea.com)

Website: [www.nightsea.com](http://www.nightsea.com)

Fluorescence can be a powerful tool for investigating cultural objects and revealing or highlighting hard-to-see features. NIGHTSEA offers economical solutions for adding fluorescence to your inspection toolkit to visualize fluorescence over a wide range of scales, with 5 available excitation/emission combinations. From flashlights for viewing by eye to adding fluorescence to existing stereo and digital microscopes (Keyence, Hirox, Dino-Lite), the equipment can add to your understanding of your conservation challenges.

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## Join us in the Grand Ballroom Foyer 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 **Friday, May 19, during the 3:30pm break**. Posters will be on view throughout the meeting.

- 01** **An Alternative Conservation Model of the Agro-Industrial Heritage of the Metropolitan Area of Rosario City**  
*Carolina Haydee Rainero*
- 02** **Finding Neon: Measuring the Color and Light Output of Neon Tubes**  
*Giulia Rioda*
- 03** **Gold and Asian Lacquer: Application Methods, Degradation and Related Treatment Considerations**  
*Li-Jung Yen*
- 04** **Explorations into the Use of Diatomaceous Earth Stones as an Alternative Drying Method in Paper Conservation**  
*Ewa M. Paul*
- 05** **Nobility Claims Made Art: A Survey of the Bookbinding Techniques and Historical Context of Eight Spanish Cartas Ejecutorias de Hidalguía (Executory Certificates of Nobility)**  
*Verónica I. Mercado Oliveras*
- 06** **Is Silver a Color?: A Survey of Silver Lusterware Objects and Their Formidable Elements**  
*Brianna Turner*
- 07** **The Technical Imaging and Investigation of Use of Indian Yellow in James Forbes Watercolors**  
*Anita Dey*
- 08** **The In Situ Humidification of Stretched Gouache on Sheepskin Parchment Paintings**  
*Anita Dey*
- 09** **Intake and Housing of the International African American Museum Collection at Warren Lasch Conservation Center in Charleston, South Carolina**  
*Kate Dieringer*
- 10** **Non-destructive Analysis of the Early Isolani Collection at Pratt Institute**  
*Alissa Yong*
- 11** **When Dorian Visited Our Museum: How We Can Prepare to Mitigate Future Impacts of Worsening Natural Disasters on Our Collections**  
*Bria A. Dean*
- 12** **Maria Augusta Rui Barbosa's Textiles: Practical, Technological, and Research Approaches**  
*Gabriela Lúcio de Sousa*
- 13** **Flexible Bindings: Sustainable Models for an Alternative Look at Book Conservation**  
*Ana Roberta Tartaglia*
- 14** **Project and Construction for the Restoration and Expansion of the Paulista Museum Building – The Ipiranga Monument**  
*Griselda P. Klüppel*
- 15** **Training and Skills Development for Conservators in Brazil in Times of Change: Reflections from the Attendance of a Salvage and Disaster Recovery Course**  
*Ellen R. Ferrando*
- 16** **Challenges of a Digitalization Project in Times of Climate Changes and Pandemic Crisis: From the Conservation Perspective**  
*Viviana van Vliet*
- 17** **The Revenant: A New Look on Photographic Albums**  
*Claudia Constanzo, Vianka L. Hortuvia*
- 18** **Climate Change: How Are Latin American Conservators Playing Their Role?**  
*Josefa Orrego Trincado*
- 19** **Do pH Indicator Tests Tell Us Anything about the Elemental Composition of Glass Beads?**  
*Grace Kim, Laure Dussubieux*
- 20** **Improved Interpretation of A-D strips with Colorimetry and Visible Light Spectroscopy**  
*Lindsey Zachman, Emilie Duncan, Molly McGath*
- 21** **Heritage Conservation and Climate Change**  
*Yazmin Miranda*
- 22** **Customization of Preservation Policy for Local Literary Institution: Case Study of Zi-Xia Hall**  
*Ying-Chern Chen*
- 23** **Recovering the Missing Aura II: The Conservation Strategy and Treatment of Sakinu Ahronglong's Fire-Damaged Books**  
*Hsuan-Yu Chen*
- 24** **Tenshin-en: The Past, Present and Future of the MFA's Japanese Garden**  
*Ellie Ngo*

# POSTERS

- 25** Conservation Study of S.S 37 Wooden Coffin and Mummy Cartonnage, Egyptian Museum of Cairo  
*Mohammed A. Hussein*
- 26** Novel Use of MA-XRF to Analyze the Efficacy of Two Common Treatments for Bronze Disease  
*Skylar Jenkins*
- 27** Identification and Characterization of the Vinegar Syndrome (AC-Degradation), Damage and Consequences on Handwritten Letters  
*Yerko A. Quitral*
- 28** The Leather Discussion Group: Georeferenced Database Created to Collect and Visualize Modern and Historic Data on Binders, Tanners, Printers, Owners, Host Animal, Binding Condition, and Treatments  
*Katie C. Wagner*
- 29** Knowledge Before Oratory: A Preliminary Survey of Scaleboard Bindings at the Boston Athenæum  
*Mitchel Gundrum, Jane C. Knoll*
- 30** An Interdisciplinary Approach of Preventive Conservation: Automated Visual Recognition for Deterioration on Manuscripts  
*Wanjen Lin*
- 31** Conservation Processes of a Wooden Coffin Covered with a Black Resin Layer and Colored Materials in Dahshur Archaeological Area  
*Abdelmoniem M. Abdelmoniem*
- 32** Conservation Processes of a Painted Wooden Coffin at Dahshur Archaeological Area  
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- 33** Sustaining the Abydos Temple Paper Archives (ATPA): It All Began with a Floor Full of Scattered Paper  
*Ahmed T. Ibrahim*
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*Rasha A. Shaheen*

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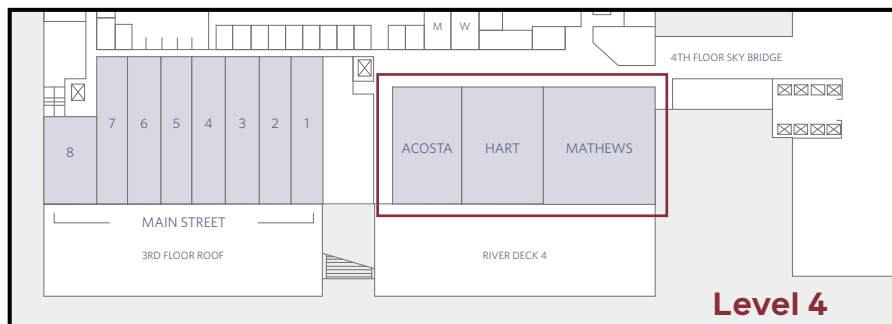
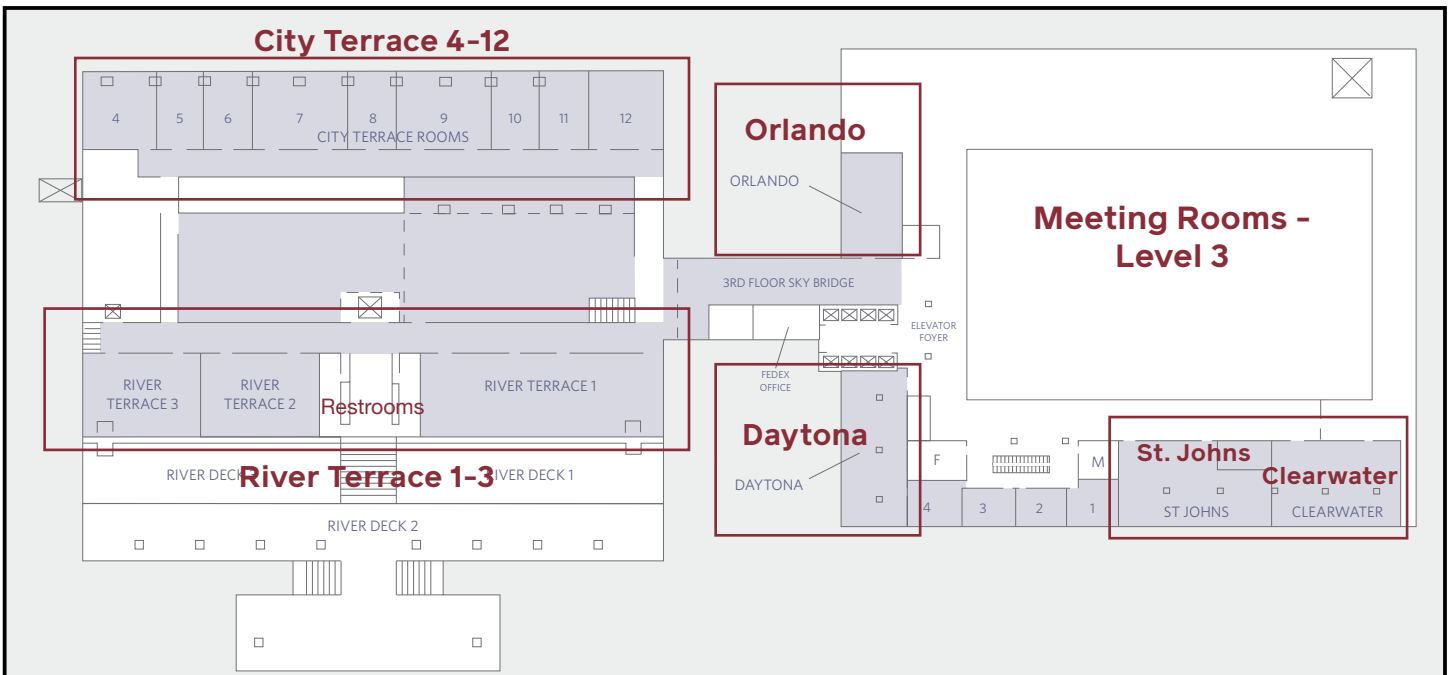
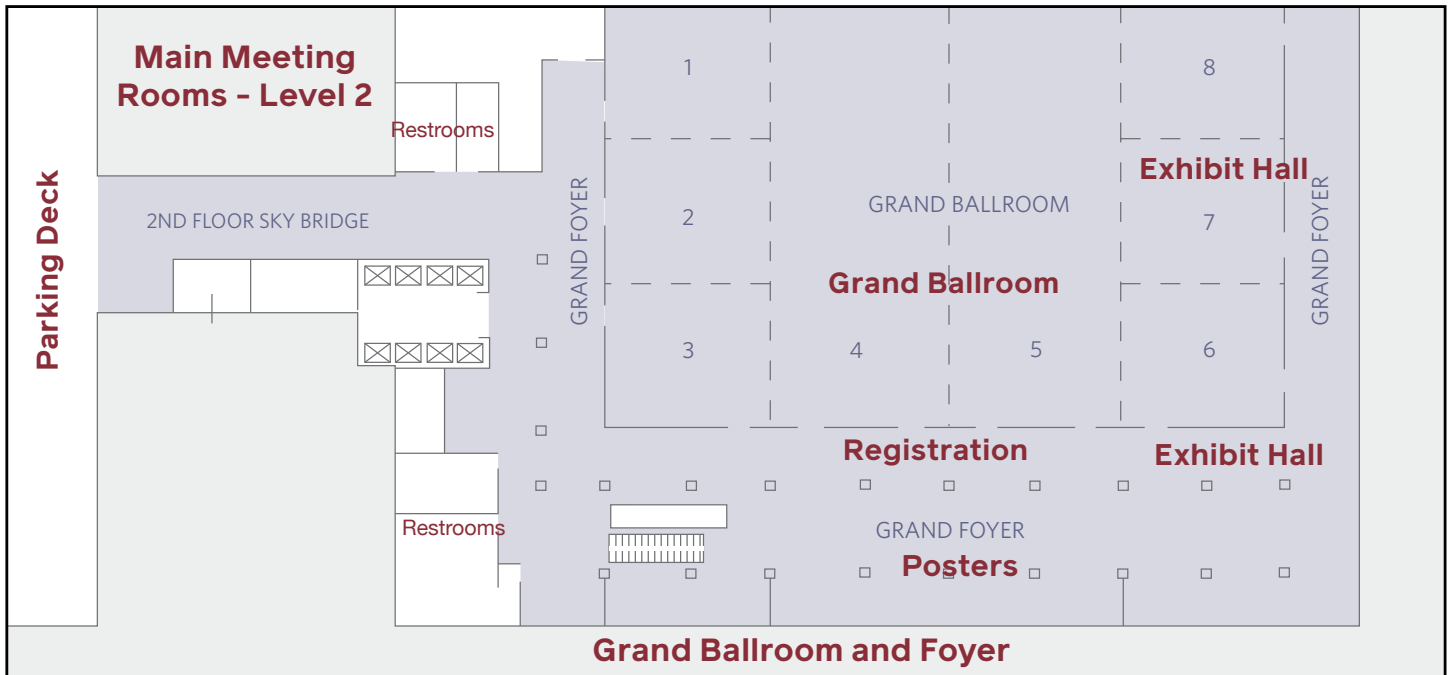
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# Hotel Maps

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# ABSTRACTS

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## Opening General Sessions

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### SUSTAINING OUR PROFESSION

#### Conservation as Change Agent: Towards a Sustainable Future

Glenn Wharton

We are witnessing fundamental changes in cultural heritage conservation, including the emergence of collaborative practices. Conservators now work with artists and community members to negotiate meaning, materiality, and representation in conservation research and decision making. Conservation professionals and those with a stake in conservation decisions question and renegotiate power relations during these collaborations. At times, artist and community concerns take precedence over traditional conservation values of physical longevity and minimal intervention. This can lead to radical reconstructions, repatriation, and even destruction of cultural heritage collections.

Inclusive models of practice can be labor and resource intensive, requiring multiple meetings with various constituents. Yet value is found not only in the final decision and conservation action, but in the process itself. Collaborative research and decision-making produces new knowledge and reorganizes power relations. Artists and communities become empowered to decide about the disposition of their artistic production and their cultural heritage.

This presentation explores further potential for value in the process of conservation. If new knowledge is produced, and artists and community members are empowered, then there is certainly more that can come from collaborative conservation research and decision-making. It can be used as a tool for community building, for individual and local identity construction, and for climate change action. Instead of reacting to change, conservation can make change happen. It can function as a change agent. The presentation includes illustrations of how the conservation process can help implement environmental and social sustainability.

#### Building Diversity in Conservation through University Training Initiatives

Nina Owczarek, Bianca Garcia, Cynthia Schwarz, Ellen Pearlstein, Mark Aronson, Nicole Passerotti

In recent years, many conservators have focused new energy on training students from underrepresented communities in an attempt to broaden the demographics of professional conservation across the country. This presentation will highlight some of the programs embedded within university conservation departments and programs, outline their histories and impact, discuss the strengths and weaknesses of these programs, identify opportunities and challenges, and finally consider some of the lessons learned over the past six or so years. The presentation will conclude by identifying suggestions for the future, including short- and medium-term goals, needs for these programs, and ideas to further make inroads in balancing the skewed demographics of the practitioners in the field.

This presentation will center on the programs hosted at the University of California at Los Angeles (UCLA), the University of Delaware (UD), and Yale University (Yale). Rather than relying on the internship model where a museum or conservation studio hosts one or two students to participate in the activities of the lab, these programs engage the cohort model which brings students together to learn as a group and to practice conservation skills and theory. Cohort members may still be placed (either individually or in pairs) into subsequent internships. Some advantages of the cohort approach include the ability to target foundational knowledge and the opportunity to build a peer support network. This model is not typically practical in a museum setting for reasons that include limits on dedicated teaching time for the staff and space capacity that typically can only accommodate one or two students actively participating in lab projects. The ability to use the cohort model is a feature that makes these

university-based programs unique.

Recruitment and future placements are regular challenges in these programs. The UD and Yale programs both developed through collaboration with the Alliance for HBCU Museums and Galleries (the Alliance). This relationship places these initiatives in a broader suite of summer programs based in museums and cultural heritage, putting conservation in context and offering students a more holistic view of museum work. The partnership with the Alliance also aids in student recruitment and preparation. The two-part structure to the UCLA program and recent changes to the UD program attempt to integrate the cohort teaching model with internship placements. Internships remain highly valuable as they integrate students into a lab or studio setting where they can actively see the relationships between conservation and other museum disciplines such as curation, archives, installations, and technical sciences. This real-world experience allows students to reflect on their specific interests and understand what a career in conservation is like. Combining these learning modes gives students maximum experiences and information even for the short time available in the summer. Furthering readiness for museums and other cultural heritage institutions to better prepare for students from these diversity programs will be an important aspect of developing continued excitement for the field and to continue building their conservation experience.

#### Gender Equity in Conservation: Understanding the Data and Exploring Ways to Improve

Suzanne Davis

This talk explores the current state of gender equity in the U.S. conservation workforce, with a focus on understanding and improving the gender wage gap and creating trans-inclusive workplaces.

While the national gender pay gap is well-recognized, people may be unaware that the gap is larger in women-dominated workplaces like museums and libraries, and in women-dominated professions like conservation and many allied heritage preservation fields. The national pay gap has hovered around 20% since 2005, yet multiple surveys of AIC members reveal a gap of at least 30%. To examine the wage gap among AIC members, this paper draws on data from three compensation surveys of AIC members (in 2009, 2014, and 2021) and places it in context alongside findings from broader national surveys of museum workers and current data from the U.S. Bureau of Labor Statistics.

This talk also briefly reviews the mechanics of two major drivers of wage inequity—the glass escalator and the glass ceiling—the effects of which are greater in women dominated occupations. Multiple national surveys of museum workers confirm that the wage gap widens as employees advance in their careers, providing evidence of a “glass ceiling” for women. These surveys also clearly show men advancing at higher rates than women, revealing a “glass escalator” for men.

Although museum-specific data on the intersection of gender and race, cultural affinity, marital and family status, sexual orientation, and disability do not yet exist, this talk explores what we know about intersectional effects on the gender wage gap. Data on compensation and career outcomes for transgender workers are similarly lacking in the museum field, but information does exist at the national level and is also reviewed.

Finally and most importantly, this paper examines ways to improve equity, with a focus on structural employment practice changes at the institutional level, tips on creating trans-inclusive workplaces, a brief discussion of the role and possibilities of self-advocacy in museums and other settings, and a few suggestions about what professional associations like AIC can do to support equity in museums and for their members. Please note that while this talk introduces new data, contextual information, and suggestions, it builds on work previously published and accessible to AIC members.

#### Living Histories: Building a Conservation Leadership Program for Social Change

Sarah E. Kleiner

If “callings” exist, it happened to me; or perhaps the work I was doing pre-pandemic was entirely unsustainable. During the global health emergency and

## OPENING GENERAL SESSIONS

national awakening to racism in America, my identities as conservator and white mother of two Black sons collided. Working from home, while parenting a preschooler and monitoring a kindergartener on Zoom, was overwhelming. My younger son, then two, asked me “what color am I?” and if “the police would shoot” him. So when the Collective of Black Conservators convened in July 2020, to “Demand Racial Justice in Conservation,” their framework became my beacon and guidepost. Thoughtful and consistent offerings from AIC’s Equity and Inclusion Committee, like *Confronting our Biases to Transform Conservation* and Dr. Nicole Robinson’s *Race, Power & Responsibility* were deeply impactful. In addition, I pursued three years of anti-racist facilitation training, shifting my practice of conservation to include social justice and equity at its foundation. My conclusion at midcareer, is that without immediate change, our field is unsustainable. Owing to academic and experiential requirements, the pipeline through conservation education, generally 80% white and 76% female, takes approximately 9-11 years. Internships and fellowships are limited and require frequent moves. Conservators earn low paying wages in often expensive cities. Mid-career advanced training is restricted, financially challenging, and/or requires travel for extended periods of time. Those who advance into conservation leadership positions do not necessarily have management training. While foundations, individual donors, and museums are beginning to invest in diversifying the field; those efforts do not fully address the impact of the predominantly white, female frameworks within conservation. These challenges raise pressing questions: How do we sustain (and thrive) in our profession? How do we create prismatic networks? In collaboration with the AIC membership and others, I aim to develop a Conservation Leadership Program focused on social change and sustainability. In our profession, we touch and hold history in the most intimate way. We are bridge-builders, multilingual across art and science, connoisseurs in the sense of deep knowing, and connectors of past and present. Most importantly, “Conservators help shape what our society values by making decisions on what to preserve, whom to include in our work, and therefore whose stories we remember.”—Collective of Black Conservators. Working together, we must also re-shape our profession. This proposed Program and its educational framework seeks to impact how we sustain in our work. Here, people will be intentionally prioritized first, above cultural heritage, representing a shift in our field. Empowering future conservation leaders means providing them with tools to navigate uncertainty, set equity at the foundation, and reach their full potential while building generative networks. With the experience and engagement of our membership—and others outside our profession, this Conservation Leadership Program will create pathways to tell more honest and complete histories of cultural heritage and build more equitable and sustainable futures. The time for reimagining systems is now. How will you answer your call?

### SUSTAINING THE CLIMATE

#### **A Passionate Path: FAIC’s National Heritage Responder’s Work in Protection and Recovery of Cultural Heritage**

Ann V. Frellsen, Holly Herro, Vicki L. Lee

In celebration of 50 years of the Foundation for Advancement in Conservation (FAIC), the National Heritage Responders (NHR) History Team is recognizing and honoring one of FAIC’s many significant contributions to the field of conservation. FAIC and NHR, along with national and international partner organizations, have developed and professionalized heritage protection and response.

In the spirit of the Monuments Men and Mud Angels, NHR is comprised of devoted volunteers with the mission to assist cultural institutions and collections affected by various types and sizes of emergency situations. FAIC and NHR’s histories are interwoven with cooperative institutional and personal relationships, sharing a common goal of successful disaster protection and response.

FAIC has provided a strong base for NHR’s activities through grants, staffing, and training. Given the significant increase in devastating climate events and social unrest, it is timely that FAIC provides the needed cooperative and organized training and response structure. FAIC establishes the framework for team deployments by documenting their work, providing remote support

and emergency supplies, and offering relevant workshops and lectures before and after disasters. NHR team members, supported by FAIC staff, the Emergency Committee, and NHR Working Group, developed the Disaster Wiki and Disaster Recovery Tip Sheets, and disseminate information to colleagues and the public.

Consistent training began in early 2000s with AIC’s Collections Emergency Response Team. Later renamed National Heritage Responders, the team includes conservators, archivists, collection managers and allied professionals, bringing together diverse and complementary backgrounds. Many programs have been created through the dedication of NHR members, contributing expertise through local, regional, tribal, state, federal, and international organizations.

Working cooperatively with first responders, community groups, and other volunteers, FAIC continues its educational commitment to protecting tangible heritage. NHR members are devoted to teaching their specialty at every opportunity, tailoring programming to address the specific needs, interests, and capabilities of regional and allied groups, organizations, sites, and the public. Together NHR and FAIC are core to forming and training national regional disaster groups; developing cultural resiliency programs, disaster plans, and training materials; and are expanding the NHR team to replace retiring members, grown from 100 to nearly 200 professional members.

During disasters, FAIC and NHR team members respond to minor and major catastrophic events of all types. Large scale, team-wide responses have addressed the needs of hundreds of institutions, including after the 2010 Haiti earthquake, 2012 Superstorm Sandy, 2017 Puerto Rico hurricanes, and 2022 Kentucky floods. NHR has salvaged all types of collections and developed Collections Recovery Centers to assist local communities in recovery of affected materials. Many NHR volunteers have developed continuing, supportive relationships with recovering institutions and individuals.

The NHR team’s passionate commitment has resulted in a unique and successful subspecialty, worth chronicling, especially as FAIC governance transitions and the NHR team expands. This presentation examines NHR’s history and current activities in conjunction with FAIC to improve cultural heritage resilience through community building, partner networks and advocacy.

#### **Virginia’s Tangier Island History Museum: Rising Waters**

Heather Parks

Tangier Island, VA, is a 3-mile-long island in the Chesapeake Bay with the highest point being 3 feet above sea level. The Tangier History Museum and Interpretive Cultural Center is not in that lucky spot. The island is made of about 400 crabbers and has a moderate tourist industry. Despite a not having a grocery store, doctors or dentists, Tangiermen are proud of their heritage as having come to America with John Smith, joining the Pocomoke Indians. The island is reachable only by boat or plane and is listed on the National Registry of Historic Places. Resources are limited, and the island as a whole is having to consider their future there due to climate change and erosion. Reports claim it has already lost two thirds of its land mass.

The Tangier History Museum is made up of donated photographs, documents, maps, memorabilia and tools for household and the water industries. The entire collection is donated from island families and stems from their own interest in preserving their history.

A risk analysis for the museum would certainly contain rising sea level and hurricanes. While regular tides don’t reach the museum interior, Hurricane Isabel pushed water into the back office. Tactics such as not having collections on the floor, a new roof and dehumidifiers have been addressed, but the future will likely require having duplicates on display with originals safely on shore, or possibly even transferring the collection as a whole to another location on the mainland. As a Tangierman myself, hearing other options from the conference attendees would be most welcome.

# OPENING GENERAL SESSIONS | CONCURRENT SESSIONS

## Water and Memory in the Lowcountry: Launching the Lowcountry Alliance for Response Network

Kimberly Roche, Patricia Smith, Cashion Drolet, Georgette Mayo

The rich history of the South Carolina Lowcountry is preserved not only within its many archives, libraries, museums, special collections, and historical societies but also through its cultural landscapes, historic and archaeological sites, neighborhoods, and tribal and historic communities. These sites and collections can be utilized to study everything from the Lowcountry practice of sweetgrass basketry to evolutionary biology as a function of climate change. However, the impacts of climate-related disasters on coastal communities increase in frequency and intensity with every passing year. This is especially true for the Lowcountry, where the ever-present threat of coastal erosion, sea level rise, and tidal flooding can easily threaten and overwhelm this low-lying landscape.

The Alliance for Response (AFR) initiative, generously supported by the Foundation for Advancement in Conservation (FAIC) and the National Endowment for the Humanities (NEH), provides a flexible model which can be adapted for region-specific considerations. The Lowcountry Alliance for Response (LAFR) network must be developed to meet the unique demands of the Lowcountry where the daily threat of tidal “sunny-day” flooding compounds the annual threat of tropical systems and storm surge, and with a vast number of historic sites and cultural landscapes outside the typical “institutional custodian” structure that contribute heavily to the Lowcountry’s unique culture and sense of place. The negative effects of climate change on the cultural heritage sector are of grave concern as heritage custodians are continually asked to undertake more responsibilities with fewer resources. Furthermore, marginalized communities are even more susceptible to loss of their material culture and heritage from environmental impacts and commercial development.

LAFR held its Kick-Off Forum on June 21, 2022. The steering committee was comprised of Clemson University’s Warren Lasch Conservation Center, Avery Research Center for African American History and Culture, Charleston Library Society, City of Charleston’s Emergency Management Division, Drayton Hall Preservation Trust, Historic Charleston Foundation, Gullah Geechee Cultural Heritage Corridor, and the South Carolina Historical Society. Ultimately, LAFR will aim to increase preparedness and resilience of cultural assets in the Lowcountry by fostering local connections with emergency responders, supporting organizations in writing emergency plans and training staff, and advocating for inclusion of historically excluded stakeholders. With a regional focus, LAFR can better tailor the network to address regional threats and risk factors as well as provide stronger connections between local first responders, emergency managers, and heritage custodians who must be working cooperatively in a time of crisis.

## Climate Smart Planning for Cultural Heritage: Building Resilience in a Changing World

Tatiana Ausema

As energy costs rise and natural disasters become more frequent, conservators and other cultural stewards face an enormous task: to anticipate operational, physical, and financial impacts of climate-related events on their institutions, while also reducing their own impact on the environment. This effort requires bold action and leadership at all levels, from public-facing staff and volunteers through board members.

This talk presents a framework for how conservators and cultural organizations can incorporate climate resilience into strategic planning. It is based on work being done in the private and government sectors, and informs a new grant program at National Endowment for the Humanities: Climate Smart Humanities Organizations.

Climate Smart strategic planning centers around two related principles: mitigation and adaptation. Mitigation focuses on reducing greenhouse gas emissions or an organization’s overall carbon footprint. For a museum this will likely include an energy audit of the building and systems, waste streams associated with visitor services and exhibitions, and operational assessments such as the

impact of loans and transportation. These assessments would then inform a high-level climate action plan that identifies operational and physical changes required to meet emissions targets and lower environmental impact, and also the resources needed to make such changes happen.

Adaptation involves studying climate-related risks and developing measures to reduce vulnerability from extreme climate events. Activities might include working with local experts to identify projected risks of floods, fires, storms, or drought; enhancing emergency response plans; comparing cost estimates for renovation or new construction; and partnering with the surrounding community to prepare for and respond to emergency events. A robust climate adaptation plan provides a roadmap for anticipating future events and prioritizes actions that protect human life, collections, and daily operations.

Conservators and the conservation community are a crucial partner in both developing and implementing these climate resilience plans and assessing the impact on both operations and cultural heritage. Conservators in private practice can support clients in the development of similar plans, while institutionally-based conservators can advocate for community- and collection-centric approaches to resilience plans.

## Concurrent General Sessions

### A: BEYOND NEUTRALITY: CONVERSATIONS AROUND COLLECTION CARE AND SUSTAINABILITY

#### The Time For Talking Is Over: Stop Talking and Start Doing

Lorraine Finch

Why are we continuing to talk about sustainability but not taking action? In the words of the Head of Conservation at a UK National Museum, ‘sustainability is important but not urgent’. I will issue the challenge to why this is still the prevailing view in spite of all of the scientific evidence and the reality of extreme weather events occurring across the globe.

We will begin with an overview of the current situation with the climate and environment crisis using trusted data to outline the urgent need to take action. Using case studies from cultural heritage sites and collections globally I will highlight the damage and loss that is already occurring to heritage. Drawing on never before seen research I will examine the blocks and pain points as identified by cultural heritage professionals which are preventing climate and environmental actions from being taken.

Recognizing that being challenged is uncomfortable ‘The Time For Talking is Over’ will encourage reflection by asking what we can do. It will provide motivation and inspiration to take action by giving examples of successful sustainability actions taken by cultural heritage organizations, showing their impact in reducing carbon emissions and reducing energy costs. It will outline what we can do now.

This will be a call to action, empowering you to take action by providing practical examples of what you can do to reduce the impact of your work on the climate and the environment. Although the current situation is ‘Beyond alarming’ (Sir David Attenborough) it is our power to make a difference. The latest research shows that all the solutions to the climate and environment crisis exist. All we need to do is to stop talking and start doing.

#### Convincing the Right Audience

Christopher Cameron

There is a lot of buzz around “going green” and becoming more sustainable. Many institutions are focusing on what they need to do to reduce carbon emissions, energy consumption, or improve the collection environment. However, focusing on selling the project can be just as difficult as completing the project itself.



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Institutions are continuously attempting to implement recommendations that have been provided by consultants or advisers for their facility. While the institution focuses on the primary recommendations, many are not certain how to convince their entire team of the importance of the project. For every project there are audiences, both internal and external, that preservation professionals need to prove their case to. Whether it is a granting agency, a donor, institutional administrator, or fellow staff members, moving a project forward is all about 'selling' the project.

This presentation will outline the barriers that institutions can face and methods to overcome those barriers. Whether the barrier is an internal lack of education on the project, poor 'marketing' of the project or identifying and convincing funders, this presentation will provide methods and strategies that can be implemented to help take a project from planning to completion.

### **Neutrality is a Delusion: Museums Have to Face the Realities of the 21st Century**

Anna Krez

#### **A: PRESERVING THE LEGACY OF HUMANITY: WHAT IS IT THAT WE WANT TO PRESERVE?**

##### **The Cause Lies in the Future**

Stephanie de Roemer

The quote 'the cause lies in the future' by the German Fluxus artist Joseph Beuys (1921 – 1986) and the Austrian American cyberneticist Heinz von Foerster (1911 – 2002) will serve as an opening paradox and invitation from which to explore the statement and query: 'preserving the legacy of humanity: what is it that we want to preserve?.'

Utilising the field of cybernetics and concepts of the paradox, circularity, and self-referentiality to evaluate empiric and heuristic knowledge gained from 20 years of experience in the conservation care of objects ranging from Ancient to Contemporary World cultures, will investigate the endeavour and objective (telos) of conservation itself. Joseph Beuys' artwork '7000 Oaks' (1982), will serve to demonstrate the Aristotelean concept of 'dynamis' - the potentiality of 'unfolding/ becoming' - set in motion by the energy that comes from the future - inherent to conservation's objective to: 'preserving the past for present and future generations'.

Observed commonalities through an 'archaeology of dynamics' obtained from this broad field of encounters of and care for humanity's diverse cultural tangible heritage in the context of re-occurring (environmental and societal) cycles and patterns of natural disasters, pandemics and conflict, provide an emerging narrative of humanity's ability of adaptation and assimilation to such continuously changing environment and conditions and advocate for a legacy beyond 'hope' towards 'agency'.

In the context of conservation of cultural heritage and the question of what it is we want to preserve, the focus will be shifted away from particularly Western industrial and capitalist notions of value connotations attached to media and materiality of objects, and instead will be directed towards the role and value of sustaining underlying dynamics that not only facilitate and make tangible acts and practice of informed decision making towards preventive conservation strategies, care and philosophies, but also determine quality.

Relating these conservation dynamics directly to the United Nations framework for Sustainable Development and adopting the 17 Sustainable Development Goals therefore as the objectives of heritage conservation, and placing the human at the heart of these dynamics as an agent for cause, way and reason for humanity's legacy and its preservation, invites to re-consider the question and outcome of 'what it is we want to preserve' from one of conservation as 'a means to an end' - to imagining 'how' conservation can be the dynamo that animates and facilitates people and partnerships as that that sustains our ability to care and create in anticipation of the future.

### **Climate Change and Cultural Landscapes: Resource Management in the South Carolina Lowcountry**

Patricia Ploehn

The Lowcountry region of South Carolina is comprised of a variety of cultural landscapes, each with their own unique blend of natural and cultural resources. These resources embody the heritage of the region, serving as both tangible and intangible markers of the communities who historically shaped the landscape of the Lowcountry and continue to inhabit it today. Many of the landscape resources found in the Lowcountry are intrinsically viewed as both natural and cultural resources. Extant rice fields lining the coastline where enslaved people facilitated the production of South Carolina's colonial cash crop now serve as integral freshwater wetland habitats for endangered waterfowl species. Longleaf pine forests restored by conservation organizations not only provide vital habitats for threatened species, but also show cultural shifts in land use and agricultural practices. However, environmental data collected in recent decades has shown that climate change has had a negative cumulative effect on the continued conservation and protection of cultural landscapes and their resources in the Lowcountry. Coastal ecosystems have been severely impacted by rising sea levels, intense storm events, and a higher frequency of annual flooding.

All of these factors have, for example, resulted in an increase of saltwater intrusion into tidal wetlands, which in turn have begun to migrate into freshwater systems that cannot handle higher salinity ranges. This is further complicated by the presence of both upland forests and manmade infrastructure that forms a boundary between the coastal wetlands and more densely populated rural and urban settlements. With migrating tidal wetlands on one side and a hard infrastructure boundary on the other, freshwater systems are forced to either adapt to new salinity levels and invasive plant species or encroach on upland forest areas that have their own environmental resources to balance and maintain. The loss of freshwater wetlands and upland forests concurrently results in the loss of cultural resource features that tie the land to its own heritage.

Protecting cultural landscape sites in the Lowcountry from the impacts of climate change involves looking into the resource management practices of both public and private organizations who own and operate cultural landscapes in the region. The ways in which resources are identified and managed by professionals in the field directly influences how organizations respond to climate change impacts on those resources. Examining the relationships between public and private organizations conserving and managing land in the Lowcountry is beneficial for the entire cultural heritage field. Mapping patterns of climate change on individual sites can result in aggregate data showcasing widespread impacts on Lowcountry cultural landscapes. Collaboration within the cultural heritage field can result in more substantial responses to threatened heritage. As the environment rapidly changes and development transforms the land, the cultural landscapes of the Lowcountry serve as the last bulwarks protecting the collective history and heritage of the area. If the tangible heritage found on Lowcountry cultural landscapes disappears, then the intangible heritage of the people and culture will not only be negatively impacted, but ultimately lost.

### **Rescuing "The Life Scrolls" & Remembering Florida's Fallen from WWI**

Ann I Seibert, Joanelle Mulrain

Riverside Memorial Park, Florida's World War I Memorial in Jacksonville, FL, opened on Christmas Day in 1924. As a result of the CAT 3 Hurricane Irma in the Fall of 2017, the riverfront Park's six acres sustained more than four feet of water from rain and storm surges from the St. Johns River. Once the water receded, most of the Park's original concrete balustrades were broken, and the force of the water destroyed much of the bulkhead. The water was present under the esplanade for a significant period. A bronze plaque on the esplanade indicated where a 1924 "bronze" box (later found to be copper) was interred as a time capsule. This box held a precious historical document. According to the Park's Dedication Ceremony program, there were scrolls made of "parchment" (found



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to be English watermarked paper). The names of more than 1,220 Floridians who fought and died in the Great War, The Florida Fallen, were written in calligraphy with black India ink.

In 2018, the Association voted to unearthing the box in honor of the 100th commemoration of the end of WWI. In partnership with the City of Jacksonville, the capsule was located by ground-penetrating radar, and shoveling began. "Tink!" The capsule was located and transported with honor by the Jacksonville Fire Department to the Museum of Science and History, where it was opened during a press conference. The concrete around the iron-soldered-shut copper box had to be chipped away. Once a seam in the end wall of the box was carefully opened, a smaller lead box appeared. Orange water slowly seeped out, indicating the waterlogged contents included rust and sediment. The corroded boxes were taken immediately to the St. Augustine Lighthouse & Maritime Museum, nationally recognized for underwater archaeological restoration. The work to recover the box and scrolls was carried out in the Conservation Lab, often with an audience of the public visiting the Lighthouse.

The two boxes, the inner copper box and the outer lead box were stabilised using marine archaeological techniques and then sealed with wax. The six pages of the wet, rolled and slumped scroll pages were separated, flushed with water to remove a red clay-like deposit, and each sheet reassembled, with many fragments strained from the water that flowed out of the box, put back into place like a giant puzzle.

A research project, parallel to the conservation effort, presented the names as the "Florida Fallen" on the Park's website for family members to submit photos and memorabilia to tell the stories of those who were lost. Nearly 1,800 Floridian's names are now on the website, added by a history professor researching additional sources. The "Life Scrolls" is a travelling exhibit that tells the story of the time capsule's unearthing and the subsequent recovery of the documents. Today, the six scrolls are framed and stored in drawers in the Florida Room at the Jacksonville Main Public Library.

### B: EMERGENCY RESPONSE

#### Disaster Response in a Rural Sacrifice Zone (Lord Willing and the Creek Don't Rise)

Alex R. Brooks

On July 28th 2022, Eastern Kentucky suffered widespread flooding unprecedented in living memory. Raging water swept down narrow mountain canyons, carrying debris, cars, sheds, whole houses and bridges. Homes were destroyed, many families' entire possessions destroyed, and at least 40 lives lost. The creek through Whitesburg Kentucky normally runs 1-2 feet. Normal flood stage in Whitesburg is 10 feet and the previous devastating record in 1957 was 14.7 feet. The 2022 flood reached 20.9 feet.

Alongside the human tragedy, the Appalshop archive was also covered in 6.5 feet of water. They faced an overwhelming task of saving their collection while their neighbors navigated the intense emotional and physical pressures of an unprecedented disaster in a rural area. While families shoveled feet of mud from their living rooms, dragged their waterlogged possessions into front yard piles rivaling the homes they had filled, Appalshop's staff and volunteers struggled to save the collected heritage of their region.

Appalshop is a 53 year old media creation center whose archive housed over 24,000 items: thousands of 16mm film reels, open roll audio, and many types of audio and video cassettes - a survey of every media format from the last 50 years, and important collections of still photo negatives and prints. While they had planned for a disaster worse than any previous flood - perhaps 1 or 2 feet above the last record - they never imagined this; approximately 80% of their collection was completely under river water containing mud, sewage, gasoline and other hazardous materials.

In the heart of an often ignored and maligned region, Appalshop is unique in giving the people of Appalachia a voice to tell their own stories. Their collection contain years of hard work to reframe a region and culture. Coal mining, synonymous with Appalachia, powered a good portion of America for the past 100 years but has left very little wealth in its wake. Beginning in the 1960's mountain-top removal has drastically changed the landscape of the region,

removing topsoil and plants and filling creeks with debris. This man-made environmental change, combined with the social impact of disinvestment in a sacrifice zone, makes a climate change fueled thousand year flood even more impactful, and makes it even more challenging to organize an effective disaster response.

My paper will describe the disaster response in the immediate days, weeks, and months after the flood waters receded. It will describe the immediate challenge of organization and planning in a rural area where resources were limited before the flood and increasingly challenging in the aftermath when potable water, cellular service, and air conditioning were unreliable or non-existent. It will describe the challenges of conserving a substantial and important collection containing a wide variety of materials including multiple forms of time-based media, paper and photographs. Finally this paper will summarize unexpected circumstances and lessons learned that may benefit the next disaster response in the Age of Environmental, Social, and Economic Climate Change.

#### Performing Arts Readiness: Bringing Good Disaster Preparedness Practices to the Arts Community

Tom Claesson

Performing arts organizations can be especially vulnerable to disasters and emergencies of all kinds, resulting in destabilizing or catastrophic loss of income and assets. As a service to these important community centers, places of business, and cultural anchors, the Performing Arts Readiness project seeks to empower arts organizations in their preservation and preparedness activities. The PAR project helps performing arts organizations nationwide learn how to protect their assets, sustain operations, and be prepared for emergencies, through a program of education, information, grants, and disaster networking. This session will focus on how the conservation community can work more closely with the performing arts community on preservation and disaster planning initiatives.

#### The Case of 100,000 Visual Memories: A Collection Casualty Is Turned into a Mass Digital Initiative

Karin Neander, Sara Ellenius, Teresa Mesquit

Nordiska museet in Stockholm, Sweden, houses one of northern Europe's largest cultural-historical photograph collections, comprising documentary materials, photographers' archives as well as collections from businesses, organizations, and institutions. Among this material are negatives from the late 1800s to the folkhem period, lasting into the 1970s, during which Sweden defined and solidified its welfare state ideals. Organized under such topics as urban and rural, work and leisure, cultural mores, as well as fashion photography, portraiture, and advertising, these represent an invaluable resource for the visual understanding of Swedish society. Among the most prominent photographers are K.W. Gullers, known internationally from the Family of Man exhibition and in Sweden for his depictions from the folkhem period and commissions for Swedish industry; Gösta Glase, known for his iconic mid-century images of Stockholm; Gunnar Lundh's massive archive of Swedish everyday life, politics, and travel from the 1920s-50s; and Sten Didrik Bellander, assistant to Richard Avedon in his early career, known for his portraits, commercial and fashion photography.

About 100,000 of ca 1 mill. nitrate and acetate negatives were drenched or otherwise affected by a water leak in the museum's negative storage in January 2021 and subsequently packed for frozen storage during the response operation. Planning for recovery commenced directly after the incident and a pilot project entitled 100 000 Bildminnen (100,000 visual memories) was developed to treat, digitize, and make widely accessible this invaluable material, nearly none of which had been digitized. The project components involved developing methods for thawing, separating, and drying film negatives in a variety of conditions and enclosures while ensuring in-process the transfer of existing archival information. Digital image capture was integrated into the

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backend of the treatment process to streamline the project, and the museum has partnered with KulturIT to develop a process for transfer of metadata, and to disseminate images from the project. Following a long period of planning and testing, a team of 9 project staffers were hired for the execution phase starting in September 2022, with expected completion during 2023.

While the water damage to this unique collection was hardly induced by climate change, the experiences and actions are much like those from climate-related flooding events. What are realistic outcomes in the mass treatment of 100,000 frozen negatives in the aftermath of such a water event? Working with a fixed budget from the insurance claim, the scope of recovery needed to be balanced against such line items as locale, equipment, materials, and staffing. Priority was given to base-line treatment measures so that the entire body of material could be digitized, largely leaving object-specific treatment out of the workflow. A visual atlas of damage, based on the damage encountered, provided aid in quick condition assessments prior to sleeving, which in turn provides basic statistical data on condition and impact of the incident in the museum's collection management database. Digital capture was streamlined with certain standardized settings but also included "gallery" overview documentation of each archive to visually represent the variety of formats. Lastly, a unique collaboration with Wikimedia Sverige features a selection of images to be used in crowdsourcing events, including writer's studios. One of the major takeaways of 100 000 Bildminnen is how these methods can be adapted for a realistic and efficient collection management praxis, and also serve as a model for other digital initiatives.

Current results from 100 000 Bildminnen can be seen on [DigitaltMuseum dig-italtmuseum.se](https://DigitaltMuseum.dig-italtmuseum.se) and on Wikimedia Commons [commons.wikimedia.org/wiki/Commons:Nordiska\\_museet](https://commons.wikimedia.org/wiki/Commons:Nordiska_museet)

### **B: REDUCE, REUSE, RECYCLE**

#### **A Conservator's Place in the Repair Revolution**

Shane Orion Wiechnik

The first Repair Cafe was introduced in Amsterdam in 2009 as an effort to engage with local level sustainability and waste reduction. The notion of engaging in a grassroots community focused repair effort has spread, and in 2014 we were involved in the introduction of the first Repair Cafe in Australia at The Bower Reuse and Repair Center in Sydney. Repair cafes, and the right to repair movement of the last two decades have been growing parts of an effort to combat climate change and over-consumption by reducing waste, increasing the longevity of objects with embodied energy from their making, and increasing the general knowledge of the public in regards to repair and sustainability.

Policy movements have been increasing in Europe based around the circular economy, the idea that challenges the notion of consumption. Traditionally, objects are made by consuming materials, and those objects end up in landfill upon completion of use. The Circular economy encourages ideas of repair, reuse, and resource recovery to keep those materials in the production and consumption model, thus reducing unnecessary carbon emissions and waste.

Often these policies involve regulations around the creation of new objects, with the focus on reducing planned obsolescence of objects and encouraging the reparability of new objects. Policies surrounding encouraging repair and maintenance of existing objects outside of the heritage sector are less common, and programs like repair cafe's are often entirely independent and volunteer focused.

The focus of this talk will be about the value conservators can add to this effort, and the place they potentially should have in an effort to both share knowledge about object preservation, and to actively engage in policies that support repair and object conservation efforts.

#### **Sustainability Tools in Cultural Heritage: Lessons Learned for Forward Thinking**

Sarah Nunberg, Matthew J. Eckelman

Through establishing and developing Sustainability Tools in Cultural Heritage

(STiCH) we have learned valuable lessons that we will share in this presentation. The 30,000 hits on the STiCH website demonstrate the appetite for guidance in effective sustainable choices. Overall, we have learned the benefit in providing specific direction towards sustainable practices that professionals can grasp and initiate. The STiCH Carbon Calculator look-up tool and Library of Case Studies provide data that guides and empowers professionals as they continue to explore and implement new, lower impact methods. In this talk we will reference the findings of the Case Studies and the guidance provided by the Carbon Calculator to illustrate our overall lessons learned.

STiCH was established in 2020 and it has become an international tool with plans for expansion. We have explored the environmental impacts of scenarios in six Case Studies: Comparison of Backing Boards on Paintings, Gloves: Nitrile to Cotton to Latex, Comparison of Fabrics for Lining Paintings, Anoxia: Storage and Pest Eradication, Crates: Comparing Single Trip, Round Trip, and Reusable Assemblies. We have built a Carbon Calculator that many professionals already depend on to determine the carbon footprint of their work and to discover more sustainable working methods. Conservation teaching programs have integrated our Tools into their curriculum and we continue to provide workshops and presentations globally. Our study results are often surprising, revealing the invisible impacts of actions or materials. STiCH acts as a decision tree, providing clear, easy to use steps in the Carbon Calculator and detailed explorations in the Case Studies. It helps establish baselines and shows the complexities in sustainable choices, leaving decisions up to the user. In this talk we will walk through the steps for using the Carbon Calculator and for understanding and implementing information provided in the Case Studies.

Through our project we have learned the importance in collaboration between fields to support sustainable practices. We will discuss lessons learned in creating effective tools for sustainable practices specific to cultural heritage preservation, and how the valuable, clear link between LCA methods and preservation practices provides a route for effective collaboration. Collaboration between these two specialties has opened the central question: "at what cost are we preserving our cultural heritage?" As conservators, we know that preserving our cultural heritage for future generations is sustainable at its core, and as we explore sustainable goals we emphasize that "green" practices are not about stopping work. Instead, informed choices and sustainable thinking improves professional methods, requires creative approaches, and reduces environmental impacts. Creative thinking is the core of conservation practices and integral to our work.

As useful as LCA is, it by no means provides an easy one-stop answer. Sustainability is a multi-pronged goal and conservators will achieve this goal and use their discoveries as they work to not only preserve our heritage but our planet.

#### **Future, in Flux: Conserving the Carnegie International (1896 to Present)**

Mary P. Wilcop

With the stated goal of promoting international cooperation and understanding, the Carnegie International is the United States' oldest ongoing survey of contemporary art. Since 1896, the Carnegie International has been hosted by Carnegie Museum of Art, aimed at bringing the best in contemporary art to Pittsburgh. Carnegie Museum of Art, originally founded as part of the Carnegie Institute by steel magnate Andrew Carnegie, was uniquely envisioned as a multidisciplinary space that could serve as home to art, music, science, and literature. Acting against the tradition of enriching the art museum with its founder's own holdings, Carnegie Museum of Art's collection was built from this annual survey, overseen by an advisory jury composed of artist peers. Initially focused on paintings alone, the exhibition's scope continues to expand to incorporate the ever-emerging practices of living artists including photography, sculpture, time-based media, performance, installation and site-specific works, off-site murals and conceptual projects extending beyond the walls of the museum and into the city itself. The Carnegie International has long served as inspiration for Pittsburgh's emerging art scene, while offering its participants broader and more global audiences.

The 58th Carnegie International (September 23, 2022 to April 2, 2023) provided an occasion to reflect upon Carnegie Museum of Art's legacy of conserving contemporary art, which dates back nearly to the founding of the museum

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itself. Bringing together nearly 80 artists and more than 800 artworks, this year's exhibition – like the many before it – featured primarily young and emerging artists pushing against boundaries of traditional practices while endeavoring to define their own practice within a larger institution. Limitations on travel and communicating across time zones amidst the Covid-19 pandemic compelled the museum's conservation, art preparation, and collections teams to think creatively and engage deeply with artist collaborators in order to present their works as authentically and safely as possible. This paper will discuss bespoke display strategies and preservation considerations that emerged from this year's exhibition, while also touching upon conservation challenges from the International's previous iterations. Topics include the need for various and adaptable pest mitigation solutions; supply-chain issues and resolutions; sourcing of exhibition materials both locally and abroad; replication of unusual display tactics of large-scale works on paper; and considerations around the importance of the conservation laboratory in cultivating feelings of trust between artist and institution. It will consider the International's future in the face of an ongoing sustainability crisis particularly as it pertains to the exhibition's inherent reliance on international shipping and loans. How can conservators, artists, and allied staff work collaboratively to shape a more considered International of the future?

### C: PHYSICAL PROPERTIES OF MATERIALS

#### Mammalian and Fish Gelatines at Fluctuating Relative Humidity

Karolina Soppa, Stefan Zumbühl

It is well known in conservation, that humidity influences the material properties in different ways. Karpowicz (1989) and Zumbühl (2003) have shown that mammalian collagen-based glue films continuously contract after humidity cycles. The induced stresses that can lead to cohesive peeling of paint. This paper explores the question whether fish gelatines, which are supposed to be more elastic, builds up less tension after experiencing high humidities.

The strain tests at constant stress load over 10 climate cycles by Zumbühl were reproduced for gelatine. The following adhesives were selected: A medium Bloom grade, 180 Bloom, type A (Roth), was used as a standard gelatine. Two fish gelatines were further investigated. One from warm water fish and one from cold water fish. Both were selected with a low degree of bloom. All aqueous adhesive solutions were prepared 12% per weight. Standardised films were produced with a film applicator (Erichson, width: 13 mm, wet film thickness: 300 µm) on melinex. Subsequently, the films were dried 14 d at 21±1°C and 50±3% relative humidity. The films were measured in a specially manufactured PMMA climate chamber. The mechanical tests were performed using a tensile testing machine (Zwick 1120, test expert) at a constant force of 0.1 N. After preconditioned at 53% rH (saturated salt solution, magnesium nitrate, Mg(NO<sub>3</sub>)<sub>2</sub> 6 H<sub>2</sub>O), 10 climate cycles were recorded. Each climate cycle lasts 24 h (humidification: 9 h at 75% using a saturated NaCl solution, Drying: 15 h at 53%) at a constant temperature of 21±1°C.

Basically, polymer films show a characteristic behaviour in changing climates. During humidification, the films expand due to the swelling of the material. During the drying phase, the films contract again due to the desorption of water. However, it can generally be observed that the film dimension no longer corresponds to the initial length after a measuring cycle, which is due to internal, structural changes. Here, two processes run against one another. If the film is plasticised by water absorption, the film is stretched. If, on the other hand, a reorganisation of the molecular structure occurs during the moisture cycle due to the improved molecular mobility, then a smaller film dimension results after drying.

Mammalian gelatine: After the first moisture cycle, a considerable dimensional change of -1.3% was observed. After that, the dimensional fluctuation levels off. Within one moisture cycle, elongation and shrinkage is c.1.1–1.5%. The total contraction after 10 cycles was 1.2%.

Warm-water-fish gelatine: After the first moisture cycle, a dimensional change was observed as well, however, only -0.6 %. The total shrinkage after 10 cycles was 0.9 %.

Cold-fish gelatine: This material shows a completely different behaviour than the other two gelatines. Even with a very low application of force of 0.1 N the gelatine showed within four humidifications a plastic deformation of up to 14%.

The reason for the differences and finally the consequences for the conservators are discussed.

#### A Heated Situation: In Situ Monitoring and Humidification of a Wooden Altarpiece

Julia Brandt, Patrik Aondio, Paul Bellendorf, Alex Fröhlich, Theresa Hilger, Kristina Holl, Thomas Löther, Stephan Ott, Leander Pallas, Elise Spiegel.

The global climate crisis is demonstrably leading to drier, hotter summers worldwide. This also affects the indoor climate of historic buildings. Whereas the relative humidity in these buildings in Central Europe tended to be too high in the past, but climate change is incrementing dry periods. The preservation of works of art in these buildings is thus an important, but yet largely unexplored field of research.

The sacristy of Freising Cathedral (Bavaria Germany) holds since 1495 a large-scale panel painting as part of an altar. The installation of a heating system and the construction of a drainage for some of the walls resulted in lower relative humidity and increased damage to the paint layer since the middle of the 20th century. As a consequence conservation treatments had to be carried out at ever-shorter intervals. The support has shrunk to such an extent that it is no longer possible to consolidate flaking paint without taking out material. The progression of this drying-related damage anticipates the consequences of the climate crisis for the interiors of historic buildings and impressively demonstrates the challenges the preservation of cultural heritage will be facing in the future. In the light of rising energy prices and the need to save energy, conventional air conditioning of historic rooms is increasingly utopian. In 2021, the Bavarian State Office for the Preservation of Historical Monuments, the Technical University of Munich, the University of Bamberg (Kompetenzzentrum für Denkmalwissenschaften und Denkmaltechnologien KDWT) and the company Care for Art initiated a research project funded by the German Federal Environmental Foundation (Deutsche Bundesstiftung Umwelt DBU). The aim is to develop resource-saving methods to preserve artworks in their historical context even in drier climates. The Freising panel painting serves as a case study for the development of an in situ humidification method, which should subsequently ensure the necessary conditions for the preservation of the panel painting in situ without the use of additional energy. For the development of the method, it is first important to document the panel painting's reactions to changes in relative humidity as accurately as possible. An elaborate measuring system for recording the wood moisture, the surface temperature and the geometric changes of the support depending on the room climate provide for the first time detailed information about the behaviour of centuries-old panel paintings. At the same time, climate chamber experiments and computer-aided hydrothermal simulations make it possible to predict the behaviour of the artwork in different climate situations.

The lecture presents the setup and the installation of the innovative measurement system with a high-resolution structured-light 3D scanner, triangulation lasers, extensometers, time-lapse cameras, surface temperature sensors and wood moisture sensors. Special emphasize will be given to practical questions on how to fix the sensors to the painting. The initial measuring results presented will provide information about the behaviour of a complex system, such as a panel painting, in different climatic situations and lay the foundation for further measures.

#### A Case Study: Safely Transitioning Wooden Objects from a Tropical Region to a Controlled Museum Environment

Catherine Silverman, Jason Deblock, Amy Dowe, Mark Geist

The exhibition Bámigbóyè: A Master Sculptor of the Yorùbá Tradition, at the Yale University Art Gallery (YUAG), reunited more than thirty sculptures attributed to the workshop of Nigerian sculptor Moshood Olusomo Bámigbóyè (ca.



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1885–1975). Carved in most cases from a single block of wood, and sometimes decorated with pigment, these objects are highly responsive to changes in relative humidity (RH), with large fluctuations risking catastrophic failure. Wooden objects loaned by the National Museum, Lagos, Nigeria, a museum without climate control in a tropical region, included small Ère Ibejì (twin figures), verandah posts and monumental Epa masks over four feet in height. It was necessary to employ strategies to safely transition wooden objects from storage with high humidity to the controlled museum environment at YUAG.

This case study will present steps taken to mitigate damage including packing objects to minimize condensation resulting from temperature changes in transit; acclimatizing objects in a purpose-built sealed chamber where the RH could gradually be lowered; modification of the installation schedule to allow the maximum time for acclimatization; and narrowing the RH range in the exhibition gallery to lessen the drop in RH experienced by the loans from Lagos, while adhering to the loan requirements of other lending institutions. The decision-making process, based on research into allowable RH fluctuations for wooden objects will also be discussed.

This research may assist other institutions transporting objects between disparate climates.

### **D: CONSERVATION IMAGING IN THE AGE OF CHANGE, SPONSORED BY OPUS INSTRUMENTS (ATIK CAMERAS)**

#### **Beyond RGB for Documentation: A Spectral Image Processing Software for Color Accurate Object Documentation and Spectra Reflectance Estimation**

Leah Humenuck, Gabrielle Brogle, Susan Farnand, Olivia Kuzioy

BeyondRGB is a user-friendly, free, open-source imaging software which simultaneously enables the rendering of highly color-accurate images with the ability to estimate spectral reflectance curves. Together, the data are useful for assisting with monitoring object changes, such as before and after loan or treatment. It also operates in the workflow of conservation documentation, helping to identify areas of interest for further technical investigation. The input images that affords these abilities are captured using a conventional RGB camera paired with a dual-illumination scheme. These tools enable a simple six-channel spectral capture method we hope to popularize by demonstrating the accessibility and utility of the information provided after processing with BeyondRGB.

#### **The Politics of Digital Repatriation and its Relationship to 3D Imaging Sovereignty**

Brinker Ferguson

On July 31, 2012, the government of New Zealand passed the Rongowhakaata Claims Settlement Act, which returned ownership of the meetinghouse, Te Hau-Ki-Turanga, from the Museum of New Zealand Te Papa Tongarewa (the National Museum of New Zealand, “Te Papa,” for short) back to the indigenous iwi (tribe) Rongowhakaata. The outcome of these legal actions represented the first time in over 150 years that the Rongowhakaata iwi had full rights to Te Hau-Ki-Turanga, including all decision making power over the presentation, conservation, and interpretation of the meetinghouse. However, this return of ownership did not extend to all of Te Hau-Ki-Turanga. Since the 1860s, when the meetinghouse was first confiscated by British troops during the New Zealand Wars (1845–72), a number of its carvings disappeared, believed to have been sold off during the meetinghouse’s voyage. Rongowhakaata scholars have since been able to identify many of the missing pieces of Te Hau-Ki-Turanga, which ultimately ended up in collections abroad, including the National Gallery of Australia and the British Museum. However, due to the legal frameworks in these other countries, it appears unlikely, at least for now, that these carvings will be returned to the iwi alongside the rest of Te Hau-Ki-Turanga.

These ancestral carvings have thus become central to an ongoing dialogue

about ownership, representation, and stewardship between the Rongowhakaata iwi, Te Papa, and those international museums presently holding the carvings in their care. Over the course of several conversations, a compromise has arisen in the form of a “digital repatriation” initiative. In this instance, “digital” refers specifically to 3D digital capture of the meetinghouse and its carvings through photogrammetric or stereo-imaging techniques, and “repatriation” refers to the ownership of this imaging data, along with the return of the object’s museum records, exclusively for the iwi’s archives. For many museums around the world, repatriation is a controversial and politically sensitive issue that is nevertheless central to the process of reconciliation between indigenous communities and cultural heritage institutions. The concept of “digital repatriation” however, raises its own questions about its relationship to restitution. After all, how can one truly “return” something that in itself implies a potentially infinite number of (digital) copies? Does digital repatriation actually shift any real power to the iwi, or does it instead perpetuate an asymmetrical hierarchy that privileges the physical ownership of the objects over the cultural claims of the Rongowhakaata iwi? On its surface, digital repatriation projects cannot and should not replace claims for the physical repatriation of cultural patrimony, but the issues brought to the fore are more complex than a debate about the physical object versus its digital surrogate. This presentation will demonstrate how the more common approach to “digital repatriation” projects in the museum field are not working, and offer an alternative model through the 3D imaging project of Te Hau-Ki-Turanga as led by the Rongowhakaata iwi.

#### **Modifying a Smartphone for All-in-One Multispectral Imaging**

Sean Billups

Conventional systems for technical imaging for cultural heritage preservation require a DSLR, modified to remove the IR/UV cut filter, as well as a costly set of filters and tunable light sources. This system can easily cost several thousand dollars, and requires significant setup time, studio space, as well as technical knowledge and supporting hardware/software.

Smartphone photography has advanced significantly in the past few years, and this quickly-narrowing gap between full-frame and smartphone cameras prompted the initial question for this research: “is it possible to modify a smartphone to enable full-spectrum technical imaging?” The goal of this project has been to create an affordable, adaptable, and portable system for technical photography and multispectral analysis that also leverages a smartphone’s on-board processing power for computational imaging. To this effect, I have developed modifications for several smartphones: the Pixel 3a, which requires the removal of the integrated IR/UV cut filter, and the Doogee S61, which already includes an IR-enabled camera. Custom 3D printed cases were made to hold wheels for quickly switching between filters such as UV shortpass, IR longpass, polarized, and bandpass filters from 365-1040nm. Custom modules containing full-spectrum and specific-wavelength LEDs provide affordable light sources, and plug into the smartphone’s USB port. The low cost of the smartphone models, use of 3d printed components, and small 10mm filters lower the cost of a full multispectral imaging system from thousands of dollars for a DSLR setup to a few hundred.

In addition to its low cost, using a smartphone as the basis for an imaging system makes for a portable, rapid camera with a very small learning curve. A reference app developed for the smartphone lowers the barrier of entry for students and other professionals in the field by providing step-by-step instructions on performing different imaging techniques. The end goal of the app is to interface with a server for photo upload, conservation-specific photo editing, and various types of processing for computational imaging.

Possible applications of this system include equipping conservation students with their own multispectral cameras for instructional purposes, enabling private conservators without extensive resources to do technical analysis, and even providing conservators at large institutions with tools for rapid, on-site assessment to help inform further analysis, treatments, and preventive conservation. Increasing access to tools for technical analysis fundamentally benefits the field of conservation by informing professionals about condition issues and expanding the knowledge base of everyone working in cultural heritage preservation.



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### Under the Hood: Multispectral Imaging System for Historical Artifacts

Juilee Decker, David W. Messinger

MISHA (Multispectral Imaging System for Historical Artifacts), funded by the National Endowment for the Humanities as a Tier 2 R&D grant (PR-268783-20), offers an accessible, user-friendly system and software that can be used on small format historical documents, sheet, and leaf collections. Developed by Rochester Institute of Technology's Imaging Science, Museum Studies, and Software Engineering programs, MISHA provides a low-cost, low barrier-to-entry system for cultural heritage institutions to collect images of objects in many wavelengths of light as one solution for recovering obscured and illegible text on historical materials and to document current condition. Multispectral imaging (MSI) enables users to examine and deepen their understanding of artifacts in their collections and to document their condition, and to develop new knowledge about manuscripts whose erasures or earlier markings have been made visible or disclosed. As medievalists Melissa Conway and Lisa Fagin Davis noted in their September 2015 "Directory of Collections in the United States and Canada with Pre-1600 Manuscript Holdings," thousands of codices, leaves, manuscripts, and fragments are held at libraries, museums, and private collectors across the US and Canada. Unfortunately, while "traditional" MSI systems are very capable, they are very expensive, and require knowledge of image processing methods. Most libraries and museums cannot afford these systems, nor do they have the capacity to process the data. They are also beyond the reach of independent professionals. To mitigate this, we have developed a low-cost spectral imaging system with accompanying low-barrier-to-entry software.

For this talk we will provide an overview of the system-software dyad, drawing attention to its low-cost and low barrier-to-entry. MISHA consists of two LED panels, a camera, and two software applications: one to capture images by controlling the camera and LED panels; the other to process those images for analysis. The free, open-source, extensible software (available on GitHub) offers a simple interface and ability to process imagery with multiple algorithms, calibrate, and visualize the data by creating false colors images (from principal component transformation and other processing algorithms) for analysis to create a "new" image of the captured data, and thus potentially revealing an impression of previously illegible texts or drawings. Building upon results from users based at universities, museums, libraries, and archives across the United States (in NY, PA, CO, TX, OH, NJ, and MI), we will share the arc of improvements from proof-of-concept in 2021 to the current iteration, with attention to ease-of-use to unlock the potential "hidden" in collections and to provide useful context for condition reporting. With these tools, MISHA can assist with recovery and discovery of these texts and offers a valuable addition to the toolkit of conservators, curators, collections professionals, and scholars.

### Accessible, Adaptable Imaging for Ancient Color Research: An Online, Open-Access Toolkit

Suzanne Davis, Caroline I. Roberts

This paper describes a project to make research on ancient color accessible to a wider range of institutions and scholars. Funded by the National Endowment for the Humanities (NEH) and hosted at the Kelsey Museum of Archaeology at the University of Michigan, the project involved a large-scale technical survey of Roman Egyptian artifacts and the development of accessible color research protocols, now offered on a publicly available website.

The scientific investigation of color on ancient artifacts is already well-established; considerable research has focused on reconstructing the original color schemes of marble sculpture, understanding the materials and techniques of wall paintings, and exploring the artistic production of portrait panels in the Mediterranean world. Most of these studies, however, examine a small selection of artworks at large museums or research institutions, and they are usually conducted with the support of conservation scientists. Yet many institutions with smaller budgets and fewer staff also have important collections of ancient objects. They—and their affiliated researchers—often lack the equipment and specialized knowledge to conduct this type of research, limiting what we can learn about the colorful material culture of antiquity.

To help address this problem, conservators at the Kelsey Museum proposed and were awarded an NEH grant to develop accessible color research protocols and offer them in an online toolkit. The toolkit features a range of color investigation resources. These include non-invasive, imaging-anchored research protocols; pigment and dye identification flowcharts; case studies; and an annotated bibliography. The project's goal is to make technical color research more accessible to non-specialists—primarily humanities researchers outside the cultural heritage field—and the protocols have been successfully utilized by undergraduate and graduate students as well as faculty specializing in archaeology, art history, and materials science.

The protocols were developed and tested in the context of a large-scale, technical survey of 150 Roman Egyptian artifacts in the Kelsey's collection. This scale of research necessitated streamlined workflows to enable rapid acquisition and interpretation of large datasets. In addition to utilizing relatively inexpensive imaging equipment, participants relied on widely available, commercial platforms like Adobe Photoshop to carry out image processing. The toolkit provides tips for how to adapt research workflows toward a desired outcome, whether it is quick data interpretation or eventual publication of calibrated images.

Another important outcome of this research is the data that were gathered from the Kelsey Museum's objects, most of which have excavation provenance from the sites of Karanis and Terenouthis, Egypt. The archaeological contexts of most of these objects were domestic, and most of the artifacts would also be described as 'everyday material' from antiquity. This kind of material—tools, toys, clothing—is rarely given the same level of research attention as artwork. In this way, our project aims to expand not only the range of people who can benefit from studying ancient color, but also the types of artifacts that can be studied, leading to an expanded and enriched understanding of our ancient, colorful past.

### Standardization of Multiband illumination for Conservation Documentation

Scott Geffert

Several years ago, the Metropolitan Museum of Art Imaging Department set a goal in conversation with the Conservation community of the Museum to roll out ICC calibration and ISO 19264 (objective scene-referred) workflow across all Conservation departments. The primary focus was to bring the various departmental imaging efforts into better alignment. While that work continues to this day, the primary focus of ISO 19264 is best practice for digitization of reflective originals under visible illumination. During the course of working with our conservators it became clear there was growing interest in multiband documentation imaging. Its commonly the case that cameras, filters, software and illumination sources vary across conservation labs, and targets have not been standardized for use in imaging beyond visible light. While over time, great progress has been made to align equipment and capture workflow for visible light imaging, standardizing the lighting equipment for visible imaging and especially UV and IR presented challenges:

- Inconsistent Spectral Output (Daylight, Visible Light and infra-Red Light)
- Inconsistent Form-Factor/Geometry
- Lack of Portability
- Cost and Accessibility/Sustainability
- Inconsistent Daylight Viewing Quality

Inconsistent illumination has a negative impact on the quality of Conservation documentation and productivity suffers as conservators struggle with uniformity and consistency, especially when photographing artworks over time during different stages of Conservation. While profiling and flat-fielding techniques can help resolve some issues for visible light imaging where we can rely on objective validation techniques, they are less successful for UV and IR imaging where standards do not yet exist. Consistent staff training is also difficult when equipment varies.

To address the shortcomings outlined above, we set out to create a practical-affordable light source design specification and prototype in consultation and testing with our Conservation and Science departments. The general specification of the light sources are as follows:

- Energy Efficient LED Based

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- Three-Channels:
- UV (465nm) iIR (950 nm) and broad-spectrum high CRI D50 Daylight (ISO 3664-200)
- Compact-Low Profile 24" Linear Fixture with a standard 5/8" Female Stand Mount (yoke)
- Unique Rotating Design maintains uniformity and geometry
- 12V 110/220V International power supplies (Can run on 12v DC Battery sources)
- Designed using 3D printed parts and off-the-shelf components

This presentation will document the early design and testing work that led up to the current prototypes that are now rolling out across our multiple Conservation departments at the Metropolitan Museum of Art as well as external parties for real-world testing and feedback. We feel that the AIC community will benefit from the work we have completed to date, and involving more parties to evaluate these working prototypes will accelerate the refinement of this specification to a standardized open specification.

### E: OBJECTS AT RISK/MAPPING

#### Challenges of Sculptures Conservation in Outdoor: The Manguinhos Historical Architectural Nucleus

Sarah C. M. de Sequeira

The medicine doctor, bacteriologist and sanitarian Oswaldo Cruz (1872-1917) is one of the most important figures in Brazilian science, with great contributions to the eradication of diseases in Brazil, in which he contributed to planning and implementation of measures against yellow fever, smallpox, tuberculosis, and bubonic plague. In 1908, the Federal Serotherapy Institute, located at the Manguinhos farm (north zone of Rio de Janeiro), is renamed Oswaldo Cruz Institute, in honor of the hard work of the scientist and his colleagues, which gave them international recognition. In the 1970s, the Oswaldo Cruz Institute was renamed as Oswaldo Cruz Foundation (Fiocruz), which remains to this day, and this institution is a reference in teaching and scientific research, including leading the treatment of Covid-19 in Latin America.

One of the units in the Foundation is the Oswaldo Cruz House (COC – Casa de Oswaldo Cruz), responsible for preserving the institutional memory, safeguarding the immense documentary, photographic, audiovisual and museological collection of Fiocruz and the personal collections of many scientists who pass by the institution. In this collection, along the Fiocruz-Manguinhos campus, there are several statues with the objective of honoring and remembering the legacies of these scientists. Many of them are exposed to the open air and subject to deterioration resulting from climatological conditions and influences from external agents.

Therefore, this presentation focuses on the cultural assets exposed outdoors at the Manguinhos Historical Architectural Nucleus (which encompasses the Moorish Castle, a great symbol of science for the public health), selected for my master's research at Oswaldo Cruz House, and the problems related from their exhibition at external environment, where the conservation is a major challenge. In this space, the sculptures evoke the images of Cruz, Carlos Chagas (1879-1934), Sérgio Arouca (1941-2003) and Louis Pasteur (1822-1895). However, their exposure to the external environment makes them suffer directly from climate action and changes. Rio de Janeiro has an average annual temperature of 26°C, but it reaches over 40°C during the summer months. The average relative humidity remains between 77% and 80%. The objects are continuously exposed to solar radiation, vegetation and incidence of pests, which also accelerate degradation. In addition, the proximity to highways, the Guanabara Bay (which suffers from the dumping of waste), airports and shipyards, generates several pollutants that can be deposited in the collection due to the action of winds and acid rain.

However, considering the importance of the legacy of these scientists for the Brazilian population, it is necessary that these objects remain accessible to the public outdoors, being COC's task to outline strategies for the conservation of this important part of its collection in the external environment. Thus, this research includes the inventory of these objects, the monitoring of environmental conditions and their influence on the selected sculptures, which are part of the preventive conservation and risk management plan, identifying and

analyzing the risks for the collection exposed outdoors, considering the climate crisis that hits them directly. The author would like to thank APOYOnline, the Foundation For Advancement In Conservation (FAIC) and the Getty Foundation. (Funding information: Latin American & Caribbean Scholars Program)

#### CRSurveyor: Expanding Access to Digital Survey and Photodocumentation Tools for Cultural Heritage at Risk

Taylor A. Pearlstein

After Hurricane Katrina in 2005, federal agencies realized they lacked proper survey methods and tools, response strategies, and data sharing capabilities to evaluate historic properties damaged by the hurricane. They required an application with GPS positioning capabilities using geographic information systems (GIS) to record and map historic resources affected by the disaster, while also complying with the requirements of the National Historic Preservation Act (NHPA) of 1966. To assist with this task, the National Park Service's (NPS) Cultural Resource GIS Facility (CRGIS), with funding from the NPS Certified Local Government (CLG) program and a partnership with the National Alliance for Preservation Commissions (NAPC), developed a mobile and tablet-based geospatial application to fulfill historic resource field survey needs.

Following a trial run with Virginia's City of Alexandria, CRGIS created a prototype application to meet FEMA's survey needs and the NPS's data transfer standards called CRSurveyor. This web-based survey form was built to log information from intensive and reconnaissance-level field surveys for historic structures. Surveyors could document individual buildings by filling in data fields, from foundation to roof, using drop-down menus and comment fields. The application also allowed surveyors, using a mobile device, to capture and log photographs and attach important documents to the survey record while out in the field.

Following Hurricanes Harvey, Irma, and Maria in 2017 and Hurricanes Florence, Michael, and Typhoon Yutu, a partnership between the NPS State, Tribal, Local, Plans, and Grants (STLPG) and NAPC was extended to build out and further expand CRSurveyor access to several State Historic Preservation Offices (SHPOs) and Tribal Historic Preservation Offices (THPOs) for post-disaster survey and documentation. Over the past 3-4 years, states, territories, and tribes have voiced their needs and provided input to further improve the digital survey tool. This has resulted in the creation of user-friendly survey modules to record heritage beyond just historic structures, to include archaeology, a post-disaster survey tool, and a Spanish language option.

While the tool has developed over time to better meet the needs of grantees, the evolution of the project has raised important questions surrounding digital preservation, surveying, and imaging in the face of increasing natural disasters. Testing of the app is still ongoing with our grantees as disaster recovery continues, but we want to share some of the real-world successes and challenges we have faced thus far in regard to creating a standard survey tool in collaboration with agencies across all levels of government and bring to the forefront our continuing conversations around maintenance and sustainability of the digital tool as technology evolves. The tool has been designed in response to recent storms, but it is forward-looking in its intent to document heritage when the question is not if, but when, the next natural disaster will impact a community.

#### Protecting Public Art: The Future of Remote Risk Assessment and Mapping

Madeline Cooper, Nicole Grabow, Janae Huber

Public art collections across the nation are diverse in geography, administration, scale, and the artwork itself but they are bound by a common goal: to make art accessible to people moving through their daily lives. Ranging from small town civic monuments to large statewide collections, public art is located on federal, state, municipal, and transit property as well as in tribal nations. While their geographic diversity is part of what makes public art collections effective, it also presents challenges to emergency preparedness, mitigation, and response.

Risks vary across the country: while east and gulf coast collections are vulnerable to hurricanes and flooding, collections in the west and southwest are more

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at risk of damage caused by wildfires or earthquakes. Climate change increases the likelihood, frequency, and potential impact of these types of catastrophic events. Although emergency planning positively affects public art collections and their audiences, only 13% of programs surveyed by the Americans for the Arts in 2017 had an emergency preparedness plan.

One barrier to emergency preparedness planning for public art collections is a lack of resources that address their unique challenges. Tools and guides created for museums, libraries, and archives are not built for collections that span multiple facilities and the broad geographic area that characterizes most public art collections.

Protecting Public Art is an NEH-funded Research and Development planning project to develop a reproducible framework for remote risk assessment using Geographic Information System (GIS) mapping. The project is a collaboration between the Midwest Art Conservation Center and Washington's State Art Collection (ArtsWA) and, in this phase, focuses on artworks in six Washington State counties with plans to include the complete ArtsWA collection as well as two additional partner collections in the next phase.

The core of the project is the development of a remote risk assessment framework that will rely on information in an existing collection database (such as media, size, condition, and installation details) and combine it with hazard data available in GIS-based maps. Hazard data that includes for example earthquake, flood, and wildfire risk is publicly available for most of the United States, therefore, a risk assessment workflow that utilizes this data will be replicable by public art collections across the country. The goal of Protecting Public Art is to not only assist ArtsWA, but to also create tools to employ GIS-based data that are flexible and scalable for adaptive use by any public art collection. The preliminary risk assessment will be complete by the summer of 2023 and will be used to develop an emergency preparedness and response plan for ArtsWA that meets the challenges of a large geographic area and diversity of facilities in a changing global climate.

This presentation will share the work to date and the history of the project, including images of the mapping tools and overlays as well as the results of our public art survey; and it will outline the next steps and future direction of this research.

### **A Blueprint For Developing a National Projection of Climate Change Impacts on Cultural Property**

Charles Vörösmarty

Climate change constitutes a quintessential global challenge impacting many sectors of society and its supporting environment. While ongoing and anticipated changes to the climate system are global and long-term in their essential character, they also embody regional hotspots and hot moments. There continues to be great concern about the intensification of climate-impactful trends and extreme events, such as heat waves and drought, heat-related ozone and other air pollution phenomena, extreme precipitation, and flooding, damaging winds and coastal storm surges.

From an Earth Sciences perspective, these changes have been documented carefully through a well-established assessment process, globally represented by the sequence of Intergovernmental Panel on Climate Change reports and in the United States by the series of National Climate Assessments that appear every four years. This research lays the essential groundwork for the scientific veracity of climate change, while also presenting climate-related impacts with respect to societally critical services of economic importance, like food-energy-water sector reliability. Much less research has been directed to the issue of climate-change impacts on cultural heritage.

The development of a blueprint to map and anticipate the impact of climate change on cultural property is the focus of this presentation. Recent review (Sesana et al. 2021) of the factors that, at least in theory, can impact these cultural assets identify five key hallmarks of geophysical climate change signatures--changes in temperature and diurnal heat cycles, precipitation, relative humidity, winds, freeze-thaw patterns--plus derivative phenomena including elevated exposure to salts, biological growth, and airborne material erosion. Utilizing the decades-established technical capabilities from the climate and

Earth system science research community we can exercise models and analyze a broad suite of observational climate data sets (both in situ and remotely sensed), combine these with the position of cultural property, and thus make the climate threats to cultural property imminently mappable. Taking one archetypal form of cultural property that is in direct contact with the rapidly changing climate--historic monuments and buildings -- we present a set of provisional national-scale maps representing the conjunction of threats arising from the key climate change factors. We present contemporary to mid-21st century [2020 projecting to 2050, 2075] geospatial patterns of vulnerability and draw conclusions about the regions of the United States that are most or least threatened by imminent climate changes. With suitable refinement, these patterns could constitute the foundation for the proactive targeting of preservation interventions and funding aimed at preserving these threatened cultural assets.

### **Increasing HCC's Sustainability: The Overarching Theme for the New Research Strategy at the Heritage Conservation Centre in Singapore**

Christel C. Pesme

The paper will present the decision recently taken at the Heritage Conservation Centre (HCC) in Singapore to develop its new research strategy under the overarching theme of sustainability. HCC is the centralised repository and conservation facility for the management and preservation of the 230,000+ works -ranging from maritime archaeology to visual and decorative arts - that constitute the National Collection (NC) of Singapore. Its team of 35+ conservators supports the exhibition program of the 8 main Singaporean cultural institutions. Until recently and despite the regional context and climatic conditions, the recommendations applied to care for the collection were the ones elaborated for institutions in temperate climates and accepted as best practice. Considering the current global climate crisis and the increased concerns raised by the museums regarding the energy consumption and costs associated to the current environmental set points, it was urgent to reconsider HCC's care practices towards increasing its sustainability.

The paper will present the three directions of research currently developed at HCC under the overarching theme of increasing the sustainability of the institution and its functions. The definition of sustainability applied is the one proposed by Saunders (2022) in which five pillars -social, societal, economic, environmental and operational - are used. In such a model, the most desirable decision results ideally in having positive and optimal impact on the three first pillars while limiting to a maximum negative impact on the latter two.

The first direction of the research strategy focuses on the core function of HCC and aims to increase the sustainability of the applied Collections Care practices. The current effort to explore the use of a value-based method to implement a more sustainable storing and display strategy of the NC, especially considering the challenging regional climatic conditions, will be described. The system implemented since 2011 to classify the cultural value of the NC will be presented and the derived care decision framework applied at HCC described. It will be shown how this can help recontextualising the collection, developing its interpretation and increasing its cultural value.

The second direction of research focuses on investigating all possible means to increase safe access to NC while promoting its diversification to induce a shift in the discussion from "Access vs Preservation" dilemma towards "Useability as Sustainability" approach, as formulated by Nadal in 2021. Examples of using replica to present the work's intended "functions" while respecting its material integrity and historical value will be shared. Uses of other collection surrogates, documentation and/or data that permit to increasing work's cultural value will be mentioned.

The last research direction explores possible practices to ensure that HCC 's functions are sustained. Understanding HCC as an element of a larger professional ecosystem with roots connecting with the local network of private and public cultural agents in Singapore and branches reaching regionally and internationally, the benefits of using the model of permaculture to develop HCC's activity will be discussed along with its associated concepts such as interdependence, collaboration, circulation and integration.



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### F: EDUCATING THE FUTURE

#### **T/D/SIP-C: The Continued Evolution of an Introduction to Practical Conservation for HBCU Students and Recent Graduates**

Nina Owczarek, Joyce H. Stoner

In summer of 2017, '18, and '19, the University of Delaware (UD) and Winterthur Museum hosted a Two-week Introduction to Practical Conservation (TIP-C) to introduce HBCU students and recent graduates to the field of heritage conservation, developed in collaboration with the Alliance of HBCU Museums and Galleries and Yale, with support from the Kress Foundation. Since then, the program has gone through transformations into a distance-learning program and into a longer six-week internship in 2022. This presentation shares the background of the program, discusses its evolution through these renditions, and considers the future while applying some lessons learned.

In the United States, the demographics of conservation professionals is heavily white (European descent) and female, not reflective of national demographics. By having so little diversity in the field, we miss opportunities to have multifaceted understanding and interpretation of collections. To improve the balance in conservation's demographics, the UD summer program aims to inspire HBCU students to pursue graduate education in the arts, humanities, and, ideally, art conservation.

Initially, TIP-C focused on the examination and preservation of four dioramas from the Legacy Museum, Tuskegee University. These mixed-media (largely plaster and painted wood) dioramas were part of a series of 33 created in 1940 under the supervision of African American artist Charles Dawson to emphasize the contributions of Africans and African Americans to world culture. The dioramas deteriorated, requiring in-depth examination, stabilization treatment, and preventive care. An early programmatic goal of TIP-C was to conserve all of twenty extant dioramas so they could be exhibited together again while involving professional and aspiring African American art conservators as much as possible. Recently discovered hazardous materials in the dioramas have prevented continued work on them.

In 2020 and '21, the program became the Distance-Learning Introduction to Practical Conservation (DIP-C), forced on-line due to the Covid-19 pandemic. At the same time, we welcomed the Conservation Center at New York University as a new partner. The program focused on contextualizing the role of conservation while teaching preventive measures, conservation philosophy, and ethics. Hands-on activities were carried out through a combination of student-supplied artifacts and shipped materials.

After two years of distance instruction, the program transformed into the Six-Week Introduction to Practical Conservation (SIP-C), offering a one-week introduction and five-week conservation internship for four students. Additionally, we welcomed the Brooklyn Museum as another new partner. For this version of the program, after the first week together at Winterthur, two students interned at the Brooklyn Museum, and two interned at Winterthur. All four worked with faculty at NYU in a three-day reunion in New York mid-way through the program.

TIP-C/DIP-C/SIP-C provides students with an extensive introduction to the field of art conservation, actively intervening in an attempt to correct imbalances in the profession of art conservation. We believe that we are making inroads towards moving the needle to better representation.

#### **Dynamic Resources and Building a Community for Changing Times: The AIC Imaging Wiki and IWG Community**

Leah Humenuck, Adam Neese, Wendy Rose

The Imaging Working Group (IWG), an international community of people (conservators, photographers, imaging specialists, scientists, and more) interested in conservation and cultural heritage imaging, are working to develop a dynamic imaging Wiki and build a community as a useful and available resource for changing times. The Imaging Wiki, developed on the AIC Wiki platform, is an

ongoing project aimed to provide a free, user-friendly, online imaging resource for the conservation and cultural heritage community. With the help of dozens of volunteers, the wiki aims to be a dynamic knowledge repository to provide guidance on conservation and cultural heritage imaging for a range of users. Over the last two years the IWG has begun to create pages on the wiki covering a variety of imaging techniques, and it is currently refining and adding new information to them. The IWG is using the online AIC Community platform as a place to pose questions, post announcements, enhance connections, and encourage cross-disciplinary collaborations. The imaging Wiki and the IWG Community are continuing to develop and grow and the IWG is taking feedback to accommodate the conservation and cultural heritage community's needs for an available and dynamic resource for photo-documentation.

These resources are providing spaces for communication, connection, and collaboration to address the changing imaging related challenges of the community whether it is providing resources for a low-cost setup to face economic challenges or a workflow for documenting heritage at risk due to climate change.

#### **What Do You Need to Know? Re-Evaluating the Senior Capstone Course in the University of Delaware's Undergraduate Program and Thinking Towards the Future**

Madeline Hagerman

When I began teaching in the University of Delaware's art conservation program as an adjunct professor in 2017, one of my first classes was ARTC 495 - Senior Capstone in Art Conservation—a course I have now taught five times. Dr. Mariana DiGiacomo and I had been tasked with filling the considerably-large shoes of Dr. Vicki Cassman, who retired that summer after leading the undergraduate art conservation program for years. The capstone course aimed to prepare undergraduate students for conservation graduate programs, with topics from what to wear for an interview, to crafting the perfect personal statement—all useful things for students who wished to attend conservation graduate programs in the United States. However, many of our students do not attend an ANAGPIC school, going abroad for graduate school or discovering their passions lie in a related field. Schools across the globe are adjusting their admission requirements, distilling down the essential knowledge for conservation students. Over the years, I thought about how this course could better serve all undergraduate art conservation students. My first change involved broadening the scope to reflect key ethical conundrums within the art conservation and museum field, modeled on content from my own college seminar courses. In capstone, students still receive career advice, such as practice interviewing and CV-writing, but I shift the emphasis towards developing critical thinking, creativity, and communication skills, and most importantly, fostering student self-confidence. Students lead discussions on readings with topics such as the development and evolution of conservation ethics; replication and repatriation; authenticity and re-fabrication; sustainability, conservation and climate change; working with stakeholders; pathways to the conservation profession; and “botched” restorations and the public perception of conservation. Often, these discussions take up the full class as even the quietest students jump in with their ideas. As I adjust my course assignments and readings each summer, I think about a fundamental question: what do you need to know to start your career as a conservation professional? Dr. Joelle Wickens and Debra Hess Norris wrote in 2018 about the need for soft skill development in graduate conservation training. Since our field deems undergraduate students unqualified to practice interventive conservation upon graduation, should we instead also focus on the development of soft skills? Concepts such as time management, oral and written communication, teamwork, critical thinking, decision making, creativity, etc. are foundational in conservation. As I ponder these questions in one of the courses I teach, I also think about how we can shift our extensive coursework requirements to best prepare our students to start their careers. In the next year we will update our curriculum requirements to better reflect what a pre-program student needs to know in this watershed moment in the conservation field.



# Specialty Sessions

## ARCHITECTURE

### Camouflaged Concrete: Study of the History, Technology, and Deterioration of the Painted Concrete Sound Mirror, Il-Widna, in Malta

Naomi A. Ruiz, Chiara Pasian

The British came to Malta in 1800. During their stay, they built many militarist structures to protect this Mediterranean island. In the Interwar period (1918-1939), the British started experimenting with reinforced concrete parabolic sound mirrors to acoustically detect and relay the sounds of incoming enemy aircraft. In 1934-1935, they built a 200-foot-long strip sound mirror in Malta, Il-Widna, meaning “the ear” in Maltese. Il-Widna is only one of two 200-foot-long strip sound mirrors in the world and the only sound mirror built outside of the United Kingdom.

Il-Widna showcases how reinforced concrete enabled the use of diversely shaped structures as a specific scientific design and curvature were necessary for its function. Furthermore, to not be detected by aircraft, its painted camouflage needed to blend in with the earth-toned colors of the Maltese rural landscape. The painted yellow diagonal lines on the sound mirror faces resemble the lines of local yellow Globigerina limestone walls seen throughout Malta historically and today. This painted scheme has retained its authenticity, leaving it to be a prime example of painted camouflage in Malta and the only strip sound mirror in the world with such a surviving painted surface.

The significance, materiality, techniques, condition, and degradation phenomena of the painted camouflage surface and its relationship with its concrete support were unexplored before this study. In situ visual examinations and infrared thermography (IRT) were conducted to establish the original techniques and condition of Il-Widna. Afterwards, stratigraphic samples were taken and observed under a stereomicroscope, prepared into cross-sections, and analysed under a polarized light microscope (PLM). Five selected samples were then subjected to a scanning electron microscope (SEM), coupled with EDX analysis to study the elemental composition of each stratigraphic layer and paint. The results suggest that a hydraulic binder, possibly Portland cement, and local limestone aggregates were used in the concrete. The white layer found on both sides of the mirror touching the concrete is composed of calcium carbonate and was probably used as a release agent in the in situ concrete construction technique. Only the north face of the sound mirror has a grey sandy layer composed of a hydraulic binder and aluminium and silicon-based aggregates. The SEM-EDX mapping and point analysis results (coupled with a literature review) show that the five colored paints are probably cement-based paints with aluminium-silicon-based aggregates. The PLM and SEM-EDX allowed for various pigments to be identified, such as the chromium oxide green pigment, which aids in the argument that the camouflage paint was applied before chromium materials became restricted, i.e. at the start of WWII. This finding supports the hypothesis that the camouflage was original to the design of Il-Widna. The condition survey showed that the deterioration of the paints is occurring in relation to the materials, underlying deterioration of the concrete support, and locations on the long concrete structure, which is influenced by different environmental and external factors.

### Cleaning Woes - Challenges of Climate Change

Tania Alam

When done right, cleaning can greatly improve the appearance of a historic building. As a result, many restoration projects include a cleaning component. While cleaning may seem like a rather straightforward process, it requires attention to detail, more so now in the time of changing environmental regulations. In part thanks to rising climate change, and an increased need for sustainability.

What are some of the challenges that conservators have faced in recent times? One of the major concerns has been the formula change of cleaning agents without prior notice. A product that was tested a year ago may not be the same product that is purchased today. A product that was successful in previous

cleaning projects may no longer be in production. This is especially true for paint strippers that have undergone formula changes in recent years due to stricter environmental and safety regulations.

A product's effectiveness can vary greatly depending upon environmental conditions. Temperature and humidity can have a significant effect on the performance of a cleaner or paint stripper. Products that were effective when tested during cooler temperatures may be too harsh when used in warmer weather. Conversely, products that worked well when tested in warmer temperatures may not work as well in colder weather. This unpredictability is fueled further by the unpredictable nature of the effects that climate change has on temperature and humidity. Consequently, product amounts, methods of procedure, and project duration and budget can all be affected.

If attention is not paid to the on-going changes of chemical formulas and climate change, cleaning can go wrong, possibly causing irreversible damage to a substrate and a building's aesthetic.

What are the solutions to these challenges? Keeping up to date with the ingredients used in chemical cleaners and paint strippers is a good practice. No matter the past success of a cleaning product or the experience of the conservator or contractor, performing testing and mock-ups before any large-scale cleaning is undertaken is unnegotiable. Every time.

### From Sacred to Secular: Adaptive Re-Use of Religious Structures

Speakers: Stephanie M. Hoagland

People around the world are becoming less religious, whereas others are abandoning organized religion while retaining their spirituality. Shifting demographics in urban areas are leaving churches and cathedrals without the large congregations required to fill the pews. A number of churches in rural locations have been left vacant, open to the elements and vandals. These buildings are often beautifully constructed, historic structures which serve as landmarks for the neighborhood. They also often require substantial funds for maintenance and upkeep, which can be difficult to raise when the wealthy parishioners have passed on or moved away.

Although considered blasphemous by some, a change in use has allowed a number of these buildings to be preserved. It's not unusual to scroll through the Cheap Old Houses website and find an old neighborhood church converted into a luxurious home. Many larger cities have enormous cathedrals which have been converted into a gym or spa. For the non-religious, there seems to be something poignant about the conversion of a 19th century church into a library and community center.

This presentation will look at some of the innovative ideas for adaptive re-use that have been put forth as a way to bring these buildings back into use so that they can remain a vital part of the neighborhood. It will also review some of the challenges which arise from converting a religious space into secular or commercial usage including what to do with stained glass windows which focus on religious themes. Examples will include both a general review and a case study of 15 James Street in Newark, New Jersey, formerly known as the Second Presbyterian Church, which was recently converted into the national headquarters for Audible.com. The 15 James Complex consisted of three buildings which had been constructed at different times, in different styles, using different materials. The “Sanctuary” was constructed in 1932 in the Late Gothic Revival style after the previous church had been destroyed by fire; Hunter Hall consisted of the remaining three bays of the 1888 Richardsonian Romanesque church, was clad in brownstone, and served as a conduit between the Sanctuary and the Community Center. The five-story Community Center was constructed in 1929 of red brick with cast stone trim. The Sanctuary at the time of purchase was in poor condition with extensive areas of water damage to the faux Caen-stone walls from the leaking roof. Improper previous roof repairs at the Community Center led to an unexpected, and costly repair to avoid its collapse. A lack of maintenance at Hunter Hall resulted in stained glass windows on the verge of failure and in dire need of restoration. Preservation Architects, Engineers, Architectural Conservators, artists, and tradesmen worked as a team to ensure that the restoration and adaptive re-use of the “innovation cathedral” were a success.

### **The Conservation of Lockwood House and the Revision of Inadequate Project Specifications**

Speakers: Katey Corda, Hannah B. Leighner

EverGreene Architectural Arts was contracted by the National Park Service to stabilize the interior surfaces of the historic Lockwood House, located in Harpers Ferry, West Virginia, between 2020-2021. Encompassed by Harpers Ferry National Historical Park and overlooking the junction of the Shenandoah and Potomac Rivers, Lockwood House provides a glimpse into the United States' Civil War era. The house was built in 1848 as the home of the Armory Paymaster and was used as a hospital for Confederate, and then Union soldiers, and to hold prisoners throughout the Civil War. When the war was over, Lockwood House transitioned into a school for freed slaves as part of Storer College, one of the first colleges for African Americans in US history.

Lockwood House has been minimally altered since the closure of Storer College in 1955. Period wallpaper and historic paint layers remain in many of the rooms, as well as the original plaster layers dating to the mid-19th Century construction. Perhaps the most significant historical artifact maintained in the house is its collection of 19th- and 20th-Century graffiti, written and drawn directly on the finish coat plaster in multiple rooms. The graffiti is an invaluable record of Lockwood House's history and its variety of occupants, prisoners, and students, who contributed to a collection of drawings, calligraphy, and signatures that uniquely document a significant era of US history.

Lockwood House fell into disrepair over time, victim to water infiltration and poor maintenance which had resulted in severe degradation and loss of historic material. The collaborative project between the NPS and EverGreene aimed to preserve the interior fabric in its current condition, rather than attempting to restore it to any previous appearance. The project focused exclusively on stabilization efforts, using compatible preservation materials and methods for remedial treatments.

One of the largest challenges faced over the course of the project was that certain approaches as outlined for treatment and materials dictated in the project specifications proved to be unsuitable for the unique conditions encountered onsite. Adherence to those specifications would have damaged the historic material and rendered much of the historic graffiti virtually illegible. Working collaboratively with the National Park Service, the specifications were challenged and adapted on the spot, which is unusual for government projects. This presentation intends to address not only the specific criteria considered in the development of a unique injection grout material, but also the approach to successful revision of a project directive when inadequacies were discovered within the specifications.

### **Panel: Heritage Disaster Response – Lessons Learned and Paths Forward, with ASG and APT**

Moderators: Brooke Russell, Rachel C. Palisin; Speakers: Kelly Ciociola, Kim Roche, Patricia Smith, Craig Bennett

Disasters, whether small- or large-scale, threaten both cultural heritage and its supporting infrastructure. Stewards who typically plan and refine interventions cautiously must respond immediately to alleviate impacts not only to heritage collections, but the structures that house them and the myriad people involved with the site and its surrounding community. The session will focus on the differing perspectives of the multiple individuals who are involved after a disaster affects historic resource(s), highlighting issues requiring collaboration, common challenges faced, gaps in disaster response and preparedness, and how we may be able to better address them. Case study presentations from allied professionals who have been involved with disaster response and cultural heritage (architectural conservator, material conservator, structural engineer, curator/facility manager) will start the session, followed by a moderated panel discussion with the presenters, and a final open Q&A/discussion with attendees. As a collaboration between the Association for Preservation Technology (APT) and AIC/FAIC, we intend this session to generate connections and gather information to guide future programming.

### **BOOK & PAPER**

### **Conserving and Exhibiting NYPL's 1799 Copy of Albrecht Dürer's Triumphal Arch**

Denise Stockman

One of the largest prints ever made, Albrecht Dürer's Triumphal Arch is a wall-sized (about 10' x 12') architectural woodcut intended as imperial propaganda commissioned in 1515 to convey Emperor Maximilian I's magnificence and illustrious lineage. The 1799 printing was a re-print from the majority of the 190+ wood blocks, with a few lost or damaged blocks recreated as etchings. The New York Public Library's copy was on long-term display in the library's Astor Hall from the 1930s until 1984, when it was removed due to its "advanced state of deterioration." The muslin mounting onto which the over 80 individual pieces of the print were adhered was cut apart and the print remained in storage until 2019, when it was brought to conservation to be prepared for NYPL's Treasures exhibition.

Treatment included removing the muslin backing, washing, light bleaching, lining, and filling losses, including digital fills. In addition to preparing the print for exhibition, the goals of treatment included planning for ease of storage, accessibility, and digitization. The talk will also describe how the print was mounted, transferred, and installed into the main gallery of the Library's iconic 5th Avenue building for exhibition (short-term this time).

### **Finding the Forest Amongst the Trees: Unlocking the Hidden Layers of a Kashmiri Birch Bark Codex**

Mary French, Rebecca "Bexx" Caswell-Olson

When an exceptionally fragile 16th-17th century Kashmiri birch bark codex from the Chapin Library at Williams College was brought to the Northeast Document Conservation Center (NEDCC) for conservation and digitization, its contents were largely inaccessible. Each text leaf in the manuscript consisted of two to four layers of naturally and/or artificially laminated birch bark, and most leaves had moderate to severe delamination, creases, and loss. The leaves had long horizontal splits in the fore edge and sewing stations that made it impossible to open the text block without abrading vulnerable areas, and whole sections of the text block were crumpled, tangled, and interlocked together. Scholarly interest in both the unknown text and the understudied Kashmiri binding structure created a unique opportunity for a multidisciplinary project that integrated scientific analysis into the conservation and research process.

As a non-western binding structure rarely encountered by conservators in the United States, understanding the historical, cultural, and design aspects of the Kashmiri binding was an important part of creating an appropriate treatment plan. The task of recontextualizing this manuscript was of significant scholarly interest to The Book and the Silk Roads project, which also helped to coordinate the scientific analysis of the object. Radiocarbon dating established the age of the manuscript to approximately 1500-1640CE. Micro-CT scanning informed the conservation process by offering a rare chance to study the book's internal structure and original condition even in areas not visible to the human eye without disturbing the historic binding. To further assist in the conservation process, a binding model was constructed based on a study of the manuscript and a thorough literature review was also conducted to ensure that the treatment plan was culturally, historically, and materially appropriate. Following conservation and digitization, images of the manuscript were sent to an expert in the Śāradā script, who was able to identify the text and assist the conservator in determining the exact locations of loose fragments of text. Some fragments were able to be reunited with the main body of the text and the remainder were housed in a complex custom encapsulated post binding.

This paper will discuss how a conservation treatment plan was designed and carried out to restore access to the manuscript, address the logistics of managing a project with multiple institutional partners across two countries, and highlight the benefits of an interdisciplinary approach to the care and treatment of manuscripts.

## SPECIALTY SESSIONS: BOOK & PAPER

### **Ammonium Citrate as a Washing Additive for Paper**

Ute Henniges, Irene Brückle, Crystal Maitland, Antje Potthast, Theresa J. Smith, Philine Venus

Major goals of aqueous treatment in paper conservation concern reducing unwanted discoloration and improving paper permanence. Both goals are met in most established washing treatments that involve the use of mildly alkaline (deacidification) solutions with calcium compounds. Further brightening may be achieved by bleaching, though this more invasive treatment carries the risk of cellulose damage. Lately, ammonium citrate is being used by practitioners as another method of “enhanced washing”, viewed as a more powerful brightening agent than washing and less aggressive than bleaching. However, there are few studies backed with analytical data to clarify the chemical effects of ammonium citrate on paper’s cellulosic backbone. Some publications reveal the astonishing cleaning effect, while others warn against stripping calcium carbonate from paper, compromising its stability.

We designed an experiment with two historic papers and one laboratory filter paper that were immersed in solutions of 3% ammonium citrate (pH 5.5 and pH 8.5), and, for comparison, 3% citric acid (pH 2.5), ammonium hydroxide (pH 9.0), and calcium hydroxide (pH 9.0). One set of papers was washed exclusively in these solutions, the other subsequently received an alkaline reserve (calcium hydrogencarbonate). We determined the CIE L\*a\*b\* values for all samples before and after the treatment and after accelerated aging (heat-moist aging at 80°C and 65% RH for three weeks) to capture color changes. A selection of 36 samples underwent molar mass determination by GPC-MALLS-RI.

Testing revealed clear differences between the samples in contact with citric acid and ammonium citrate compared to the other treatment solutions. Specifically: Both historic papers brightened and maintained their brightness after accelerated aging. One historic paper sample and the filter paper underwent molar mass determination (the other historic paper was already too degraded for this analysis). The molar mass data clearly indicate that both the filter paper and the historic paper degraded in the aging conditions chosen for this experiment. The other significant finding shows that deacidification following the treatments helped to maintain the molar mass of the two tested papers during the harsh aging conditions. The test treatments themselves did not cause differences on a molecular level.

In conclusion, our findings show that the application of ammonium citrate may be considered as a method of enhanced washing, and the mildly acid variant (pH 5.5) brightens the papers tested in our study without compromising its molecular integrity as long as the treatment solution is thoroughly washed out and an alkaline reserve is added. We noted that, as with other washing treatments, the hue of the treated papers changed and this color change should be taken into consideration. For long-term stability, it is crucial to rinse the treated papers and remove the substances used for enhanced washing and to add an alkaline reserve.

### **The Frederick Douglass Collection at Northwestern Libraries: Stewardship, Research, and Treatment**

Roger S. Williams

Northwestern University Libraries holds a small but historically significant collection of manuscript documents by and about the 19th-century abolitionist, activist, orator, writer, and public intellectual Frederick Douglass. These were treated in 2021 in preparation for digitization. Though the treatment itself was straightforward, the significance and historical nature of the materials made research and analysis vital for informing the treatment decisions. Archival research, along with micro-FTIR analysis of old mending adhesives, was used to decipher the origins of the papers that had been applied to the documents.

The Douglass documents at NUL were previously part of a collection named “African American Documents,” which was made up of materials donated to the Libraries in the early 20th century by a private collector who was a patron of the university. The conservation department’s work with this collection required

thoughtful consideration of provenance and stewardship, which ultimately led to a reparative description effort led by the Libraries’ Archivist for the Black Experience and an exhibition curated by a PhD student. The exhibition included a description of the conservation process, creating a dialogue around the Libraries’ custodianship of slavery documents.

### **Controlled Anarchy: Technical Study and Treatment of Lygia Pape’s Tecelares**

María C. Rivera Ramos

In 1959, artist Lygia Pape wrote “The problem of chance does not exist in the sort of printmaking I do. All of it is controlled: from the choice of material . . . to the final print.” Pape (1927–2004) was one of Brazil’s foremost contemporary artists and throughout most of the 1950s she used printmaking as the vehicle for her Concrete and Neo-Concrete explorations. Scholars have argued that her predilection for woodcut reflects her desire to subvert long-established hierarchies in the visual arts which privileged painting. But Pape also subverted paradigms of printmaking itself. Her techniques aligned with traditional Latin American craft and the use of prints, broadsides, and posters to address socio-political issues yet her largely unique prints explore formal concepts. The woodcuts made between 1952 and 1960, which she named Tecelares (Weavings in Portuguese), represent an important time in her career when she manipulated printing matrices in anticipation of making three-dimensional work. Close examination of both extant matrices and impressions from the Tecelares yields insight into how Pape exploited her materials to conceptualize form and space.

Even during the earliest years of her artistic production, Pape grappled with aesthetic, formal, material, and technical challenges, solving them in innovative ways. Such solutions speak to an ethos of experimentation, as well as command of her craft. The artist favored gossamer-thin Japanese papers, which were exceedingly difficult to use when printing the sharp relief of hardwood and metal matrices. However, successful impressions on such translucent papers gave her the freedom to privilege the verso of a print over its recto. Throughout her printed oeuvre, Pape repeated, reworked, and reformatted her compositions—sometimes in incredibly subtle ways—to discover new resonances within groupings of hand-carved, geometric forms. She invented her own language of making by incorporating the vocabulary of craft.

This presentation will detail conservation-related research into Pape’s materials and process carried out in anticipation of the exhibition Lygia Pape: Tecelares, on view at the Art Institute of Chicago from February to June, 2023. During a year-long study, the author collaborated with the exhibition’s curator to examine over 100 prints and matrices. To the author’s knowledge, this is the most extensive direct investigation of Pape’s work through the eyes, sensitivity, and intellectual questioning of a paper conservator. A key element of the artist’s practice involved wrapping incredibly thin papers around rigid supports for presentation purposes. As a result, many interventions of structural stabilization were crucial. Other conservation issues associated with long term storage conditions included significant losses due to insect activity, extensive discoloration of the delicate supports, and staining related to poor quality mounting materials. Due to the fragile condition of many of the prints, 75 works required treatment to make them stable enough for exhibition. This presentation will touch on conservation issues associated with Pape’s work and the approaches to treatment that were ultimately selected. Housing and display considerations will be discussed.

### **American Art/Italian Paper: The Partnership between the Japan Paper Import Company of New York City and the Historic Paper Mills of Fabriano, Italy**

Sylvia R. Albro

My presentation looks at the relationship between these two entities beginning in 1901 and lasting close to 100 years in various forms. The personal relationships that sustained this long-lasting business partnership across changing



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histories and fluctuating economies will be examined through correspondence preserved in the historical archive of the Foundation associated with the Fabriano paper mills, among other sources. Technical records documenting the formulas for high quality artists' papers made by hand and machine in the twentieth century with a wide variety of new ingredients will be revealed. Papers commissioned in NYC, produced in Fabriano and favored by prominent American artists, printers and designers in a variety of media will be illustrated. Advertising samples of these same papers from the Harrison Elliott Collection of Paperiana at the Library of Congress will be compared. (Elliott represented Japan Paper Co. from 1925-1951).

The Fondazione Fedrigoni Fabriano (FFF) historical archive contains formula books, receipts, samples of special orders of many types of papers designed and made for the American market, including Ingres, Roma, Rosaspina, Tuscany, Murillo, Lombardia, Umbria and Fabriano Artistic watercolor paper. Appreciation for aesthetic qualities of many of these imported papers will be highlighted by the numerous works by American artists and printers who used them, from the collections of the Library of Congress, the National Gallery of Art and The Phillips Collection in Washington DC.

Evidence of industrial changes in methods of fabrication and ingredients used in twentieth century papers provides important information to conservators charged with preserving iconic works by American artists and printers, now in the collections of many museums and private owners. They include dyes and pigments, fillers, pulp furnish of a variety of sources, whiteners, and both internal and surface sizing agents. Awareness of the numerous components in modern artists' papers and their identification is essential for a conservator's decision-making process when considering the treatment, long-term housing and/or display of these artworks.

### Art on Paper Discussion Group Sessions

#### What is a Print?

Printmaking as an art form and the prints that result are oftentimes some of the most complex types of art that paper conservators grapple with. The various methods of creating a "print" range from the traditional matrix printed onto paper to multilayered, composite objects that move between sculpture, drawing and painting. Printmaking also has the capacity to utilize and integrate the latest technologies during the creation and display of prints. Throughout history, printmaking has been a democratic art form of the people, offering the ability to respond to current events in an immediate, ephemeral way. In short, prints can be everything all at once, making the subject increasingly tricky to discern and define. This discussion group will aim to incorporate several different aspects of printmaking, touching on a range of subjects.

### Heroes Behind the Chinese Albums: Two Cases of Qing Dynasty Functional Brocade Boxes

Jia-Yu Hu, Hsin-Kuan Liao

Traditionally, the way to contain and store a Chinese album was to make a tailored brocade box to protect it. The brocade box is made of cardboard overlaid with brocade using thickly applied paste. It is a special packaging method, rather than a fixed box, it can fully unfold and lay flat on the table. When it is folded, it will interlock tightly and become a firm box because of its unique structural design. The purpose of this design is to offer a convenient way to take the album out of the box. However, to make the box foldable, the edges are only two layers of brocade and silk, which causes it to abrade and tear easily.

Brocade boxes typically will not be displayed in exhibitions because they were considered as protection for Chinese albums and thus were less important than the albums themselves. But from a historical viewpoint, they are worthy of restoration, not only to preserve the historical information, but also to preserve the spirit of protecting cultural artifacts. This study will include two conservation cases from the Qing dynasty (17-20th century) brocade boxes. The albums inside contained Buddhism stories with detailed embroideries lined with paper. The boxes were seriously damaged. They had torn into individual pieces and some brocade was lost. Also, the broken pieces had been improperly taped together. Additionally, because the cardboard is water sensitive it caused

yellow stains on the brocade. Heavily stained brocade cannot be washed until it is separated from the cardboard underneath.

The restoration treatment balanced functional, historical and aesthetic values and it integrated paper and textile conservation materials. We used the original brocade that was folded underneath and Japanese tissue paper to fill losses; We also used Japanese tissue paper as well as silk crepe line to strengthen the structures, while protecting the edges and corners to prevent further tear and abrasion. Because of the thinness and transparency of Japanese tissue paper, it visually merged with the brocade and made a perfect reinforcement. After treatment, the two brocade boxes maintained accurate size to fit the albums thus restoring the protecting function.

In this changing society, not only the most valuable objects are worthy of preserving, but also what might seem less valuable but has historical significance. Although the brocade boxes seem like mere appendages, they have been protecting the albums for centuries. The value is not just artistic value but the spirit of preservation. These conservation projects can convey a message to future generations and inspire continuation of protecting our cultural memories..

### Mark Rothko Paintings on Paper, Mounted on Honeycomb Panels with Added Side Tacking Borders

Yoshiyuki Nishio, Pei-Ching Liu

Many modern artists chose to present their work unframed. One such artist, Mark Rothko, best known for his atmospheric and moody floating rectangles, saw frames as a barrier between the artwork and its audience. He believed his unframed paintings provided an immersive experience, drawing the viewer into his work. In addition to his paintings on canvas, Rothko created numerous small-sized works on paper, eventually working predominantly on paper. He had many of these works mounted to panels, canvas, or board to simulate the appearance of his unframed canvases.

Rothko's children, Christopher and Kate, sent a group of ten works on paper to Nishio Conservation Studio, five of which were mounted by Japanese paintings conservators between 2008-2012 to wooden lattices that were prepared with multiple layers of paper in the traditional Japanese style. The remaining five were unmounted. Initially, we were inclined to leave the works unframed and focus on preservation framing. On the other hand, Rothko's children expressed a strong desire to have the pieces mounted to mimic the appearance of his paintings and left unframed, which was very much in line with their father's philosophy.

Needless to say, this project posed several interesting challenges for us, as Asian paintings conservators. This paper will describe our decision-making process and the mounting technique we developed for these works. We hope this paper will illustrate another application of traditional Japanese mounting techniques for Western art.

### Plastic Findings in Book Bindings: Surveys of Materials, Structures, and Condition for the Care of Changing Collections in Australia

Cancy Chu, Melanie Barrett, Julianne Bell, Sarah Bunn, Petronella Nel, Francesca Zilio

Commercial book binding techniques have changed over the last century to include components composed of semi- or fully synthetic polymeric materials, commonly known as plastics. As identified in collection surveys at the Victoria and Albert Museum and the British Museum in the 1990s, certain plastics are known to be comparatively unstable and potentially harmful in close contact with other materials. These plastics are referred to as 'malignant'. Two recent surveys at the New York University Library and National Library of the Czech Republic further identified common plastic types in archives and libraries, including the presence of the 4 malignant plastics. Although a recent questionnaire indicates that plastic-containing book bindings are likely found in over 90% of Australian archives, there is limited information available on the structures of



## SPECIALTY SESSIONS: BOOK & PAPER

plastics found in books, common deterioration concerns, and available strategies for prolonging use and stability. This knowledge gap hinders the capacity for conservators to identify and care for recent and incoming book collections in libraries, archives, and other paper-based collections.

This project aimed to formulate storage strategies for plastic-containing books in Australia. Three paper-based collections were surveyed in a collaborative project to determine the types, structures, and condition of plastics in books, namely at the South Australian Museum, the Art Gallery of New South Wales, and the Grimwade Centre for Cultural Materials Conservation at the University of Melbourne. Fourier-transform infrared spectroscopy with attenuated total reflection (ATR-FTIR), a non-invasive contact-based technique, was used to identify plastic polymer types. Documentation of structures and condition was achieved with a standardized template to ensure the consistency of data collection, using hierarchical fields to document relational links.

Results from 165 books dating from 1949-2019 identified 6 polymer types, including 2 malignant plastics. 36 unique binding structures were documented and summarized as 10 binding types to aid in the visual identification of plastic components. Plastics were identified in book cloth, spines, covers, jackets, and adhesives. Visible deterioration was grouped into 4 categories based on hypothesized cause, then addressed with proposed storage strategies for decreasing the probability of damage. Results are compared with and supplement existing literature on plastics conservation, book conservation, and studies on plastics in paper-based collections. Proposed strategies are low-cost, accessible techniques in line with sustainability principles.

This project recognizes the changing nature of materials used in traditional formats, framing plastics conservation within a book collection context. Results increase the current understanding of plastics in book collections, equipping conservators with possible plastic types and deterioration patterns to guide decision-making if similar materials are encountered. Identified conservation storage practices highlight the need for the continued challenging of assumptions to address novel material combinations. Overall, this project demonstrates the benefits of inter-disciplinary collaboration between specialties in managing changing collections.

Funding: This work was supported by the University of Melbourne under the Melbourne Research Scholarship; the Australian Government under the Research Training Program Scholarship; and the Australian Research Council's Linkage Projects funding scheme under project LP160100160.

### Application of a Large-Scale Working Rack for an Oversized Silk Painting Conservation during the Pandemic

Yi-Chiung Lin, Ting-Fu FAN 范定甫

Regular size Eastern painting and calligraphy can usually be treated on a conventional size red lacquered working table. However, for a silk painting that exceeds 2.4 meters in height, 66 meters in length, and weighs 32 kg, it is apparently impossible to carry out its treatments and backing, especially during the pandemic between 2020 and 2021.

How do we arrange the practical working schedule to meet limited requirements for conservators and related team members, furthermore efficiently use the conservation lab space to complete the treatment, backing, and flattening of this super-sized artwork? A helpful and convenient large-scale working rack would be the best solution.

Our conservation team used an off-the-shelf industrial storage rack system and redesigned it according to the treatment requirements, and built a set of large-scale working racks for this giant painting conservation project. The set of artwork support makes this 66-meter long painting not only easy to roll and unroll but also able to be stepless control in adjusting treating sections. Therefore, while protecting the artwork, it also allows us to reduce the number of art handlers and comply with the government's pandemic regulations.

With three height-adjustable table tops, it can maximize the three-dimensional use of small working spaces, take condition pictures, and allow conservators to treat multiple fronts and backs locally during the same time. In addition, multiple

adjustable bridges across the artwork are helpful for conservators to carry out treatments on top of the painting and complete two layers of Kozo paper backing. The final stage of drying and flattening on this racking set reduces the rent, air-conditioning costs, and environmental control expenses for a super-large space. This set of large working racks that can assemble and install repeatedly can ship to different locations for artwork treatment while necessary.

### Preserving Memories: Should We Interfere?

Kerith Koss Schragar, Lisa Conte, Samantha Tepper

The installation *Missing*, acquired by the 9/11 Memorial Museum in 2022, but yet to be exhibited, recounts the artist Barbara Seigel and her husband Gary Schwartz's trajectory of grief after 9/11. As residents of Lower Manhattan, they witnessed the aftermath of the tragedy and were especially attuned to the profusion of the letter-sized missing-person posters pasted on what seemed like every surface in their urban landscape. Pre-social media, pasted-paper announcements were an incredibly effective way of communicating with your community. Within days of 9/11, the posters came to signify those killed, a reality made unbearable by the posters' ubiquity. People left flowers, candles, stuffed animals, letters, and other ritual offerings near the constellations of missing-person posters, transforming them into memorial sites. Inspired by the Mexican ex-voto tradition, *Missing* recalls these sites of mourning and commemorates the victims of 9/11. Composed of solvent transfer prints on wax-coated paper, it depicts 60 of the posters she witnessed and photographed and the poem *Os Urubus*, meaning the vultures in Portuguese, written by her husband, Gary, arranged in a birdlike form. The materials themselves were chosen for their relative instability—to signal the ephemerality of the original poster materials, the memorial sites, and the inevitability that memories of 9/11, too, would change. The artwork offers an important window into an untranslatable experience -- the post-9/11 social milieu. But other than a few illegible images, no instructions for its display existed when the artist died in 2015, complicating the ability to faithfully present it to audiences and preserve it in the future.

This talk will explore the integrated approach taken to parse the identity of *Missing* and ascertain if the work can exist in more than one authentic state. To do so, we will consider concepts of changeability and variability as they relate to this artwork and other memorial-based artworks to understand to what extent they affect the conceptual integrity of *Missing*. We will also consider the ethical issues attendant to displaying and caring for this sensitive artwork (which contains images of people killed on 9/11) in a memorial museum where outreach and discourse with community members and victims' families is essential, including whether *Missing* be displayed without their consent.

### Nanocellulose Fills and their Application in Photograph Conservation

Marissa Maynard

Conservation is a constantly evolving field that utilizes materials, skills, and analyses from multiple fields and disciplines. Recently, different variations of nanocellulose have been introduced to paper conservation to aid in tear repair and other stabilization treatment due to its high tensile strength, purity, and overall good aging characteristics. This study builds on these previous studies and showcases how nanocellulose can be utilized to create colored fills with different surface textures or surface gloss that can then be applied to fills for photographs. Matching fill materials with the original color and texture of photographs can be difficult due to the variety of gloss and tonal range of the photographs. Nanocellulose presents a unique opportunity to help solve this difficulty since the nanocellulose pulp can be colored and cast before it is applied to the photograph. The goal of this study is to find the best way to color, cast and apply fills to different photographic processes. This was accomplished through a variety of trials using different coloring agents including watercolors, Carriage House Pigments and acrylics. These colorants were mixed with the nanocellulose suspension in combination with water and/or ethanol. Photographs using different types of lighting as well as observations were used to assess the color, gloss, and color distribution of each trial. Promising results were seen with both QOR watercolors and acrylics as long as a 'sizing' agent of methylcellulose was added before the sheet was cast. Different adhesives and application processes were also assessed.

### **Paper, Metal, and Liquid: Bronzing Degradation in a Nineteenth-Century Lithograph**

Meredith French, Juan Juan Chen, Rebecca Ploeger, Aaron Shugar, Theresa J. Smith

Lithographs featuring religious subject matter were common in nineteenth-century America. The print that is the focus of this research, however, is an unconventional version of the Irish-Catholic patron-hero, St. Patrick. He is depicted standing on three snakes in a landscape with a steepled building in the background. Stenciled matte black paint frames the scene and fills the space behind him. A shiny, green-grey design borders the print and identifies the subject as St. Patrick. All color was painted free-hand or through stencils, and the print bears no information about the artist, publisher, or date. The object displayed excessive dirt and debris within the frame, planar deformations throughout the sheet, and a disfiguring dark stain from a liquid event in the lower left region. Furthermore, the tideline of the stain was curiously deformed with bumps protruding from the interior of the paper sheet. St. Patrick was a popular subject for nineteenth-century American and European lithographs, however the black background is not a common aesthetic feature. While this research did not uncover similar backgrounds in other lithographs, the steepled building was found in another print featuring St. Patrick by the prominent American lithographic firm, Currier & Ives. Investigating the technologies, materials, and body of work created by Currier & Ives and similar American firms provided a rich, cultural context for the subject of this treatment and the two prints are likely related. Scientific analysis and multimodal imaging identified the pigments and revealed that the shiny, green-grey border was in fact degraded brass powder. Bronzing, the historical technique of applying metallic powder to a print, would have given the media a golden appearance. XRF mapping of the brown stain showed that while some copper from the brass powder remained on the border design, nearly all of the zinc relocated to the tideline. This could indicate dezincification of the alloy. Additionally, XRF revealed a surprising abundance of metals in the stain, including iron, lead, aluminum, potassium, calcium, and manganese. Grenz radiography identified the nature of the protrusions in the tideline: dense dendritic crystals. Analysis of the crystals using SEM-EDX spectroscopy indicated they are primarily composed of sulfur and magnesium. While the full meaning of these results is unclear, some conclusions about metal in paper can be drawn. Although an aqueous treatment was designed for this project, the discovery of numerous metals in the stain and the solubility of some media changed the course of treatment. Instead, the object underwent surface cleaning, minor structural repairs, inpainting of insect grazing and abrasions, as well as optical inpainting to reduce the appearance of the brown stain and foxing. Originally envisioned as a complex stain reduction treatment, this project evolved into the historical research of early lithographic-print houses, printing technology, and the analysis of water-catalyzed degradation of brass powder in paper.

## **CONTEMPORARY ART**

### **The Technical Study and Conservation of “The Kiss II,” a Multiplex Hologram**

Lindsay Cross, Juan Juan Chen, Emily Hamilton, Rebecca Ploeger, Patrick Ravines, Aaron Shugar

“The Kiss II” is a Multiplex hologram created by Lloyd Cross, the inventor of this technology, in 1975. Cross invented the Multiplex hologram and the Multiplex hologram printer. When illuminated, the hologram depicts Pam Brazier, Multiplex partner and girlfriend of Lloyd Cross, blowing a kiss and winking as the viewer walks around the work. This particular copy was produced by Peter Claudius in the 1980s. It was previously owned by New York’s Museum of Holography and now belongs to private owners in Buffalo, New York. The current owners sought out treatment to address condition concerns that included instability of the housing, deterioration of the hologram film, and dirt and dust accumulation. The position of the hologram in the housing obscured part of the image, necessitating intervention to make it legible.

Research for this project included an interview with Jason Sapan, aka Doctor Laser. Sapan founded and runs Holographic Studios in New York, New York. As a colleague of Lloyd Cross and creator of multiplex holograms, he was able to

provide unique and invaluable insight into this project. This research was coupled with scientific analysis to gain a better understanding of the object. Analysis consisted of confocal microscopy, X-ray fluorescence, and Fourier-transform infrared spectroscopy.

Treatment of the work involved cleaning, stabilization of the housing, and review of lighting components. The work was originally displayed with a 100-watt incandescent light bulb with a single vertical filament, which is now obsolete. A comparative study of different light bulbs was undertaken to ensure the holographic image was displayed as originally intended despite changes in lighting technology. It was determined that the best option was a 75-watt incandescent light bulb with two compact vertical filaments.

In addition to addressing condition concerns, this project aims to improve upon the documentation protocol for Multiplex holograms. In person, the holographic image appears detailed and three-dimensional. However, it is extraordinarily difficult to accurately capture the image with the equipment and techniques typically used for photographic documentation. Various photographic techniques were explored in attempt to document the holographic image. Stereoscopic photography and the use of an iPhone 12 Pro most successfully captured the detail and dimensionality of the holographic image.

As a result of the conservation treatment of “The Kiss II” the hologram film was returned to its proper position showing the image in entirety, as intended by the artist. Furthermore, cleaning and stabilization of the housing and replacing the light bulb will help protect the hologram and slow future deterioration. There are many variables and challenges when it comes to documenting and treating this technology, but it is the hope that this project lays the groundwork for a suggested protocol for documenting and treating Multiplex holograms.

### **Fluid Dynamics: Adapting the Installation of Michael Stevenson’s The Fountain of Prosperity**

Lynda A. Zycherman, Andy Wolf

The Fountain of Prosperity, a water-driven kinetic sculpture by Michael Stevenson, was prepared for a Spring 2023 exhibition at the Museum of Modern Art in New York (MoMA). The central feature of the artwork is a recreation of an analog hydromechanical computer known as the MONIAC, designed in 1949 by the economist Bill Phillips. The original MONIAC computers used pumping and flowing water distributed through valves, tubes, and tanks to model the flow of wealth throughout a national economy and to calculate solutions to economic equations. Michael Stevenson’s 2006 recreation is a degraded version of the computer, referencing the consequences of colonialism and economic imperialism. The Fountain of Prosperity is a scrappy, eccentric construction with a weathered steel structure supporting rust-stained acrylic water tanks. It functions in a severely limited capacity, and exists in an intentional state of partial ruin. This creates an interesting challenge for conservators, who must balance the conceptual needs of the artwork, its safe display, and its automated operation, all within the context of a fluid exhibition budget.

Operation of the Fountain in its intentionally deteriorated condition poses risks, both to the artwork itself and to the surrounding gallery environment. Excessive leaks can drain the system of water, endangering the pumps. Previous repairs to leaky areas with putty, executed both by the artist and a succession of caretakers, have progressively affected the piece’s installation and operation, freezing its moving parts in place. Even the act of turning on the MONIAC requires care in manipulating the tanks’ positions to balance flow cycles and avoid spillage. We crafted practical solutions to enable full-time operation and the daily supervisory labor that entails. Replacement parts were sourced in case of failures while the Fountain is on view.

Through research, virtual interviews with the artist, guidance from previous caretakers, and hours of wet test runs, MoMA conservators mastered the installation, operation, and maintenance of the sculpture, and updated the existing documentation. Using the knowledge gained, we collaborated with the artist and MoMA staff to adapt the installation for safe display. Conversations with the artist around the intended state of the work prompted a minimal treatment strategy, approaching the artwork and its condition on its own terms, with a focus on sustainable operation. In practice, this translated to the continued implementation of previously-used simple repair techniques, despite their

## SPECIALTY SESSIONS: ARCHAEOLOGICAL HERITAGE & ARCHITECTURE

consequences, as well as a preference to modify the context surrounding the work, rather than the work itself. The treatment was designed less to arrest the continued degradation in condition, than to slow or manage it. Because the putty repairs are visible, and literally bear fingerprints, the conservator's role is slightly more conspicuous than is traditional, a dynamic that conservators of contemporary art continue to reckon with.

We continue to discuss eventualities with the artist to establish a baseline for when more permanent, structural repairs are needed. MoMA conservators will further refine the installation when it is installed this spring, ensuring its viability in years to come.

### Artist Interviews and Artist Books: Two Case Studies of the Impact of Artist Interviews on the Outcome of Book Treatments

Jessica L. Pace, Lou Di Gennaro

Interviewing artists, makers, and source communities has become a common conservation practice in museums and private practice though it is not as widespread in libraries and archives. However, materials such as contemporary artists' books might necessitate a broader adoption of this form of engagement in order for conservators to apply a values-based decision making model to the works' preservation.

This talk presents two cases in which interviews with the makers played a vital role in shaping the approach to the care of two books held within the Special Collections at NYU Libraries. One of the works, *20 Slices of American Cheese* by Ben Denzer, is composed of slices of American cheese and the other, "Isaac Newton's *Philosophiae naturalis principia mathematica* by Didier Mutel, comprises 22 aquatints printed on bound concrete leaves. The books' use of non-traditional materials presented unique challenges that necessitated a rethinking of our approach to their conservation. Interviews with the artists became an indispensable tool in our search for solutions that balance a consideration for the artists' intent with research access and preservation of these works. In both situations, our initial assumptions about the course of treatment that we would pursue changed dramatically after speaking with their creators. The resulting preservation plans give the conservator and the artist shared agency in the continued care of the work and incorporate the stories of the works' physical changes into their existence in the collections.

## JOINT ARCHAEOLOGICAL HERITAGE & ARCHITECTURE

### Let the Objects Speak!

Evelyn Thompson

The White Marl Taino site is one of our oldest pre-Columbian site and the largest known inland site in Jamaica. It was first brought to the attention of the Jamaican government as a national treasure by James Edwin Duerden (Curator of the Natural History Museum, Institute of Jamaica) in 1897.

Seven acres, of the original 33-acre property, was handed over to the then Jamaica National Trust Commission in 1960. In 1965 it was mapped by Geologist, Dr. James Lee. The site and the large number of artefacts excavated over the years, contributed to the "Arawak Museum", which opened in 1965; displaying and storing a earthenware ceramics, stones, shells human remains, and a large number of flora and faunal remains.

However, despite the value we may place on our heritage, there comes a time when development meets head-on with conservation, and we have to make some hard decisions. One such encounter occurred in 2016, with the realignment of the major thoroughfare, connecting the old capital, Spanish Town to the new capital, Kingston. In keeping with the Jamaica National Heritage Trust Act of 1985, a team from the JNHT and the University of the West Indies spend several months excavating the White Marl site, encountered a large number of earthenware fragments, bones, and a few skeletal remains. All objects were retrieved, except for the human remains.

Taino human remains are often found with funerary wares, in keeping with the custom of providing articles for the afterlife. So it was an exciting moment when we encountered two complete earthenware bowls. They were carefully excavated, retaining their contents, and put in storage.

Later one of the two bowls, filled with earth, was taken to the conservation laboratory for post excavation work. It was of elliptical base with circular rim and protruding decorations around its maximum circumference. The object still contained earth, as excavated, strands of root were protruding from the earth and soil was still present on its exterior. The excavation process was used as a demonstration, with just under 10 attendees, viewing and documenting the process.

This abstract explores the laboratory excavation process, conservation procedures employed, the challenges and the information garnered.

### Strategies for Handling Archaeological Architectural Fragments

Julia Commander

While working on the treatment and reconstruction of fragments from the palace of the 19th Dynasty Egyptian Pharaoh Merenptah, the Penn Museum team has adapted and developed various strategies for handling and lifting stone fragments. The range of condition issues and delicate surface decoration of the limestone fragments create unique challenges for approaching treatment. Custom lifting rigs and rigging solutions have been used to facilitate treatment steps from deconstructing previous support materials to fabricating new structures for installation in the upcoming Ancient Egypt and Nubia galleries. This talk builds on previous research from the Penn Museum reinstallation project and focuses on some of the tested methods and solutions for working on a monumental scale.

### Arresting Time: Stabilizing the Mill Ruins at Thomas Jefferson's Shadwell

Lucy W. Midelfort

Along either side of the Rivanna River just outside Charlottesville, Virginia, Thomas Jefferson had three mills between 1803 and his death in 1826: a grist mill, a manufacturing/merchant mill, and a saw mill. Together, this mill complex ground wheat and corn from Jefferson's fields as well as those of the local community for a fee, produced wood for Jefferson's building projects, and ground gypsum plaster for fertilizing Monticello's fields. Over the last two hundred years, two of the mills have been entirely lost and only ruins of the grist mill remain. The remaining ruins represent a last piece of physical evidence of an early 19th century commercial hub.

Though the wooded site is relatively isolated sitting between the Rivanna river and railroad tracks, the local government (Albemarle County) is planning a public footpath adjacent to the mill complex that will greatly increase visitation. When the path is constructed, safety for the public and protection of the ruin will be essential. Additionally, the mill's location in a floodplain leaves it inherently at risk; the site has flooded in the past, and threats due to high water levels are only rising with climate change.

The Thomas Jefferson Foundation partnered with Dominion Traditional Builders between 2021-2022 to conserve and stabilize the grist mill's ruins to prevent further loss. The multi-step process involved removing overgrown vegetation, injecting grout behind sections of extant original plaster on the structure's interior, repointing the mortar joints on the interior and exterior with compatible lime mortar, and installing a mortar cap along the top of the walls to prevent moisture infiltration. The presentation will detail the project's decision-making process as well as the formulations of the repointing mortar and injection grout.

After completing the stabilization of the mill ruin, the site remains at risk due to floods, which we expect to become more common with increased storm severity due to climate change. The stabilization efforts undertaken aim to make the site more resilient to rising and receding floodwaters.



## SPECIALTY SESSIONS: OBJECTS & PAINTINGS

### Conservation and Reconstruction of Dye House, Ekhsheid Period, Islamic Period, Egypt

Yousry Taha Abdelsameea, Akmal A. Sakr Sr., Mohsen A. Taha

This dye house is an unique monument dated back to Ekhsheid period, that is the only monument survived from this period, a similar one now in Marco, from the same period, that gives an indicator to the commercial relationships between Egypt and North Africa in this period.

This dye house was discovered under a small rubbish hill within the excavations carried out to prepare the place for building the National Museum of Egyptian civilization (NMEC) in 2003-2004. When this dye house was discovered, there was a diffusion if it is a dye house of tanning house, analyses pointed out the presence of dyes, so possibility of being tanning house was excluded.

This dye house is composed of two double rows, every one contains 13 pottery jars, and two single rows, with varied diameter (65-95 cm), its length 14 ms, fixed within a space bordered by burnt brick using a mortar, surrounded with burnt brick enclosure, the measurements of the brick are: XRD patterns of mortar revealed the presence of calcium carbonate (CaCO<sub>3</sub>), Quartz (SiO<sub>2</sub>) and Sodium Chloride (NaCl), so a similar mortar was used in reconstruction.

This dye house is subjected to different deterioration agents, the most deleterious are salts, in particular sodium chloride (NaCl), that was crystalized on the surface of pottery surface in form of white effloresces, sub-surface water, due to its neighborhood to Ain El Sera Lake, in addition to acid rain, in particular that dye house in present in an open area.

The conservation plan includes 1. Documentation using architectural, geometrical drawings, photogrammetry and auto cade program was used, using gathered data, such as the shape fracture lines, color of pottery fragments, that gave an indicator to the location. 2. Desalination of salts using bentonite-sand poultice contain crystallization inhibitors modified by the first authors, and the primary results were satisfied. 3. Fixing flaks of pottery jars using Primal AC33, and gently pressed, to fix these flaks into its original position. 4. Reduction of subsurface water by cutting drainage tube of polypropylene with small holes connected with a central drainage basin. 5. Reconstruction the walls of the dye house and pottery jars using burnt brick, similar to the original one, guided by data reported in the excavation dairy. 6. Protecting this dye house using umbrella of plexi glass, with semi pyramid end, to avoid weathering agents, in particular winds and rains. 7. Preparing this dye house to be put forward on the tourist map of the Museum, using the integrative interactive media, to tell the idea of this dye house.

### JOINT OBJECTS & PAINTINGS, SPONSORED BY CLICK NETHERFIELD

#### Restoring Color to Faded Feathers and Fur

Julia Sybalsky, Lisa K. Elkin, Michaela Paulson, Fran E. Ritchie

Like many organic materials, keratin and biopigments found in feathers and fur are sensitive to light and ultraviolet exposure. As a consequence, history often dictates that caretakers of these collections inherit the responsibility of deciding whether and how light damaged objects should be displayed. In some cases, application of a colorant to an original surface or adding colored fills to compensate for fading may be appropriate. However, before arriving at that conclusion, many ethical questions require careful attention: what was the original intent of the artist, how is the object valued, are there cultural considerations to take into account. If recoloring is determined to be an appropriate approach, best practice must be observed, starting with a careful analysis of potential materials and techniques to be used, whether each alternative offers reversibility or the option to retreat in the future, and whether its application may cause damage to original materials.

With generous support from Institute of Museum and Library Services, the American Museum of Natural History Science Conservation staff have committed years of effort and investigation to developing best practices for restoring color to faded feathers and fur. In this talk, we will present key considerations in approaching these treatments, drawing on a decade of research guided by

input from the professional community.

The scope of research at AMNH has focused primarily on colorants and application methods suitable for two approaches to restoration: 1) Direct recoloring of original feathers and fur through the application of the colorant onto the faded substrate and 2) Construction of naturalistic fills that are inserted among original materials to overlay those that have faded. We have relied on online surveys, consultations, and literature review to supplement our own expertise in identifying over 40 materials of interest to the community for these purposes. Subsequent assessment of their potential to create realistic outcomes in treatment, the range of colors available, their published lightfastness, sheen and opacity, ease of use for blending or creating crisp hard lines, reversibility, and how they interact with fur and feather surfaces, provided the basis for selecting a smaller number of promising colorants for extensive study, including solvent-soluble metal complex dyes (aka Orasol dyes), Wildlife Colors acrylic paint, PanPastel artist pastels, Golden's QoR paints, and Kremer's XSL pigments. This research identified good options for both approaches to restoration, but also showed that selecting the best method requires thoughtful attention to the condition of the keratin, and how the object will be used in the future.

Our presentation will include key observations and takeaways to guide those considering the use of these materials and techniques in other collections. Further, though research at the AMNH has focused specifically on strategies for restoring color in taxidermy, the approach developed here, in which alternative methodologies are identified with input from a wider professional community, and then evaluated against the ethical and technical criteria of importance to that community, can be adapted and applied to a range of other collections.

### Tokens of Affection: Examination, Preservation and Conservation of Portrait Miniatures

Theresa Fairbanks-Harris, Richard R. Hark, Aniko Bezur

Portrait miniatures are complex and often understudied artworks presenting a combination of materials that offer an opportunity for conservators with different backgrounds to come together and share their expertise to effectively address treatment issues. These fascinating and beautiful small portraits are painted or enameled on a variety of supports, including parchment, ivory, copper, wood, and paper. They are highly personal images of loved or revered individuals that were very popular, especially before the advent of photography. Miniatures were made to be held in the hand, worn as locket and bracelets, or stored in precious housings. The enclosures were essentially shrines to the personage within. Materials used included decorative housings with human hair (often of the loved one), pearls, brass wires and ciphers, decorative colored and stamped foils, and colored glass. These miniatures could be stored in ivory or wooden enclosures or metal or enameled lockets that were sometimes encrusted with jewels and precious stones. The metal lockets and frames were fitted with a glass lens and are sometimes challenging to open. Miniatures have often been tampered with, altering the original configuration of components.

This presentation will focus on the analysis and conservation treatment of two miniatures. Scientific examination of an additional dozen miniatures was also undertaken to learn more about the pigments and other materials used to create the paintings, thereby informing future conservation treatment as well as artistic practice. Scanning micro-X-ray fluorescence spectroscopy (MA-XRF) and Raman spectroscopy provided useful insights into the material components and helped to identify areas of past alterations.

The treatment of a British miniature painted in 1682 in watercolor on parchment by Lawrence Crosse of Colonel James Griffin will address the disfiguring, discolored historic lead white corrections which had darkened on exposure to atmospheric pollution to brown spots on the face of the sitter. A second treatment involves a miniature of a gentleman by Irishman Francis George Joseph in watercolor on ivory painted in 1798 that addresses the correction of a poorly treated miniature. This miniature is encased in a rose gold locket with a decorative back that had been attacked by mold and further tampered with, resulting in the misalignment of the blue cobalt glass, human hair, and decorative wirework. An overview of portrait miniature materials and techniques will be included as background for the technical examination and conservation efforts. The value of analysis to support conservation decisions in the treatment of these remarkable objects will also be highlighted.



## SPECIALTY SESSIONS: OBJECTS & PAINTINGS

### Seeing through the Infinity Net: A Collaborative and Interdisciplinary Investigation into Yayoi Kusama Self-Obliteration

Wenting Chen, Adam Finnefrock, Alessandra Guarascio, Lynn Lee, Jennifer L. Mass, Ph.D, Rebecca Ploeger, Marc Walton

Yayoi Kusama's Self-Obliteration (1966-1974) is an installation consisting of six mannequins, four chairs, and a table decorated with an ensemble of tableware, ashtrays, fruit, and a plant. Kusama painted the entirety of this assemblage with her iconic 'infinity net' motif, which was a representative concept she used in her paintings and throughout the artistic career. To produce this decorative scheme, the artist painted thick loops of impasto that intricately linked together into a net. The repetition of these loops camouflaged the underlying form thus collapsing the distinction between all elements of the artwork and 'obliterating' any notion of individuality.

This study examines the form and structure of Self-Obliteration in preparation for the artist solo retrospective at M+ museum to open in November of 2022. Close examination of the mannequin's surfaces reveals previous interventions. In certain areas the artist's hand in restoration can be observed while other parts appear to be conservation treatments designed to either stabilize delamination of paint layers from the mannequin fiberglass surface or account for loss. This paper thus details the condition of the artwork, as well as its treatment needs before its presentation within the exhibition. The treatment focused on the consolidation and stabilization of the delaminated painted surfaces on the mannequins and the cleaning of embedded dirt. Technical research of the materials and construction of Self-Obliteration's painted surface provided a deeper understanding of the objects and Kusama's artistic and technical choices. Py-GCMS and Raman microspectroscopy were used to understand the binding media and pigment identification, respectively. Cross-sections revealed the paint layer structure and provided deeper insights into how Kusama produced her infinity nets. This presentation describes both the decision-making associated with the treatment, and the characterization of the paint material intended to broaden our knowledge of Kusama's artistic practices.

### Rawhide and Cardboard and Paint, Oh My!: Surveying and Conserving the Yale University Art Gallery's Indonesian Shadow Theatre Puppet Collection

Amreet Kular

In 2016, the world's largest collection of over 20 000 Indonesian shadow theatre puppets and paraphernalia was donated to the Yale University Art Gallery. The collection was amassed by Swiss primatologist Dr. Walter Angst (1942-2014) and its purpose is to document the different regional styles in shadow puppet theatre throughout Indonesia. Angst was a methodical collector, mostly acquiring entire puppet sets rather than individual puppets. He took detailed provenance and informational notes about the puppets, which were donated with the collection. Though the tradition is thought to have started with depicting Hindu stories, shadow puppet theatre is not static. It evolves over time, hence the appearance of new styles, new stories, new materials, new puppets and old puppets being reused in innovative ways to tell contemporary stories.

The breadth of the gallery's collection provided an interesting opportunity to survey the different materials and styles that exist in Indonesian shadow puppet theatre. Traditionally, the puppets were made from water buffalo rawhide and the control rods were carved from water buffalo horn. The puppets were painted with dry pigments mixed with ancur, a wood shaving binder. Gilding was applied to the important characters. Over time and in different areas across Indonesia, the materials changed. Cheaper cardboard and wooden control rods were substituted for the expensive water buffalo materials. Artists selected readily available acrylic paints as replacements for the more time-consuming and expensive process of creating their own pigments. Some artists created metal puppets, while rudimentary puppets were fashioned from grasses in the fields. The variations in style and materials highlight the significant role of the puppet artist in bringing a story to life. In addition to the

appearance of the puppet, the dhalang's, or puppeteer's, performance is also crucial for bringing vitality to the puppets and the story.

The style and material variations of the shadow theatre puppets affect conservation decisions. An issue amongst many of the rawhide puppets is delaminating paint and gilding, caused by relative humidity fluctuations that caused the rawhide to expand and contract, thereby stressing the decorated surface. Selecting a consolidant with an appropriate strength and appearance is necessary when treating these puppets. In addition, the question of what constitutes dirt on an indigenous object is revisited when faced with decisions regarding cleaning. Puppets were continually being damaged during performances and subsequently repaired to allow them to be used again. Evidence of damages and repairs actually increases the perceived value of a puppet because it indicates that it was well-used. Therefore, a conservator must avoid removing dirt or adhesive residues that indicate repair and use. However, depending on the style, in some cases the presence of dirt or coatings can be damaging and can obscure the true appearance of the puppet. In these cases, more interventive cleaning is necessary to reveal the puppet and prevent future damage. The intention of conserving the puppets is to protect both their physical integrity and the intangible qualities relating to their use in performances.

### The Cleaning of Six Painted Monumental Carvings from the Northwest Coast at the American Museum of Natural History

Samantha Alderson, Soraya Alcala, Judith Levinson, Madeleine Neiman

A group of 19th-Century monumental painted wooden carvings was cleaned in connection with the recent major renovation of the historic Northwest Coast Hall at The American Museum of Natural History by a team that included conservators trained in both objects and paintings, working in consultation with additional conservators, scientists, and descendent community members. The project included a set of four poles and a figure from the Tsimshian nation of northern British Columbia and Alaska and one Nuxalk house entry pole from the Bella Coola valley of British Columbia.

The carvings, ranging from 6'-15' in height, had been on continuous open display in the museum for 100 years or more, and their polychromy had become significantly obscured by multiple layers of aged museum-applied coatings and heavy soiling. Previous testing had not found a satisfactory method for cleaning without damage to the fragile paint below and many questions remained about the nature of the paint and coatings and their relationship to each other.

The surfaces were complex and varied, thus no one cleaning methodology could be effectively employed. Based on testing the team implemented a combination of different materials and techniques, modifying protocols depending on the demands of the surface. Most of the cleaning was accomplished using macroemulsions containing pH-buffered water, a chelator, a water-immiscible solvent, and xanthan gum whose components could be adjusted as needed. In addition, Nanorestore® cleaning fluids and hydrogels, and the non-woven micro-filament textile Evolon were utilized to address specific areas.

In the end, the team was able to successfully reduce the coating and grime layers on all six poles, greatly improving their appearance and legibility. In addition, research conducted in collaboration with conservation scientists at partner institutions aided in the understanding of coatings and underlying paint, and their relationship to each other.

### Unfolding a Revolution: The Trans-Cultural Synthesis of Two Biombos, or Mexican Folding Screens

Corina E. Rogge, Trevor Boyd, Stephen Hanley

It is said that imitation is the sincerest form of flattery, so objects that incorporate the traditions of one culture into the art of another through appropriation and reinterpretation of designs, materials and artistic traditions are highly illuminating. Such objects speak to aesthetic tastes, trade routes and transmission

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of goods and information, and socio-economic status signaling. Mexico was central to Spain's transport of goods from Asia to Europe, and much wealth of those living in Viceregal territories derived from the transport of objects from Asia. These goods were high status luxury items in Mexico but were unaffordable for most of the population. As a result, locally made, less expensive objects imitating authentic Asian wares became popular. Amongst the most valued and coveted objects were Japanese and Chinese folding screens, known in Spanish as *biombos*, an adaptation of the Japanese words *byo-bu*, meaning 'protection from wind.'

In 2021 the Museum of Fine Arts Houston acquired two 18th century six-panel painted wooden *biombos* that were made in Mexico and incorporate both European and Asian aesthetic influences. The *biombos* feature views of Mexico City, its environs, and people who lived there as they went about their daily lives. Many of the places and buildings are identified on the screens by name or description and although undated, comparison of the buildings depicted with historical information suggests a date of manufacture between 1742 and 1764. The people depicted are sometimes explicitly labeled with their profession and unlabeled persons can still be categorized socio-economically by their dress. These explicit and implied identifications reveal that the artist(s) were attempting to depict all members of society, not only the elite, and illustrate the diversity of the populace. Although the buildings and individuals are depicted in a European style, the background of the screens is bright red, imitating Asian cinnabar lacquer. The skies are filled with stylized local birds, including quetzal and parrots, which suggests a transliteration of the traditional phoenixes used on Asian goods into the local aesthetic vernacular. As phoenixes represent the empress and femininity in Asia, the birds could also suggest the screens were intended for feminine household domains.

While visual analysis shows the trans-cultural intersectionality of the aesthetics of the *biombos*, little is known about their materiality and construction. In addition to incorporating Asian motifs, are materials such as *urushi* lacquer present? Were the pigments locally sourced in Mexico? How were the screens constructed? There is also the issue of how the structure of the *biombos* has been altered over time; these functional objects have survived hundreds of years and, like many furniture items, have undergone campaigns of repair. To better understand and appreciate the *biombos*, a complete technical study was undertaken, including pigment and media analysis, x-radiography, infrared reflectography, and x-radiography. These results are being used to inform treatment decisions and help decipher the history of these unique objects which served as symbols of the rise of a new Mexican cultural and economic expansion.

### Angels Rising from the Ashes: Conserving the Fire Damaged Reredos and Sculptures at Mission San Gabriel

Sonia Tatiana J. Fraj, Christina Varvi

Founded by the Franciscan order in 1771, Mission San Gabriel Arcángel was the fourth of what would become 21 Spanish missions in California. Built by enslaved Tongva native peoples, the mission was one of the finest along the coast and referred to as the "Godmother of the Pueblo of Los Angeles." Among the Mission's most important decorative features was its painted wooden reredos, a decorative altarpiece that occupies the back wall of the sanctuary. Added in the early 19th century, the gilded and marbled reredos also contains six  $\frac{3}{4}$  life size sculptures situated on two registers of niches: Saints Gabriel, Francis, and Anthony (top); and Saints Joachim and Dominic, and the Holy Virgin Mary (bottom). As is common for California Missions, the reredos was restored and partially repainted several times in the past. A major restoration campaign was undertaken in the early 1990s, resulting in significant alteration of the original color scheme.

In July 2020, a fire set by an arsonist nearly destroyed the sanctuary. RLA Conservation was brought in to salvage and conserve the reredos and all decorative artworks in the building, including soot-covered objects in an adjacent museum. Damage was extreme both because of the soot and the vast amounts of water used to put out the fire. Though it was not charred beyond repair; the extreme heat of the fire coated all portions of the upper reredos and its sculptures with thick oily by-products of scorching that required the use of solvent gels to properly remove without impacting the underlying layers.

As conservators removed the soot, we found that past interventions, done in acrylic paint, had completely burned. Below these layers, we found original colors that were significantly different than those added in the 1990s. We learned, through our work, that the reredos is a collage of different parts that had been assembled together for this building. The cleaning process also revealed information about the sculptures that allowed us to identify which ones had been made for the reredos and which were adapted for this church.

This presentation will demonstrate how a devastating fire that nearly destroyed a sacred building presented the Mission with an opportunity to remove layers of inconsistent historical additions to its most important decorative artifact, and to piece together the history of its fabrication.

### Early American Graining: A Technical Survey

Kirsten T. Moffitt

Since antiquity, paint has been used to transform ordinary surfaces into extraordinary examples of exotic, valuable, and aesthetically pleasing woods. Bird's eye maple, oak, ebony, mahogany, rosewood and more have been imitated in both oil and distemper through the careful layering of opaque and transparent layers, deceptive brushwork, and a certain degree of technical skill. An expression of wealth and status in early American homes, by the first quarter of the 19th century graining was so common that Nathaniel Whittock noted in his *Painters' and Glaziers' Guide* (1827) that "very great improvement has been made within the last ten years in the art of imitating the grain and color of various fancy woods...there are few respectable houses erected, where the talent of the decorative painter, is not called into action, in graining doors, shutters, wainscots, &c."

When a surface has been overpainted, as is often the case with furniture and architecture, cross-section microscopy may be the only way to determine if a surface was grained in the past. For the analyst/conservator who studies painted surfaces using this technique, a distinctive buildup of characteristic, colorful layers are typical of imitation graining in cross-section, but these finishes can vary widely in appearance due to their materials and method of application. Unless successfully exposed for study through the removal of overpaint, it is challenging to understand important characteristics of a graining finish including the species of wood imitated, the grain pattern, and the style of painting. In an effort to study and better understand historic graining in early America, The Colonial Williamsburg Foundation (CW) has collaborated with outside analysts, architectural historians, and paint experts to explore this widespread decorative trend.

This talk will examine findings from surviving historic graining examples on architecture and furniture to establish a correlation between various types of imitation graining and their resulting appearance in cross-section under the microscope. Where applicable, data collected using additional techniques including SEM-EDS, PLM, XRF, and FTIR to better understand the pigment, media, and varnish components of graining finishes will be shared. These results will be contrasted with directives found in historical graining treatises, and the evolution of graining techniques from the 18th through the mid-19th century will be explored. Examples will focus on exposed 18th and 19th-century vernacular graining in the CW collection as well as select historical sites in the southeastern United States including the Carolina Room- a grain-painted paneled period room (CW), the Cogar Shop doors (CW), various grain-painted furniture in the CW collection, as well as surviving architectural graining from Brice House (Annapolis, MD), Stratford Hall (Stratford, VA), the Schorsch House (Portsmouth, NH), Monumental Church (Richmond, VA), Wilton (Hartfield, VA), and Thomas Jefferson's Monticello (Charlottesville, VA).

# SPECIALTY SESSIONS: RESEARCH/PREVENTIVE/BOOKS | OBJECTS

## JOINT RESEARCH & TECHNICAL STUDIES / PREVENTIVE CARE / BOOK & PAPER

### Poison Books: Is That Green Book Going to Kill Me? Bibliotoxicology Working Group Discussion Panel - 10:30 am to Noon

Kimberly Harmon, Timothy N. Greening, Rosie Grayburn, Becky Fifield, Melissa Tedone, Susan Russick

So called “poison books” have been positively identified in collections all over the world. The Bibliotoxicology Working Group is an ad-hoc, international cohort of conservators, cultural heritage scientists, librarians, collection managers, book historians, and health and safety professionals. The group explores reliable identification methodologies for toxic components of historical bookbindings and archival materials and develops best practices for managing such collections with a focus on health and safety. This panel will address the following questions:

- What hazardous materials were used in bookbinding? In what time period(s)?
- Is it possible to safely use these materials?
- What are the OSHA requirements for labeling and handling?
- Do I need to buy an XRF to identify hazards?
- Who else in my institution needs to know about this?
- How do I get from panic to planning?

The session will combine short presentations with ample time for questions and discussion. Presentations will be:

- Melissa Tedone, Head of Library Materials Conservation Lab, Affiliated Associate Professor WUDPAC, Winterthur Museum, Garden & Library, “The Evolution of the Bibliotoxicology Working Group.”
- Rosie Grayburn, Head of Scientific Research and Analysis Lab, Affiliated Associate Professor WUDPAC, Winterthur Museum, Garden & Library, “Searching for arsenic: the scientific approaches of the Poison Book Project.”
- Timothy N. Greening, Archeological Scientist, Parks Canada, “Arsenic to Dye For? A Study of Arsenic inside a 19th Century Book of Textile Samples.”
- Kimberly A. Harmon, CIH, Industrial Hygienist, Office of Safety, Health and Environmental Management, Smithsonian Institution, “Exposed! Results of sampling during handling of “poisonous” books.”
- Becky Fifield, Associate Director, Collection Management, Preservation and Collections Processing, The New York Public Library, “We have a plan for that! Initiating the Hazardous Collection Material Management Program at the New York Public Library.”
- Susan Russick, Chief Conservator, Northwestern University Libraries, “Can we call it arsenic yet? The 19th century Green Books Project at Northwestern University Libraries.”

## OBJECTS

### Hands, Hair Plugs, and Hardtack: Conserving Organic Objects from Gettysburg National Military Park

Fran E. Ritchie

The National Park Service (NPS) is responsible for protecting and operating over 423 individual “units”, including 63 National Parks, 74 National Historic Sites, and other designated areas such as battlefields, monuments, nature preserves, and more. Gettysburg National Military Park (GETT) commemorates the Union victory and turning point in the Civil War, as well as its bloodiest battle. The Museum Conservation Labs at NPS Harpers Ferry Center (HFC) are responsible for supporting and performing conservation work across all park sites. A recent project for GETT prepared objects from the park and from the Civil War Museum of Philadelphia (CWMP) for display in a temporary exhibit on A Rough Coarse Life: The World of the Civil War Soldier. Some treatments were typical of battlefield sites, such as tin canteens, firearms, and medals. More surprising, however, were the organic objects that included a Prussian-style calfskin sharpshooter knapsack, a piece of hardtack (cracker), and a painted wooden prosthetic hand. These unique pieces of cultural heritage required the use of methods more commonly used on organic and natural science materials that may be less known to objects conservators with other sub-specialties.

The calfskin sharpshooter knapsack is one of only a handful that exist today. Extensive hair loss from pest infestation, leather loss and deterioration, and textile fragility called for leather and hair fills using flexible acrylic emulsion adhesives and commercially sourced hides of a variety of species. The dried and brittle hardtack required testing various adhesives (such as cellugel, methyl cellulose, and Butvar B-98) on modern-day crackers to determine the best consolidant for porous food that would not impart a glossy tideline. The flaking paint and large losses of the fingertips on the rare prosthetic hand necessitated consolidation and cleaning of the paint, and the use of toned bulked adhesives to create a more cohesive appearance. Unlike other park projects, the GETT curator and CWMP representative were instrumental in determining the extent of treatment for each object and was guided by the desire to present them as they would have been encountered by a Civil War soldier. The exhibition's important narrative directed more interventive approaches than are often practiced on utilitarian objects, but the results of the treatments allow the visitor to focus on the personal stories surrounding a dark moment in our nation's history, rather than the effects of 150 years of aging.

This talk will highlight decision-making processes, materials, and methods used on hides and leather, painted wood, and cellulose collections that objects conservators can incorporate into their treatments of similar substrates.

### The Beads' Needs: Preserving a Large Collection of Native North American Beadwork with Glass Deterioration

Cassandra Gero, Kaitlin “Katie” Linder

Glass deterioration, also known as glass disease, happens when alkaline components leach out to the surface of the glass. It's believed to have two contributing factors: unstable composition of the glass, and incorrect relative humidity. This problem is particularly difficult to address in composite items decorated with small, tightly bound glass beads and may also incorporate other materials. Eventually, the affected glass will crack and crumble, causing the loss of culturally significant beaded designs.

In 2015, conservation staff at the Field Museum began a survey of Native North American beadwork items from the Plains region to identify beaded items suffering from glass deterioration. Beads were tested for stability by pressing dampened pH strips to the surface following O'Hern and McHugh. The measured surface pH was used to give a treatment priority to each item. Items with pH of 8 or above were included in the next phase, the bead stabilization project, which began in 2021. 1807 catalog numbers were surveyed, and 786 were ultimately included in the stabilization project.



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Our method for trying to slow down the glass deterioration is microclimate storage at stable relative humidity (RH) in the low 40 %RH range. All items are documented through photography and condition reports and then housed in stable relative humidity. Smaller items are stored in gasketed metal cabinets with conditioned silica gel. For larger items, a custom Escal barrier film enclosure is created for each item, with a packet containing silica gel buffer and a humidity indicator card. Given the density of packing of the items in the cabinets and Escal enclosures, it was found to be important to acclimate the items to the correct RH prior to storage.

Covid-19 and the large volume of material restricted the scope of collaboration with Native Communities associated with the items being treated and re-housed. Nonetheless, we were able to engage the Native American community through a three-day workshop, hosted at the museum for people from Native American Plains communities who have a role in caring for beaded items. This workshop was an opportunity to share trusted collection care resources, show how the Field Museum cares for beadwork, and provide an opportunity for hands-on practice cleaning beads and creating archival housings.

Over the course of the project, we have encountered many challenges, including a slow start due to Covid-19 restrictions, schedule delays, multiple staff departures, competing departmental priorities, and more. In this paper we discuss the survey methodology and results, the rationale and practical implementation of our relative humidity stabilization methods, and our strategies for overcoming these challenges and reconciling our conflicting priorities.

The documentation, treatment, and rehousing of the items in the bead stabilization project, as well as the workshop, were made possible in part by the Institute of Museum and Library Services grant number MA-245371-OMS-20.

### **Beyond Conservation: The Interpretive Restoration of a Frankenthal Porcelain Group**

Anthony (Tony) Sigel

Restoration has become a dirty word in our profession. Increasingly, we dismiss restoration, or “aesthetic reintegration” as a legitimate activity. The essential tasks of restoration—re-creating elements, filling and inpainting losses are often devalued as merely “benchwork” or “hand-skills.” In truth, restoration work is often one of the most complex, difficult, rewarding, and necessary aspects of the profession. And so, when an object is so severely damaged it requires significant restoration to be exhibitable, what principles guide us?

My most recent treatment, *Love Restrained by the Graces* modeled by Conrad Linck for the Frankenthal Porcelain Manufactory (c.1763-77), called for restorative work at the highest level. The complex, beautifully modeled and decorated figural group was heavily damaged. Older restorations, remedying several broken-off limbs and a head, were clearly failing. The most consequential losses, however, were to the extensive colorful network of draped floral garlands. The delicate porcelain vines, leaves, flowers, and bows were almost entirely missing. I imagined a naughty child had methodically broken them off, leaving mere stumps.

Restoration was obviously required, but how much, and what kind? Only two poor quality photos of other versions were found and no other examples in other collections could be located. To provide a semblance of the original appearance, significant interpretive restoration was needed. I created colored wax mock-ups for curatorial conversations to help define the scope of the treatment. My plan was to restore only those elements for which sufficient physical evidence remained, but as the work progressed and my confidence and understanding of what the composition needed increased, so did the scope of the restoration. I returned to the photographs for inspiration, as my conservative approach evolved to allow the re-creation of more of the missing elements, aware that no two pieces were decorated exactly alike.

Porcelain sculpture is an unforgiving material to restore; its perfect surfaces and minute detail require a high degree of expertise. While remaining within the mandate of reversibility, I drew upon traditional porcelain restoration methods, also developing novel techniques to recreate, attach, and inpaint innumerable missing elements. After much experimentation and many failures, I arrived at a process of direct modeling and casting the individual flower types, leaves,

and ribbons, using epoxy putty, Paraloid B-72 and cyanoacrylate adhesives. I formed the vines from metal wire of different gauges and adhered them to existing broken stubs, using temporary plasticine props to aid in positioning and joining the elements. Afterwards, I inpainted the restorations with acrylic media and used an airbrush to re-integrate original glaze damaged during a previous restoration.

The results exceeded expectations. The restorations integrated invisibly with the original elements. The newly-fashioned garlands restored a sense of unity and completeness to the composition, presenting a balance and imparting a rhythm only found to have been missing when the treatment was complete. This success validated both my initial plan for limited restoration and my subsequent willingness to expand it.

### **A Confluence of Passions: A Classical Guitarist's Approach to the Conservation of an Oud, a Stringed Musical Instrument from Ottoman Syria**

Adrienne Gendron

Musical instruments may pose particular ethical questions in collections settings due to their unique status as functional objects whose core purpose is contingent upon the production of sound, a factor that is typically made unavailable when they enter a museum collection. The conservation of these objects is accordingly complex, and accepted levels of intervention vary significantly between institutions. This presentation concerns the treatment of a 19th-century oud at the Cleveland Museum of Art (CMA) with significant structural damage. The author's background as a classically trained guitarist along with her interest in conservation ethics and decision-making informed a people-centric approach to the treatment, which welcomed experts outside of the CMA network to contribute to the decision-making process. Discussions with ethnomusicologists, musical instrument conservators, and an oud scholar and player provided critical contextual information and elucidated a path forward. Ultimately, the treatment involved a compromise between minimally and highly interventive tactics, resulting in an approach that addressed structural and aesthetic concerns while preserving historical information as much as possible. Despite numerous obstacles, the project provided an opportunity to interrogate the values motivating standard conservation practice, examine the philosophical differences between a museum object and a functional musical instrument, and foreground voices not typically heard in the museum setting.

### **Adhesives for Deteriorated Cellulose Nitrate: Navigating an Intervention**

Emily Brzezinski

Cellulose nitrate is notorious for its dramatic deterioration that leaves the plastic extensively crizzled and crazed, eventually leading to disintegration. The Smithsonian, National Air and Space Museum (NASM) holds innumerable cellulose nitrate objects, including a navigation board used by aviators Charles and Anne Lindbergh in the 1930s. The navigation board comprises a wooden backing board, steel hardware, and a transparent cellulose nitrate sheet protecting the paper charts. Inherent vice and poor storage conditions have caused extensive crazing and breaks to the cellulose nitrate, placing the plastic's structure – and therefore the legibility of the entire object – at risk. Adhesive consolidation or facing was required to preserve the integrity of the original material.

While conservators have undertaken more interventive treatments of plastics in recent years, there is a paucity of publications concerning adhesives used in the treatment of cellulose nitrate objects. The study began by surveying conservators at NASM and the broader community, asking what adhesive methods conservators use to stabilize cellulose nitrate and how the treated objects fared over time. Informed by these results, several adhesives were tested in combination with deteriorated cellulose nitrate. The sensitivities of the plastic restricted experimentation to adhesives soluble in water, non-polar solvents, and emulsions. These adhesives were assessed for their efficacy in stabilizing breaks through facing or butt joints, and consolidation of the internal



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crizzling. The experimental methodology first utilized a series of facing mock-ups, assessed for strength, retreat-ability, and flexibility. Secondly, consolidation was evaluated by adding chemical dyes to the same adhesives. The dyed adhesive was applied to degraded samples, and photomicrographs were taken at cross-sections to assess the levels of penetration into the porous material. The results informed the stabilization of the Lindbergh navigation board.

This project also reflects on the ethical dilemmas that interventive treatments bring to conservators. When deterioration is unavoidable and severe, we must balance the object's inevitable loss with the inherent risks of intervention. Ultimately, an adhesive treatment cannot arrest cellulose nitrate deterioration. However, it could act as a temporary stopgap to allow handling, exhibition, or replication, extending the life and accessibility of the object. This case study includes the ethics, practicalities, and outcome of an interventive treatment for cellulose nitrate, and reflects on our decision to intervene.

### **Don't Just Wing It! The Impact of Cleaning on Feather Preservation**

Lisa K. Elkin, Michaela Paulson, Julia Sybalsky

The Science Conservation team at the American Museum of Natural History recently completed a four-year Institute of Museum and Library Services funded program evaluating commonly used feather cleaning techniques and their impacts on preservation. This talk will share the findings from this extensive experimental investigation, which resulted in an interactive decision-making tool for cleaning feathers and documented best practices for treatment of feathered objects.

Over 100 cleaning techniques commonly used by allied professionals were identified through a community survey distributed broadly. An initial empirical evaluation of each technique resulted in the selection of 23 methods to evaluate more closely. Data from short- and long-term impact studies of the selected methods was interpreted using a multi-criteria decision-making technique called the Analytical Hierarchy Process (AHP), allowing them to be ranked according to their potential for causing damage to feathers of different types and condition states.

An interactive digital guideline for decision-making was built using rankings derived from the AHP. This tool describes best practices for cleaning, delivering customized recommendations in response to user inputs about the morphology and condition of the feathers to be cleaned, as well as risk tolerance for different types of damage. The guideline presents a clear description of each cleaning method, supported by a video tutorial for better understanding of application and technique. Potential damages associated with each method are also presented and represented in an illustrated damage typology.

The new guideline for cleaning feathers has been trialed by conservators and allied professionals representing a range of expertise and experience levels. Several case studies illustrating its application to the treatment of objects including taxidermy, feathered objects and study skins will be presented. With the benefit of feedback and insights from this field testing, the guideline has been refined into a valuable resource to help conservators and allied professionals approach cleaning decisions in a more systematic way, and to support better-informed assessment of the risks associated with cleaning feathers.

## PAINTINGS

### **An Approach to Treating the Ill Effects of an Early Wax-Resin Infusion: Franz Kline's Nijinsky, 1950**

Sara Kornhauser

American artist Franz Kline (1910-1962) is associated with the Abstract Expressionist movement and best known for his monochromatic paintings. First seen in his breakthrough exhibition in 1950 at the Charles Egan Gallery, Nijinsky (1950), which is in the collection of The Metropolitan Museum of Art, is an example of this more mature style. Titled after the famous Russian dancer Vaslav Nijinsky, the painting is an abstract composition with gestural strokes of carefully placed black and white paint on top of a reddish-brown intermediate paint layer. Prior to this evolution in style, however, Kline worked with a more colorful pallet. Nijinsky is a unique combination of the two because it is executed on top of an earlier, unknown composition. Kline would occasionally recycle canvases and other materials due to financial constraints. The colorful layers of the earlier painting beneath Nijinsky, however, created a thick paint film with a superficial bond between compositions, and resulted in ongoing cleaving and cracking paint. My talk explores the research and treatment of Nijinsky, which was undertaken to address these condition issues, and provides a method for treating early wax-resin infused paintings.

Before entering The Met collection, Nijinsky was owned by Muriel Kallis Newman in Chicago. There it was treated by a private conservator, Anton Konrad, in 1960 to address its unstable paint film. The treatment, which included infusing the canvas with wax-resin adhesive, was unsuccessful and made it difficult to re-treat the interlayer paint cleavage. The painting was also edge-lined; the original, colorful tacking edges overpainted; and the dimensions of the composition expanded when it was attached to a new stretcher. This project focuses on undoing the previous treatment, a challenge conservators are confronting more frequently when encountering paintings treated with wax-resin, providing an alternative to passive monitoring or full wax-resin reversals.

The main goal of the treatment was to reduce the wax-resin and properly address the severely unstable cleaving and cracking paint film so the painting could be safely exhibited in the future. A range of wax-resin reduction methods were explored, taking into consideration the paint sensitivity, structural concerns, and artist signature on the canvas reverse. Aesthetic issues were also addressed, including uncovering the original tacking edges, reducing distracting cracks, and bringing the painting back to its original dimensions. A technical study of the painting was carried out by Conservator Isabelle Duvernois in collaboration with the Department of Scientific Research at The Met, leading to discoveries about Kline's working methods and informing treatment decisions. The study included cross-section analysis, gas chromatography-mass spectrometry, infrared reflectography, macro-X-ray fluorescence, Raman spectroscopy, and X-radiography. Mechanical reduction of the wax-resin from the back of the painting using localized low heat was successful at bring back the natural texture and planarity of the canvas, and helped diminish areas of quilting. After consolidation was carried out, the painting was stretched onto a customized stretcher and aesthetic compensations were made to minimize distracting cracks.

### **Guidance on the Safe Use of Magnets in Conservation and Display of Works of Art: Occupational and General Public Exposure to Static and Varying Magnetic Fields**

Zuzanna Szozda, Stan Zurek

In the pursuit of new, minimal, reversible yet successful procedures in conservation and framing of artworks strong permanent magnets have been used for decades and still are (Spicer 2019). However, it should be recognized that since there are two types of magnetic fields: stationary and time varying (i.e. magnets are stagnant or in motion) the limits to both vary as obviously their influence on the human body significantly differs (Szozda & Zurek 2022).

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The International Commission on Non-Ionizing Radiation Protection warns against exceeding admissible limits (in Tesla units), i.e. the value of the induction or the magnetic field of the static and time varying exposures to head and trunk as well as limbs showing also that there is a very strong distinction between occupational groups and general public (for which permissible values are significantly lower) (ICNIRP 2009 & ICNIRP 2010). This obviously has bearing on the safety of conservators and museum personnel. It is crucial to emphasize that the human body does not sense magnetism. For this reason, the use of solutions with open magnetic circuits should be eliminated (Szozda 2022). Safe magnetic systems enabling local pressure and/or appropriate tension for stretching objects (e.g. on paper or canvas) will be discussed. This includes i.e. loose holders, rigid pads and substrates as well as frames with embedded magnetic inserts.

The aim of the paper is to consider and address this topic further analysing the practical use of magnets, i.e. their position changes, time varying exposure and the equivalent frequency of the magnets' movement in the context of safety, along with other aspects. Furthermore the concept of magnetic dose will be introduced together with the guidelines and limits of exposure to the magnetic field. Some experimental and simulation results will be included, showing typical magnetic field distribution around magnets and magnetic structures in connection to the safe limits suggested by ICNIRP. Finally, the impact of magnets on the environment will be discussed.

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### Treatment of a Severely Distorted Canvas Painting in a Humidity Chamber Using a Saturated Salt Solution

Kelsey Wingel

Saturated salt solutions are often mentioned as a controlled and effective means to maintain specific relative humidity levels in an enclosed environment for extended periods of time. Despite widespread knowledge of this technique, the practical use of saturated salt solutions in humidification of canvas paintings is rarely discussed in the conservation literature. This presentation will describe a case study in which a humidity chamber using a saturated solution of sodium chloride (NaCl) was effectively used to reduce deformations in an unstretched oil-on-canvas painting. The painting discussed in this case study, a preparatory study for mural painting *The Spirit of Light* (1902-1908) by the American artist Edwin Austin Abbey (1852- 1911), had suffered decades of poor storage that created severe deformations in the stiff canvas support. To prepare the work for humidification, the painting was loomed to a Medex strainer with polyester sailcloth strips, BEVA 371 film, binder clips, and elastic bands. The necessary surface area of the saturated salt solution was calculated and the chamber was carefully organized to safely hold the painting and containers of solution, enable air circulation, and allow periodic tensioning of the painting. Once in the chamber, the painting was gradually tensioned over the course of six days until the large deformations were eliminated. The temperature and relative humidity

of the chamber were monitored with a Conserv wireless data monitor. Assessed in a tactile and visual manner, the response of the painting will be discussed in relation to the relative humidity data gathered during the treatment, presenting information about the length of time the painting took to reach its equilibrium moisture content (EMC) and the response of the humidified canvas, ground, and paint layers over time. After removal from the chamber, the painting was dried on a Willard Table under light suction. In addition to discussing the practical aspects of the treatment, this presentation will outline the unique benefits of using saturated salt solutions in humidification chambers, including their efficiency, reliability, and affordability.

### Straight Out-of-the-Tube: Analysis and Conservation of George Mathieu's *Pour une aliénation définitive du logos*

Christy H. Gradini, Fiona Beckett, Jiuan Jiuan Chen, Aaron Shuga

*Pour une aliénation définitive du logos* (96.5 cm × 195.6 cm, Buffalo AKG Art Museum, Acc.1971:7), painted in 1955 by French artist Georges Mathieu (1921-2012) is an iconic example of Lyrical Abstraction. Mathieu launched this European counterpart to Abstract Expressionism in the post-war upheaval of 1947. His unorthodox methods present a unique combination of aesthetic concerns and intrinsic material instability. Mathieu's technique involved squeezing oil paints out-of-the-tube directly onto his canvas with rapid and spontaneous calligraphic motions. The primary condition issue for *Pour une aliénation définitive du logos* was the failing adhesion between this thickly applied paint and the primed canvas support which resulted in extreme lifting and loss. Mathieu's out-of-the-tube impasto, floating composition, and the large scale of the painting amplified this deterioration.

This paper discusses previous treatments and research of Mathieu's paintings and presents imaging techniques and scientific analysis that were used to characterize the materials to help establish a suitable course of treatment, while taking into account the ethical dialogue surrounding appropriate levels of intervention. Analysis included: multi-modal imaging with a modified UV-VIS-IR DSLR camera photogrammetry, transmitted light photography with high-dynamic-range stacking, transmission Fourier transform infrared, pyrolysis-gas chromatography-mass spectrometry, and x-ray fluorescence spectroscopy. The treatment consisted of a restrained cleaning, a novel approach to consolidation, compensation, and the installation of a new secondary support structure. Securing the delicate painting to a new stretcher was accomplished with a custom-made external hammock and carved backing board to accommodate the topography of the reverse.

The issues encountered in this project speak to the broad scope of challenges in conserving modern oil paintings and more particularly the specific challenges of so-called "Montparnasse Disease" suffered by a group of works from the Post-War School of Paris. Imaging and analysis of *Pour une aliénation définitive du logos* uncovered valuable information about the artist's materials and technique and the treatment stabilized the painting's fragile structure. The conserved painting now more accurately represents Mathieu's unrestrained style and artistic voice in a new era of globalism and extreme change.

### Artist, Collector, Conservator: The Legacy of Morton C. Bradley Jr. at Indiana University

Julie Ribits

Although best known as an innovative conservator and author of the reference manual, *The Treatment of Pictures*, Morton C. Bradley, Jr. (1912-2004) was also an accomplished artist and collector. After a notable tenure at the Fogg Art Museum, he established his private practice and remained in New England until his passing. However, Bradley's family had lived and prospered in Indiana since the early nineteenth century. A descendant of Indiana University's first president and the son of two professors, Bradley maintained his many ties to Indiana and always considered himself a "Hoosier" at heart. Consequently, he made several substantial gifts over the course of five decades.

Comprised of a series of gifts given as early as 1967, the Morton C. and Marie Bradley collection now spans four major areas that have impacted multiple

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generations of Indiana University students, staff, and faculty. His historic pigment collection has been the impetus for strategic partnerships with scientific departments on campus that may not otherwise prioritize meaningful engagement with museums and the arts. Bradley's own artwork, a large series of geometric sculptures installed across campus, have highlighted his attention to detail and deep understanding of mathematics and color theory. Bradley's archive and funds from his bequest have created and maintained the Morton C. Bradley Jr. Education Center, an immersive learning space with archival storage operated as part of the Wiley House, the ancestral family's home turned historic house museum. Finally, Bradley's painting collection, many of which were treated by him throughout his career, now comprise a significant portion of both the European and American paintings collections at the Eskenazi Museum of Art on Indiana University's Bloomington campus.

Acknowledging the gifts Bradley left Indiana University in all forms, this research focuses primarily on the paintings donated to the museum. We aim to critically re-examine the works owned and treated by Bradley, to analyze how his methods of treatment evolved throughout his career, and to determine how these changes have affected the current condition and overall longevity of the collection now under our care. Treatment histories were not included as part of the gifts to the museum; therefore, past restorations have been determined through examinations, photodocumentation techniques, and sampling analysis of residual treatment materials. An ongoing survey of treatment materials such as wax-resin, aluminum sheets, and cotton duck interleaves has begun to shed light upon Bradley's treatment methodology and the inception of his considerations for retreatability.

Though many of the invasive techniques pioneered by Bradley, such as the addition of aluminum sheeting as a component of lining treatments for canvas paintings, have since been largely abandoned in favor of more nuanced structural work, much can be gleaned from revisiting these techniques and the ways in which the paintings have aged directly due to intervention. Through this research, we hope to increase the body of knowledge for Bradley's treatment techniques and subsequent aging properties, as well as contribute to multifaceted education opportunities for students through the intersectionality of science, art, and conservation at Indiana University.

### **The Use of Photometric Stereo for Documenting Restoration Treatments: Case Study of a Copy of Guilio Romano's Milvian Bridge (Oil on Canvas, ca. 1700)**

Lieve Watteeuw, Hendrik Hameeuw

Between 2016 and 2021 a prominent project was undertaken to study and restore the large copy on canvas of Guilio Romano's Battle on the Milvian Bridge by a Roman workshop ca. 1700 (now in the Court Bladelin, Bruges). In support to the restoration process of the painting the analytical research techniques and methods of scientific imaging, carried out by KIK-IRPA, IPARC and KU Leuven, brought to light new information at a very detailed level about the original composition of the pictorial layer and the later adaptations of the paintings. The MA-XRF analyses identified most of the original pigments and the overpainting during the various restoration phases in the nineteenth and twentieth centuries.

The condition before, during and after restoration was documented by the Multispectral Microdome (MSMD) based on photometric stereo computer vision algorithms. As a result, the spatial evolution of the restoration and the necessary improvements in the stability of the canvas and the pictorial layers could be studied and visualized in detail. This varying information obtained during the restoration was documented in detail for one selected crucial and challenging zone in particular: the eye of the horse on the scene of the battle on the Milvian Bridge.

The MSMD (photometric stereo, i.e. related to RTI) generated interactive imaging of the pictorial layers during different steps of the restoration. This tool illuminates a surface from 228 different directions with 5 different spectra: ultraviolet, blue, green, red and infrared. With each new lighting angle, a photo is taken, and with that complete dataset of images, computer algorithms can reconstruct both the relief and reflectivity of the pigments. The device thus documented five successive phases in the conservation-restoration process, each

time the exact same zone. Phase 1 concerns the condition with varnish before the start of the restoration; phase 2 is after further decrease of the varnish layer; stage 3 is after the decrease of the fillers, making the cloth visible; in phase 4, the soil layer is brought up to level; phase 5 is after the completion of the restorations, with the new 'retouches' and the first new varnish layer.

This type of imaging makes it possible to interactively analyze the materiality of the pictorial layers. With the computer models, a researcher can virtually scan the surface in great detail. In addition, the incidence of light and light intensity can be controlled and the reconstructed information can be visualized in different ways. By working interactively with this, this research method supports the conservation-restoration process and ensures a rich documentation of the completed phases. In addition, this type of multiple rich datasets, including 3D-information, opens new possibilities for computer aided algorithms to perform automated comparisons between restoration phases. It also increases accuracy and reliability when final and intermediate results are compared where the physical differences between the restoration phases are severe. Standard 2D documentation methods often hit their limits here as too few points of reference are detected between such phases to guarantee correct alignment.

### **"Careful Studies from Nature": Grafton Tyler Brown and His Yellowstone Series**

Ellen Nigro

Grafton Tyler Brown (1841-1918), an African-American lithographer and painter, led a fascinating life, and was a pioneering painter in the American West. Born in Harrisburg, PA to a free family, Brown left for California as a young man, settled in San Francisco where he apprenticed as a lithographer, and eventually ran his own successful commercial printmaking business in the booming Bay Area. By the early 1880s however, Brown sold the business and took up landscape painting as a primary occupation. Brown worked throughout the Pacific Northwest and the Rockies, spending time in Victoria, British Columbia; Portland, OR; Helena, MT; and Yellowstone Park in Wyoming. He finally settled in St. Paul, MN where he finished out his career as a draftsman for the Army Corps of Engineers. Brown's time as a commercial lithographer and businessman informed his painting practice. Notably, he created and advertised a series of made-to-order scenes of Yellowstone Park in the mid- to late-1880s, selling the paintings to those who wished to take the beauty of the first national park home with them. One such painting, Grand Canyon, Yellowstone, in the Brooklyn Museum's collection, was researched and treated in 2020-2022. In addition to presenting challenging condition issues of a lead soap crust and an abraded surface, this work was a gateway into Brown's fascinating life and how he fits into the larger context of 19th-century America. It sparked conversation and reflection around the American art historical canon and conservation of works by African-Americans, leading to a public program at the Brooklyn Museum and an upcoming gallery feature on the artist.

### **Interdisciplinarity and Inter-Institutionality: A Partnership between the São Paulo Museum of Art (MASP) and the Frans Hals Museum in the Study and Treatment of Three Frans Hals Paintings**

Aline A. Oliveira, Liesbeth Abraham, Valter Felix, Renato Freitas, Sofia Hennen, Elizabeth Kajija, Andre Pimenta

Interdisciplinarity has always been a key feature of the conservation field. Exchanging knowledge from different perspectives is essential to better understand a cultural object. Institutional partnerships may also be enriching through the exchange between professionals with different backgrounds and expertise.

São Paulo Museum of Art Assis Chateaubriand (MASP) has a large collection of European Art, and one of the museum's roles is to preserve and research this collection. In recent years, MASP has invested in conservation projects in which specialists on a given material or artist are invited to work with the conservation staff to discuss technical and ethical matters that arise during treatments.

In 2022, a project was organized in partnership with Frans Hals Museum to



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study and treat three paintings by Frans Hals in MASP's collection: the portraits of Captain Andries van Hoorn (1638), Maria Pietersdochter Olycan (1638) and an unidentified 'Seated Officer' (1631). The Physics Departments of the Federal Institute of Rio de Janeiro (IFRJ) and of University of São Paulo (IFUSP) were also involved.

The aim of this collaboration was to perform well-founded treatments of the paintings, which presented aesthetic issues such as oxidized varnishes and altered inpainting that were disturbing their reading. For that, technical and stylistic aspects and the documentary history of the paintings were assessed.

IFRJ and IFUSP performed visible light, raking light, induced ultraviolet luminescence, infrared reflectography, and radiography imaging, as well as Macroscopic X-Ray Fluorescence scanning (MAXRF) and X-Ray Fluorescence spectrometry (XRF) measurements. Their involvement in the discussions was essential regarding pigment identification and interpretation of past interventions.

Frans Hals Museum was an active partner in all phases of the project. In the first stage, concerning preliminary technical and historical research, MASP's conservation team had online meetings with FHM specialists, who shared their expertise on the artist's practices, technique, and stylistic evolution. The second phase consisted in organizing a scientific committee including professionals from different Dutch institutions with experience in Frans Hals' works, in which the results of the preliminary study were presented. Issues such as the previous addition of a coat-of-arms in one of the paintings, large amounts of overpainting and changes of original dimensions were discussed. The third phase of the project consisted in the conservation treatment of the paintings. The conservator of FHM spent a month in São Paulo participating in the conservation treatment along with MASP's conservators. Her involvement was essential during the process, to better understand Hals' handling of paint and evaluation of damages. This proved especially important during removal of varnish layers, recognition and interpretation of overpaint, and during retouching.

A conservation treatment concerns not only technical aspects but also - and sometimes mainly - ethical decisions influenced by diverse cultural approaches. In that matter, the interinstitutional exchange was essential in the understanding of the paintings and in the decision-making process. The awareness of the cultural, social, and historical importance of dialogue when treating an artwork creates more conscious and collaborative conservation decisions.

### The Chromatic Reintegration with Wax Sticks

Romina Gatti, Mariana Calderón, Damasia Gallegos, Ana Morales, Mariana "Mana" Bini Olazabal

Innovations in art materials of the 20th century and the need to experiment with new visual possibilities produced a wide range of artwork made of unusual components. Therefore, when restoration treatments are needed, unorthodox works beg the restorers to take a different approach than the one followed for traditional paintings.

A bibliographical review of painting techniques becomes almost irrelevant with a piece made in the context of an artistic vanguard movement; this is why the artist interview has become an essential resource for conservators of contemporary art. However, for modern pieces, this measure was not yet widely practiced. Moreover, in the case of deceased artists, finding accurate information about their materials and methods becomes difficult, with some artworks almost impossible to decipher.

Trabajo, is an oil-based mural, painted in 1941 by Argentinian artist, Benito Quinquela Martín (1890-1977), and is located within an indoor patio of Public School N°7 Mexican Republic in the Villa Santa Rita neighbourhood of Buenos Aires, Argentina. The mural measures 300 x 800 cm and is mounted at 80 cm above floor level. It is composed of eight vertically juxtaposed, semi-rigid Celotex plates. Celotex, a brand of cellulosic chipboard, known for being lightweight and economic, is widely used as a construction material but is evidently unsuitable as a painting support. The incompatibility of materials produced an adhesive fault between the support, ground, and paint layer, leading to large areas of media loss.

Traditional materials and techniques for media reintegration, such as pointillism, tratteggio and chromatic abstraction, were not adequate for the issues at

hand. As an alternative, the restorers decided to test the use of wax media for inpainting. Historically, wax has been used as a stable, flexible material, known for its versatility in a broad range of artistic techniques.

According to the colour palette of the lacunae, a colour map of areas of loss was made to help create sticks, using wax as a binding agent, together with inert materials and pigments. The restorers filled areas of loss by melting the wax sticks with the aid of small thermal spatulas; and in areas with impasto, the wax was moulded while warm to match the original texture. Any excess of wax was removed with white spirit and a swab. Since the areas of loss were considerably large, there was no risk of covering the original painted surface.

The wax stick method—a technique with few bibliographical sources—proved to be the most suitable for the particular case of Trabajo. The variety and the inherent frailty of its materials, as well as the challenges of the outdoor environment, required a customised treatment and a whole new approach in which minimal intervention was a priority over implementing invasive treatments that would otherwise compromise the integrity of an artwork made with unusual materials and techniques.

### Prior to Contemporary Art Conservation: The Practice of Primary Conservation through Georges Rouault's Technique

Guillemette Caupin

Making artworks always involved the cooperation of "intermédiaires". Those mediators such as art dealers, artists' suppliers, or collectors assume responsibilities along the artistic process and up to the work's release to the public. Among them, a discrete figure has yet to be uncovered: the conservator. Partnerships between artists and conservators are documented in Contemporary Art Conservation, but while the conservator appears to have significantly interacted with the Art World before the mid-20th century it remains largely unknown. Recent research has shown that the conservator also intervenes alongside the artistic process of an artwork - and not only after its completion when damage occurs - in what we call Primary Conservation.

This concept will be illustrated by the practice of the French artist Georges Rouault (1871-1958) who cooperated with several Parisian restorers (Charles Chapuis and Marcel Coince, Gaston Chauffrey, Jean Malesset, etc.) throughout his career. Georges Rouault's main techniques started with paint on paper, then deliberately asked his conservators to mount his in-progress works onto linen canvas or wooden panels. The step of "marouflage" is essential in Rouault's practice as it allows the artist to apply thicker layers of paint. Two study cases will be presented to illustrate Georges Rouault's practice: *Conférencier* (1908-1910, Centre Georges Pompidou, Paris) and *The Manager and The Circus Girl* (1932-33, The Metropolitan Museum of Art, New York) to understand how works on paper became easel paintings.

The time at which conservation occurred, illustrated in Rouault's case, has not been defined within the conservation-restoration terminology edited by the International Council of Museums (ICOM) in 1968. Indeed, preventive conservation, remedial conservation, and restoration do not include conservation on an in-progress artistic production nor relate the conservator's gesture to the artist's. In that sense, the concept of Primary Conservation refers to the simultaneity of creation and conservation acts. Primary Conservation actions happen during the artistic process from the very beginning of the conception of an artwork to a few years after its completion. They are direct measures and actions taken onto an artwork in progress to ensure its stability during its making and allow its achievement, often requested by the artist itself.

Beyond the knowledge of Rouault's technique, this talk aims to present the making of paintings as a collective activity in which, sometimes, the conservator takes an active role. Primary Conservation intends to bridge the History of paintings and their techniques with the History of painting conservation not only in France but worldwide. Furthermore, the acceptance of Primary Conservation in the making of artworks questions the inheritance of original materials and their preservation today as the conservation treatment is part of the artist's intention.



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### Building the Capacity of Utah Field Services: Training Stewards in Preventive Conservation

Marie D. Desrochers

The challenge of preserving and making accessible the state of Utah's diverse cultural holdings is enormous, and the need for knowledgeable museum/collections stewards in Utah is significant. Utah Field Services (UFS), a partnership between the Utah Division of Arts & Museums' Office of Museum Services and Utah Humanities' Center for Community Heritage and Utah State Historical Society, is supporting preservation of the state's collections through the Utah Collections Preservation Program (UCP) with the support of a grant from the National Endowment for the Humanities. The preventive conservator hired under this grant is currently running the program and she will share in this talk how the state of Utah is implementing a preventive conservation approach, training non-conservator collections stewards across the state to create a more sustainable preservation network that did not previously exist.

Utah's material culture is distributed among small local institutions, which capture local history and provide residents with a sense of community. It is housed in the publicly accessible collections of 250+ museums, 55 city/county libraries, 21 college and university libraries, 29 county offices, and 93 archives, as well as in collections held by tribes or non-traditional collecting community groups. Residents want cultural resources to be maintained locally, despite risks and challenges for conservation.

Conservation resources, funding, and staff are scarce in Utah. About 78% of Utah's cultural heritage institutions have no staff members with formal conservation or collections care training, and more than 80% of Utah museums reported having 4 or fewer paid staff in a 2018/2019 Utah Museums Survey. The lack of conservation training in the Intermountain West, combined with few trained collections professionals in the state, means that Utah's bench of trained conservation professionals is narrow and concentrated on the Wasatch Front. For example, all five members of AIC living in Utah are within 50 miles of Salt Lake City. Additionally, budget size per organization in Utah is among the lowest in the nation.

Like in much of the country, the traditional models of conservation support are unrealistic in Utah. For the past ten years, Utah Field Services (UFS) has laid extensive groundwork in improving knowledge of collections care and sustainable institutional policy and procedure, as well as mentoring projects that have empowered individual organizations to better their collections through organizational core documents. UFS has internalized a philosophy of supporting a community-based approach, focusing on preventive conservation methods that are sustainable in their affordability and level of required expertise. The team of 9 stewards currently being trained in the UCP program is building on this groundwork, and in the long term they will serve as regional liaisons, providing preventive conservation support to their neighbors. This will increase the capacity of the Field Services team to support far reaching corners of the state. Presently, the outreach conservator is working with each team member to complete a preventive conservation project with a budget of \$5,000 of grant funding per institution. These projects range from archival rehousing of collections, to designing new storage solutions for historic river boats, to volunteer training, to preserving outdoor fossil specimens. The entire UCP project is putting into practice the ethos of conservation that emphasizes community empowerment, preventive methods, and sustainability in a region of the country where this way of thinking is required.

### We Are Family: The Cooperation of Collection Conservation and Management within the League of Literary Museums in Taiwan

Hsuan-Yu Chen, Ting-Tzu Liu

In Taiwan, a group named "Literary Museum Family" is related to Taiwanese literature as the bloodline. It was officially formed in 2015 by the National Museum of Taiwan Literature (abbr. NMTL) and other local literary museums. Via cooperation in multiple fields, the members promote Taiwanese literature together. It has accumulated 37 institutions all over Taiwan today.

The members of the literary museums include authors' memorials or former residences, local literary museums, literary archives, libraries, and literary activity bases. Due to the small size and limited resources of most local institutions, it is generally challenging to consider the preservation of collections when the main focus is on promoting literature education. In recent years, NMTL has successively received requests from the members for collection assistance. Observing the cases, those are the problems concerning conserving and preserving the deteriorative collections because of the lack of professional collection managers. NMTL is the only national-scale literary museum in Taiwan. We started to change the previous method of providing consultation for the small-sized museums belonging to the family to active aid in the conservation of the collections by using national power from 2020.

While handling the cooperation of conservation, the first problem we faced was that the staff in local institutions could not distinguish the objects with high importance and urgent conditions. Under this situation, this study classifies the characteristics of literary collections and designs a "Self-assessment form of Collection classification and documentation" to guide the custodians who have no idea of how the collection inspection is to initially screen their collection, which should be conserved, by themselves. The form is designed following two essential principles: 1. The users can fill in the form quickly, and 2. The collection must be evaluated objectively. In terms of filling out the form, only four necessary parts, including collection information, value grading, condition, and classification summarizing, are retained in the form design, which avoids the complex processes of documentation to confuse custodians. When it comes to sifting deteriorated objects from all collections, checklists are established in the value grading and collection's condition section. Pictures and described guidelines are used to reduce the perception of misunderstanding on year, authenticity, collection type, future use, and deterioration type. According to the standardized process, those selected results are converted into numerical points and calculated. It may help to find out the objects which should be prioritized treating.

After instructing the regional staff to operate the form practically, the instruction and grading can be verified and adjusted. It is expected that the objects that need to be treated can be sifted from many collections, and practical cooperation in conserving collections can be established. Literary objects collected in the folk connect an author's life with the land and exhibit the local culture and history. They are like seeds planted on the earth. In order to preserve the literary saplings representing the characteristics of each region, the NMTL and the families try to jointly irrigate the soil and nurture them healthily.

### Cognito Forms: A Comprehensive Solution for Collection Surveys and Condition Reports

Silvia Manrique Tamayo, Clara Huisman

Based on current conservation and museum registration forum inquiries, the interest for new and dynamic condition assessment tools remains high, with limited solutions. Working in three different cultural institutions in South Florida, we have found that Cognito Forms, an online form builder, is a promising option for designing and implementing collection surveys, generating condition reports and managing workflows in conservation and collection settings. As an inexpensive tool with an intuitive interface, Cognito Forms is considerably more robust than Google Forms. It provides more and varied query options as well as added flexibility in both the survey configuration and the final report design. Most importantly, it provides the advantages of some of the more popular mobile condition report apps with additional features. Data can be downloaded as both a spreadsheet—useful for data analysis and database compatibility—and as a custom item-level report in a doc or PDF format with the option to embed annotated images. The Cognito interface is easy to use and highly customizable with advanced features such as: prefill form options for auto-populating catalog information, skip logic function for integrating several forms into one, and post-submission editing for user flexibility. As a web-based application, it can be easily accessed by multiple users through different electronic devices, which allows team members to contribute and collaborate on large-scale projects. Cognito forms can also be integrated with other software and web platforms. The form builder has been used at The Wolfsonian-FIU Museum, the University of Miami Libraries and the Lowe Art Museum for both collection-wide condition surveys and individual condition reports. Additionally, we have successfully applied Cognito to other related tasks in collections care

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management, for instance, tracking and documenting object movement, and recording daily task progress for enclosure construction and book cleaning projects. More recently, we have implemented it for receiving interdepartmental requests for conservation services and collections intake workflows, making use of its message and alert features, and embedding options for scheduling meetings. This presentation will explore how Cognito Forms works, how the collected data can be output and shared, and how it can serve conservators seeking to create more comprehensive and efficient surveys, condition reports, and collections care projects.

### Doing More with Less: Tips and Tricks for Building a Conservation Imaging Program

Bethann Rea, Jacqueline J. Quinn, Catherine Orochena

This presentation will explore the economic challenges of implementing an imaging program from the ground up. This analysis will break down the process into four topics: workflow, equipment, software, and file management. These guidelines are based on the professional experience and research of three digital imaging and conservation specialists.

Our objective is to provide a positive experience for conservation, museum and library professionals that are struggling to track and document collections care tasks while facing budget cuts and staffing shortages. This cohort has considered the following when developing their guidelines: accessibility of selected equipment, open-source tools, institution-provided software, and sustainable or low-cost storage options. The presenters will provide example imaging projects that highlight the capture configurations and file management decisions.

An additional goal for this program is to provide recommendations for effective communication and collaboration between stakeholders. Sharing user stories, developing an accepted vocabulary, and determining levels of commitment for services, which will yield a standardized assessment process for imaging rare and fragile materials. The presenters aim to establish a baseline imaging program that can continuously improve as economic opportunities and new collaborative projects develop at their institution.

### Environments of Change: Digitization of Historic Sites and Artifacts for Heritage Repositories, Educational Video Games, and Virtual Reality Tourism Apps

Andrew Moore, Caroline Longo, Melissa Allen, Steven Bednarski, Emy Kim, Antonia A. Mappin-Kasirer, Patrick Shaghaghni

The 3D digitization of historic sites and artifacts has been developing in the field of conservation for over twenty years. Scanners have been used to document artifacts and spaces, virtually reconstruct them, print copies to increase accessibility and reduce handling of the original, and create customized supportive structures (Zheng et al, 1999; Boehler et al, 2002; Wachowiak and Karas, 2009; Logan et al 2010). Using updated scanning technologies, researchers with The Environments of Change project have been building a comprehensive digital environment in order to render and share a historical relationship between humans, nature, and culture. As one of its main objectives, The Environments of Change project seeks to design and develop an interactive digital database of stored artifacts from archaeological sites in England. Outcomes of this project will include access to virtual artifacts for all online user and will provide new research possibilities for those who cannot travel or gain access to the physical objects. As a preliminary initiative, in May 2022, graduate students from the Master of Art Conservation at Queen's University and Digital Media at Toronto Metropolitan University traveled to Herstmonceux Castle to assess, document, and digitize hundreds of artifacts from the estate's Visitors' Centre. These archaeological remains, including iridescent glass fragments, WWII Royal Air Force porcelain, and iron horseshoes, had drastically different provenance, histories, and material properties. The team used an Artec Spider 3D scanner to digitize the historical artifacts and they assessed the limitations associated with 3D scanning objects of different materials and textures. The scanned artifacts are a vital part of the project's digital environment, bringing together scholars across disciplines with the goal of sharing and preserving history.

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### Identification and Hazard Mitigation of Polychlorinated Biphenyls (PCBs) During a Large-Scale Collections Move

Jacqueline Riddle, Skye Marshall

Polychlorinated biphenyls (PCBs) are a highly regulated class of organic compounds, due to their negative toxic effects on human health and persistent bioaccumulation in the environment. Oils containing PCBs are found in museum collections in oil-filled capacitors and transformers, which are present in a wide variety of artifacts, including: TVs, radios, computers, printing presses, X-ray units, and other electrically powered devices. PCB-containing oils can also be found in artifacts which had high-heat applications, such as: lamp ballasts, microscope oils, cutting and lubricating oils, heat transfer fluids, and hydraulic fluids. Despite their prevalence in collections containing modern manufactured objects, PCBs in heritage institutions remain chronically understudied and misunderstood. First synthesized in the early twentieth century, North American legislation banned the production of PCBs in 1979 and regulated the storage and disposal of PCB-containing materials. Under Canadian and American legislation, museums must manage the PCBs in their collections and cannot legally store artifacts which contain more than 50 ppm of PCBs. Conservators at Ingenium - Canada's Museums of Science and Innovation have developed a process for identification and hazard mitigation for artifacts that may contain PCBs, working within a pre-established hazard management framework. This process was implemented during the collections move, completed in August 2022, in which all 165,000 artifacts and 2 million archival items were moved to a new purpose-built facility. Priorities for PCBs testing during the move were determined based on a wide variety of ever-evolving factors, but primarily focused on PCBs found in oil. Following the move, we are now looking more in-depth at lower priority items such as PCBs found in solid caulking material, industrial paint and electronic potting material. When required, samples or wipe tests are taken and sent to an external laboratory for analysis using gas chromatography with electron capture detector (GC-ECD), following a standardized Environmental Protection Agency (EPA) procedure. Mitigation strategies for each artifact depend on a variety of factors including test results, compliance with PCB legislation, artifact significance, and health and safety considerations. Case studies will be presented, providing concrete examples of artifacts from the Ingenium collection with test results both above and below the 50 ppm PCBs threshold, and how the hazard was mitigated for each. Through a discussion of challenges and decision-making processes, this presentation will examine how Ingenium's conservation staff are working to research and respond to an often neglected but problematic aspect of technological material culture.

### Duck, Duck, Grey Duck: A Study of Pesticides in Three Northwoods Taxidermy Collections

Nicole Grabow, Melissa Amundsen

Pesticide use on artifacts is well-known and documented within the conservation community, but collection caretakers in small to mid-sized institutions do

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not always have access to the resources and knowledge of the professional conservation field. In this study, which was made possible by a grant from the Minnesota Historical and Cultural Heritage Partnership Program, scholarship was combined with outreach and training to assess a representative group of the taxidermy artifacts in three regional collections from northern Minnesota. The goals of the project were to identify pesticide contaminants in the study group and to make inferences on the potential pesticide presence in the collections overall. At the same time, the institutions were provided with training on the health hazards and recommendations for safe handling, storage, display, and disposal protocols for these objects.

The project brought together three small collections: Roseau County Historical Society, Lake of the Woods County Historical Society, and Warroad Heritage Center are all located in Northern Minnesota along the international border with Canada and near Lake of the Woods, the sixth largest freshwater lake in the United States. The region is wooded, more sparsely populated than other parts of the state, and known for mining, forestry, and outdoor recreational activities such as fishing and hunting. Many residents have taxidermy in their homes, and this representation of the local culture is reflected in the taxidermy collections that are found in the region's historical societies.

The Midwest Art Conservation Center's Preventive Conservation team visited the three collections in the summer of 2021 during a site visit that included a training workshop, walkthroughs of the collections, analysis with handheld XRF, and sampling of the study group for GC-MS. The GC-MS portion of this project was completed by the Scientific Research and Analysis Laboratory at Winterthur. A total of 60 taxidermy specimens were included in the study group, 58% of which were found to contain hazardous contaminants that were likely applied for their pesticide effect. These contaminants cannot be visually identified but require analysis to detect. All hazardous contaminants detected contain either arsenic or lead. No mercury was found, and no organo-pesticides were detected. Most hazardous contaminants were detected in artifacts that were manufactured prior to 1960.

The presentation will share more detailed results of the analysis and discuss the practical challenges addressed, limitations encountered, and lessons learned. It will also include some great images of north woods taxidermy.

### Museums Poisons Test Kit: Analytical Testing for All Museums

Paulette Reading, Brandy L. Howard, Charlie "Chuck" Koch

Elemental analysis using handheld x-ray fluorescence spectroscopy (pXRF) has become the go-to technique to identify the presence of inorganic metals/pesticides in cultural collections by the conservation community. However, access to this technology remains largely inaccessible to the wider cultural heritage population. Institutions with limited budgets to obtain instrumentation, and those lacking conservation departments (most institutions), face multiple barriers including lack of staff training to perform tests and interpret results, and access to a safety professional with expertise in hazard identification and control. Even awareness remains an obstacle. Many staff do not know that their collections may contain hazards, let alone know how to address it.

Mishandling of hazardous collections not only puts people at risk but poses an environmental hazard and impedes sustainability efforts. The job of an industrial hygienist is to communicate these hazards to vulnerable populations. Conservators in private practice hold a unique position to reach the target population for this research project: underserved communities and collections. As contract workers, they develop relationships with the directors, curators, registrars, and collections managers in charge of caring for cultural heritage, including small, underfunded collections in remote locations.

The authors, representing a collaboration between conservation and industrial hygiene professions, have been awarded a research grant through the CDC NIOSH Mountain and Plains Education and Research Center to support their project, "Museum Poisons Test Kit." The project involves the development of a low-cost test kit for metal contamination by testing the surface dust in collections. Utilizing validated analytical methods common to industrial hygienists, wipe samples will be taken from display cases, storage boxes, and cabinets. Samples will be submitted for laboratory analysis. Testing of adjacent surfaces

eliminates the need for direct sampling or handling of artifacts. Outsourcing analysis provides a low-cost option to in-house testing. Four museums have committed to participating in this study: University of Colorado Museum of Natural History (Boulder, CO); Greeley Museums (Greeley, CO); Colorado Springs Pioneers Museum; and History Colorado Center (Denver, CO) including four of History Colorado's community museums located throughout the state (El Pueblo History Museum, Ute Indian Museum, Trinidad History Museum, and Fort Garland Museum and Cultural Center).

The end goal of this research is to develop a simple test kit with instructions and methodology that is easy for staff members to use to determine if toxic metals are present in museum dust. The first step aims to increase awareness about artifact contaminants in cultural institutions. The second phase involves developing a test kit that is designed to detect the presence of hazards using NIOSH validated methods. The final step entails disseminating practical, low-cost recommendations and resources including training in proper use of personal protective equipment, resources for how to manage any found hazards, and recommendations for additional artifact analysis such as XRF.

The grant period for this research project ends June 30, 2023. This presentation includes a description of the study to date, including available results of sample analysis.

### Evolved SHS: An Efficient and Sustainable Housing System for Tintypes

Clara M. Prieto

The SHS (Structural Housing System) can be defined as a tertiary housing system that efficiently stores and protects direct positives (daguerreotypes, ambrotypes, tintypes) taking into account the original structure, its mounting, movement and its specific viewing needs.

Tintypes, unique photographic objects, are technically complex and comprised of a multitude of elements. In order to guarantee its preservation they have to be considered as a whole artifact, even though they consist of different parts of diverse materials: metal, collodion, paper, etc.

These elements are among the key factors which influence how they are seen, displayed and preserved. Therefore, it is necessary to ensure complete protection against all agents of deterioration, including the most harmful of all, handling. But at the same time, these unique objects have to be able to be handled to be seen.

Up to the moment, housing systems for tintypes has basically consisted of paper or plastic sleeves, either for individual objects or album pages are in use. This are indeed very convenient storage systems, but as the plastic or paper is in direct contact with the image surface, there's a high risk of abrasion. Handling Mats are also proposed, but in those, the plate is held by its perimeter between two pieces of mat board. In the event of heavily distorted plates, this system is difficult to apply and not very adequate, particularly for tintype plates with damaged edges. In any case, the objects must be extracted for its examination and display, thus being exposed to the all the risks of direct manipulation.

As a result of the multidisciplinary research conducted, several prototypes of the Structural Housing System SHS have been conceived and designed to address all these needs, and modifications have been introduced in order to accommodate the needs of mounted tintypes.

In line with the trend towards resources efficiency, the SHS is a sustainable housing, inexpensive and simple to assemble and apply.

### Thinking Inside the Box: Computerized Mat Cutting for Collection Housing

Brie Warren, Chloe Gise, Anna Maupin

In preparation for movement and reorganization of over 49 million collection items, the Harry Ransom Center (HRC) at The University of Texas at Austin invested in a Computerized Mat Cutter (CMC) machine in 2021. In the first year of our project we have been able to expedite thousands of custom housings for movement and permanent storage, including book boxes, folios, glass based



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negatives, sink mats, spacers, oversized photographs, and objects. The streamlining of both repeatable and custom housing designs has changed the way we work by scaling up our projects and pre-existing housing protocols while still meeting the existing needs of our collections.

Ideal for large scale projects, the CMC can be operated by a single person. It has features that accommodate changing project needs and priorities such as portability of software, adaptable and new template creation, ease of use, short training time, and optimized material utilization. The CMC turns what would be weeks of housing by hand into a single day of work. Included are our most frequently selected housings and adaptations used during this project, as well as housing selection criteria, time management, statistic tracking, and materials usage.

### Adapting Preservation Work in Automated Storage and Retrieval Facilities

Christopher Saclolo

Many cultural institutions with growing collections have led to offsite state-of-the-art storage facilities new concerns for collection preservation. While this technology based offsite locations have relative environmental control, there is constant conservation and preservation attention needed for fragile materials within those facilities.

In 2018, the University of Central Florida Libraries constructed an automated storage and retrieval system, or also known as "ARC" for Automated Retrieval Center. The ARC is a building expansion of the university's main campus library. It is the first library automated system in a Florida institution. The ARC houses a robotically guided system which, by virtue of density and height, can hold up to nine times more cubic material in a fixed storage bin than conventional library shelving. It is anticipated to store 90% of the library's general print collection permanently, which allows the library to repurpose areas to expand study, research, and learning areas.

Because space has become limited for all parts in the library, the ARC is also used by Special Collections & University Archives. For now only manuscript collections are being transferred into the ARC. While this enables the growth of collections, there are also concerns of having fragile materials in shared storage areas because of possible environmental climate change due to periodic building maintenance, limited storage bin size dimensions, no expedited access to collections, stability of technology, and new workflows.

While high volume storage is not a new concept, this presentation will address some preservation, conservation, storage, and workflow concerns for using automated storage and retrieval systems, as well as adapting to these facilities for Special Collections & University Archives materials. This presentation will also give an in-depth perspective on offsite storage, showing photo documentation and work plans on the process of storing materials in our ARC. The goal is to give an insight to the impact of automated storage and retrieval systems in collection preservation.

### Boxing with Leopold von Ranke

David J. Stokoe

In 2016, Syracuse University decided to expedite the relocation of a large part of special collections' books to high density (HD) climate controlled off-site storage to free up space in the main library. The Leopold von Ranke (1795-1886) collection was purchased for Syracuse University in 1887 and formed the nucleus of what is now the Syracuse University Special Collections Research Center (SCRC).

Von Ranke was a German historian and historiographer. Highly influential in shaping the modern approach to history, emphasizing such things as reliance on primary sources, narrative history and international politics. He rejected the idea that each era is by definition superior to those that preceded it, as well as the idea of sweeping historical theories that attempt to encompass huge swathes of time and geography. Apart from his personal papers, the collection comprises some 18,000 bound volumes, many heavily used over the years and varying greatly in size, condition and binding style.

The collection was chosen for many reasons including collection size, limited and predictable usage, historic importance and existing cataloguing records. Transporting items to and from offsite storage would increase risks considerably compared to onsite risk factors. Although some items were already housed in a variety of ways, the majority had no protection at all. Housing options were assessed, costings compared, budgets reviewed and heads scratched! Mechanized individual boxing was the answer!

In September 2017 we took delivery of a Library & Archive Mini-Grand PRO box maker with digital measuring device. We hired 3 graduate students, purchased supplies, spent a week training and set to work.

Prior to measuring and boxing, books are checked against existing catalogue records and edited where necessary. HD storage is barcoded and arranged by size so two identical barcodes were assigned for each book, one for the box the other on A/F card inside the front book board.

We set up a macro and barcode scanner to populate the measuring device call number field, and began measuring in sequence two shelves at a time to limit data file size. The books are similar in size so we chose 2 suitable box designs from the 57 offered by the Kasemake software, a British Library design in E-flute for book spines over 20mm, and portfolio style in 20 point for smaller.

Measurement data is imported into the Kasemake software and sorted into descending size order to maximize boxes per sheet. The software allows quick automatic positioning, averaging 6 per sheet (60" x 40") and costing \$10 - \$15 each including materials and time but not equipment! The machine prints the call numbers, creases and cuts the perfect box every time. Boxes are assembled and matched to books in the conservation lab prior to relocation in HD offsite storage.

While the von Ranke project is ongoing, the equipment is also used for many other housing needs in special collections and for circulating stock when necessary. The new capabilities have changed the way we approach collections management, in the long term saving money and time, but above all better protecting fragile items without compromise.

### Early to Mid-19th Century Leather Saddles

Michela Kuykendall, Hillary Sullivan, April Berry

Having in place a program or policy for the conservation of the collections is critical for any museum, library or archive. Such program or policy is usually adapted to the real possibilities of the institution to meet its conservation needs, establishing terms in time with priorities depending and according to the most urgent problems or needs. The National Museum of Music of Cuba treasures a significant collection of textile pieces that belonged to outstanding Cuban bands and musicians, representatives of our cultural identity and bearers of values which transcend the material. Even though we had been working in the improvement of the conditions in the storage vault, we have recently noted signs of deterioration that had not previously existed, while others have worsened. So far, we have not been able to determine the causes of such damage. We therefore implemented a study to draft a policy and establish recommendations and guidelines aimed at the preservation and conservation of these pieces, specifically by determining the causes and the origin and possible problems existing in the storage. These recommendations have been organized in three major periods taking into consideration the problems and priorities, establishing feasible solutions. Some of these recommendations have already been implemented with the few resources available, and we have even assessed the risk-benefit relationship for the conservation.



# SPECIALTY SESSIONS: RESEARCH & TECHNICAL STUDIES

## RESEARCH & TECHNICAL STUDIES, SPONSORED BY BRUKER CORP

### Scientific Characterization of Alternatives to Cyclododecane: A Technical Study of Volatile Binding Media for Temporary Consolidation of Cultural Heritage

Hamada Sadek Kotb, Elisa Franzoni

This paper presents an in-depth technical study exploring alternatives to cyclododecane (CDD), a type of volatile binding media (VBM) previously used widely in conservation as a temporary consolidant but now difficult to source. This study compared CDD to cyclododecanone, cyclododecanol, camphene, menthol, and their mixtures to evaluate their potential use in conservation.

Temporary consolidation is an incredibly important tool in conservation, because museum collections, buildings, and sites are exposed to many types of risk, such as floods, fires, earthquakes, a rapidly changing climate, and damage during military conflicts. Moreover, during archaeological excavation, there is also a risk that objects may be exposed to environmental shock, which can damage the finds dramatically. During all of these situations, cultural heritage can suffer, with a severe risk of losing fragile material forever. Temporary consolidation can help manage these risks; museum collections and site architectural elements can be stabilized via the introduction of a temporary consolidating material that restores the physical integrity of objects to enable emergency treatment, removal, or the securing of an object. VBM, which spontaneously pass from the solid to the gaseous state and do not require additional steps to be removed without leaving residues, are especially useful as temporary consolidants. Cyclododecane (CDD) is the most common temporary consolidant, and it has been used since the 1990s. However, little is known about the interaction between VBM and different substrates, and studies are also lacking on alternative VBM for CDD substitution, especially in terms of exploring sublimation rate, residues, chemical interactions with different substrates, possible mechanical stress due to shrinkage, and morphological observation of the surfaces.

In this study, cyclododecanone, cyclododecanol, camphene, menthol and their mixtures were studied and compared to CDD. The VBM were investigated by differential scanning calorimetry, thermogravimetric analysis, X-ray diffraction, scanning electron microscopy, and with a colorimeter. The VBM that were studied have different melting points and sublimation speeds which may allow conservators to tailor the sublimation time, depending on the purpose of temporary consolidation (long- or short-time).

The experimental tests were carried out on laboratory samples mimicking deteriorated materials, including limestone, marble, glass slides, painted murals and ceramic, to understand the physical-chemical behavior of the new subliming compounds. In particular, the following parameters were investigated for the VBM and their mixtures: (1) sublimation rate, which depends on many factors, including microclimatic conditions and porosity of the substrate, and the VBM's crystallization behavior on the specific substrate; (2) interactions between the alternative VBM and substrates, including the chemical composition of the substrate; (3) morphological and chemical chromatic changes in substrate and the formation of micro cracking on the surface; and (4) presence of residues following sublimation.

This work is part of VOLATILE4ARCHAEO, a project funded by the European Commission under the Marie Skłodowska-Curie Actions.

### Evaluation the Efficacy of Dibarrier Discharge Plasma (DBD) In Decontamination Bio Deteriorated Cultural Heritage Objects

Akmal A. Sakr Sr.

Cultural heritage objects are subjected to different deterioration agents, out of them microorganisms, that involve significantly in deterioration of these objects, in particular organic through different pathways, such as producing acids and enzymes that decompose a wide range of complex polymers into

short chain, that provide a nutrient source for growth and colonization of other associated microorganisms.

To avoid using chemical substances, that endanger both the object and the conservators, so green technologies, such as dibarrier discharge plasma (DBD) were used. DBD plasma set up was designed within Plasma Lab, Faculty of Engineering, Zagazig University, East of Delta, Egypt.

DBD are generated through ionization gases such as He, under high voltage. This method has many advantages qualifying it to be a promising sterilization method that produce no hazardous residues, proved efficacy in sterilization the surgical instruments. This method does not break down DNA in the treated objects, such as mummies and human remains, on the contrary of gamma irradiation, not impair the further investigations and drawing phylogenetic tree.

The efficacy of DBD in sterilization of deteriorated cultural heritage should depend on different factor, the most important are: the type of gaze, its purity, the type of microorganisms, as the treated microorganisms varied in their resistance profile to this method, the treatment time and the distance between DBD source and the treated object. The lethal effect of DBD plasma was investigated, it was concluded that lethal action is attributed to two processes: blocking protein synthesis in the cell membrane of the treated objects; the second one is fragmentation of mycelium of microorganisms into bacilli form. Finally, it was found that DBD have no effect on pigments, such as (vermillion [Hg], Fe2O3, CuCO3, C) as FTIR patterns illustrated.

### A New Horizon for Atomic Oxygen in Sustainable Heritage Conservation: Green Technology for Contactless Cleaning of the Works of Art

Nina M. Olsson, Anton Nikiforov, Tomas Markevicius

The cultural heritage conservation profession is increasingly aware of climate change, scrutinizes unsustainable approaches, and seeks alternatives to environmentally hazardous and waste-generating methods. Mainstream cleaning methods frequently require mechanical action and physical contact with water or solvents, which can damage many sensitive art materials, and conservators now encounter fragile and untreatable surfaces where soot from smoke or fire, and diverse organic contaminants cannot be removed at all with conventional means. In the context of sustainability, the paper will discuss a radically different green approach to the cleaning of artworks based on extremely short-lived oxygen atoms - atomic oxygen (AO), which could provide a breakthrough solution to safely remove problematic contaminants from a broad range of surfaces in a non-contact manner, without health or environmental concerns or waste, which resonates with the sustainability ethos and the needs of the field today. AO is naturally present in Low Earth Orbit at 96%, but not on the ground, where it is extremely short-lived and self-reactive, and must be produced and used instantaneously. Therefore, its practical application requires a generation system tailored for conservation, which will be discussed in the context of past research, since the AO method was tested by B. Banks at NASA in the 1990s. We will discuss the design and working principle of the AO proof-of-concept system working at atmospheric pressure to achieve O fluencies around 10<sup>21</sup>m<sup>-3</sup> by flowing gaseous mixture O<sub>2</sub> in He (0.1-10 v.% O<sub>2</sub>), using radiofrequency (RF, 13.56 MHz) field, pulsed modulated RF field at the frequency range 2-100 MHz, as well as recent atomic oxygen cleaning experiments at the European Space Agency ESA's LEOX facility. Directed to the artwork's surface, the AO beam ablates carbon-based contaminants by converting them mainly into CO, CO<sub>2</sub>, and H<sub>2</sub>O vapors. AO is a short-lived active species (a few milliseconds in room conditions) and has the second-highest electronegativity of all reactive elements. Thanks to these qualities, AO interacts readily with a broad range of contaminants, eliminating soiling through ablation at the atomic scale. Since the atomic surface area of contact with the fluid is much more intense than with a volatile species, AO is expected to prove a superior alternative or supplementary means for enhanced safety and efficiency of mainstream methods. The discussion on practical cleaning applications will be supported with experimental testing and characterization of AO on 39 samples of archetypal sensitive and porous art materials, such as plaster, alabaster, gouache, acrylic, and oil paint, carried out in the ESA's LEOX facility. Preliminary testing shows that AO technology could fill the critical gap in green cleaning methodology for problematic cultural heritage materials considered untreatable by other means.

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The paper discusses future research and development plans for AO technology in cultural heritage conservation under Research Foundation Flanders FWO funded PLASMART (2022-2026) project for fundamental science, and the European MOXY project (2022-2026), funded under the Horizon Europe call Green Technologies for Cultural Heritage.

Speakers and Co-authors

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### Access and Accessibility: Challenging How We Are Using “Accessibility”

E. Keats Webb, Sally G. Kim, Ashley Grady

The AIC 2023 Annual Meeting theme of environmental, social, and economic change has sessions touching on “accessibility” of methods, tools, and techniques. Often “accessibility” in conservation and conservation science references tools and techniques that are lower cost, more sustainable, and may not require an expert user. While the cost and complexity are very important considerations for increasing the availability and use of some tools and techniques to conservators and cultural heritage professionals, this presentation aims to challenge our definition of access and accessibility to include people with disabilities and expand our considerations of equity and inclusion as part of our DEAL statements, discussions, and actions. It was previously observed in a 2021 F/AIC Accessibility Survey that 29.0% of conservation-related professionals in our AIC community identify as having disabilities (Teper, Namde, and Kim, 2022). Yet, there is a significant lack of awareness and dialogue on if people with visible and invisible disabilities are given the same level of opportunities to attain the same information and engage in the same activities as people without disabilities (South Carolina Technical College System, 2013).

Using a Disability Justice and Universal Design framework, making a space or activity accessible means providing what is needed in order for everyone to fully participate (Sins Invalid, 2019). Our considerations for space and activities should include our physical spaces, virtual environments, our daily practices, and how we present and publish our work. Accessibility includes wheelchair access, real-time captioning, and ASL interpretation in addition to image descriptions and alt-text for images and videos, teleworking, normalizing sharing access needs, considering timing and breaks (for physical, mental, and emotional well-being and basic needs), and more. Accessibility should not be an afterthought but integrated into our daily practices and budget planning.

This presentation aims to challenge us to extend our definitions of access and accessibility beyond cost, sustainability, and complexity to include people with disabilities and to encourage a social/political/cultural shift in how we are making our work and workplaces more accessible and inclusive. Finally, tips on how to make physical labs, virtual working environments, and disseminated research more accessible for conservators, scientists, and conservation-related professionals will be shared to demonstrate how Universal Design is applicable and makes research easier for all.

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### Bridging the Gap: Redirecting the Heritage Science Curriculum Towards Accessibility and Globalization

Alison Murray, Kyna Biggs, Rebecca Ploeger, Aaron Shugar

Historically, a clear divide between sciences and humanities has existed, treating the disciplines as separate and with limited overlap. The field of art conservation is, however, uniquely situated within this divide, as conservators must routinely combine knowledge from both scientific and artistic disciplines in their practice. While developing an understanding of key scientific principles adds critical aspects to conservation education and practice, it is often noted by conservators that the science curriculum is inaccessible to many entering the field. Current training by heritage scientists within the field often relies on theory-based teaching, where trying to find a proper entry point and depth of teaching can be challenging. This is often complicated by the diverse educational backgrounds and interests of students. When no applied examples are used to explain why the scientific theory is important, the course material becomes inaccessible and creates barriers; this is a disservice to both students and educators. This perceived disconnect during training can result in a reluctance to incorporate advanced scientific techniques within conservation practice or to collaborate with conservation scientists. Over time, the divide between these disciplines can grow larger.

It is evident that the field requires a recalibration of its approach to scientific education. Previous studies reflecting on the challenges conservation graduates and educators faced while learning or teaching the science curriculum identified the following key themes: A lack of linking scientific concepts to practical conservation work, apprehension towards failure-based teaching, and difficulties dispelling the fear of science within the science curriculum taught by scientists. These themes can greatly impact a student’s learning trajectory and put limits on the scientific concepts that are accessible to them during training and throughout their career. Additionally, global forums have demonstrated that these struggles and disconnects within the science curriculum are widespread in the field. This talk will draw from personal experience as a student and teacher of the science curriculum within a conservation graduate program, as well as perspectives from early-, middle-, and late-career conservators collected during research. An evaluation of the impact of these mentioned themes on students’ learning and future comfort with science throughout their career will be discussed. Additionally, strategies and resources designed to aid educators in developing a curriculum to overcome these barriers will be explored. In particular, a new online resource designed to build a global network dedicated towards redesigning an accessible science curriculum, Conservation Science Education Online (CSEO), will be introduced. A collaborative, global response to these concerns is needed to develop effective strategies for heritage science curricula to encourage scientific confidence in students, both in short- and long-term learning. Properly linking scientific theory and application to the practice of conservation, giving tangible examples, and encouraging interdisciplinary collaborations will be key to meeting the goal of protecting global cultural heritage.

### Increasing Student Engagement in Sustainability Initiatives at the Queen’s University Art Conservation Program

Caroline Longo, Emy Kim, Terry O’Reilly

This talk will give an overview of research into waste disposal and material recycling practices within the Queen’s Art Conservation program during 2022 and 2023. The lifecycle of various materials used in the conservation labs at Queen’s University, including commonly used solvents, nitrile gloves, and plastics, were assessed with the goal of providing graduate students with resources to make more informed decisions about sustainable material use in the labs. In order

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to gauge a baseline of student knowledge of material disposal and recycling protocols, a simple survey was sent to current and recently graduated students in the Summer of 2022. The results of this survey were taken in conjunction with an audit of items placed within trash receptacles in laboratory spaces to identify what materials, if any, could have been reused or directed to a recycling stream. It was determined that although students largely believed they were recycling materials to the best of their knowledge during laboratory activities, many materials, including coroplast, mylar, and paper towels, could have been reused or recycled instead of directed to the waste stream. The survey also identified that students desired recycling and waste disposal protocols to be more directly addressed within laboratory modules, and for sustainability as a concept to be better integrated into the general Master of Art Conservation curriculum.

At the time of writing this abstract, further research will take place throughout the fall of 2022 and winter of 2023 to determine the impact of signage placed throughout laboratory spaces to make recycling protocols and initiatives more accessible to students in their everyday lab activities. The effect of these signs in diverting recyclable or reusable materials from the waste stream will be determined through continual waste audits and another student survey to be sent out in winter 2023. This poster directly relates to the theme of this year's AIC conference by introducing a potential avenue for increasing student engagement with sustainable decision making, and gives an insight into ecological sustainability from a graduate student perspective.

### **The Mysterious Glass Pectoral of the Lady Nfrw Found in Saqqara Necropolis: Theories of Glass in Ancient Egypt – Is There a Scientific Explanation?**

Ahmed T. Ibrahim, Abdelmoniem M. Abdelmoniem, Ibrahim A. Mohamed Ali, Almoatzbellah Elshahawi, Eid Mertah, Moamen Othman, Mohamed Abdel Rahmani

This glass Pectoral of the lady Nfrw is preserved at the Egyptian Museum, Cairo EMC, JE 92636, belongs to the collection of the Lady Nfrw – Ramesside period 19th dynasty, discovered among other objects in 1957 at Saqqara Necropolis. The entire pectoral shape of a naos (or shrine) belongs to the lady Nfrw used by ancient Egyptian artisans. This pectoral is in the shape of a naos (or shrine) like a naos, inside a heart amulet is found above a solar barque where the gods Re and Osiris are also visible. On the base – a small part whose edge is chipped – a text is engraved in several lines because of this god's representation and the text's content, which combines the beginning of Chapter 30 B of the Book of the Dead. It is the oldest known example made of glass using the engraving technique. This study aims to analyze the glass heart using Reflectance Transformation Imaging (RTI) and Optical Light Microscope (OLM) to reveal more information related to the engraving technique and the tools used on the glass surface

### **Investigating the Materials and Techniques Used in Traditional Miniature Paintings of Rajasthan**

Georgina M. Rayner, Narayan Khandekar, Katherine Eremin, Celia S. Chari Ph.D., Anjali Jain, Jinah Kim

This study seeks to scientifically characterize natural pigments used in the workshop of Mr. Babu Lalji, a traditional miniature painting artist based in Jaipur, Rajasthan. A group of forty-one mineral and organic pigments, including a variety of red, yellow, green, brown, black, and white colorants are included in this study. The pigments are characterized using a combination of Raman, transmission and reflectance FTIR, SEM-EDX and microfadeometry. The last is of particular interest for studying the stability of light-sensitive pigments (e.g., safflower and realgar), and is carried out on paint-outs made by mixing the pigments with traditional gum and oil binders applied to samples of historic and modern Indian and Islamic paper supports. Through this study, a library of spectral data is being created to understand better the materials used in traditional miniature painting practices that have been generationally maintained and are still used in modern workshops. The information on the pigments currently used in traditional Indian miniature painting will be compared to analyses of Indian manuscripts in the Harvard Art

Museums collected with the same analytical techniques. The study forms part of the Mapping Color in History (MCH) project, which is developing a digital portal with a searchable online database documenting pigments used in Indian and related manuscripts based on new analysis of works in the collections of the Harvard Art Museums and Museum of Fine Arts, Boston, and on existing published data.

### **(Don't) Spare the Horses: A Technical Analysis of Acee Blue Eagle's Tempera Painting, Warriors on Horses**

Sydney E. Schaffer, Joanna Didik

Acee Blue Eagle (1907-1959), one of the prolific artists to emerge from Oklahoma, was an internationally celebrated Native American artist in his lifetime. Born Alexander C. McIntosh, Acee Blue Eagle was part of the Muscogee (Creek) Nation and studied painting under Oscar B. Jacobson. Blue Eagle graduated from the University of Oklahoma and became the first Director of the Art Department at Bacone College in 1935. Blue Eagle painted primarily in the flatstyle which employs techniques such as contour lines, bright colors, and minimal background using tempera paint on paper. Blue Eagle's painting, *Warriors on Horses*, is an example of flatstyle and is in the collection at the Gilcrease Museum in Tulsa, Oklahoma. The painting is part of a larger project funded by the Henry Luce Foundation to catalogue, report, and conserve art in the indigenous painting collection. The poor condition of the tempera painting is an example of the condition commonly found in the vast collection which include works from Woody Crumbo, Fred Beaver, and the Kiowa Five.

*Warriors on Horses* is in poor condition from previous display and storage, exhibiting photochemical damage of the matboard substrate and paint, cracking of the paint, and media loss. Fourier-transform infrared spectroscopy (FTIR-ATR) analysis and solubility tests revealed that the binder is not soluble in water unless the paint was exposed to environmental factors, especially light. The binder resembles a modern water-based poster paint having a synthetic component, likely a vinyl polymer. X-ray fluorescence (XRF) was completed to ascertain the elemental composition of the pigments which include titanium dioxide/zinc mixtures of white, lead based yellows, iron oxide reds, and calcium found in bone black. Microfading testing (MFT) was performed on the pigments along with the matboard substrate to evaluate the vulnerability of the materials for future exhibition and storage. The analysis of the MFT data collected illustrates the vulnerability of the red paints and the matboard substrate. These findings about the red paint are counterintuitive to the known stability and permanence of iron oxides and provides an example of the complexities of the components that are in the water-based pigments. The investigation into the materials of Blue Eagle's painting revealed the characteristics of his materials, advancing the knowledge of the process that he took in the creation of his art and will inform the future exhibition, storage, and treatment of his artwork as well as similar artwork found in the collection.

### **Characterization of Mark Tobey's Paint Materials Using Mass Spectrometry Methods**

Nicholas Dorman, Tami Lasseter-Clare, Vanessa Johnson, Christopher E. White

Mark Tobey was a founder of the Northwest School and a 20th c. painter working in the Pacific Northwest, New York and internationally. He worked primarily in aqueous media on paper, utilizing gouache and tempera while experimenting with layering unconventional materials. A painter of calligraphic images inspired by his spirituality, his extensive travel and innovative style established his work in the collections of major museums around the world. Analysis of his painting materials is absent from the literature, and the prevalence of friable and underbound paint layers prompts binder analysis to inform conservation treatment. This study sought to understand the composition of Tobey's paints by utilizing sensitive mass spectrometry methods such as Pyrolysis coupled to Gas Chromatography Mass Spectrometry (Py-GC/MS) and proteomics via Liquid Chromatography Tandem Mass Spectrometry (LC-MS/MS) to identify key components of reference binders and paints as well as microsamples from paintings by Mark Tobey from the collections of the Seattle Art Museum and the Jordan Schnitzer Museum of Art in Eugene, Oregon.



## SPECIALTY SESSIONS: RESEARCH & TECHNICAL STUDIES

Py-GC/MS utilizing a TMAH methylating agent was modified from a published method and used to characterize a range of traditional and unconventional reference binders, papers, and materials including plant gums, egg, linseed and heat-bodied oils, PVA, resins and waxes as well as commercial tempera paints documented in Mark Tobey's studio. Unique markers for each binder were identified by running references multiple times and the data resulting from these analyses were compiled into custom libraries in AMDIS and searched against when analyzing Tobey paint samples. Egg was identified via Py-GC/MS by detecting indoles and pyrroles and was often found concurrently with linseed oil, detected via the presence of a strong azelaic acid dimethyl ester peak. Analysis of proteinaceous reference binders via enzyme digestion and tandem LC-MS/MS is ongoing and will aid in verifying the presence of egg and other protein binders in Tobey's paints.

### The Pecking Order: Using Digital Capture and Multi-Criteria Decision Analysis to Rank Cleaning Techniques for Feathers

Lisa K. Elkin, Robert Waller, Michaela Paulson, Julia Sybalsky

Though digital images, micrographs, and descriptive notes are typically qualitative in nature, these familiar, affordable, and accessible formats can be used to support highly structured decision-making in treatment. One approach was recently developed by conservators at the American Museum of Natural History using digital capture and multi-criteria decision analysis to assess the impacts of cleaning on feather preservation. This strategy can be applied easily and effectively by others interested in systematically interpreting qualitative data to inform treatment decisions.

After surveying a community of over 100 professionals about their practices for cleaning feathers, the AMNH research team selected 23 techniques for in-depth experimental investigation. In nearly 250 cleaning tests, physical changes resulting from cleaning were recorded using a standardized written template, multi-band digital images taken with a modified DSLR camera, and digital photomicroscopy. Interpreting the experimental dataset to directly compare cleaning methods required integrating a large volume of qualitative data generated in multiple formats. The research team first developed a comprehensive, controlled vocabulary describing categories of damage with levels of extent, and then used this framework to catalog the results of each cleaning test. Each damage type was further characterized with a visual example, creating a glossary to support shared understanding. The Analytical Hierarchy Process (AHP), a structured technique for analyzing and supporting complex decisions, offered a means to convert this typology into a ranking of techniques based on the relative importance of damages observed in testing. Through a series of pairwise comparisons, each type of damage was assigned a numerical priority reflecting its importance to the selection of a safe and effective cleaning method. From the priorities, scores were computed for the 23 cleaning methods tested. Ranked by score, one can see which methods carry the greatest risk of damage. From these rankings, a digital decision-making tool was developed to guide conservators in treating feathered objects.

With a strong data set supporting the analysis, the AHP can be used to systematically merge diverse, categorical, qualitative measures into rational measures of importance to a conservation treatment objective. Although some sophisticated imaging equipment supported this study, the process does not require complex equipment, and provides the conservation community with an accessible approach to characterizing and comparing impacts of alternative treatments.

### Pilot Study on Silicon Carbide Sandpaper DRIFT Analysis for in Situ Characterization of Plastic Materials in Storage Collections

Kate Duffy, Kasey Hamilton, Georgia Arbuckle-Keil, Natalia Macro, PhD, Ashley Scavuzzo

Non-invasive and in situ characterization of museum objects is critical to provide proper storage conditions for the collections, protecting them for the

future generations. At the Philadelphia Museum of Art (PMA), the Scientific Research Department (SRD) utilizes a complement of analytical techniques for the study of the collection. While in some cases material identification still requires sampling, the SRD has been developing non-invasive analytical protocols, utilizing the Bruker Alpha FTIR and its associated three modules that provide varying degrees of invasiveness. The external reflection (ER) module is suitable for shiny, reflective three-dimensional objects and is completely non-invasive, whereas the attenuated total reflection (ATR) module is used for flexible materials like textiles and soft plastics but can sometimes leave an indentation mark on the surface of the object. The diffuse reflectance (DRIFT) module is used for objects that, due to their shape and texture, are not amenable to either ER or ATR analysis; it requires a small sample and, therefore, can be considered micro-invasive. DRIFT spectroscopy was introduced to the field of analytical chemistry at the end of the 1970's as a rapid and sensitive alternative technique to transmission FTIR [1,2,3]. Initially performed by mixing sample with potassium bromide, in the 1990's the Victoria and Albert Museum successfully analyzed cultural heritage materials by DRIFT spectroscopy using only the sample on a piece of silicon carbide sandpaper [4].

Currently, at the PMA, DRIFT is being applied to the characterization of plastics, for rapid identification that can be performed in situ without the sample manipulation typical of transmission FTIR. For DRIFT analysis, a 10 mm disc of sandpaper is rubbed against the studied object, sampling micrograms of material. Different grits of silicon carbide paper were compared, and the sampling strategy was focused on limiting the amount of material needed for the analysis. The analysis was then performed directly on the sandpaper disc, and the spectra obtained were comparable with transmission and ATR spectra. The in-situ protocol was developed first on known polymer materials (The ResinKit™, 1997) and then extended to study and accessioned objects at the PMA.

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2. Suzuki, E.M. and Gresham, W.R., 1986. *Journal of Forensic Science*, 31(3), pp.931-952.
3. Mazzella, W.D. and Lennard, C.J., 1991. *Journal of Forensic Science*, 36(2), pp.556-564.
4. Pretzel, B., 1995, May. IEE Colloquium on NDT in Archaeology and Art (pp. 8-1). IET

### Modifications in the Design and Operation of the Thomas Open Source Retro-Reflective Micro-Fading Tester: Optical Considerations, and Operational and Analytical Issues

J P. Brown, Jacob L. Thomas, Grace Kim

Micro-fade testing (MFT) provides a semi-quantitative method of predicting the fading rate of light-fugitive colored materials due to light exposure (Whitmore, Pan, and Bailey 1999) -- essentially, an Oddy test for museum lighting. However, the equipment is expensive for most conservation laboratory budgets (USD 25-35k), and there is no modern standard open-source software for acquisition and analysis of the results.

In this paper we describe the optical path of the open-source Thomas retroreflective MFT unit (Brown & Thomas, 2021) in detail, and present recent modifications to the design. As before, the instrument can be built from standard Thorlabs optical components in an afternoon, is hardware agnostic in its choice of light source and spectrometer, and costs around USD 8k in parts.

Modifications to the unit include better control of the beam centration, spot size and intensity, and better focusing and target finding to improve the repeatability of measurements. We discuss operational factors which affect the rate at which measurements can be taken (how fast can you take meaningful measurements?), examine the limitations of blue wool as a transfer standard, and describe some current issues in the mathematics behind the analysis of time-series spectral data for MFT.



# SPECIALTY SESSIONS: TEXTILES

## TEXTILES

### Measure Twice, Cut Once: Reusable Efficient Fosshape Torso Mounts

Jacquelyn Peterson-Grace, Gretchen Guidess, Sara Luduena

The Art Museums of Colonial Williamsburg (CW) are soon to open the Mary Turner Gilliland and Clinton R. Gilliland Costume Gallery dedicated to displaying garments. Traditionally, garments from the collection are displayed at The Art Museums on fully realized mannequins, augmented with reproduction garments and accessories. This approach helps visitors interpret individual pieces of the collection within the context of 18th and 19th century dress practices, illustrates the historic range of body shapes represented by garments that were tailor-fit to their original owners, and adds to the immersive experience found in the Historic Area. It is also labor intensive, requires significant use of a wide range of materials, and limits the number of objects that can be displayed. Exhibitions in the Gilliland gallery will also include individual objects mounted on torso forms, providing the opportunity to spotlight single objects like a waistcoat or pair of stays.

In planning for the opening exhibition and future rotations, the textile conservation team has developed a process for creating torso forms that can be reused many times. These forms have an exterior skin of Fosshape, a familiar and widely used material, with an internal infrastructure of dense Ethafoam 900 disks. The process of transferring the interior dimensions of the Fosshape skin onto the Ethafoam involved determining consistent placement for each disk and a series of blue board templates to guide the carving of the Ethafoam. The Ethafoam disks are screwed into place through the Fosshape and the center back seam is closed and reinforced with a 'spine' of matboard. The Fosshape provides a stitching surface for adding any additional padding and the forms are covered with a deep navy show fabric that is flattering to the objects and does not evoke human skin tones, inviting a more inclusive interpretation of the collection. As each future costume exhibition is expected to include at least eight torso forms, textile conservators invested the time to standardize the construction process by creating patterns and templates for each stage to expedite production and make the most of materials.

The forms are constructed from robust, inert materials. They are strong enough to support objects on display and to be reused many times, saving time and materials for future exhibitions and limiting reliance on supply chains. They can be produced in-house at a fraction of the cost of purchasing prefabricated forms. This limits shipping expenses and their associated carbon footprint to just that of the raw materials, all of which are ordered in bulk and shared by other CW conservation labs. The Fosshape and Ethafoam can easily be cut down to accommodate garments with measurements smaller than the smallest mannequin. Investing the time to create patterns and templates has made the fabrication of these torso mounts expedient with as little material waste as possible. They are built for long term structural stability, a more sustainable approach from a financial, environmental, and labor standpoint.

### Residual Concern: Shedding of Nylon Fibres from Vellux during Mechanical Cleaning of Historical Textiles

Sarah Bernardo Souza Almeida

Mechanical cleaning is an essential process for conservation and it is crucial to assess any harmful impact the cleaning materials used might have on the cultural objects and the environment. Vellux® is a brand of insulation blankets commonly marketed for the hospitality sector. In the early 2010s, heritage conservators incorporated it into their cleaning supplies. Vellux® showed good cleaning properties, however, blankets started yellowing and shedding nylon fibres as they aged. The fibres are hardly visible and go completely unnoticed on white surfaces due to their translucency and short length. Shedding can also release particles of polyurethane foam and unknown additives. Vellux® fibres were likely being left on objects, and limited research had assessed their composition or deterioration.

An MPhil dissertation at the University of Glasgow in 2022, written by the author, investigated Vellux® properties and quantified shedding, evaluating options to

reduce it. The research aimed to bring awareness to nylon fibres of Vellux® being left on cultural objects and transferred to sewage and waste sites. The research involved developing experiments simulating mechanical cleaning with Vellux®. The tests compared a new blanket to a three-year-old blanket and were performed on fabrics of different textures. The fabrics were photographed with ultraviolet lights, which increased the visibility of nylon fibres. The fibres were counted with the support of the free software ImageJ and analysed statistically. The research also included SEM and FTIR to assess the composition and deterioration of the material.

The experiment demonstrated that a startling amount of fibres could be left on surfaces after cleaning. Tests revealed that some techniques for using the material might increase shedding. A positive alternative to reduce residues would be to pre-wash Vellux® before cleaning, however, this would carry other concerns on Vellux® physical stability, water consumption and pollution of sewage with nylon fibres.

### Three Flags, the Same Identity

Patricia C. Lissa, Ivana Rigacci

Between 2008 and 2022 in Argentina, conservation treatments were carried out on several silk flags from the first decades of the XIX century, related to the South American emancipation wars from the Spanish empire. This work presents the research and treatment of 3 historical textiles from that group of flags, that were compared and found to have been sewn from silk fabric, with the same technical and chromatic characteristics, and which provided information on the original colours of the current light blue and ivory Argentine National flag. The comparison also showed how the different environmental and climate conditions affected the material and colours.

Two of the flags, now called "the flags of Macha" or "Ayohuma's flags", were found in 1883 hidden together in a church in the Bolivian Altiplano after the patriot defeats at the Battles of Vilcapugio and Ayohuma. In 1896 one was brought to Argentina, to the recently created History Museum and the other one remained in Casa de la Libertad in Sucre, Bolivia. There is still no reliable historical documentation, but their geographical location and their light blue and white colors associate them with the Campaign of General Manuel Belgrano, creator of Argentina's first flag in 1812 and leader of the patriot army in the north of the country.

The third textile, or "Estopiñan Flag", is made with fragments of the same cloth as the previous and was two donated to the Government of Jujuy in the first decades of the 20th century, relating it to the same battles defeats.

The successive conservation projects in Argentina and Bolivia between 2009 and 2021, made it possible to compare the three flags and find their common characteristics such as the tabby silk, light blue and ivory colours in warp and weft, three stripes, size, thickness of threads and weave density per centimeter.

Comparing their deterioration and the change the light blue colored stripes helped us to find out how different environmental and exhibition conditions modified the original colours and silk structure. During the last treatment we were able to test a light blue silk thread sample with High Liquid Performance Chromatography (HPLC) to identify Indigo as the original natural dye employed.

All the collected information during the restoration process was shared and worked on in an interdisciplinary forum with historians, vexillologists and chemists to expand the research and reach the conclusion of the contemporaneity of the 3 flags, and to prove the use of light blue as the original colour still in use in the Argentinian flag. Nowadays, the three textiles are exhibited in conservation conditions in two museums in Argentina and one in Casa de la Libertad, Sucre, Bolivia.

### A New Approach for Display Forms Has Been Improving Display Appearances!

Sunae P. Evans

The National Museum of American History (NMAH) has been continuously acquiring new costume objects. Many of them are made of synthetic materials that vary in their sizes and shape and can be either loose fitting or tight.

## SPECIALTY SESSIONS: TEXTILES | WOODEN ARTIFACTS

NMAH abandoned fiberglass mannequins or display forms made of hard materials for the exhibitions a couple of decades ago and use only mannequins made of Ethafoam since they are archival, lightweight, and easy to carve to fit the costumes.

It is challenging and limiting to achieve a desirable pose because of the soft nature of the Ethafoam mannequins, compared to using more rigid fiberglass mannequins. Some of our costumes made of synthetic fibers that stretch to fit the body more tightly and allow for more body movement, and often expose the arms and legs. This presents more of a challenge with the mannequins since we must balance the aesthetic appearance of the costume while following conservation standards. To solve some of these issues, collaboration with various expertise such as conservators, bracket-makers, mount-makers, and mannequin manufacturers was critical because soft Ethafoam mannequins require special armatures and joints to allow for more animated poses and support.

This presentation will focus on the process of the mannequin selection, the tools, techniques, and specific brackets chosen for the display methods used for the variously fitted costumes that are particularly made of stretched synthetic fabrics.

### Stabilizing Silk Ribbons and Ribbonwork at the National Museum of the American Indian

Susan C. Heald, Rebecca Summerour, Heather Ahtone, Kathleen Martin, Lauren Osmond, Welana “Osage/ Muscogee Creek/ Cherokee” Queton

This paper presents techniques and solutions for stabilizing silk ribbons and ribbonwork in the National Museum of the American Indian’s (NMAI’s) collection for a long-term loan to First Americans Museum (FAM) in Oklahoma City, OK. About 120 items stewarded by NMAI are featured in FAM’s exhibition WINIKO: Life of an Object, which presents cultural diversity in Oklahoma’s 39 federally recognized tribes through three sections: Creation, Collecting, and Continuum. Anthropologist Mark Raymond Harrington acquired most of the loaned items from tribal members in Oklahoma between 1908-1914 for the Museum of the American Indian (MAI), Heye Foundation based in New York City. A few items had been exhibited, but most were stored in museum facilities for more than 100 years, largely disconnected from documentation. Welana Queton’s research in NMAI’s archives reconnected archival information, collection items, and Oklahoma tribal communities from which the items were removed, rekindling connections. The all-Native curatorial team at FAM collaborated with Oklahoma tribal communities and NMAI’s conservation team to identify exhibition goals, evaluate proposed conservation treatments, and plan appropriate travel, handling, and exhibition. Although many requested items were in poor condition, especially items with weighted silk components, the team determined it was critical to return them to Oklahoma for long term exhibition. Ribbonwork designs, colors and techniques hold significant cultural information for tribal communities and families. Therefore, stabilizing and exhibiting ribbonwork was a priority.

Ribbons adorn many of these items as decorative applique, edge binding, and hanging embellishments alongside varied materials. Nearly all ribbons are silk, but cotton fabric and wool tape are occasionally utilized with similar techniques. Most ribbonwork in the exhibition was delicate and vulnerable, requiring extensive conservation treatment. The composite nature of each item presented varied challenges and many stabilization solutions were more involved than typical conservation treatments at NMAI. Distinct needs for individual projects are discussed, presenting an array of applications for stabilizing silk ribbons and ribbonwork with stitched and adhesive methods. This paper evaluates established materials and techniques for silk stabilization and applies them to ribbonwork, considering cultural aestheticisms gleaned through community input.

## WOODEN ARTIFACTS

### Panel Discussion: Imagining a Sustainable Career for Wooden Artifact and Furniture Conservators

Stephanie Hulman, Gregory Landry, Catherine Silverman, Antoine (Ton) Wilmering

Stephanie Hulman is a conservator of decorative and historic finishes. She has been working in the field of heritage preservation since 2005 and is a Professional Member of AIC. After earning her Master of Science in Art Conservation degree from the Winterthur/University of Delaware Program in Art Conservation in 2012, she has worked as a contract conservator for the Baltimore Museum of Art, the Walters Art Museum, and the Philadelphia Museum of Art. While her business is located in Baltimore, she works for a variety of museums and private clients throughout the Mid-Atlantic region. She focuses on the treatment of decorative arts with specialties including painted furniture and objects, polychrome sculpture, lacquer, murals, gilded surfaces, and architectural finishes.

Gregory Landry’s practical experience began in 1972 when at age 16 he started working as a cabinet shop assistant for the Corner Cupboard Antiques in Stratford, PA under the tutelage of David Sloan. He continued restoring furniture part time at the Corner Cupboard for five years, then serving full time as the cabinet shop manager from 1977-1979. Gregory attended Gettysburg College, graduating with a bachelor’s degree in history in 1977. He joined Winterthur Museum, Garden & Library in 1979 as assistant furniture conservator. He served as the head of the Winterthur furniture conservation laboratory from 1986-1995, head of the conservation department from 1995-2006 and director of the academic affairs division until his retirement in 2021. Gregory served as the Conservator-in-Residence for the Conservation Resources for Architectural Interiors/ Furniture and Training (CRAFT) program at the Palace Museum/Forbidden City in Beijing, China, sponsored by the World Monuments Fund and Tsinghua University for parts of each year from 2014-2019. He is now senior furniture conservator emeritus at Winterthur and affiliated associate professor in the art conservation department at the University of Delaware. Gregory has focused his research on the preservation of historic surface coatings, techniques of traditional cabinetmaking, period architecture and transportation. He continues to teach for the art conservation department at the University of Delaware and is a professional associate of the American Institute for Conservation.

Cathy Silverman is Associate Conservator of Furniture and Objects at Yale University Art Gallery. She gained a BA in Art History at Bristol University, and spent two years studying furniture restoration at London Metropolitan University before earning an MA in Conservation Studies, specializing in furniture from West Dean College, in England. Prior to joining the gallery, Cathy worked in private practice in New York and London and as a postgraduate fellow at the Metropolitan Museum of Art. Initially hired as project conservator for the relocation of the Yale University Art Gallery’s American Furniture collection, she joined the permanent staff there a year later.

Antoine Wilmering is a senior program officer at the Getty Foundation and oversees grant initiatives related to the conservation of cultural heritage around the world. He manages Keeping It Modern, an international grant initiative that continues the Getty Foundation’s deep commitment to architectural conservation with a focus on significant buildings of the twentieth century. Wilmering was trained as a conservator of wooden objects in the Netherlands and in the UK, and prior to joining the Getty in 2004, he taught conservation at the Graduate Institute of Conservation of Cultural Relics at the Tainan National University of the Arts in Taiwan (2000–2004) and was a conservator at the Metropolitan Museum of Art (1987–2000). His publications include Italian Renaissance Intarsia and the Conservation of the Gubbio Studiolo (1999), and he was awarded a Getty Conservation Institute guest scholarship in 2003.

## SPECIALTY SESSIONS: WOODEN ARTIFACTS

### **Intentional Framing at the Harvard Art Museums: Albert Moore's 'Study for Blossoms'**

Allison Jackson

It is becoming increasingly common that a frame conservator's role is not only to conserve existing frames, but to decipher how an artwork would have originally been framed and return it to its original context, rather than the presentation choice of various collectors who reframed in their own taste throughout the life of an artwork.

The new frame constructed for Albert Moore's Study for Blossoms is a stunning example of just such an historic reconstruction at The Harvard Art Museums. A fellow's research project on Albert Moore's carefully planned technique revealed that the existing frame for the painting was far from what the artist would have chosen. Moore was part of a larger group of Victorian era artists that rejected the conventional framing practices of the time, choosing to design and even make their frames themselves. Using archival photographs and existing examples of Moore frames in other collections, a team of conservators, curators, and contractors designed and created a reproduction to bring this artwork back to life.

This collaborative project was the inspiration for a didactic intervention in the gallery to highlight the role of frames and the impact they can have on the way a work of art is seen, to be transparent about the work of museum staff, and recognize frames as works of art in their own right.

### **Exchanging Knowledge: Lessons from a Conservation Journeyman**

Shane Orion Wiechnik

Furniture conservation in Australia is a small field, with art and object collections often bringing in private cabinetmakers and restorers to work on their furniture objects. Surveys revealed conservators were often frustrated and upset with the work of those individuals, due to the divide between trained conservators and those with the skills to work on furniture. Other surveys repeatedly show that conservators found it difficult to receive specialised training, education programs failed to incorporate practical skills and crafts, and there were gravely few people able to competently perform these skills. The diverse range of objects found in a multicultural country such as Australia only increases the discrepancy between the skills needed to care for its heritage and the capacity to acquire those skills within Australia.

Julian Bickersteth, appointed Australia's first furniture conservator at the Museum of Applied Arts and Sciences in 1984, proposed a furniture conservation apprenticeship to address this critical lack of training capacity. An internal apprenticeship does not however expand or grow the knowledge and skill base in Australia. I believed that an international journeyman format may be better suited to bringing in and sharing expertise, and decided to undertake such a journey myself.

As part of a George Alexander Fellowship with the International Specialised Skills Institute in Australia, I organised and embarked on a year of travel and knowledge-sharing based around the traditional journeymen of Germany and France in order to explore the viability and value of sharing international experience through this process.

I travelled the Eastern United States, Europe, the UK, and a few locations around the Mediterranean, spending time working in a variety of local workshops, visiting institutions, meeting professionals in person, and engaging in a process of actively sharing knowledge and experience.

It is the purpose of this presentation to share the lessons learned in this process, and discuss the viability of interconnected training opportunities such as this, as there is both benefit to the individuals who will be the caretakers of heritage objects in the future as well as the established organisations who take them in.

### **Chemical-Analytical Characterization of the Materials Applied on the Coffered Ceiling of the Lonshan Temple (Lukang, Taiwan)**

Yu Lee

Based on the written documentation, the Longshan Temple in Lukang, was founded between 1646 and 1661. The temple was built in the present location in 1786. This Buddhist temple was constructed with an uncommon layout in Taiwan, especially with the spread-out building complex within the national heritage site (5000 m<sup>2</sup>). This religious site composed with divided architectural units, that is dedicated to the goddess Guanyin (Goddess of Mercy). Depending on the iconography and habitate regulations in different areas and spaces, the units are decorated with painted wooden polychromies and diverse calligraphy. The most recent polychromes were painted by the local Master Tsing-Ling Kuo from 1958 to 1964.

The traditional polychrome techniques have been transmitted orally. Although, it has not been scientifically proved. This research tempts to reconnect the documented oral history and the applied materials and techniques on the painted surfaces. The organic and inorganic components from the original polychromies will be identified. A series of analytical investigations will be carried out by optical microscopy, FTIR spectroscopy, GC-MS and SEM-EDX and microparticle voltammetry (VMP). Given the combination of VMP and GC-MS, it is possible to characterize the presence of porcine blood as a preparation binder. The result features a fundamental material database, from which an adequate conservation strategy and preventive conservation can be proposed.

This paper presents the results obtained multidisciplinary approaches that allow us to better understand the application of pig blood and tong oil as part of the historical polychrome techniques in Taiwan.



## Poster Sessions

### 1 An Alternative Conservation Model of the Agro-Industrial Heritage of the Metropolitan Area of Rosario City Room TBA (Hyatt Regency Jacksonville Riverfront, 225 East Coastline Drive, Jacksonville, FL 32202)

*Carolina Haydee Rainero*

In the 21st century, the practice of built heritage conservation introduces new approaches in the discipline. The aim of this paper is to present a case of study that promotes an alternative approach regarding agro-industrial heritage conservation plans.

The first priority should be to protect the remaining physical resources, thus preventing any further deterioration. Only then can we ask ourselves what to do with these buildings and begin to think about how to interpret them. Reuse is critical many times because the resources are too vast and cannot be preserved by public initiatives alone. As much as possible, reuse should be keyed to the ways in which the built resources can be used to tell the story of the place based on creative collaboration between the multiple actors involved in the management plan.

During the last 30 years the concept of architectural heritage has changed from considering it in an individual perspective to a more comprehensive notion of environment, that is to say, taking into consideration the close interaction between buildings and landscape. In addition the heritage itself becomes a cultural resource which can promote the improvement of the environment.

In the world context, the actions on cultural heritage have moved from studying an isolated heritage to a cultural landscape, from heritage conservation to management of cultural resources and from public actions to participative enterprises.

Objectives.

- To enhance the practice of built heritage conservation.
- To involve citizens in the conservation programs.
- The primary objective of our conservation program is to preserve and communicate the identity of a community.
- The management program of the different buildings must focus its actions both on the correct conservation of buildings and sustainable development.
- The cultural values have to be recognized in a participative way and once their clarified they may re-value and become the statements of any future proposal.

The project.

- After researching the metropolitan area of Rosario for the last four years we could define a cultural landscape according to the productive activities of the region.
- Because of this, a large number of landmarks -Wheat mills, railroads, storehouses and "estancias"- are still present in the flat land of the "pampa".
- We can conserve our built heritage by integrating the building's project conservation into regional development projects.
- Based on recent actions, the inter-institutional coordination has been used in former rehabilitation and conservation projects with very satisfactory results that reinforce local identity.
- The major benefit of these projects has been the raising of local citizens awareness on the preservation of historic buildings and how citizens can improve their living conditions by different local projects based on the heritage conservation.

- Built Heritage conservation can be re-qualified and reached a new dimension in the context of opportunities and challenges of cultural diversity promotes and it appears as a resource to protect identity at the time to promote sustainable development.

### 2 Finding Neon: Measuring the Color and Light Output of Neon Tubes

*Giulia Rioda*

Gas discharge lights, also known as "neon", are often present in contemporary art collections, taking such forms as sculptures, commercial signs, and installations. While there is substantial conservation literature on considerations for lights used to illuminate artworks, there is relatively little about lights found in artworks themselves. It is not surprising, therefore, that the care of neon, and light-based art in general, is typically absent from conservation training. As a result, conservation professionals take non-standardized approaches to the documentation and long-term preservation of such media. As with any light source, the photographic documentation of neon is notoriously challenging, not only because of its dramatic variance in brightness but also due to the color and luminance shifts that occur gradually over its lifespan. This heightens the importance of documenting these parameters at a moment when their appearance is considered acceptable. Moreover, the identification of such parameters may provide a measurable standard that can guide an "acceptable" intervention or restoration of the lights, when required.

This poster summarizes the results of experiments conducted by the authors on test neon units and artworks, using a variety of spectrometers, both digital and analog, with the goal of creating a standardized workflow for the documentation of the color and luminance of neon lights in artifacts. Guidelines for interpreting data, including case studies that link variations in data to variations in its visual sources, will be offered.

This study is part of a more comprehensive research project at the Getty Conservation Institute on the care of neon-based artworks.

### 3 Gold and Asian Lacquer: Application Methods, Degradation and Related Treatment Considerations

*Li-Jung Yen*

The Collections and Science Departments of the Getty Conservation Institute (GCI) are currently engaged in a research project focused on the cleaning of wooden gilded and lacquered surfaces, found on a variety of artifacts such as boxes, furniture, sculpture or architectural elements. This collaborative research includes the investigation into techniques used to create these decorative surfaces, materials characterization, study of degradation processes, and subsequently the development of treatment approaches.

This poster will present an aspect of this project, specifically the study of the association of gold and Asian lacquer. It will include a brief overview of the different ways gold can be used as a decorative element of a lacquered surface in Asia: applied as leaf or foil over lacquer, or as flakes or powders within the lacquer layers, sometimes at different depths within the surface. It will then reflect on degradation processes specific to surfaces associating gold and Asian lacquer, and related cleaning treatment considerations.

The study will include images of cross-sections of gilded lacquered surfaces, as well as the results of organic and inorganic analyses of samples collected from a group of objects selected for the project. Organic materials will be characterized by Gas chromatography-mass spectrometry (GC-MS) and/or Fourier-transformed infrared spectroscopy (FTIR). Gold particles will be examined from cross-sections with optical microscopy and scanning electron microscopy (SEM).

A major goal of this study is to determine how the presence of gold, and its application method, may affect the degradation of the lacquer film and consequently cleaning processes. Earlier observation and analysis of samples have revealed that lacquer protected by a gold layer seems to be less

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affected by light-induced degradation than adjacent lacquer not protected by gold. This project aims at looking at more examples of gilded Asian lacquer to determine if this is indeed a recurrent phenomenon, and in turn consider how it could affect cleaning approaches.

### **4 Explorations into the Use of Diatomaceous Earth Stones as an Alternative Drying Method in Paper Conservation**

*Ewa M. Paul*

Diatomaceous Earth (DE) stones are advertised by their manufacturers to be made of all-natural material. DE stones dry out instantly, prevent bacterial and mold growth and are made without additives. DE stones do not contain asbestos or other substances of very high concern defined by the European Chemicals Agency and the Office of Environmental Health and Hazardous Assessment. According to the manufacturer's claim this product have passed Prop-65 which holds even more rigorous standards than the EPA.

I got interested in this product and material because I am interested in sustainability in the field of Conservation. This material is similar to Fullers' Earth which has its place in the field of conservation. DE stones have a potential to replace cotton blotters in some drying procedures. I imagine many other possible uses for this product in the field of paper conservation, from being an absorbent pasting out surface, to possibly augmenting blotter washing techniques.

The presentation will focus on the origins of DE and its physical and chemical characteristics, and how it compares to Fullers' earth. It will briefly mention my observations when used during mock up treatments as well as possibly include an FTIR and XRF analysis. The analysis should happen in the near future at the NARA science lab and will be conducted by Dr. Jennifer Herrmann.

### **5 Nobility Claims Made Art: A Survey of the Bookbinding Techniques and Historical Context of Eight Spanish Cartas Ejecutorias de Hidalguía (Executory Certificates of Nobility)**

*Verónica I. Mercado Oliveras*

Spanish certificates of nobility were legal documents detailing the judicial procedures that legitimized members of the Spanish lower untitled nobility as *Hidalgos of Blood*. Their status originates from kinship, a condition that granted them social recognition and tax exemptions, benefits that set *Hidalgos* apart from the ordinary tax-paying people. Although invaluable primary sources that provide a rich intellectual glimpse of Spain's Ancient Regime's judicial organization and legal claims, they remain understudied in the United States from the bookbinding and decorative perspective, constricting the understanding of their physical characteristics and preservation needs. Eight certificates of nobility from the Kislak Center for Special Collections and the University of Delaware Morris Library, dating from the 16th to 19th century, were surveyed in an attempt to begin alleviating the knowledge gap. Visual examination and bilingual historical research were relied upon to unveil their inner and outer bookbinding configurations and iconographic themes. The observations from this ongoing research suggest the use of multiple materials and the presence of painted illuminations that elevate the verdict's relevancy and the family's social standing, such as parchment, velvet, or leather to cover its boards; gold finishing and metal furniture to decorate the bindings; textblocks made out of parchment, paper, or a combination; the use of unsupported and supported sewing structures to assemble the textblocks; the presence of painted sacred scenes, heraldry devices, and other elements of illumination; amongst other structural and embellishing features. Although preliminary, this survey provides the groundwork for the material and decorative connoisseurship of similarly understudied Iberian legal manuscripts in the North American continent while supporting their preservation. Furthermore, it sheds light on the material variations, and sacred and secular themes the Spanish lower nobility relied upon to validate and elevate their status through the commission of certificates of nobility.

### **6 Is Silver a Color?: A Survey of Silver Lusterware Objects and Their Formidable Elements**

*Brianna Turner*

While the 1700s-1800s English elite adorned their tables with silver tea services and vermeil (silver gilded with gold) salt dishes, the working class treasured the "silvered" (or silver-luster) ceramics produced by ceramics potteries.

Our questions regarding material compositions began when we were cleaning a collection of vessels for Dr. Elizabeth Williams' exhibition, *Trading Earth: Ceramics, Commodities, and Commerce*. This show includes functional home goods and luxurious objects from a global perspective. While preparing the pieces, the ones that caught our attention were ceramic bodied pitchers with metallic, reflective glazes that mimicked the surfaces of vessels made from silver. Wanting to know more about the best way to handle and clean these objects, we sought to find out the chemical makeup of the glazes.

We called upon Dr. Catherine Cooper, who works in Natchitoches, Louisiana at the National Center for Preservation Technology and Training. Using a Bruker X-Ray Fluorescence (XRF) unit we analyzed our five subjects. Elemental analysis of the objects revealed that the silver coloring was created using heavy metals including arsenic (As), mercury (Hg), and lead (Pb) as well as trace amounts of platinum (Pt). This information illuminates not only the need to flag these objects for safety and handling in Museum+, but also raises questions about the health and safety of the artisans who made these objects and the individuals who used them.

We plan to continue our research and expand our study of the 20 silver lusterware objects. The collaborative efforts of curators, conservators, and scientists makes it possible to create an holistic interpretation of these imitation silver objects.

### **7 The Collection Care of Dorothy Liebes' Woven Samples: A Material Investigation into a Dynamic Career**

*Janet Lee*

The American designer and weaver Dorothy Liebes (1899-1972) was once one of the most lauded textile designers during the mid-century, known for her cutting-edge textiles that activated modern interiors with varied texture, brilliant color, and the interplay of light and shadow. Her reputation for offering innovative and imaginative textile solutions to the challenges of modern living caught the interest of several major fiber producers, including DuPont and Dobeckmun, who engaged her expertise as a consultant to develop markets for new synthetic materials like Orlon, Dacron, and Lurex. Liebes created handwoven samples combining these novel manufactured fibers with a plethora of conventional and unconventional materials to illustrate how man-made fibers might be integrated in fabrics for the modern interior and clothing. Her designs and work as a materials ambassador at trade shows and in print advertisements were essential to paving the path for the acceptance of synthetic materials among designers and consumers.

The condition assessment, materials analysis, and rehousing project of 199 Dorothy Liebes textiles originated to support Cooper Hewitt, Smithsonian Design Museum's (CHSDM) upcoming exhibition, *A Dark, A Light, A Bright: The Designs of Dorothy Liebes* (July 2023-February 2024), the first monographic exhibition of the designer's work in over fifty years. The exhibition and accompanying publication aim to illuminate the significance of Liebes' work within the history of modern design and re-establish her position as one of the most influential American designers of the twentieth century.

True to her signature eclecticism, CHSDM's collection of Liebes textiles contains a diversity of materials: natural and manufactured fibers; solid- and laminated-metal yarns; leather strips; rigid reeds, wood, and plastics; as well as transparent films. Material analysis of the collection employed polarized light microscopy (PLM), Fourier transform infrared spectroscopy-attenuated total reflectance (FTIR-ATR), and X-ray fluorescence (XRF). A focus within the

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project was the stabilization and rehousing of 120 woven samples stapled to paper cards which were made by her studio for client access. The resulting housing system for these samples will be highlighted as an accessible solution to the challenges of storing a collection of dimensional textiles attached to paper.

The project provided an opportunity to investigate Liebes' material choices in the context of the many professional relationships she held throughout her career. PLM was essential in locating proprietary fibers by morphological and optical properties. The variety of metal yarns she used were of special interest, and the delamination of sampled yarns was necessary to characterize all their layers. A FTIR-ATR profile reference library of known laminated metal yarns was also compiled as a preliminary step in identifying the sampled yarns by their trademark. Selected case study objects will illustrate stages of the project, highlighting discoveries uncovered with materials analysis and archival research of interest to conservators, researchers, and collecting institutions.

### **8 The In Situ Humidification of Stretched Gouache on Sheepskin Parchment Paintings**

*Anita Dey*

Thomas Robins the Elder (1715–1770) documented English gardens and country estates scattered around Gloucestershire County using an ornamental Rococo style. The Yale Center for British Art owns two stretched gouache on sheepskin parchment paintings by Robins. In anticipation of their future display, a collaborative treatment by the paper and paintings conservators at the Yale Center for British Art addressed the distracting planar distortions, edge tears, and discolored natural resin varnish. The parchment support was relaxed through local humidification while partially detached from the stretcher and dried under tension using a custom mount. The local in situ humidification of each painting is described along with a discussion of the most effective method.

### **9 Intake and Housing of the International African American Museum Collection at Warren Lasch Conservation Center in Charleston, South Carolina**

*Kate Dieringer*

In 2020, Clemson University's Warren Lasch Conservation Center (WLCC) began working with staff at the International African American Museum (IAAM) in Charleston, South Carolina. The museum is located at Gadsden's Wharf, the site where roughly 40% of all enslaved Africans entered the United States during the Atlantic slave trade. The museum's galleries will explore untold stories from the African American journey into the City of Charleston, which served as a significant and strategic port during the colonial and antebellum periods. These stories will highlight how the City of Charleston and surrounding regions have been influenced by the slave trade, the system of slavery, and African American cultural heritage before and after emancipation. Stories of resistance and excellence, like that of Althea Gibson, will be showcased, as well as the Gullah Geechee culture, which is a prominent diasporic group in the Lowcountry of South Carolina, North Carolina, Georgia, and Florida. Additionally, rich scientific, artistic, and cultural contributions that emerged in Africa prior to the transatlantic slave trade will be illustrated as to how these thoughts, ideas, and practices continued even after arriving in this region.

When the museum was initially proposed, the original idea was that it would serve as a 'non-collecting' institution displaying mostly loan objects with a limited permanent collection. Over the years, the vision of what IAAM would look like slowly evolved while the galleries were designed and the collection was assembled. As the organization's vision changed, the museum transformed too, becoming a more fully realized space with the possibility for a cohesive and inclusive representation of its collection. Simultaneously, the relationship between WLCC and IAAM continued to strengthen as the changing needs of the museum were met with support and flexibility from WLCC staff.

This poster outlines the processes relating to the intake, storage, and

transportation of the IAAM collection, as well as how WLCC and IAAM have been able to navigate changes together. As the mission of the museum transformed significantly over time, those involved needed to adapt to these changes, including how object intake was handled, storage facilities provided for the growing collection, and the implementation of additional resources, including preparing objects for display and permanently storing the rest of the objects in the collection. WLCC has helped create a cost-effective, sustainable, and reliable solution for a local museum, which is limited by space and staff. The relationship between WLCC and IAAM will continue to grow into a stronger partnership, even after the opening of the museum in early 2023.

### **10 Non-destructive Analysis of the Early Isolani Collection at Pratt Institute**

*Alissa Yong*

The early Isolani collection, dating from 1957 to 1969, consists of twenty paintings and ten fiberglass polyester resin sculptures that reflect the artist's exploration of materials and their interaction with light. These artworks were donated by the artist to Pratt Institute in 2015 for the purpose of scientific study.

To investigate the evolution of Isolani's materials and techniques over time, non-destructive scientific analysis was performed on several paintings and sculptures. The portable instrumentation used included X-ray fluorescence, X-ray fluorescence mapping (MA-XRF), external reflectance Fourier transformed infrared spectroscopy (FTIR), and Raman spectroscopy. The results revealed that the artist had a unique painting palette involving mainly ground metals – such as copper, aluminum, zinc, tin, lead, and gold – on acrylic and alkyd coatings. Additionally, the unusual presence of high amounts of chlorine in most of his paintings strongly suggests the use of chlorinated rubber resin. Solid-state nuclear magnetic resonance (NMR) was further used to elucidate the nature of chlorine sources and binders.

Analysis of two of Isolani's fiberglass polyester resin painting sculptures showed that the artist achieved intentional transparency versus opacity effects by "color-matching" red lead and red organic dyes. Areas of high opacity are composed of high-density fiberglass, as indicated by the presence of high silicon and calcium intensities during XRF analysis. Conversely, low silicon and calcium signals in the transparent areas indicated the use of red-dyed polyester resin and low-density fiberglass.

This preliminary study through the use of portable instrumentation reveals the complexity and richness of Isolani's materials and techniques and his experimentation with "new materials" in his artworks.

### **11 When Dorian Visited Our Museum: How We Can Prepare to Mitigate Future Impacts of Worsening Natural Disasters on Our Collections**

*Bria A. Dean*

In recent times, island nations in the Caribbean have been facing increasingly devastating natural disasters. Investigations on these catastrophes have established a direct correlation to climate change (Zegarra, Schmid, Palomino, & Seminario, 2020). In 2019, a record-breaking category five hurricane completely obliterated cities on two islands in The Bahamas.

As mentioned, The Bahamas is not the only island nation suffering at the hands of climate change. In the past decade, hurricanes such as Maria (2017), Irma (2017), Isaias (2020), etcetera have been sweeping the length of the Caribbean devastating cities/town in their path ensuing millions of dollars in damages. In 2022, The Bahamas hosted a Regional Heads of Government Meeting to discuss approaches to climate change.

To further discussions had at the conference, this work will focus on Dorian's impact on an invaluable collections on the island of Abaco, Bahamas. Workers and volunteers laboured to recover materials from the collection. Despite the losses, this disaster provides insight on how we can create practical/realistic emergency conservation plans that suit museums in this region when storms like Dorian come to visit.



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### **12 Maria Augusta Rui Barbosa's Textiles: Practical, Technological, and Research Approaches**

*Gabriela Lúcio de Sousa*

This study aims to elucidate alternatives, possibilities and technologies used to carry out practical and theoretical research in textile conservation, using as an example the study case of items that belonged to Maria Augusta Rui Barbosa, that appurtenance of the Rui Barbosa Historic House Museum. The first project, about kimonos, aimed to study these clothes in their entirety: nomenclature, materiality, historical context, exhibition, and the history of the owner (Maria Augusta). On the themes of materiality and exhibition, scientific works were carried out specifically based on the team's effort, since the institution is going through a precarious process that has been worsening over time. For this reason, a partnership with the Technology Center for the Chemical and Textile Industries was necessary, without which some initiatives would be impossible. The subsequent research, focused on the study of the character Maria Augusta from her clothes, entitled Thinking the woman through her attire: Maria Augusta Rui Barbosa's trajectory from her clothes, faced some obstacles, the first defined by the suggested outline - study of hand fans and hats -, having as a complicating factor the lack of examples of hats in the Museum's collection, in addition to the impossibility of physical access to available objects, caused by the COVID-19 pandemic, which imposed interruption and replacement by telework on face-to-face projects. As a possible solution to the comprehension of the Maria Augusta Rui Barbosa clothing's and her use of fashion, the photos turned out as a modern technological apparatus of registration to be used in the iconographic analysis, that allowed the identification of styles and their temporalities. The need to reinvent the team of the institution, replacing direct research with objects with research through photographs in a digital file that, regardless of the situation, Brazilian public institutions have a great capacity for self-maintenance and resistance to resistance in necessary adjustments, consolidating an execution of its work in an efficient and equally relevant manner.

### **13 Flexible Bindings: Sustainable Models for an Alternative Look at Book Conservation**

*Ana Roberta Tartaglia*

Always caught attention in book conservation in my city, that binding when damaged is considered something disposable and replaceable, since the information that the book carries is the most important. The problem hidden behind this practice is that the binding is also information, deserving preservation as much as text block because it carries ways of doing, materiality, and knowledge useful for scholars and professionals in this field. Institutions that do not have a conservation sector send their volumes to be restored outside, by a specialized service, which usually opts for a new hardcover style binding. And we have few spaces for learning bookbinding in our territory, both in the training schools of librarians, where the appreciation and identification of the different styles and materiality of the bindings would be very important, as in the training of conservators-restorers, in the practice of techniques and experience in bookbinding. After reflecting on these issues, in January 2021, I began an investigation into binding structures motivated by finding solutions applicable to unbound books that could be lighter, cheaper, and easier for professionals in the field to perform. Then four characteristics were determined that bindings should have: flexibility, where the selection of existent structures could be only models that resulted in flexible or semi-flexible cover. Reversibility, with minimal use or absence of adhesives in both the text block and the structure cover, the condition allows retraction to the item. The ease of execution is an excellent condition for teaching other colleagues from cultural institutions in my territory who work in conservation, but do not have training or specialization in bookbinding practices. And sustainability, which in this study translates into better use of financial and environmental resources, starting with attention to the materials chosen with the adoption of a type of paper with good characteristics to fold, lightly stiff and with parchment finish, as well as acid free certifications, no heavy metals in its composition and the guarantee of long life. In addition to contributing to the reduction of the use of leather and parchment usually very expensive and fruit of animal cruelty.

Other materials like various archival grade papers, Tyvek© and binding cloth are also used and have a relatively low cost. After establishing the four basic features, the study reached ten models of structures which met the criteria and developed in blank books, forming a small reference collection for future treatments. Fundamental part of the investigation was to submit some models to the test of mechanical stress and resistance to temperature and humidity, in climatized and non-climatized storage areas for six months, carried out during the period of spring and summer. The climate in my city becomes very extreme during these periods, reaching temperatures between 95 and 104°F and relative humidity ranging between 65 and 85 %. Finally, hold workshops aimed at professionals from other cultural and educational institutions to disseminate flexible bindings as another resource in the practice of book conservation in our territory.

Keywords: bookbinding, flexibility, reversibility, sustainability, teaching.

### **14 Project and Construction for the Restoration and Expansion of the Paulista Museum Building – The Ipiranga Monument**

*Griselda P. Klüppel*

The prospect of intervening on a monument-building, such as the Museu Paulista, instigated the need for a reflection on the concept and meaning of a monument. Alois Riegel, in 1903, differentiates the notions of "monument" and "historical monument" (one conceived without the original intention of memory). The Museu Paulista would be inscribed in the first term, "monument", that is, deliberately created to perpetuate the memory of a community or a people, which was the celebration of the centenary of the independence of Brazil. The historic place where Emperor Dom Pedro I proclaimed the break-up of Imperial Brazil with its Metropolis - Portugal, on the banks of the Ipiranga stream.

The article to be presented is the winning project of the National Competition for the Restoration and Modernization of the Monument Building of the Museu Paulista, under the responsibility of the H+F Arquitetos Office, with a complex team of collaborators for the elaboration of the projects, started in 2017, whose works began to be executed in 2019 and, recently, it was opened to the public, on September 7, 2022, commemorating the 200th anniversary of Brazil's Independence.

The Museum building, designed by the engineer Tommaso Gaudenzio Bezzi, between 1885 and 1890, brought in its structural design great advances in engineering at the time, anchored by the formal precepts of eclecticism. The interventions proposed inside the building sought to give visibility to these structural elements and allow public access to its backstage, providing a new reading of this monument building.

The first action plan was the works to recover the physical integrity and rehabilitation of the monumental building, as a museographic exhibition function and the creation of a new, complementary, and integrated sector, containing most of the services and new areas necessary for the full functioning of a museum. contemporary, which take place in the underground extension of the pre-existing building that allowed connecting the Museum to the Park and configured a new access esplanade.

An infrastructural tower was created with the installation of all support systems for the full functioning of the institution. A gazebo-terrace was created, invisible from the outside, from which the topographic view of Ipiranga is revealed, its relationship with the building's implantation and its unfolding through the park and the successive elements that structure that landscape. The interconnections between the towers on the second floor generated the expansion of the exhibition spaces, giving content to a continent until then deserted.

Several measures and actions preceded any intervention in the building, such as the strict protection of the integrated collection (furniture, frames and pieces of the collection), guaranteeing its total safety during the period of the works. A diagnosis of conservation and damage was carried out in all the building components and decorative elements and all the necessary recommendations were defined for the works that were carried out in the monument building.

### 15 Training and Skills Development for Conservators in Brazil in Times of Change: Reflections from the Attendance of a Salvage and Disaster Recovery Course

*Ellen R. Ferrando*

This poster aims to reflect on the need for adaptation and preparedness of conservators to the issues the cultural heritage field is facing, from the attendance on a salvage and disaster recovery course offered by Historic England in the United Kingdom. As a Brazilian conservator coming from a country with a regrettable background concerning disasters involving fire and water incidents with cultural heritage, it is urgent to be qualified to act in such situations. The relevance in attending a salvage and disaster recovery course comes from a national reality in which a large part of Brazilian cultural heritage lies under the custody of public institutions and agencies that often lack physical and financial structure. Political neglect and disregard for the cultural field are almost always behind the incidents.

During the course attended, instructors pointed out a wide range of potential disaster-generating incidents involving fire and water. It is always better being prepared, because incidents of all sorts happen, announced or unannounced. Thus, something that cannot be ignored is how the climate emergency is affecting cultural heritage by increasing the likelihood of disasters. In Brazil, besides neglect, budget cuts, and the precariousness of cultural institutions in general; it lacks governmental investment and commitment to environmental causes and climate change-related issues. Besides, the fact that the existing environmental agencies are facing budget cuts or are even being extinguished, shows itself as a real threat against which we all need to advocate and engage. Native and local communities, as the wider environment are the most directly affected, and much of the national tangible and intangible cultural heritage is subject to risks and irreparable losses. We need to address the impacts of climate change nonstop, promote the crossing between culture, social value, land, and natural resources, while assessing, managing, and contributing to disaster risk reduction in our cultural organizations, strengthening our capacity to deal with and adapt in case of incidents.

Although having common concerns when it comes to incidents or even specific protocols and procedures to be followed when rescuing and recovering collections from disaster scenarios, the particularities and national reality of each organization, cultural heritage and community cannot be ignored. The availability of disaster and recovery courses is still scarce in the heritage field in Brazil, so I hope to contribute to the awareness among peers of its relevance by helping other professionals having access to the information received during the course attended.

### 16 Challenges of a Digitalization Project in Times of Climate Changes and Pandemic Crisis: From the Conservation Perspective

*Viviana van Vliet*

In 2020, the General Archives of Puerto Rico (AGPR), a government entity founded in 1955 and belonging to the Institute of Puerto Rican Culture, received a \$2,000,000 grant from the Andrew W. Mellon Foundation for a three-years digitization project aimed at creating a collection of five-hundred thousand (500,000) images, in compliance with federal standards. These collections will be freely available on the internet. The AGPR has documentation in the form of texts, prints, photographs, films and recordings.

#### Implementation Challenges

**Geographical Situation.** The AGPR is located in Puerto Rico, a small island in the Caribbean that is subject to high temperatures, averaging 82° F, and a relative humidity of ±80%. It is also in the path of tropical storms and hurricanes, which have intensified with climate change. In the past years, Puerto Rico has been hit by hurricanes Irma, María, and, more recently, Fiona. The advisories of the proximity of these atmospheric phenomena produce a state of alert and the activation of preparations and response protocols. During the project development, we have had to activate them on various occasions, experiencing power outages, among other challenges.

**Acquisition of Materials.** First, given that the AGPR is a government entity, it must purchase materials and products through a bidding process, which makes all transactions harder, more expensive, and prone to delays. The second aspect regards the pandemic, because the supply chain continues to be affected. Some products arrived up to eight months after the purchase date! Finally, there are other materials that we simply have been unable to find, such as a drying rack for documents; as an alternative, we purchased 100% cotton white towels, patterns free, to partially dry the documents laid on tables, between Reemay and towels.

**Historical Building.** We are located in a building included in the National Register of Historic Places, and thus, nothing may be modified. The restoration workshop lacks a water connection. Our solution was to connect a water hose to wash materials in trays and bought distilled water to wash documents. With the help of a suction pump, the used water is discarded through another hose connected to a drain, outside the building.

**Conservation.** Prior to being digitized, some documents need to be stabilized, others need to be restored. Many mid-18th century manuscripts are quite deteriorated because of the iron gall ink, mold, or bookworms. In these cases, all pages need to be examined and treated, which is very time-consuming. On the other hand, no document goes back to its deposit after digitization without being duly rehoused per conservation standards. This is another process that takes a considerable amount of time.

The challenges presented herein evidence that we need to create alternatives in case of any setbacks and find adequate solutions based on what we seek to accomplish. Amid so many difficulties, it is satisfying to see how the project is slowly progressing toward its final goal, though with some delay due to the previously mentioned particularities.

### 17 The Revenant: A New Look on Photographic Albums

*Claudia Constanzo, Vianka L. Hortuvia*

This article describes the Photographic Album Preservation Program whose main focus is the training in preservation of photographic albums in Chile.

Photographic albums were conceived to house and protect photographs, their development closely related to the evolution of this art. They are memory containers that tell stories both from their manufacture and from the information they contain and therefore must be understood as a whole.

Throughout Chile there are important photographic collections in both public and private institutions that have albums of various kinds, both in their themes and in their materiality. However, knowledge of these objects tends to be scarce, since research, dissemination and enjoyment of individual images has generally been privileged over the albums themselves.

One of the examples that demonstrates this situation occurred in some institutions during the 1980s, when the photographs were removed from the albums and stored separately. The same happened with their cataloging, since it was done photo by photo, without recording contextual information about the albums.

Within the framework of this problem arises the need to develop research and training initiatives on this subject, approached in a sustainable way due to the economic difficulties that the country is experiencing. It has become essential to understand its manufacture, materiality and function in order to be able to carry out informed conservation and restoration interventions.

During 2021 an initiative between the Unidad de Patrimonio Gráfico y Documental del Centro Nacional de Conservación y Restauración, el Archivo Fotográfico de la Biblioteca Nacional y el Centro Nacional del Patrimonio Fotográfico was carried out to implement the Photographic Album Preservation Program.

A training program in preservation of photographic albums was designed for different organizations that are custodians of photographic albums. The first 3 training courses were held in central and northern Chile. About 50 institutions took part in them. Most of the participants were collection managers or people who collaborate with photographic archives without necessarily having knowledge of conservation.

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These courses have had an important theoretical component where common language and concepts are established and conservation and collection management issues are addressed. In their practical component, the courses have been aimed at the correct handling of the objects, teaching techniques such as the elaboration of cradles and containers. Emphasis is placed on the use of low-cost and easily accessible materials, as well as simple models that can be replicated for future use in different institutional realities.

Interaction among those attending the courses is encouraged, as each person presents their album and their problems. It has provided a new look at these objects, which have multiple readings and layers of information, given by the photographs, their organization, inscriptions, and other associated elements, in addition to the materials and structures with which they were made, which portray the tastes and uses of a particular era.

The success of the program has allowed us to plan new courses for 2023 and 2024 to reach organizations throughout the country and, hopefully, in other Latin American countries.

### **18** Climate Change: How Are Latin American Conservators Playing Their Role?

*Josefa Orrego Trincado*

Climate change effects are becoming increasingly evident worldwide, with actions requiring a multi-actor and multisector approach. As conservators, we are not exempt from this issue. Its impacts challenge our duty to protect and preserve cultural heritage and confront us to rethink and modify our practices, which may be undesirably contributing to the climate crisis. Recent tools and resources are being developed to assist conservators in making more informed decisions regarding their environmental impact. Nonetheless, these discussions are led mainly by conservation bodies and networks from the Global North, prompting the question of what is being done in other regions worldwide.

Interviews were conducted to acknowledge how Latin American conservators address climate change within their practice. Findings revealed their awareness of unsustainable activities involved in conservation, mainly concerning the use of certain solvents and energy-consuming environmental parameters. Among their initiatives to combat this reality were reusing materials, reducing the use of hazardous chemicals, and researching less toxic alternatives. While environmental concerns led to these actions, other relevant aspects boosted these initiatives, i.e., complex material procurement and financial constraints. In this respect, although Latin America might initially seem challenging for a “best practice” conservation, its reality triggers positive changes toward a more environmentally sustainable profession. Finally, the importance of exchanging experiences and solutions found locally was highlighted, as it can be valuable information to enrich and diversify the paths for reducing the environmental impact of conservation in the region. Conclusively, tackling climate change can be pursued differently, and it is through collaboration that positive results can be achieved.

### **19** Do pH Indicator Tests Tell Us Anything about the Elemental Composition of Glass Beads?

*Grace Kim, Laure Dussubieux*

Glass beadwork is a form of art practised in many Native North American cultures. Unfortunately, some glass beads have an inherently unstable composition leading to the occurrence of “glass disease.” The exact trigger for the onset of glass disease is unclear, but once it has begun, some of the alkali components of the glass migrate to the surface, and the remaining glass becomes weakened. If the relative humidity surrounding diseased beads is not kept at a stable value in the 40s %RH, the process of deterioration continues until the affected beads flake, crack, and detach from the decorated surface. Since beads of a similar colour have similar composition, this process can lead to loss of whole fields of colour in a design.

Since not all beads are affected, and because it is difficult and expensive to stabilise the relative humidity in the required range for large collections, we

would like a way to identify which collections are actively deteriorating, or which may be at elevated risk of deterioration in the future so that these can be prioritised for storage in stable relative humidity.

O’Hern & McHugh (2013) have developed such a test: a moist pH indicator paper strip is pressed to a bead for 3 seconds, and then the indicated pH is recorded. This indicated pH test cannot actually measure “the pH” at a surface, but it can give some indication of the quantity of alkali on the surface which is available to be measured. From 2015 to 2019 the Field Museum conducted a survey of several thousand beaded items from the Native North American Plains using this indicated pH test.

Recently we have been reviewing whether the indicated pH results have any clear relationship to the elemental composition of the beads. In this poster, we report the results of using laser ablation - inductively coupled plasma - mass spectrometry (LA-ICP-MS) to determine the surface and bulk composition of surveyed beads of known surface pH. Beads which had become detached from items (either through the bead cracking or through thread failure) were selected for testing across a range of indicated pH values from 6.5 to 10. Comparison will be undertaken to assess whether a correlation exists between the surface pH of the beads and their depletion of alkali as measured with LA-ICP-MS.

Reference:

O’Hern, Robin & Kelly McHugh. 2013. ‘Deterioration and conservation of unstable glass beads on Native American Objects.’ *Bead Forum*. 63:1-13.

### **\*RATS Big Cheese Award Winner\***

### **20** Improved Interpretation of A-D strips with Colorimetry and Visible Light Spectroscopy

*Lindsey Zachman, Emilie Duncan, Molly McGath*

Detection of off-gassing acids using A-D strips is a proven method of evaluating degradation of cellulose acetate films. However, the visual interpretation of the color change is inherently subjective and prone to variability depending on factors such as lighting and individual inspector interpretation. Recently, at The Mariners’ Museum and Park, we have been conducting a survey of motion picture film to assess condition and are incorporating the use of A-D strips to detect off-gassing acids. We use both individual assessment and colorimetry as well as visible light spectroscopy to evaluate the resulting color changes to the test strips with the goal of standardizing a colorimetric/spectroscopic method that reduces interpretative error. The results of these assessments and tests show that the addition of colorimetry and visible light spectroscopy enhances interpretation through quantification and characterization of the color change.

### **21** Heritage Conservation and Climate Change

*Yazmin Miranda*

Is it possible for our heritage to survive in the face of current changes in climate? Nowhere in the world do we spare them from torrential rains, hurricanes, earthquakes and other devastating weather factors. Establishing emergency plans in the face of this type of phenomenon can be a possible way out of conservation concerns, it is a complex issue but not impossible to cover. Faced with inclement weather, there are Cultural Centers, Museums, among others, that have implemented Emergency Plans for possible catastrophes. It is important to establish different groups within these organizations that are trained to deal with all possible scenarios that may occur. Human resources are one of the many viable solutions to concern. Training the staff that is already playing a role within the organization is to give more value to the environment where the activities are carried out, be it the Museum, gallery, art galleries, etc. Let’s take advantage of the human resource within the Museums, Cultural Centers and empower them so that they are the ones who train other people belonging to other cultural entities.



### 22 Customization of Preservation Policy for Local Literary Institution: Case Study of Zi-Xia Hall

*Ying-Chern Chen*

Since its establishment in 2003, the National Museum of Taiwan Literature (NMTL) has shouldered the important task of preserving precious heritage of Taiwanese literature. In addition to the museum's own rich collections, since 2016, it has successively established relations with various literature museums, writers' memorial halls and other institutions all over Taiwan. Uninterrupted communication has begun since 2020 to carry out close interactions and cooperation. For the purpose of jointly maintaining important literary materials, NMTL provides professional assistance and consultation on collection maintenance to more than 30 literary institutions. Due to the high temperature and humidity in Taiwan, the preservation of manuscripts, books and other cultural relics is quite challenging. In particular, small-scale museums often have relatively limited manpower and resources, and are unable to deal with the preservation of a large amount of collections.

Zi-Xia Hall—one of the member of the literature institution group in close relations with the NMTL—collects rare books, diaries, essays, photographs and paintings of the Han scholar, Jiazhen Zheng and his student, Ruizhu Zheng, both famous sinology researchers. Although Zi-Xia Hall has made a lot of effort to preserve these precious treasures of knowledge, the centuries-old collections have damages such as insects, broken binding and corrosion. Due to Zi-Xia Hall's very limited manpower for collection management, it is urgent for them to seek assistance. From 2020 to 2021, NMTL launched a conservation and preservation project, and completed up to 930 items for cataloging and condition assessment, the digitization of 120 items, and the conservation of 30 manuscripts. After the project, all of the items have been stored in appropriate acid-free boxes and dry cabinets in its existing storage location, which increases the stability of the collection and its preservation management in the future.

After preservation policies most suited for the existing environments were adapted and implemented through the project, collections from private institutions and museums could last longer and benefit the greater public. In particular, the environmental conditions in Taiwan are quite unfavorable for paper preservation. With relatively abundant resources, national level museums have professional facilities and storage conditions which are in contrast, not always affordable options for private collections. On top of the experience of cooperating with the literary museums and the institutions, the issues of adapting to the different collections' exhibition conditions and requirements, and its preservation in varying environments are still needed to be considered. To design a relatively cost-saving preservation plan, taking into account management, regular inspections, exhibitions and even education and promotion, etc., furthers the preservation of the precious literary treasures, and also drive the concept of museum-level preservation system to be implemented in various places to the greatest extent.

### 23 Recovering the Missing Aura II: The Conservation Strategy and Treatment of Sakinu Ahronglong's Fire-Damaged Books

*Hsuan-Yu Chen*

The aura in the literary manuscripts shows an author's creative inspiration, but there was a streak of wisdom light dimmed in the night because of the blaze in May 2019. In this case, a series of manuscripts were burned and delivered to the National Museum of Taiwan Literature (NMTL) after salvaging from the writer's residence. Those were written by a significant Taiwanese indigenous writer, Sakinu Ahronglong. After being burned, extinguished by water and dried in the air, the paper left the deterioration of mildew, bleeding media, offset, stains, distortion and dirt residues. The condition affects the manuscripts' further preservation, paper structure and appearance. The subsequent problems of collecting and application have been greatly challenged. The content of the manuscripts includes the author's diaries, essays, notes, sketches, etc. Sakinu's life experiences and memories can be observed through these manuscripts spanning decades. NMTL collects objects related

to the representative writers in Taiwan, and this batch of unique manuscripts is expected to be reborn from the ashes over here.

Based on the previous research, the paper is composed of cotton fibers, and most of the fiber's structure is still intact. We had evaluated to deal with the existing deterioration by wet treatment. However, a large amount of mildew will become a significant issue. There was a two-stage experiment done for further treatment. In the first stage, gamma radiation of 3kGy was chosen to completely eliminate the activity of mold. Then, the folding endurance of experimental paper was tested to evaluate the change of paper strength, which dealt with burning, irradiation and washing. The results indicated the interaction of cross-linking and the gel effect observed in the composition of the paper. Compared with the unburnt form, the folding endurance for machine direction decreased by approximately 7-8%, instead of the CD having an increase of nearly 10%. The loss of paper strength after burning and irradiation is limited; moreover, it can be recovered by washing. Accordingly, the feasibility of treating the paper structure of fire-damaged manuscripts is improved.

The original binding of these is a ring-bound sketchbook. However, the structure was damaged entirely and appeared in bulk. Although it is feasible to recover the book structure based on the previous study, the appearance of bookbinding is bound to be changed. Moreover, confronting a tremendous amount of burnt paper, we should arrange the treatment with a utility method. This further study aims to determine the key basis for deciding the conserving degree of fire-damaged manuscripts. It also discusses the viewpoints, including the future application of manuscripts, the purpose of conservation and the maintenance of fire-damage history with conservators, curators and the author. According to those, the follow-up treatments are carried out appropriately. As a result, we hope to seek balance and benefit between collecting, exhibiting, and researching. Furthermore, it is also responsible for the author and donations.

### 24 Tenshin-en: The Past, Present and Future of the MFA's Japanese Garden

*Ellie Ngo*

The Museum of Fine Arts, Boston (MFA) houses the finest and largest collection of Japanese art outside of Japan and is committed to its preservation and display. To that end, in 1988 the MFA constructed a Japanese kare-sansui style garden adjacent to the Museum building. To ensure that this rock garden was authentic to its form, the MFA hired renowned Professor Kinsaku Nakane to oversee the design and construction of the garden. The garden was named Tenshin-en in honor of Okakura Kakuzō (aka. Okakura Tenshin), an eminent Japanese scholar and the first curator of Asiatic Art at the MFA. Tenshin-en is a 10,000 sq foot garden with a dry waterfall, over seventy plant species, and eight stone sculptures enclosed by a kabukimon-style gate. For decades, the garden was maintained by specialists in the care of Japanese gardens. Unfortunately, in recent years, Tenshin-en has experienced a slow decline due to changing institutional and environmental factors, which were exacerbated by the Museum's closure during the Covid-19 pandemic.

In summer 2022, two pre-program interns, Ellie Ngo and Kei Takahashi, were welcomed by the MFA's Object Conservation department to assist with the maintenance of the outdoor sculpture collection. Their responsibilities included an in-depth research project into the history and condition of Tenshin-en by gathering existing documentation, undertaking condition examinations, and conducting interviews of current and retired staff. The research and recommendations resulting from this project will hopefully provide new direction as the MFA takes a renewed interest in returning this important space to its former beauty. In the current social climate, inattention to Tenshin-en might lead public audiences to conclude that the Asian collections are not a priority at the Museum. Without proper maintenance, the garden will continue to deteriorate, which could lead to cultural misunderstandings. The MFA must implement a maintenance plan that not only fits the needs of the garden, but also takes into account cultural perceptions, community involvement, and the changing environment.

During this process, it is important to consider how the garden came to be in its current condition, what the garden means to the MFA and larger community,

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why it is so important to preserve, what successful care has looked like in the past, and what it could look like in the future. Perhaps the garden has been overlooked in recent years because in delegating maintenance responsibilities for different elements of the garden to different museum departments, the unified significance of the immersive space was lost. Given the great intentionality accorded to all the individual elements, Tenshin-en should be seen as an aesthetic entity in which individual artworks reside. The amount of thought, time, effort, and expert craftsmanship that has gone into every aspect of its creation is evidence of this. As a living work of art, it deserves the care of conservators and the attention of curators. Without a clear institutional framework and dedicated sustained resources, Tenshin-en's proper upkeep will remain elusive.

### **25** Conservation Study of S.S 37 Wooden Coffin and Mummy Cartonnage, Egyptian Museum of Cairo

*Mohammed A. Hussein*

Ancient Egyptian wooden coffins and cartonnage – fascinating works of art and unique receptacles of the dead – have been miraculously preserved for millennia in the dry sands of the desert in Egypt. Since the founding of Egyptian Museum in Cairo, the collection of coffins has grown and steadily filled up the basement storage, to a critical level.

A late period coffin set, consists of an anthropoid wooden coffin, cartonnage with an intact mummy. The set were found at the basement of the EMC during the work season in 2004. The study case has only a single document of information, a report written by Maspero in 1901, indicating that the object entered the museum collection in 1900. It was left unregistered since then. In Maspero's report, he addressed that, it was discovered by Petrie excavating in Lahon, Fayoum. The report includes a black and white photograph shows the object by the time of discovery.

The type of the coffin and cartonnage suggests a middle Egypt type of third intermediate and late period. The name of the owner is demolished in both, since the lower part is damaged.

The wooden coffin consists multi-layers: wood, gesso layer, additives-under investigation- and painted layer. There are different pigments that used in the decoration of the coffin: white background covered with blue, red, black and yellow for inscription and decorations.

The state of the wood is very poor, the coffin is dismantled into many pieces (base, 2 sides and fragments), and some pieces are still joined together by wooden dowels. The head block has areas of loss, cracks, breaks and disjoints.

The cartonnage has areas of loss, crumble, distortion and covered heavily with dust, some black greasy stains was located in the right side. It has irregular surface, slightly push-up areas that possibly resulted from the positioning of the mummy beneath, there are some areas of abrasion, micro cracks, and scratches in the painted layer. The pigments are vanished in some parts of the cartonnage.

The feet area suffers a severe damage, textile bandages are directly exposed and the gesso layer and the painted layer were almost lost except in small part that is Powderly loose. By investigating the lower part, the instep bones are missing in both legs

Conservation approach:

Wooden coffin: The wooden pieces is reassembled together using replicated wooden dowels to retain its original shape, filling materials is used to fill in the gaps between wood. Disjoints reattached using paraloid B72 and fragile pieces is consolidated using Klucel G 15% in alcohol.

Mummy Cartonnage: Mechanical cleaning to remove accumulated dust using soft sponges, wetting the folded areas to flatten the cartonnage, specially in the face, head and left side. Preliminarily Consolidation for the damaged lower part of cartonnage using klucel G 15% in alcohol before working on textile wrapping to preserve the painted detachments and avoid future loss.

### **26** Novel Use of MA-XRF to Analyze the Efficacy of Two Common Treatments for Bronze Disease

*Skyler Jenkins*

Scanning micro X-ray fluorescence (Scanning  $\mu$ XRF), otherwise referred to as Macro XRF (MA-XRF) has become a common technique in the analysis of 2-dimensional artworks such as paintings, but has been less frequently applied to the analysis of archaeological metals. Several recent studies focusing on copper alloys have tested the application of MA-XRF for the identification of bronze disease with mixed success. The current study builds off of this research by testing the application of scanning MA-XRF as an instrumental method to assess the efficacy of two commonly used treatments for bronze disease, benzotriazole (BTA) and silver oxide.

Ancient copper alloy coins exhibiting bronze disease (copper chloride corrosion) were selected for this study by conducting a survey of the coins in the collection of the Virginia Museum of Fine Arts. Coins were initially selected based on visual evidence of bronze disease, which was confirmed through microchemical testing for chlorides. The selected coins were scanned before treatment using the VMFA's Bruker CRONO MA-XRF to map the presence of chlorine on their surfaces. The chloride corrosion was then mechanically removed and the coins were treated alternately by immersion in 3% BTA in ethanol, and with spot application of silver oxide powder slurry in ethanol followed by scanning using the same MA-XRF system and settings. The effectiveness of the treatments will be assessed using a high humidity micro-chamber in order to correlate the results with the MA-XRF data.

This poster will present the results from analysis of the two copper alloy coins including elemental maps of chlorine distribution from before and after treatment. The pros and cons of using MA-XRF for the identification of bronze disease, and the assessment of common bronze disease treatment methods will also be discussed.

### **27** Identification and Characterization of the Vinegar Syndrome (AC-Degradation), Damage and Consequences on Handwritten Letters

*Yerko A. Quitral*

Acidity, both intrinsic and extrinsic, has been described as one of the main factors of chemical deterioration in paper. By stimulating the degradation of cellulose fibers through hydrolysis of glycosidic and intermolecular bonds, it destabilizes the structure, leading to weakening of the fibers, and consequently, to the instability of the support over time.

The degradation of cellulose acetate (CA) in acetic acid, commonly known as "vinegar syndrome", is widely characterized for photographic films. However, until today there is little information on its characterization and its consequences on paper caused by an indirect reaction from plastic covers, encapsulation, and lamination processes.

To study this problem, a set of 150 original, handwritten letters, dating from 1850 to 1900—kept for more than ten years in CA-laminated folders and arranged in three albums—were taken as a reference. Under conditions of isolation, high temperature and humidity, chemical degradation reactions in the plastic developed, generating and accumulating acetic acid inside. This led to the development of discoloration, stains, ink solubilization, tears, and paper fragility.

In turn, the letters present characteristics of care for the handler's health, such as itching from direct skin contact, respiratory tract inflammation, and eye redness. This is due to the high concentration of acetic acid in liquid form (possibly as glacial acetic acid) in the documents and to the concentration of total volatile organic compounds (TVOCs) in the air.

Characterization was carried out by means of optical and digital microscopy, registering in sectors a pH value of 2.8 to 3.0, which in all cases, was associated with the formation of regular white crystals on the paper and plastic.

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The formation of crystals has a direct dependence on the concentration of acetic acid produced on the support, as well as on the recorded temperature: this is why larger and regular crystals are recorded at lower temperatures. To identify areas of chemical degradation due to acetic acid, acidity was measured in different areas of the paper and plastic using pH test strips, a vinegar syndrome meter for photography, and a contact pH meter.

Environmental chemical contamination produced was measured in a closed chamber containing the albums and manuscripts. Readings of TVOCs over time gave values of 3000 to 5000 mg/m<sup>2</sup>, which are considered highly dangerous in closed environments and direct work.

The signs of deterioration recorded on paper are mainly: brown discoloration, tears and detached interior sections, and the formation of a superficial layer that produces opacity, solubilization of inks, and the appearance of well-defined, white crystals in areas of high acid concentration.

The characterization of this chemical reaction on paper is essential to identify CA-degradation processes at early stages, and therefore can be used as a marker of vinegar syndrome on paper.

### **29** Knowledge Before Oratory: A Preliminary Survey of Scaleboard Bindings at the Boston Athenæum

*Mitchel Gundrum, Jane C. Knoll*

Scaleboard bindings are a significant yet academically underappreciated facet of bookbinding and publishing history. Characterized by thinly planed (1–3mm thickness) wooden boards and generally associated with plainly decorated leather and paper coverings and stabbed-thong leaf and board attachment, these books demonstrate a style that is distinctly early American and warrants scrutiny.

In June 2022, we completed a preliminary bibliographic survey of 122 scaleboard bindings held at the Boston Athenæum through the support of the FAIC's Carolyn Horton Scholarship. This sample represents a 13% addition to the 943 bindings captured in previously published surveys by Julia Miller and Renée Wolcott, further contextualizing the development of the book trade in the colonial and early national United States, and augmenting conservators' and bibliographers' understanding of a distinct category of cultural artifact.

Bindings surveyed at the Athenæum were photographed, measured, and assessed to capture bibliographic, material, construction, and decoration metrics. This data was recorded in a spreadsheet and analyzed to identify trends and outliers within the sample. The surveyed bindings held imprints dated 1648–1841 and largely corroborated prevailing wisdom on the typology of the scaleboard structure:

- 85 bindings (70%) hold Massachusetts imprints, of which 73 were printed or published in Boston. 22 bindings (18%) hold imprints from other New England states.
- Of 77 bindings with full leather covering, 66 (86%) hold imprints published before 1790. Of 16 quarter leather with blue paper bindings, 13 (81%) hold imprints published after 1790.
- Boards with wood grain oriented perpendicularly to the book spine were found on 111 bindings (91%). All of the 11 bindings with parallel-grain boards hold imprints published prior to 1750 and all but two hold European imprints.

The Athenæum bindings also presented some exciting deviations from the expected typology:

- This survey includes 13 likely non-American bindings which were outside the scope of previous surveys. These include five full parchment laced-case bindings with scaleboards, of which four have vertical grain boards.
- Eight bindings predate the oldest imprint recorded in previous surveys. Of these, the earliest overall is a 1648 Amsterdam imprint, and the earliest American imprint is a Boston publication from 1683, predating the oldest imprint from the previous surveys by three years.
- 60 bindings (49%) show evidence of textblock edge decoration, a feature

unacknowledged in previous surveys of this structure. Styles observed in this survey include red sprinkle (45 examples), blue sprinkle (eight examples), full yellow edges (four examples) and singular examples of full red edges, marbled edges, and a trimmed head edge with deckled fore- and tail edges.

An initial review of the survey results offer several opportunities for reflection and additional research, including the irregular nature of board squares, a distinction between scaleboard and other wooden board binding structures, and a general call for prioritizing protective enclosures over more substantive treatment. The data from this survey will be offered to the Boston Athenæum for inclusion in their catalog and available to other researchers upon request.

### **30** An Interdisciplinary Approach of Preventive Conservation: Automated Visual Recognition for Deterioration on Manuscripts

*Wanjen Lin*

The National Museum of Taiwan Literature (NMTL) is Taiwan's first national-level literary museum. The majority of the collections in NMTL are paper-based materials such as manuscripts and books. When the collections exceeded 110,000 items, its condition assessment and documentation work becomes more cumbersome and time-consuming. In order to relieve the current situation, the NMTL launched an artificial intelligence (AI) learning research project in cooperation with the Industrial Technology Research Institute (ITRI) in 2021, for the identification of deterioration on paper. Extending from the main axis of museum collection and preservation to the application of new technology, the first stage of this research was to collect representative images of deterioration from manuscript and book collections. These images of deterioration were used to train the AI model through a co-creation competition activity, and the feasibility of AI identification of deterioration has been preliminarily verified.

However, several difficulties were also faced during the AI recognition process. Image data is complicated due to the fact that the diversity of paper substrate background interferes with the deterioration target, which increases the difficulty for accurate recognition. Even the same type of deterioration may have further classifications, and different types of deterioration show very different visual patterns, resulting in a highly complex image that restricts the performance of AI learning. Sufficient quality data collection and input is highly influential towards AI learning quality.

To resolve this, a further research was launched to find the methodology to construct a proper image database for AI learning. Firstly, image characteristic analysis such as contrast and brightness level were conducted to extract the effectiveness of training data from deterioration images. Secondly, the visual patterns of deterioration were then divided into several classes to help improve AI's learning quality. The analysis method was implemented as operation criterion to improve the quality of labeling data. Finally, the image data collected from the analysis results went through a data augmentation procedure, and were verified with experimental training and testing for AI recognition performance. The system parameters, photography equipment and labeling software were then fine-tuned to meet the standard of NMTL's digitalization workflow. Reason being, the learning quality of AI is highly dependent on sufficient quality data input.

In this research, automated visual recognition technology for deterioration on manuscripts was verified, and the methods for collecting AI learning data are also evaluated. It is hoped that the maturing AI visual analysis technology and machine learning model can assist collection condition assessment in the future, so as to enhance efficiency and record documentation more comprehensively compared to traditional manual procedures. Through the interdisciplinary research and fusion with AI technology, the digitization and documentation of collections will be implemented to help the NMTL further understand the overall condition of its collections, effectively integrating the accumulated data from the past and the continuous documentation output of the future.



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### **31 Conservation Processes of a Wooden Coffin Covered with a Black Resin Layer and Colored Materials in Dahshur Archaeological Area**

*Abdelmoniem M. Abdelmoniem*

This paper aims to document the conservation processes of a wooden coffin covered with a black resin layer and colored materials in Dahshur Archaeological Area dating back to the late period. The coffin consists of a body and a lid. The lid was broken into more than 16 pieces. The exterior part of the coffin was decorated with a black resin layer and a painted layer. Visual observation, 2D and 3D programs, and Optical Microscopy (OM) were used. Wood identification was carried out. The coffin was previously conserved and was in bad condition. It was covered with a thick layer of dust with lost parts of the painted and gesso layers. Other parts of these layers were lost. Moreover, some parts were missing from the head area of the lid coffin. The conservation processes of the wooden coffin included mechanical and chemical cleaning; reassembling the separated wooden parts, ground layer, and black resin layers; filling the edge of the ground layer; consolidating the wood, black resin, and painted layer. The conservation processes included mechanical cleaning using soft brushes, chemical cleaning using xylene and distilled water for the black resin layer and ethyl alcohol and distilled water for the painted layer, stabilization of the separated ground layer using Paraloid B72, filling the cracks of the ground layers using glass microballoon with Paraloid B72, and consolidating the painted layer with nano-silica with Klucel G (hydroxypropyl cellulose) (0.5% concentration).

### **32 Conservation Processes of a Painted Wooden Coffin at Dahshur Archaeological Area**

*Abdelmoniem M. Abdelmoniem*

This paper aims to document the conservation processes of a polychrome wooden coffin in the Dahshur archaeological area dating back to the late period. The exterior part of the coffin is decorated with a painted layer. Visual observation, 2D Program, and Optical Microscopy (OM) were used. Wood identification. The coffin was in a bad condition. It was covered with a thick layer of dust, losing parts of the painted and gesso layers, as well as other parts of these layers, were lost. Some parts were missing from the head area of the lid coffin.

The conservation processes of the wooden coffin included mechanical and chemical cleaning, reattachment of the separated parts of the ground layer and painted layers, filling the edge of the painted layer, and consolidating the painted layer. The conservation process included mechanical cleaning using soft brushes, chemical cleaning using ethyl alcohol and distilled water for painting, stabilization of the separated gesso layer using Paraloid B72, filling cracks of the gesso layers using glass microballoon with Paraloid B72, and consolidating the painted layer with calcium oxide nanoparticles with Klucel G (hydroxypropyl cellulose) 0.5%

### **33 Sustaining the Abydos Temple Paper Archives (ATPA): It All Began with a Floor Full of Scattered Paper**

*Ahmed T. Ibrahim*

The Abydos Temple Paper Archives Project (ATPA) preserves, documents, records, and conserves historical archives containing documents from the Egyptian Antiquities' Service related to the heritage management of the site of Abydos and surrounding areas from approximately the 1850s-the 1960s. ATPA serves as a virtual repository of information that can elucidate the contributions of Egyptian archaeologists who took part in the early exploration of Egypt's cultural heritage, the formation of collections of Egyptian antiquities in museums, and the creation of Egyptology as a discipline. This paper will discuss implementing the "Strengths, Weaknesses, Opportunities, and Threats" (SWOT) analysis that has been established to assist in conserving the archives

and outline future opportunities for developing sustainable preservation, documentation, and conservation model.

The sustainability of the archives and the ATPA project is central to our current mission and future project seasons. For the database, we intend to enhance our system of recording and cataloging, enter thousands more records into the database, and create a more sustainable storage system for these rare documents.

ATPA is currently refurbishing a storage building with better security and more favorable environmental conditions for the long-term storage and preservation of archival documents. The new storage facility will also serve as a center where local and foreign scholars may access and study the documents in the archives. Furthermore, ATPA has recently collaborated with the Museum Sector of the Ministry of Antiquities to run an archival conservation field school. The Abydos Archives Center Conservation field school is a collaborative capacity-building and training program that will help emerging Egyptian museum professionals learn archival management, conservation, digitization, and research skills that can be applied in their respective institutions. Students from various regional and national museums in Egypt will begin field school training this Summer, 2022. Amid this work and plans, ATPA continues to reflect on the unique perspective of the Abydos archive to highlight the contributions of Egyptian archaeologists in the evolving narrative of Egyptology that all began with a floor full of scattered paper.

### **34 Propuesta de un plan de conservación para la Colección Teatro Bufo de la Colección Coronado de la Universidad Central Marta Abreu de las Villas**

*Mariney Rodríguez Zerquera*

El presente estudio tiene como objetivo proponer un plan de conservación para la Colección de Teatro Bufo de la Colección Coronado de la Universidad Central Marta Abreu de las Villas, Villa Clara, Cuba. En dicha universidad se encuentra la Colección Coronado que atesora libros raros y valiosos, que fue en algún momento de su historia, la biblioteca personal de Francisco de Paula Coronado. Esta Colección tiene un alto valor patrimonial ya que atesora los más importantes libros cubanos y valiosas obras extranjeras, folletos, periódicos, revistas, documentos y manuscritos, de los cubanos más representativos del siglo XIX. Del teatro cubano no le falta nada. En la colección poética, aparecen los grandes poetas de la isla en sus varias ediciones. Está formada por diversas colecciones, entre ellas se encuentra cartografía, fotografía, manuscritos, publicaciones seriadas, libros, folletos, cartas, grabados, aparece también la colección facticia y la colección personal de Coronado. Es un conjunto documental archivado por más de sesenta años, con singularidades desde el punto de vista temático, bibliológico e histórico, que permite mostrar a la comunidad académica una variedad de documentos generados desde el siglo XV hasta la primera mitad del XX. Cada ejemplar por sí solo brinda información única y valiosa por su fecha de publicación o confección, las características de su encuadernación, su portada, su impresor, el autor y el tema que aborda, posibilitando así caracterizar una época que solo podemos conocer por el legado histórico cultural, que nos brinda este conjunto de obras únicas, algunas incluso inéditas. En ella se encuentra la colección completa del Teatro Bufo cubano que está integrada por 551 obras, de ellas 175 son originales. Del total de obras 412 son libros y 139 manuscritos. Para este estudio se abordan aspectos teóricos metodológicos relacionados con la conservación de la información y se describe el fondo. Se presenta la metodología de la investigación, destacándose como método teórico: el analítico sintético y como método empírico predominante: el análisis documental. Se seleccionó como muestra del estudio la Colección del Teatro Bufo de la Colección de Coronado en el período de 1800 a 1900. La propuesta de este plan será de gran utilidad para la colección y sus usuarios ya que logrará que la información se conserve y perdure en el tiempo asegurando la integración física y funcional de los documentos. Servirá de apoyo para futuras investigaciones.

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### **35** The Story of the Castillo Indigenous Collection: A Case Study

*Paola Marie Valentin Irizarry*

José Antonio Castillo Fernández (1925-2017) was a Puerto Rican collector of pre-Colombian antiquities, who became a philanthropist and cultural functionary, genuinely committed to preserving Puerto Rican archaeological resources. Motivated by his intellectual curiosity, patriotism, and favorable conditions, he became an expert and dedicated lecturer of Puerto Rican prehistory at a time when there were few specialists and no academic programs aimed at these studies in Puerto Rico. There were also no laws that prohibited amateur excavations at archaeological sites.

In the 1960's, discoveries of new archaeological sites resulted in the rise of amateur archaeologists and collectors. During this period, archaeological collecting became a patriotic exercise. Different types of people discovered in amateur archaeology a way to study and connect with their aboriginal heritage. In this context, José Castillo dedicated himself to collecting, restoring, and cataloguing archaeological objects because he wanted to "give Puerto Ricans the opportunity to admire the work of their ancestors". Archaeology professor Dr. Peter Roe of the University of Delaware claimed that José Castillo was active from 1960 to 1975 and owned the second largest collection of aboriginal artifacts from the Hacienda Grande archaeological site in Loíza, on the northeastern coast of Puerto Rico. In the early 1970's, José Castillo founded the Archaeology Committee of the Puerto Rico Natural History Society. Through this Committee, and with the help of its members, José Castillo developed an ambitious project of cultural dissemination that involved an extensive network of students, professors, collectors, archaeologist, and amateurs, and contributed to the progress of the archaeological discipline in Puerto Rico.

With his collection, he created the Castillo Indigenous Museum, a "mobile museum" that travelled to different schools and cultural centers throughout the island. Praised in local newspapers as an expert in Puerto Rican pre-Colombian cultures, he was an influential figure who worked with the Institute of Puerto Rican Culture conducting archeological research, educating the public and advocating for the implementation of local laws that would protect archaeological sites from further looting. However, his story was lost in time and his work went unrecognized.

In 2017, the Castillo Indigenous Collection suffered severe damages from the passing of hurricane Maria in Puerto Rico. The collection was stored in cardboard boxes on the first floor of a two-story apartment building in a residential area. Windows were blown open by the hurricane winds, there was water damage from flooding, and then mold and pest damage occurred in the following months. After the disaster, the collection was offered to the Museum of History, Anthropology and Art of the University of Puerto Rico. At the time of its recovery, nothing was known about the collection's provenance, or its history. This narrative was achieved through the examination of the materials and archives recovered, research conducted at the Institute of Puerto Rican Culture and interviews done to two men who "donated" archaeological artifacts. This study contemplates the conservation challenges confronted in recovering an orphan collection impacted by a natural disaster.

### **36** Technical Study of Clay Lioness Goddess Statuary in The Grand Egyptian Museum, Old Kingdom

*Haitham M. M. Salih*

The Japanese archaeological mission from Waseda University at a rocky outcrop in Northwest Saqqara found a number of terracotta and clay statues in two rock-cut chambers on southeaster slope of the outcropping. The study will focus on the conservation and restoration of one of these statue which is clay statue depicting lioness goddess which was inscribed with the Horus name and premen of Khufu, along with the premen of Pepy I.

The statue represents a lioness goddess flanked by two small figures of a child-king. The colours of the statue seems to be red-brown, with a very smooth surface, the features of the face are very fine with a very fine wig of the old kingdom and a sheath dress, and her arms along her body.

The statue repaired several times due to the deterioration occurred to the statue through different ages. The ancient restorer applies pinkish powder-like mortar in several cracks all over the body.

The analytical study yielded that the mortar used to join the parts in the most recent restoration process is gypsum, which is very dangerous and can cause a severe deterioration the original clay, this was one of the main challenge in the conservation process so that we decided to remove all the previous mortar and collect the parts of the statue with the proper mortar which was microballon and baraloid b 72.

The main challenge of the conservation operation was the weakness of some parts due to the fragility of the clay so that the study suggested to consolidate these week parts with the paraloid B72 with concertation of 5%.

One of the very mysterious parts of the study is that we found piece of wood inside the parts of the statue behind the small child-king statue.

This study aims to do conservation process for this statue, attempt to inhibit further degradation as much as possible and fill fractures and cracks in the clay statue.

### **37** Study Characterization of Historical Collage Album Dating Back to 19th Century and Preventive Conservation to Save It

*Francis A. Mohareb*

Collage began in the Far East in the 12th century, before the age of manufacturing, when paper was precious, and was regarded as a sacred ceremonial material. The first known collages are from Japan, From the 19th century on, collage followed the trade routes and paper moved West, and the history of collage follows the manufacture of paper. Many institutions have attributed the beginnings of the practice of collage to Picasso and Braque in 1912, however, early Victorian photocollage suggest collage techniques were practiced in the early 1860.

This paper present important Collage album within the collection of Francis Amin, one of the most important photographs Egyptian collectors in the Middle East and the world, This album returns his story to the following:

Modern Egyptian postal service began when Carlo Meratti, an Italian, living in Alexandria and his nephew Tito Chini, with his famous partner (Giacomo Muzzi), established a post office to send and receive mails to and from foreign countries as early as 1821 and they called it the European Post.

Khediye Ismail realized the importance of the European Post and purchased it from Muzzi in 1865, and The Egyptian government offered to Muzzi the position of general manager of the post then He bough tit for the Egyptian government.

On January 2, 1865, the private European Post was transferred to the Egyptian government. This date is noted as (Post Day) as the postal festival in Egypt, It seems that the company that presented this album in Alexandria in 1882 to one of its major customers as a gift, and it was written in golden script in Italian which was the official language of the Egyptian post on the cover" the Postal Company for Saving and Credit is presented ( La Società postale di risparmio e prestiti ) and the City (Alexandria) 1882.

Number of album pictures ( 10 ) Some of them were museum display halls in which scenes of famous paintings and artworks and images of visitors were cut out and all these was done in the collage style with watercolors and pictures of some of the houses of that period painted and colored in watercolors, also the album included a famous view of horse racing, viewers and landscapes represent Parisian life, regions of ancient Rome and some famous sights in Rome and Paris.

The paper further discusses the use of multispectral imaging system for the Characterization of pigments in this album as a new approach in photograph Conservation field. Stereo microscope 500x, shows the structure of albumin photo prints; also the analysis was done by FTIR-ATR to identify the Color medium and adhesive.

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### **38** Technical Study for Faience Bowl Dated Back to New Kingdom, 18th Dynasty in Grand Egyptian Museum

*Mohamed Eid*

The term Egyptian faience in the present context refers to a ground-quartz body with alkaline glaze which first occurs as early as the fourth millennium B.C. and has continued to be used in the Near East for the production of small objects such as beads, rings, bracelets, small figurines and bowls up to the present time. Faience was deliberately targeted by the royal class, as shown by the thousands of faience tiles employed for the step pyramid of Djoser at Saqqara.

The study focused on the bowl that dated back to 18th dynasty, the new kingdom and it is plain bowl except the cartouche of king Amenhotep II (sometimes called Amenophis II was the seventh pharaoh of the 18th dynasty of Egypt, Amenhotep inherited a vast kingdom from his father Thutmose III.

This paper will focus on the conservation and restoration of ancient Egyptian faience bowl came to Grand Egyptian Museum from Cairo Egyptian Museum to be displayed in Grand Egyptian Museum. The bowl was broken to several parts and collected in previous restoration and was in bad condition.

The study focused on making analysis to the mortar used in supporting the bowl through the previous restoration, so after taking the samples, XRD analysis done to these samples to identify the composition of such mortar, the study found that the gypsum mortar used in the previous restoration.

The decision was reconstructing the bowl again with new and better adhesives after numbering all the broken parts of the bowl and then use the proper and the durable mortar to complete and support the bowl construction.

### **40** Finding Alternatives for the Conservation of Textiles at the National Museum of Music

*Alina Vázquez de Arazoza*

Having in place a program or policy for the conservation of the collections is critical for any museum, library or archive. Such program or policy is usually adapted to the real possibilities of the institution to meet its conservation needs, establishing terms in time with priorities depending and according to the most urgent problems or needs. The National Museum of Music of Cuba treasures a significant collection of textile pieces that belonged to outstanding Cuban bands and musicians, representatives of our cultural identity and bearers of values which transcend the material. Even though we had been working in the improvement of the conditions in the storage vault, we have recently noted signs of deterioration that had not previously existed, while others have worsened. So far, we have not been able to determine the causes of such damage. We therefore implemented a study to draft a policy and establish recommendations and guidelines aimed at the preservation and conservation of these pieces, specifically by determining the causes and the origin and possible problems existing in the storage. These recommendations have been organized in three major periods taking into consideration the problems and priorities, establishing feasible solutions. Some of these recommendations have already been implemented with the few resources available, and we have even assessed the risk-benefit relationship for the conservation.

### **41** Conservation of Ghost Message on Polychrome Wood

*Ming-Hung Chang*

Conservators often use different light sources for examination due to conservation, such as using infrared light to inspect the collection for manuscripts, or using ultraviolet radiation to observe whether there are repair marks and varnish on the surface of the collection. These are different media that may have different absorption and reflection reactions under the motivational light source. These reactions can provide maintenance personnel formulate conservation plans, or researchers can make judgments and interpretations

of the collection. The National Museum of Taiwan History (NMTH) is located in Tainan City in southern Taiwan. It is an institution that collects cultural objects from Taiwan's history and the lives of everyday people. NMTH collected 2 pieces the collection name "Jian Xing Zhuang Mansion Han Chinese Collecting Materials for Wangzai Lishe" wooden polychrome. The collections were made of polychrome wood, which records the Han people and the Paiwan native inhabitant Wangjia tribe. The name and quantity of the items traded by the native inhabitant and the painted layer on the surface are lost and worn in many places, so many words cannot be clearly identified. Reflected ultraviolet and IR photography were used to identify the lost message so it can be read clearly. In addition, in the selection of conservation materials, the conservator must also take into account the material's fluorescent properties and the impact on the object.

### **42** Planning, Developing and Implementing a Strategy to Care for a Large, Diverse and Growing Photograph Collection in the Tropics

*Esther Ng*

This paper aims to present the challenges and learning points in the journey to plan, develop and implement a strategy to care for the photograph collection at the Heritage conservation centre (HCC) in Singapore.

The HCC is the centralized storage and conservation facility responsible for the managing, preserving and supporting access of about 230,000 national collection objects of Singapore. They are ranked into four categories: National Treasure, High value, Permanent collection and Community collection. The collection belongs to eight museums under the National heritage board and is used primarily for research and display. At HCC, there are 36 conservators organized into four teams: Paper, Painting, Textile and Objects. There is also a conservation science team comprising of a head with two conservation scientists.

In 2016, the conservation department at HCC conducted a simplified version of Brokerhof, Kemp and Bulow's model of value management scan to set priorities in collection care. Within each team, areas of the collection under their purview were identified and mapped onto a chart in terms of strategic importance of collection vs the relative strengths in its care. With regards to the photograph collection care, previous efforts to build up the capacity had lost continuity when a staff left the center in 2014. In view of the growing collection, the high potential use value and the competency gap, photograph conservation was identified as one of two top competency gaps in this exercise within the Paper team.

In accordance with the larger plan to strengthen the center's capacity for photograph preservation, the author of this presentation embarked on the study of photograph conservation at the University of Amsterdam's MSc program in 2018. In 2021, a photograph project commenced at HCC which conducted an informal risk assessment by reviewing current work practices in the care, documentation and representation of the photograph collection. A survey questionnaire was also sent out to conservation, collection management and curatorial colleagues to gather staff perception on collection needs and priorities. Concurrently, a collection survey of photographs also commenced to gain insights into its condition and preservation needs.

Through these activities, an understanding of the needs and priorities pertaining to the care and access of the collection emerged. Within the national collection, the photograph collection approximates 33000 and range from 19th to 21st century analogue and digital processes. Staff perception raised needs such as photograph identification training for conservation and museum staff, cold storage, cataloguing and documentation, developing an emergency and disaster response plan, training in conservation treatments, setting display guidelines for photographs. The findings were presented to raise awareness and discussion among HCC and some museum colleagues. Short term and long term measures to improve care, access and representation of the collection are being planned or carried out. Under Singapore's Green plan 2030 and HCC's research purview to increase the sustainability of conservation and collection care, a microfading project of colour photographs to determine preservation target and inform the setting of a display guideline is being planned.



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### **43 Scientific Analysis and Technical Study of Ancient Egyptian Royal Golden Weavers from the Tomb of King Tut, New Kingdom, Dynasty 18, in the Grand Egyptian Museum**

*Mahmoud Fathy*

An ancient Egyptian golden weaver, discovered with the funeral staff of the king Tut Ankh Amun, from his Tomb, Eighteenth Dynasty (1550-1295 B.C.), Western Thebes, these weavers made out of gold inscribed with hieroglyphic inscriptions and other decorations, the weavers found separated with different sizes accessioned by the Egyptian museum in Tahrir square kept in the storerooms for long time and then moved to the grand Egyptian Museum to be displayed there.

Scientific analysis used for this study include visual annotations, stereo microscope, and portable X-ray fluorescence, the reason of making such analysis to closely examining the weavers and provide information about the condition of the weavers and looking closely to see if there are colours any paint layers, as the team observed there are some parts has a traces of preparation layers that might help answering the question of the function of these weavers.

The technical study includes the cleaning of the surface of the weavers with organic solvents then the team decided to consolidate the weak parts with Klucel G, then the team made a study to know exactly which parts should be joined depending on the shape of the parts and the inscription specially the hieroglyphic inscriptions after that the parts joined together with bridges of tissue paper with Klucel G.

This study aims to do conservation process for this statue, attempt to inhibit further degradation as much as possible.

### **44 Virtual Cleaning of Artworks Using a 1-Dimensional Convolutional Autoencoder**

*Morteza Maali Amiri*

It is well-known that the varnish applied to artwork becomes yellow with time affecting its appearance accordingly. Therefore, conservators are prompted to physically clean the artwork to recover the work's original look. Sometimes the conservators only partially clean the artwork first. Then, they try to virtually clean the remaining of the artwork to visualize the outcome of the cleaning before physically cleaning the whole artwork. There have been many different approaches that have been suggested to virtually clean an artwork. All of them have some limitations, the low accuracy of which is the main one.

In this paper, a 1-dimensional convolutional autoencoder (1DCA) is proposed to virtually clean artworks in the reflectance domain. The 1DCA is a type of Convolutional Neural Network (CNN) having the basic structure of encoder and decoder which consist of 1D convolutional layers that extract specific features along the spectral dimension. The 1DCA is used herein to map an uncleaned artwork to a virtually cleaned one. To do that, there is a need to have access to datasets of both cleaned and the corresponding uncleaned artwork, using which the 1DCA is trained. It should be noted that for the 1DCA to learn the mapping functions, the training dataset should consist of a somewhat large amount of data. The 1DCA would be then able to estimate the virtually cleaned version of the artwork in the testing dataset. Different color charts, such as the Macbeth ColorChecker, and hyperspectral imagery of the artwork. 'Haymakers at Montfermeil' (provided graciously by the National Gallery of Art) are used to test the approach and the results are compared with a model referred to as the physics-based model available in the literature. The results are found to be better than those of the physics-based model's, which shows the great potential of 1DCA for the application of virtual cleaning.

### **45 Ultra Sonic Air Humidifier with Steam Flow as a Sustainable Method for Detach, Humid and Consolidate Papyri Object**

*Wael Zayed*

Sterilization with nitrogen inside the anoxia unit was the first step before starting maintenance and preservation procedures.

High-quality photography and a portable digital microscope have been used to examine the papyrus. Test the sensitivity of inks against solutions that will be used in conservation processes, to choose the most appropriate methods of intervention.

Previously, A 3 mm thick blue colored cardboard was used as a back support for the papyri, which was common type used at the end of the 19th century and the beginning of the 20th century and consists of layers or thin pressed sheets.

Examination revealed to using a high percentage of animal glue, as an adhesive to paste the papyrus with the old cardboard support.

Papyrus ink in the surface layer is very sensitive to solution, therefore, facing the surface of the papyrus was made using Japanese tissue paper 10 cm sheets fixed by Klucel E based on Alcohol, in order to reinforce it and protect the inks when removing the back old cardboard support.

The thickness of the layer of the old carton support has been reduced to the lowest level that can be reached from the back and then remove all carton remains by humidification inside a tent using an ultrasonic humidifier.

A suitable consolidating material has been added with the humid solution to improve the object physical properties. Remove facing sheets after completing the removal and moisturizing work.

Suitable thickness from The Japanese paper was used to strengthen the papyrus from the back and assemble the separate parts.

Preparing suitable housing that is consistent with the environmental conditions and preservation for the object in the appropriate way inside the stores of the National Museum of Egyptian Civilization.

### **46 Characterization and Restoration of a Late Period Canopic Jar and Its Organic Contents**

*Akram A. Taha Sr.*

Although mummification existed in other cultures, eternal life was the main focus of Ancient Egyptian religion. Mummification process was performed into several steps. One of these steps was the removing of internal organs (liver, stomach, lungs and intestines) and inserting them in canopic jars, that were made of several materials and had characteristic stoppers. On early jars human-headed stoppers probably depicted the deceased. In later periods the different jars were linked to four protective deities called the Sons of Horus and the jar stoppers depicted these gods. The liver was protected by human headed Imsety, the lungs by ape-headed Hapy, the stomach by the jackal-headed Duamutef and the intestines by the falcon headed Qebehsenuef.

Late Period canopic jar that is housed within the Grand Egyptian Museum (GEM), Cairo, Egypt is selected for this study. The studied canopic jar was broken into two parts joined with iron wire. The remains of previous restoration materials, which may be used as adhesive in joining process, was noticed. Missing part of the base, cracks, signs of completion in different parts, adherent dust on the surface, black resinous materials and change in the color of linen wrapped the internal organ was recorded.

To evaluate the condition of canopic jar and its organic materials several investigation methods was used. FTIR analysis was used to identify the resinous materials and to evaluate the condition of linen by compared the result with control sample.

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In addition, XRD spectroscopy was used to characterize material used in the previous completion process of the jar.

Furthermore, XRF spectroscopy was used as a quantitative analysis to determine the type of pigments used. The change of textile color was stated by UV-spectrophotometer. On the other hand, HPLC patterns detected the presence of resinous materials that were used to adhere the linen wraps, and as a protective layer due to its antimicrobial activity, but was self-carbonized (Fig.2-3). These resinous materials may be imported from Syrian and Lebanon within the frame of commercial relations.

Both mechanical and chemical cleaning were used for removal the surface dust and dirt without damage to the canopic jar and its contents. The separate parts were assembled. In general, all the conservation processes of the jar revealed its aesthetic value.

### **48 Who, What, When, and Where: Uncovering the Clues on the Body of a Book Using Restoration and Provenance to Date Rebinding and Create Geographic Mapping, a Case Study**

*Leah Humenuck*

Throughout conservation and scholarship, it is well known that provenance research provides clues to the related history of the item. Much of this research is aimed at a particular person the book belonged to or with whom it was associated, but less of it is dedicated to the various institutions that might have kept this book. Beyond provenance is material biography: the choice of materials, techniques, damage etc. that has occurred throughout its lifetime. While there is a great deal of research regarding historical book creation, little is written about earlier restoration/conservation techniques. These intersections of provenance, personal and institutional, material biography, and restoration/conservation techniques can be critical to dating rebinding, other augmentations, and chart the book's geographic journey.

This case study follows the clues on a 16th century French translation of a German cryptography book which is held by the U.S. Army Heritage and Education Center in Carlisle, Pennsylvania.

The purpose of this case study demonstrates the following: the ability to use the intersections of provenance, bookbinding, and restoration techniques to date rebinding; the need for the documentation of previous restoration and conservation techniques, where and when they were used; the importance of noting whether a book is in a binding contemporary to its publication or later for virtual researchers; the importance of tracing a book's geography for the benefit of big bibliographic and institutional data analysis (who was collecting what and when); and lastly, the online availability of this information to empower digital humanists and further democratization of bibliographic knowledge.

### **47 Climate Change and its destructive effect on Mechanical, Physical and Tonal Qualities of Historical Gelatin and Albumin Photographs Prints (Comparison Study)**

*Rasha A. Shaheen*

This paper presents a study of the result of changing the mechanical and physical properties of Black and White Silver Gelatin and Albumin Photographs Prints due to exposure to air pollution gases. The test material used is black-and-white silver gelatin and albumin photographic paper. Different properties and characteristics of the prints have then been measured and compared before and after the exposure. Mechanical and physical performance was also investigated. Tensile strength, elongation percentage, and resistance breakout force and tear have been determined. Identify Changes in color characteristics by using Colorimeter. Identify the change in functional groups by using FT-IR ATR. Learn about the change in surface morphology and chemical composition of components by using SEM-ADX. The obtained results indicate a certain change in the mechanical, and physical properties of the supporting paper, which may probably increase with time. As a result of slightly, influences on Gelatin and Albumin structure units were observed when N<sub>2</sub> gas and CS<sub>2</sub> gas were applied. Both gases surprisingly decreased the aging processes through decreasing CO<sub>2</sub> release from Albumin structural unit.





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